

Analysing Critical Factors of Infrastructure Funds: An Introduction

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Abstract

Public-Private-Partnerships have been used, globally, as an infrastructure delivery and management system for both the developing and the developed countries. A growing demand for additional infrastructure has highlighted the use of infrastructure funds as an alternative to project financing. However, the current economic crisis and the inherent risks in infrastructure funding jeopardize this type of infrastructure development. This paper refers in brief to the fundamentals of infrastructure funding such as mode of application, infrastructure assets, and stakeholders. The most important contribution of the paper is the identification of certain critical factors that should be primarily considered by decision-makers involved in infrastructure investment appraisals. These factors are related to: a) the drivers for investing, b) the actual demand for infrastructure, c) the structure of the funds, d) the competition in the market, and e) the regulatory framework of operation. Along with the identification of the critical factors an analysis framework is presented that indicates the proper addressing of these factors in an infrastructure investment appraisal. The results from the validation of the critical factors and the analysis framework are expected to provide the decision makers with a secure base for evaluating the viability and profitability of infrastructure investment alternatives.

Keywords

Infrastructure, Funding, Critical factors, Economy, Decision-making

1. Introduction

Governments and public authorities all over the world are experiencing a growing need to replace or expand their infrastructure in critical sectors such as transport, energy, sanitation, public buildings, etc. This is because, both in developing and developed countries, one or more of the following conditions are met: a) aging structures, b) the rapid pace of technological change, c) the increase in population, d) the emergence of mitigation and adaptation responses to climate change, e) urbanisation, f) the rise of a middle class in developing and emerging market countries, etc. These conditions justify the urgent need for adequate and modern infrastructure that provides services to the people and the economy of a country. However, the modernization or the creation of infrastructure is associated with enormous costs that even strong economies are facing difficulties to deal with. The estimation for the next 25 years is for a demand of \$53 trillion for infrastructure development worldwide, while only for the USA it is estimated that almost \$1.5 trillion will be required within the next five years (Spellman, 2008). Referring to the gross domestic product, the Organisation for Economic Cooperation projects that infrastructure needs globally will consume at least 3.5% of GDP each year through 2030 (Spellman, 2008).

The high demand for infrastructure has, unfortunately, coincided with one of the worst global economical and financial crises since the Great Depression. A less severe, although very critical, situation in 1997 with the Asian stock market crisis has resulted to a significant withdrawal of infrastructure funds and a

period of almost 10 years for the revival of the sponsors' interest for this type of investment. In the light of a highly uncertain investment environment coupled with the urging need for state economies to deal with recession, it is imperative to identify and address some critical factors in infrastructure funding that should be further analysed, in order to: a) prevent from a new withdrawal of private funds from the global infrastructure market, b) demonstrate the necessity of a cooperation between private and public funding sources to deal with recession, and c) to identify the potentials of infrastructure funding in certain industrial sectors, globally, in the near future.

The aim of this paper is to present a first identification of those critical factors and a framework to analyse them. The second section briefly refers to the fundamental concepts of infrastructure funds, and the clarification of infrastructure assets and interested parties in investing on them. This part clearly identifies the basic constituents of the research framework. The third section presents the critical factors that should be analysed in order to clarify the potentials of an infrastructure investment alternative. In the forth section, the outline of an analysis framework for the identified critical factors is provided. Finally, in the last section, a discussion is presented on the major topics of the paper and the future steps planned.

2. Fundamental Concepts of Infrastructure Funds

Infrastructure funds may be perceived as a category of mutual funds focused on the specific area of infrastructure but not restricted to certain infrastructure sectors (Pandit, 2007). Although heavily engaged, infrastructure funds differ from private funding in conventional project finance form, mainly because they can be used for a broader spectrum of infrastructure assets. However, this does not exclude funds following the private equity model from consideration in the overall amount of the funds invested or aimed to invest in the infrastructure. Orr (2007), defines infrastructure funds as those “*focused on making direct financial investments in projects across the following sectors: power (renewable energy, coal-fired, gas turbine and nuclear), water (treatment and distribution), transportation (airports, ports, roads, parking lots and rail links), social (prisons, hospitals and schools), and utilities (gas distribution, electricity transmission, fixed-line telephone and mobile telephone)*”. Orr, himself, intentionally excludes several other sectors (e.g. resource exploitation) for the purposes of his approach (Orr, 2007). The abovementioned definitions present a rather vague framework of what is considered an infrastructure fund. This has no impact in raising such funds but it may have an impact in structuring and operating them.

2.1 Benefits of Infrastructure Funds

What are clear enough are the benefits from investing in infrastructure being a large institutional investor, a bank or a project sponsor (Roane, 2008; Hill, 2007; PricewaterhouseCoopers, 2007; Orr, 2006):

- The stable nature of the target assets renders the investment less vulnerable to fluctuating market conditions.
- Infrastructure assets offer long-term, inflation-adjusted returns, which typically demonstrate stability over time. Particularly, for long-term investors such as pension funds, the avoidance of the volatility of the share markets and other investment classes is a strong incentive for investing in infrastructure assets.
- Infrastructure funds may be part of a portfolio of private equity and real estate funds offering a combination of hard assets and visible long-term earning streams. Such a portfolio could be proved lucrative, especially for under-funded pension plans, which may be assisted to close huge gaps between liabilities and owned assets.

Although the great majority of infrastructure funds are new and, therefore, estimations of the return potential of infrastructure investments are facing a significant uncertainty useful experience drawn from

the recent past proves the attractiveness of infrastructure funds to investors. Spellman (2008) refers to a Standard & Poor's analysis of listed infrastructure stocks between 2001 and 2007, which shows their producing 23, 28% in annualised returns with a 10, 89% in annualised volatility. That compares with: a) annualised returns for bonds of 6.94% and an annualised volatility of 5.76%, and b) annualised returns for common stocks of 10.56% and an annualised volatility of 12.34%. Listed infrastructure stocks yielded 3.1%, compared with 1.8% for stocks and 4.3% for bonds. As the figures show, the financial appeal of infrastructure investments is significant compared to other type of investments. A typical return in the range of 10 to 35% is the first motive for the institutional investors' strong interest in infrastructure assets (Orr, 2006).

2.2 Infrastructure Assets

Infrastructure has moved away from being owned and operated largely by national, state and local governments to new arrangements that involve private investors, global operators and innovative financing strategies crafted by investment banks (Spellman, 2008). However, not all type of infrastructure can satisfy fund's yield requirements as described in the previous section. According to RiskMetrics Group (2008) and PricewaterhouseCoopers (2007), successful acquisition targets will usually need to display the following characteristics:

- Steady-state businesses with good visibility over future performance. These businesses are mostly related to the provision of basic, everyday services that enjoy consistent, inelastic demand.
- Long-life, high-value physical assets, which present often little likelihood of being rendered obsolete as a result of advances in technology.
- Strong cash-generation with the ability to fund regular dividends.
- Stable, long-term prospects, often from a market-leading position (monopolies or oligopolies) with barriers to competitor entry.

Identification of these characteristics in infrastructure assets is of significant importance for investors and interested parties who manage infrastructure funds.

2.3 Interested Parties

A detailed analysis of the requirements, the goals to set and the approach to adopt towards achieving the best possible return of infrastructure investments in the safest possible way is of major interest for typical infrastructure investors such as pension funds, insurance companies, banks, and high net worth individuals.

Unlike to the project finance model, where mostly individual sponsors and banks had the responsibility of raising funds, infrastructure funds are more and more attracting institutional investors such as smaller pension plans, insurance companies, endowments, etc. The reason is because through investing in an infrastructure fund these institutional investors are allowed to diversify into this important asset class to avoid bearing the significant risk of investing directly in infrastructure assets (Hill, 2007).

Another important reason that causes many institutional investors to raise interest on infrastructure funds is the expansion – at a global level – of the categories of investments which are permitted to make, based on the regulatory framework wherein they operate. Orr (2006), refers specifically to the examples of the Korean banks and the Indian insurance companies, which are being permitted by their regulators to make modest infrastructure investments, while other institutional investors such as pension fund trustees may reallocate their capital for investment from real estate-related assets to infrastructure assets due to a broadening in the definition of permissible real estate investments.

Apart from large or medium institutional investors, which are mainly targeted as investors in infrastructure, there are also small specialist teams nested within larger commercial banks, asset management companies, or family offices who are activated in infrastructure investments, as well as other players such as joint ventures or strategic partners to contractors or regional governments that are involved in the infrastructure market (Orr, 2007).

As all these parties do not follow a single model (e.g. the private equity model) but invest either their own capital or raise funds through stock exchange markets (Orr, 2007), the parties involved in the related to financing services mechanisms are also of great interest to a detailed analysis and insight to infrastructure funds.

3. Critical Factors in Evaluating the Success of a Future Infrastructure Investment

The demand for infrastructure development, worldwide, cannot be fulfilled without the involvement of private funds. This is because governments and public authorities cannot afford such costs for infrastructure development due to: a) poor economy, especially in the case of many developing countries, and b) the uncertainties of the international economic environment and the constant fear of an economic crisis. As a result of these constraints, the contribution of the private sector is more than welcome and infrastructure funds are answering the urgent call. The estimations of Stanford's Collaboratory for Research on Global Projects are that since the beginning of 2006 more than 72 new infrastructure funds have been introduced, while for the same period, the funds raised for infrastructure investment exceeded \$160 billion (Roane, 2008). The world's 20 largest funds have nearly \$130bn under management – 77% of it raised over the past two years – with about 63% from new entrants, according to McKinsey & Company. These amounts, though, may be even higher since many pension funds and sovereign funds have made allocations to internal infrastructure teams that are not publicly announced (Spellman, 2008). Only in the first months of 2008, an amount of approximately \$18 billion, was raised globally for investments into infrastructure funds aimed primarily for the region of Asia, which is expected to result to a critical raise of 3 to 5 times more comparing to the funding of Asian infrastructure in the years of 2006 and 2007 (DiBiasio, 2008). Asia is not the primary target of infrastructure funds in terms of geographical dispersion. The Collaboratory for Research on Global Projects at Stanford University allocates about two-thirds of the funds on the USA, Europe, the Middle East and North Africa, as well as India.

This boom of the infrastructure funds over the last five years has resulted to a major increase of infrastructure-related entities, which only for the emerging markets is estimated to be approximately at 54% (from 230 to 354) with total market capitalization increasing from US\$146 billion to US\$1.1 trillion (Garner et al., 2008). All these new players in the infrastructure development and delivery system, namely projects sponsors, institutional investors, governments, multilateral development agencies and bankers may contribute an up to 10-15% (US\$240bn to US\$360bn) of the annual requirements of capital for infrastructure projects worldwide (Spellman, 2008). The assistance that such a contribution would offer to state economies for dealing with recession is evident. However, in the currently ambiguous economic environment that is full of risks, this contribution may be realized only after a thorough analysis of the critical factors that would ensure a long-term viability and profitability of infrastructure investments. A first identification of these factors along with a research framework for an integrative analysis of them is presented below.

3.1 Drivers for Investing in Infrastructure

As presented above, there was a growing trend of raising huge amounts for investing in infrastructure worldwide. Global infrastructure fundraising topped \$34bn last year - nearly double 2006's level - and nearly seven times the \$5.2bn raised in 2005, according to Probitas Partners, a fund management firm in San Francisco (Spellman, 2008). In order for the above funds owners to direct this amount of money to

the infrastructure market certain drivers for investing there should be validated and presented. The critical ones are the following:

- The current international economic environment with the fluctuations of oil prices, the deep crisis in the real estate market in the USA and the low interest rates urge for safe and secure investments, which ensure steady-flows and long-term prospects. This is very important, especially for institutional investors like pension funds who may face significant problems in coping with liabilities.
- The long-term lifecycle of infrastructure assets closely matches the long-term investment periods that certain investors (e.g. pension funds) seek for their portfolios.
- Infrastructure assets are inversely correlated to the historical returns of most other investment categories and thus they are increasingly being recognized as an ideal vehicle for the diversification of risk (Orr, 2006).
- Pioneering funds currently recognised as serious players in the infrastructure market have achieved strong returns of investment and therefore constitute a good example for other investors to imitate. On the other side, developing countries (e.g. China and Russia) that have promoted a centrally planned infrastructure development have presented high rates of economic growth, an example that other developing countries with growth aspirations may well be attempting to follow with the aid of infrastructure funds (Orr, 2007).

3.2 Actual Demands for Infrastructure Funds

The projections for the next decade concerning the overall population on earth show an increase of more than one billion inhabitants, which is directly related to infrastructure development requirements of US\$8 to US\$30 trillion (Orr, 2006). At the same time, there is a rapidly growing middle class in developing countries (e.g. China), which will seek for new services that require new infrastructure. Urbanization and more energy-intensive economies will accelerate climate change, unless special and urgent care is shown for low-carbon and renewable energy – based infrastructure; measures in line of this special care are already implemented at the global level. The fact that government resources to cover these record-breaking costs are very constrained – not to mention the shortages of funds for maintenance and upgrading of existing infrastructure – leads to the result that there are actual demands for infrastructure funds, which however have to be carefully allocated geographically and thematically in order to present the real extent of actual demands for infrastructure funds in different places and sectors throughout the globe. For example, continental Europe (e.g. Spain and Germany), has the potential to attract significant infrastructure funds in the near future (PricewaterhouseCoopers, 2007).

The raising of vast amounts of funds in a very short time period (i.e. the last three years) is the main reason for the rising of specific concerns for the next “asset bubble” (Roane, 2008). As PricewaterhouseCoopers (2007) points out, the success of early funds has led to a large number of new entrants, which in turn has caused higher asset values of infrastructure in the hosting countries. The direct result is a pressure on funds’ investment returns. This tough competition between several types of investors, such as institutional or private equity investors, may lead to even higher asset values that will render the investments as non-profitable or, even worst, may lead to investments with large risk. Therefore, an accurate estimation for the real value of any infrastructure assets would reduce the overall investment risk and contribute to a safer selection between investment alternatives.

3.3 Competition in the Infrastructure Market

The relatively new market of infrastructure funds currently experiences a great number of ambitious players who seek for their sufficient share. The more established infrastructure funds (e.g. Macquarie) now find themselves being recognised as serious players and distinguished from private equity investors, while new funds (e.g. pension funds) are taking place to exploit opportunities in the market, especially in developing countries. However, it is a question whether all these players can survive in the long-term. The

sustainability of these infrastructure funds is a matter of investigation and the first parameter to check is the robustness of the investors' entity. Another critical feature is the management skills required to operate an infrastructure fund in an environment of risks and strong competition. A single adoption and adjustment of the well known methods of private equity funding to infrastructure funding and the usual diversification across sectors and geographies to mitigate risks at the portfolio level may not prove successful if the management team is not consisted of specialists of different expertise such as investor analysts, engineers, political analysts, etc. The investigation of the key players in the infrastructure market and their structure and capacities may prove very important: a) for governments and public authorities who assign or lease facilities to infrastructure funds and b) for the infrastructure market that can be organized from the beginning in an appropriate way.

3.4 Structure and Operation of the Infrastructure Fund

Effective structure and operation of the infrastructure fund provides a significant competitive advantage in a highly competitive environment. The related issues cover a wide range that includes among others:

- Appropriate form of structure, i.e. open-ended or close-ended funds.
- Clear focus on assets targets.
- Timely acquisitions to avoid capital remaining idle.
- Appropriate cash conversion and extraction to serve dividends.
- Managing of conflicting requirements and even interests between members of consortia formed to support an infrastructure fund.

3.5 The Regulatory Framework of the Operation of the Infrastructure Fund

Many countries around the world have incorporated in their regulatory and legal framework certain provisions and specifications for the privatization of infrastructure. In many developed and rapidly developing countries this framework is often very well structured and already tested through a number of public-private-partnerships that have exercised all the wide range of privatization modes, from leasing of infrastructure to transfer of full ownership to the private sector. Therefore, successful and unsuccessful cases exist to draw lessons with regard to the appropriate legal and regulatory provisions for an unhindered operation of infrastructure funds. A critical issue related also to the regulatory framework is that infrastructure assets are very heavily embedded within the societal and political context of the host countries. Let alone financial and technical issues, which are already complex enough to jeopardize the success of an infrastructure fund, the latter operates in a context of potential continuous amendments of the regulatory and legal framework as a result of a political situation that is strongly affected by the socioeconomic one in the host country. This "political risk" is visible – upon occurrence – through the legal and regulatory provisions and changes made by the government. Therefore, proper mitigation of such risk is essential, while an active management of infrastructure funds is constantly required instead of a passive sit-and-watch approach.

4. The Analysis Framework

Figure 1 presents a framework for an integrated analysis of the critical factors in infrastructure investments. As presented in Figure 1, four major issues should be addressed:

- Description of the current environment (supply and demand).
- Identification and analysis of the critical success factors in the external environment.
- Identification and analysis of the critical success factors at the organizational (internal) environment.
- Analysis and evaluation of impact and future prospects.

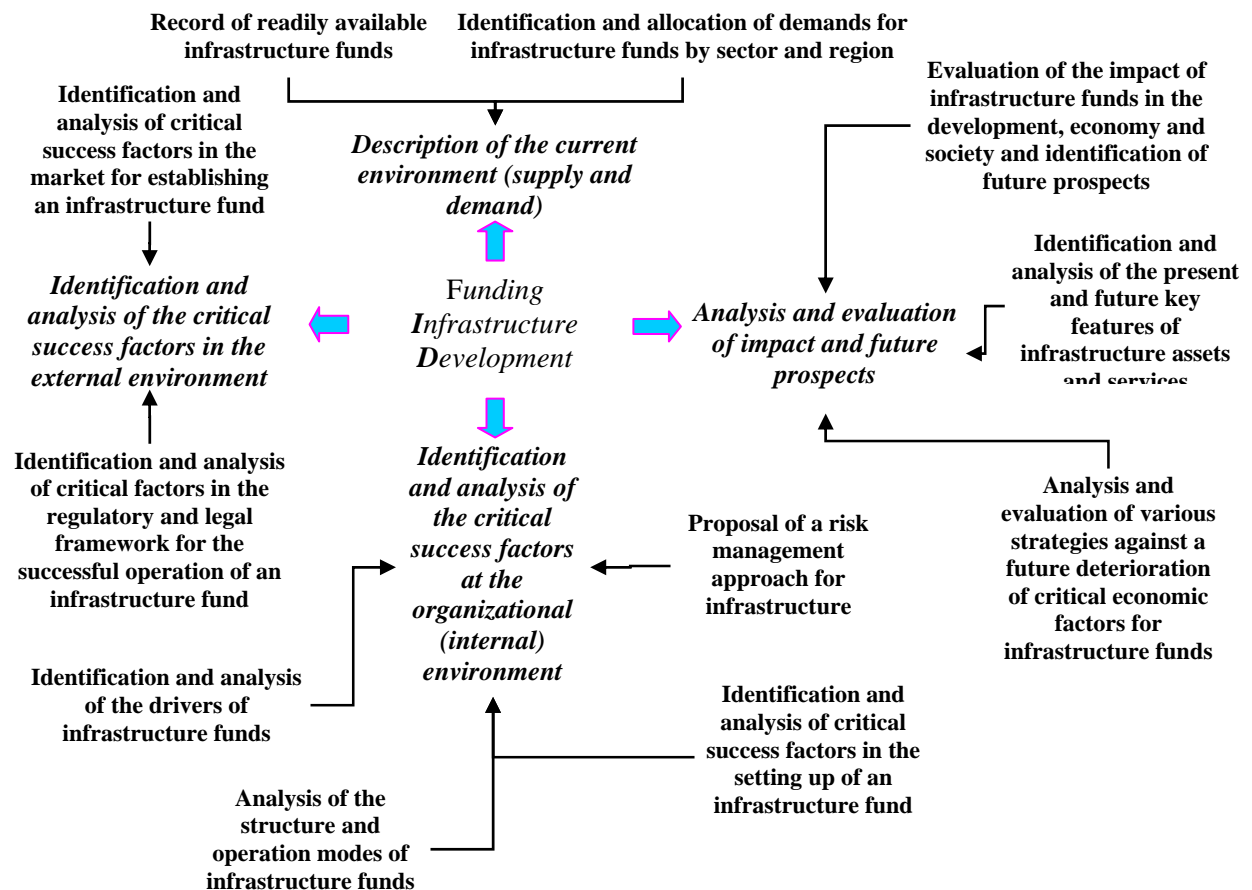


Figure 1: A Framework for the Analysis of Critical Factors in Infrastructure Funding

The methodological survey tools that could be introduced in the context of the framework described in Figure 1 may include:

- Extensive literature review in scientific and thematically-related journals as well as books.
- Data acquisition from databases (e.g. the Private Participation in Infrastructure (PPI) Project Database of the World Bank Group, the Eurostat, etc.).
- Interviews of several types (e.g. closed/fixed-response, general guided, etc.) of experts on the field.
- Questionnaire surveys of several types (e.g. open or closed format).
- Data and information analysis through statistical tools (e.g. SPSS) and semi-quantitative methods (e.g. the Analytical Hierarchy Process).
- Integration of qualitative and quantitative theories and tools.
- Structural analysis.

5. Discussion

The last three years an excessive amount of funds has been raised globally with the goal to finance infrastructure projects and services through a delivery scheme that is different from the traditional project financing. Infrastructure is more and more appreciated as a significant investment asset not only by project sponsors but also by multilateral development agencies, banks and institutional investors such as pension funds. The increasing demand for infrastructure, globally, the existence of readily available funds

and the interest of several types of investors to enter the infrastructure market formed a framework for a flourishing industry sector in the near future.

However, inherent uncertainties in long-term investments coupled with the current economic crisis require very careful steps in the beginning of a new era in infrastructure development. In this paper, the critical factors in infrastructure funding were identified and an analysis framework for them was presented. These critical factors are: a) the drivers for investing in infrastructure, b) the actual demands for infrastructure, c) the competition in the infrastructure market, d) the structure and the operation of the fund, and b) the regulatory framework wherein the fund operates. A proper analysis of these factors in the context of the proposed framework shall demonstrate the limitations and opportunities of certain investments in infrastructure.

A current ongoing research aims at further clarification of the parameters of the presented analysis framework and implementation in specific real cases. The results are expected to be significant not only to the already established infrastructure funding organizations, but, most important, to those who intend to involve in infrastructure investment at present and in the future.

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