

Public-Private Partnerships: The Underlining Principles of Infrastructure Investment, Finance and Development Projects

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Abstract

In a lot of countries, paucity and inadequate of resources upon the public investments available for infrastructural projects have led government to request the private sector to go into long-term contractual agreements for the investing and maintenance of capital intensive development projects.

This paper analyzes the underlining principles of infrastructure investment, finance and development projects, centering on Public Sector (PS) and Public-Private Partnerships (PPPs). We demonstrated that project investments are suitable for PPP infrastructure projects, since properties and development projects are situated in a precise location.

Furthermore, in the scenario of an accurately formulated PPP contract, the higher expenditure of capital and investment are perhaps the compensation for competence, effectiveness and advantages of PPPs. Lastly, we anticipated that PPP modification will continue to advance in the future, when more detailed and specialize academic research has been adequately conducted with the aids of innovative ideas and results oriented outcomes reported accordingly.

Keywords: Public-Private partnerships, Risks, Public sector, Infrastructure investment and development projects, Special purpose company

1. Introduction

The term Public-Private Partnerships (PPPs) has caught academic researcher's interest from the moment, when this type of project was introduced in the infrastructure finance / investment and development trade. Many scholars have challenge; confronted by attempting to improve the operation of PPP projects by categorizing major aspects of these projects (Erridge and Greer, 2002; Grimsey and Lewis, 2002; Li et al., 2005b; Tang, L et al. 2009). The use of PPPs to substitute and harmonize the Public Sector Provision (PSP) of infrastructure has become common in recent years. In the modern era of infrastructure development, projects that require complex, innovative, and large upfront investments, such as the financing and construction of bridges, seaports, airports terminals, sewage and renewal energy facilities, light and speed rails, highways, schools and hospitals are now frequently provided through the means of PPPs.

There exist three extensive options of organizational forms in the provision of infrastructure development: such as PSP, PPPs and privatization, perhaps under a regulated monopoly. Each of these forms includes a number of contractual arrangements, for instance, According to Guasch (2004) there are as many as 12 measures, structured with the intention of increasing private participation. They are as follows public supply operation, outsourcing, corporatization and performance agreement, management contracts, leasing (also known as affermage), franchise, concession, build-operate-transfer (BOT), build-own-operate, divestiture by license, (also known as sale, and

private supply and operation. Our definition of PPPs includes the four cases grouped by Guasch as concessions, namely leasing, franchise, concession, and BOT. In this article we use the terms PPPs, Private Finance Initiative (PFIs) and concession interchangeably.

2. Rationale and Scope of the article

As Li et al. (2000) and Tang L et al. (2009) suggested, instead of arguing for a particular viewpoint, it would be more advantageous to examine analytically what we do know and how we can advance to learn more. Therefore, a systematic review of appropriate empirical and non-empirical PPPs studies was undertaken and the purpose of this paper is to take a precise look at the financing and investment of infrastructure development projects. The main proposal of this article is that PPP investments receive the same treatment as government investment. This is because PPP contracts have similar- and in some cases indistinguishable connotation for the intertemporal budget as PSP. We use empirical and non-empirical studies to consider significant types of infrastructure and development projects that match up with privatized public amenities, i.e. power transmission and distribution, water treatment plants, waste management, sanitation and multi-purpose seaports. In these circumstances, finance and investment does not vary from that of usual private infrastructure development project

The structure of the article is as follows, first there is a general background discussion of PPP, spread and growth of PPP across the globe. Then, we continue by describing the typical arrangement for PPP, which consist of two characteristics. Here we have Special Purpose Company which is a firm managed by a sponsor and the basis of finance adjustment over the life sequence of a PPP project. In addition, we discuss and mentioned briefly about the case of contracts in the United States before the financial catastrophe of 2008-2009, whereby the projects were funded with bonds issued at the time of contract closure. The sponsors of the infrastructure project bought cash stream insurance from the bond insurance companies (monoline). With this assurance, credit rating organization gave an investment mark categorization to the project from the beginning. In the next session, we asked some critical questions such as *is Project Finance Appropriate for Financing PPPs / PFIs? What are the reasons for higher cost of finance and investment?* The economic life sequence of PPP investment and finance were also discussed together with the economic characteristics of PPP Projects. The final section concludes with more discussion and summarizes the present article.

3. Definition and Background

Public-Private Partnerships could be defined as the means by which large-scale investment and service provision of infrastructure development are locked into a single long-term contract. A cluster of private investor's raises capital to finance, invest, maintains and manages the construction of the project, and also operates the facilities for a long period of typically 25 to 30 years and, at the end of the arranged contract date, transfers the assets to the government or any other nominated by them as it stipulates in the contract agreement. Thus, for the duration of the operation of the project, the private partner receives a flow of payments as reimbursement. These payments cover both the initial investment- Capital expenses (capex) and operation and maintenance expenses known as (opex). All of these depends on the form of development projects and type of infrastructure development, these revenues are acquired not from the tax payers but by user fees and charges such as in a toll highway, or from payment by the government's procuring bureau such as the case of Beijing Olympics stadium, or the case of jails.

According to Grimsey and Lewis (2002) PPP can also be defined as, agreement where public sector bodies enter into long-term contractual agreements with private sector entities for the construction or management of public sector infrastructure facilities by the private sector entity, or the provision of services (using infrastructure facilities) by the private sector entity to the community on behalf of a public sector entity. Peirson and McBride (1996; 1-4) noted that numerous forms of PPP include some or all of the following features:

The public sector entity transfers facilities controlled by it to the private sector entity (with or without payment in return) usually for the term of the arrangement;

The private sector entity builds, extends or renovates a facility;

The public sector entity specifies the operating features of the facility;

Services are provided by the private sector entity using the facility for a defined period of time (usually with restrictions on operations and pricing); and

The private sector entity agrees to transfer the facility to the public sector (with or without payment) at the end of the arrangement.

4. The growth and spread of PPP

The growth and spread of PPPs across the world has been less than uniform or unitary in nature as is the case with most of the new public management reforms (Olson et al., 1998,). Three classic specific country based research papers have managed to discuss this growth and spread of PPP across the world. Consequently, Baker, (2003) discuss about the United States perspective, Newbery and Pallot, (2003) argue on the New Zealand PPPs growth and development, English and Guthrie, (2003) explain by displaying this international multiplicity. Another interested academic papers by Heald, (2003), Rutherford, (2003), Edwards and Shaoul, (2003) and Broadbent et al., (2003) took another dimension by critically looking at the United Kingdom focus, and deliberating largely on the different technical issues surrounding the most advanced and dominant form of PPPs and PFIs.

On the other hand, Yescombe (2007), argue that the growth and spread of PPPs around the world is very much connected to the development of project finance, a financial method based on the lending against the cash stream of a project that is legally and economically self-sufficient. Project investment and finance setups are highly leveraged and lenders receive no guarantees beyond the right to be paid from the cash flows that accrue of the project. Hence, as the assets of the project ventures are specific, the capital investments are not readily convertible in cash and have little or no value if the project eventually fails.

5. The adjusting basis of finance (investment) over the life sequence of PPP projects (Bank, Bond stakeholders, Monoline)

The adjusting basis of finance (investment) goes with the developing outline of risks and incentive over the life sequence of PPP projects. The majority of these to the specifications of the project take place during construction stage.

Yescombe (2007) point out that banks exercise control over all changes of the PPP contract and strongly control the project company's behaviour. Thus, they are well suited for lending during construction. By contrast, bond shareholders only have control (through the bond agreements) over matters that may significantly affect the security cash streams but cannot adequately examine the whole information of borrower behaviour because of transaction costs. Therefore, they are better positioned to invest and finance the infrastructure development project during its operational stage, when there are smaller amount of unanticipated events such as project adjustments and modifications.

On the other hand, in the United States before the financial catastrophe of 2008 to 2009, contract projects were previously financed with bonds issued at the time of contract closure. In this situation, the sponsors of the project bought cash streams insurance from a monoline (*bond insurance companies*). With this assurance, credit rating agencies gave an investment mark categorization to the project from the very beginning. Hence, the monolines replaced the monitoring and supervising roles of banks during the construction stage. Thus, with the current economic investment climate, we doubt if monolines would be use again since defaulting on its obligations during the 2008- 2009 financial credit crisis, this business model is not likely to return in the distance future.

5.1 Is Project Finance Appropriate For Financing PPPs / PFIs?

Many scholars have argued for or against if project finance /investment are appropriate for financing PPPs/PFIs projects. In some quarters, it is frequently believed that it is more expensive than public debt. In fact, project finance charges are typically higher than charges paid by government debt. We critically discuss and analyze this argument in view of the different sources of risk. We use a simple form to show that it is optimal to transfer demand risk to the government. This is because PPPs/PFIs involve large upfront investments, payment and risk. Exogenous demand risk is also the main apprehension of lenders, when user fees and charges are the major proceeds source, so by transferring it to the government, the risk and also the price charged to the infrastructure development project fall. In other words, even when projects are based on availability payments (*and thus there is no demand risk*), the finance prices charged PPPs are higher than the prices charged on government debt. In this situation, the higher price mirrors in fraction the risk that the infrastructure project will be unavailable at some point in the lifetime of the contract, and no payments will be received to service the debt. Additionally, the risk connected to construction costs of PPP/PFI is similar to the risk under a price cap construction contract, which also provides strong incentives for cost reduction and thus may be well-organized.

5.2 What are the reasons for higher costs of project finance / Investment?

Therefore, we propose that the higher costs of project finance are to some extent due to *defective contract blueprint* and to some degree due to the *cut- cutting incentives entrenched* in PPPs/PFIs. In addition, for a well planned PPP/PFI contract, the higher cost of capital may well be the flip side of the efficiency merits of PPPs as

compared to public sector provision. (Riess, 2008).

We want to reiterate that our main proposal in this article is that PPPs and PFIs investments receive the same treatment as government investment. This follows from nothing that PPP contracts have similar-sometimes impossible to tell apart- implications for the Intertemporal budget as public sector provision (PSP). For instance, reflect on the case where the development project can accrue user fees both under the PSP and under a PPP. We discuss that under a PPP, the revenue stream to the private sector, in the form of user fees and charges during the concession; precisely counteract the investment savings made by the government early on in the relationship, at the investment stage. In other wise, it can be said that PPPs change the timing of government proceeds and expenditures, and the composition of financing, yet they have little impact on the chronological budget constraint.

Actually, it is the government that delegates to a company the construction, operation and maintenance of the infrastructure and development project for the entire lifetime of the contract, with reversion of the infrastructure to state ownership at the end of the stipulated contractual agreement. Thus, in exchange, the firm receives a stream of profits that the government could have efficiently used to the same purpose.

The differences between PPPs and Privatization is very clear in the sense that what might have link them together when it comes to infrastructure development project and the government budget is permanently separated when infrastructure facilities are privatized.

6. What is infrastructure?

The term “infrastructure” could be defined in various aspects but in relation to this article. We will define it as the provision of essential services and amenities to the industry and households in the society (Martini and Lee 1996). Hence, investment in infrastructure development projects is a key input in the development of the economy and a panacea to economic activity and growth. However, what is regarded as “essential”, “key” and “panacea” changes from one country to another and from one period of time to another. For instance, the massive production of steel, coal and iron ore was once regarded as indispensable infrastructure.

Recently, some activities that are considered as infrastructure investment and finance includes:

- Telecommunications (WiFi, WiMax, Broadband , GSM and CDMA etc);
- Social infrastructure (hospitals, modern prisons, courts, museums, schools and Council and Government housing);
- Energy (Renewable energy i.e. solar and wind, power generation, distribution, transmission and supply);
- Transportation (light rail systems, bridges, tunnels and under-ground/over-ground high speed trains, toll roads etc);
- Water (Water supply, dams for irrigation, water, liquid and solid treatment plants, sewerage etc).

These share with other types of fixed investment (for instance in the property development, office block construction (Lewis, 1994). According to Dixit and Pindyck (1994); Adam (1996) both argued that some of the common characteristics seen in fixed investment are as follows:

- Valuation (the projects are difficult to value because of taxation, fixed choices and pricing rules and regulation)
- Duration (infrastructure is long-lived, and has a long maturation period);
- Illiquid (the lumpiness and indivisibility of infrastructure projects makes for a limited secondary market);
- Capital intensive (projects are large in nature and also highly geared);

The result is that evaluation of the projects is a complicated and dedicated activity. The basic indicator used to be that infrastructure had to be provided by government-owned establishments which was previously the main approach in Europe or by privately owned services, subject to rate of return regulation which is the approach of most states in the United States. This belief resulting from a number of intrinsic characteristics, such as the existence of:

- Externalities: This is the situation whereby costs and benefits are bestowed upon those that are not a party to the transaction (e.g. spillovers);
- Natural monopolies: This is the situation whereby economics of scale make it efficient and adequate to have only one provider (for instance, Water Corporation, an electricity grid, and in some extent power generation, transmission and distribution).

- Public goods: This is the situation from which it is complicated (and perhaps not desirable) to exclude non-payers (the non-excludability principle);
- Network services: Here, it involves providing integrative activities which connect economic activity together.

Consequently, the drift away from public to private sector provision of infrastructure development has been underpinned by a distinct change in philosophy and practice on this subject matter. There has been the view and analysis, for example, that a shift from 'taxpayer pays' to 'user pays' (*i.e. from ability-to-pay to the benefit principle*) in the provision of critical infrastructure development projects such as (water, power, sanitation and roads high-way construction) is probable to be associated with an improved profitable use of the services. However, numerous previous industries considered to be inherent monopolies, e.g. electricity network, generation, transmission and telecommunications, have been broken up into different geographical regional firms or, with deregulation, divided into competitive (or potentially competitive firms) sectors vis-à-vis those sectors that remain inherent monopolies (the distinction between power supply and high-voltage transmission, and between railway operation and rail track services).

In those other activities which have inherent monopoly features, replacement of price-cap regulation for rate-of-return regulation (*i.e. fixing of maximum process rather than the mark up over costs*) has produced strong motivation to reduce costs, while third party access to certain facilities that are not economic to duplicate has expanded successful competition in the upstream and downstream trades served by the facilities. All of this has laid the foundation for PPP financial arrangement (Grimsey and Lewis 2002).

7. Financial arrangements in PPPs

With some contextual features in place, we can now attempt to strengthen out the jumble of meaning in infrastructure financing and infrastructure investment in PPP. Confusion sometimes arise between '*infrastructure financing*' and '*infrastructure investment*'. The former comes from the privatization of existing facilities, while the infrastructure investment involves the development, operation and ownership either by the private sector alone or in a joint venture between government and the private sector firm. (Grimsey and Lewis, 2002).

7.1 The Life sequence of PPP Investment/Finance

The typical PPP infrastructure investment development project involves as follows,

Upfront investment: this is the type of investment whereby a large initial sum of money and other related investment activities are sunk into the infrastructure project.

Maintenance and operation costs (O&M): this is the type of investment whereby the costs are paid over the duration of the project. Thus, maintenance and operation costs are relatively small fraction of the total cost of the project, but crucial since it determines several characteristics of PPP finance.

Insert Figure 1 here

Figure 1 shows the time outline of financial stream as regards to a standard PPP/PFI project. It presumes that the interest rate is 13 percent, that incomes grow at 6 percent each year and that debt payments grow 4.5 percent each year. Capital expenditures occur during the first five years. Proceeds over the life of the project are used to pay off debt before 30 years. After the initial capital expenditure, the main purpose of the infrastructure project is to accumulate income and efficiently disgorge them to pay for outstanding debt, and to generate dividends for the equity holders.

7.2 The Economic Characteristics of PPP projects

We mention and discussed three additional economic characteristics of most PPP projects which are important to comprehend the choice of financial arrangements.

7.2.1 Independent supervision

PPP infrastructure development projects are habitually large enough to require independent supervision, particularly during construction, and normally even in the operational phase. Besides, there are few agreements to be realized by constructing or operating two or more PPP projects together. For instance, the projects may be located in different parts of the city, or at the place where the service is consumed, and efficient balance is location specific. This means that project properties are illiquid and have small value and worth if there is a project failure.

7.2.2 Subcontracted in nature

When it comes to most production processes of PPP infrastructure development projects, the construction and

operation are subcontracted. Consequently, any degree and scope economies are internalized by dedicated service providers – for example. Construction firms, maintenance contractors or toll gate/road collectors.

7.2.3 Bundling of construction and operation expenditure

It is resourceful to bundle construction and operation. This is because bundling compels shareholders to control operation and maintenance expenses and also generates motivation to design the project so that it lessens life sequence expenditure. More importantly to say the obvious, when engineers are in charge for enforceable service standards and regulations, they have a motivation to consider them when designing the project.

As we will see next, the details of project investment finance fit this crucial financial side of PPP infrastructure development projects.

8. The Economic life sequence of PPP finance and investment

According to Yescombe (2007), the growth and spread of PPPs around the world is very much connected to the development of project finance, a financial method based on lending against the cash stream of a project that is legally and economically self-contained. As shown in Figure 2, this is guaranteed by forming a *Unit/Company called Special Purpose Company (SPC)*, which does not undertake any business other than building and operating the project (Yescombe 2002, p. 318). The sponsor of the construction or infrastructure development projects set up a *Unit/Company called Special Purpose Company (SPC)* before going to take part in the bidding process. The sponsor is also the main equity investor who is responsible for bidding, developing and managing the project. They are the residual plaintiffs and are indispensable to the success and completion of the project. This means that lenders (banks, lending organizations) will vigilantly examine the features, attributes and qualities of the sponsor before committing capital and funds. Sponsors can be operational and play double roles, in the sense that they belong to the industry, and will get business for themselves as subcontractors; or financial sponsors, who are involved in the financial arrangements for the project. Levy (1996) point out that the Queen Elizabeth II Bridge over the Darford River in the UK is an example of the first type of sponsor: the construction division of Trafalgar House Plc organized local landowners plus an investment bank and presented an initial proposal to the government. The Department of Transport approved the proposal and, after looking at other bids, awarded the project to Trafalgar House. Another example in which the main sponsor was a family-owned Investment Company is the Dulles Greenway project in Virginia, which started operating in 1995, with the sponsor 57.04 percent of property (Toll roads investors Partnership II). (See Levy 1996)

8.1 Initial sponsors

Initial sponsors are those guarantors that supply the initial equity of the project, and in some situations, they are needed to keep a portion until the end of the PPP contract, devoid of the possibility of transferring the asset. The main objective is to create long-term motivation. However, this is costly for the initial sponsor because of two reasons: first, since the cost of capital of the sponsor is so high; and the other is practically tying up resources for a long time, does not make enough business sense if they asset cannot be transfer to other uses. As the sponsor concentrates in the early, building stages of the project, this limits potential business. It means that infrastructure development projects must be very lucrative to adequately compensate the sponsors for this cost. In most cases, however, after the project is operational, the initial sponsor transfers the SPC to a combination of an operation known as *Facilities Management operator*.

8.1.1 Facilities Management operator (FMO)

This is the position in the contract that is responsible for daily operation and maintenance over the life duration of the PPP project after construction and plays a vital role to third-party passive investors.

Insert Figure 2 here

8.2 Demarcation in the economic stage

During the entire life of the project the SPC will remain active. But in its active state, there is also a clear delineation line between financing during the construction stage and financing during in the operational stage. This is shown in Figure 2. All through construction, sponsor equity (maybe such as bridge loans and subordinated or mezzanine debt) is pooled with bank loans and occasionally government grants in money or kind. In the case of projects that derive their revenues from user fees, the initial contribution to investment is sometimes supplemented with subsidies from the government.

Mezzanine debt: this is a financing method which uses unsecured, high-interest giving loans and which follows venture capital financing. It also combines debt and equity, the difference between the secured leading amount (available collateral) and the purchase price.

Towards the end completion of the construction period, another stakeholder known as “bond shareholders” enter the contract scene and become a replacement for bank leading. Bond finance is connected to two supplementary bodies: the rating agencies and insurance companies (see Figure 2). When the PPP infrastructure project becomes operational, but only then, the sponsor’s equity may be bought out by a facilities operator, or by the less active third-party shareholders, more often than not the pension or mutual funds. Indeed, the bond holders have priority over the cash stream of the project.

The life sequence of PPP finance and the change in financing basis is determined by the different incentive difficulties faced in the two stages of the PPP, its construction and operational stages. Achieving the target in construction is subject to large uncertainty, complexity in major design changes and costs depend critically on the meticulous nature of the building contractor and the sponsor. Thus, at this junction there is sufficient scope for moral hazard.

According to (Tirole, 2006; Yescombe, 2007; Engel et al; 2010), banks carry out a supervising role that is well coordinated to moderate moral hazard by implementing firm control over wanton changes to the project’s contract, the character and actions of the SPC and her contractors. In order to control their character and actions adequately, banks gradually distribute finances only when each project stages are completed accordingly. Further, after completion and ramp-up of the project, suddenly the risk falls and is limited to events that may influence cash streams. This is the appropriate period for bond finance since bond shareholders’ are more concerned about proceedings that drastically affect the security of the cash streams, but are not directly involved in management, or in control of the PPP infrastructure development project. Indeed, this is suitable for organizational and other non-active investors who by statutes can invest only limited amounts of their resources in the preliminary stages of a PPP infrastructure project due to high risk.

9. Contracts and project finance and investment

We point out and scrutinize these contracts problems cause by incentive which in PPPs and PFI cases can be traced back to the contracts made by the SPC and the role of various agents.

Insert Figure 3 here

As shown in Figure 3, the SPC situates at the centre a grid of contracts. SPC is the heart of the grid of contracts. These include contracts with the procuring bureau (mainly the local, state or central government), with users of the services provided by the PPP, with building and operations contractors as well as with the investors and financiers in the project. Each of these contracts is a prospective source of disagreement which may jeopardize debt shareholders. The achievement of the SPC in tackling with these possible disagreements rests on two crucial factors. They are as follows, first is the quality of the legal institutions and laws on which the grid of contractual agreement rests. The second crucial factor is that the details, information of each relationship and contract affect risk perceptions by debt shareholders.

Note: The infrastructure development project is proposed to provide adequate service to end users, but the essential contracting parties are the SPC and the procuring bureau, which implements the PPP contractual agreement and also represents the end users of the project. As contracts give at least some prudence and judgment to the procuring bureau, cash streams and to some extent the termination or continuation of the concession may depend on the bureau’s verdicts. Thus, there are some sources of disagreement between the SPC and procuring bureau such as; unrealistic / unclear service standards and more importantly, imperfect conflict resolution system increase the potential risk thereby putting the contractual agreement in danger.

Moreover, end user fees will be at great risk if the political bureau is lured to play to the gallery by bringing down the service fees, either directly or by rescheduling quarterly inflation modification using regulatory takings as an excuse. Also, if a significant portion of the SPC’s incomes and proceeds are accruing from payments made by the procuring bureau; these payments depend on the capacity or the government eagerness to fulfill its own responsibilities. It pursues that the governance arrangement of the procuring bureau, its level of autonomy and the financial situation of the government, influence the phase of risk perceived by debt shareholders.

9.1 The Relationship of the SPC with Construction and O&M contractors

9.1.1 What are the relationships between SPC and construction and O&M contractors?

Next, we discuss by reflecting on the relationship that exist between SPC, construction and operation and maintenance (O&M) contractors. Several PPP infrastructure development projects involve complicated and intricate engineering. In multifaceted construction projects, unforeseen circumstances are to be expected and when this happens, it becomes more difficult to find a good structural contractor as a replacement. Thus, in situation like these, the knowledge, understanding and character of the contractor become an issue. Besides, his

financial muscle becomes relevant because it determines the capability to realistically withstand cost overruns without having to renegotiate and change the contractual agreement. Also, while the operational stage is less complicated, revenue streams depend on the accomplishment of the contracted service, quality standards and principles, which depend on the O&M contractor. Once more, the experience and the financial muscle of the contractor cause serious concern to the debt stakeholders. Debt shareholders also care about the form of risk-sharing agreements between the SPC and the contractors. Note Cost-plus contracts, which shift cost shocks to the SPC, are riskier than fixed price contracts.

Lastly, debt shareholders are more concern and care only about the incentives of the sponsor, who provides around 25 to 30 percent of the financial support in the classic PPP and PFI infrastructure project. This large amount of equity has the lowest priority in the cash stream fall, and is hypothetically dedicated to the length of the PPP contractual agreement in order to provide incentives to reduce the life sequence expenditure of the project. The funds providers are concern about the financial muscle, knowledge and technical know-how of the sponsors, especially during the initial construction and the ramp-up stage of intricate and complicated infrastructure and transportation development projects. They assess and value earlier successful skills such as reliable knowledge and technical competence in the industry, and rigorously search for proof that the sponsor is highly dedicated to the project, both financially and in terms of character and time consciousness.

9.2 Dimension of project incomes and finance demand risk

According to Engel et al, 1997b, Engel et al., 2001 and Engel et al., 2010 the amount of incomes and proceeds accruing to SPC depend on the availability of the project, the level of end user fees and charges, the real demand volume and the contractual term agreement. The importance of each factor differ from one project stage to another, but incomes can be classified along two elements, such as

- The source of payments
- The extent to which the SPC is made to bear demand risk.

We argue that to better understand the incomes that have been classified into two elements. Thus, provided that the SPC meets the minimum quality and availability standards, demand for majority of PPP infrastructure development and construction projects are exogenous to a large extent. Even though that they cannot affect demand, many PPPs/PFIs are made to bear demand risk. When incomes and proceeds accrue primarily from user fees, SPCs assume two types of project risks associated to demand. They are as follows;

9.2.1 Project failure risk

This is the type of risk that stipulates the project is a failure and will never be able to repay the creditors. Thus, this risk symbolizes a market test of the quality of the project and is correctly assigned to creditors.

9.2.2 Fixed long-term concession contract risk

This is the type of risk that appears due to fixed long-term concession contractual agreement (i.e. 25 years). This means that a lucrative project may be unable to repay the debt over the contract term, due to unfavorable initial macroeconomic circumstances, for example. Even when the primary basis of incomes is the procuring bureau, the contract may secure payments to utilize and operate the project over a mandated fixed term, in the purported shadow tolls (or fees). In both situations, it is the bond shareholders who bear the uncertainty that demand may not produce sufficient incomes during the duration of the contract so as to meet debt repayments timetable. Hence, sponsors face even more risk, and expect large profits in reimbursement.

9.3 Can PPPs infrastructure development contracts be independent?

PPP infrastructure development contracts can be structured and planned in a way to make project incomes and profits independent less dependent, of demand in over a period of time. If this is done, it lessens the second type of risk and therefore the expected payment to the sponsor as well as the return demanded by bond shareholders. Consequently, if the procuring bureau happens to be the main source of incomes, then the contractual agreement that eliminates this associated risk has a predetermined term, with payments dependent on the availability of the infrastructure – thus the so called availability payments (AP). More importantly, if the user fee happens to be the major source of income, the appropriate contract is known as a present value of revenue (PVR) contract, which stipulates a certain set present value of incomes and proceeds, under a changeable length contract. In any of the situation, the contract eradicates demand risk to a large amount. The income and proceeds risks are considerably reduced in so doing work towards achieving the defined performance standards. With all the consideration, investors have a preference for cash streams that are conventional in nature. Hence, availability contracts and flexible- term contracts tend to receive higher ratings than PPPs/PFI contracts whereby the concessionary

agreements allows significant demand risk (Fitch Ratings 2010).

9.3.1 The financial structure of a PPP infrastructure project

In setting up the financial structure of any PPP infrastructure development project, there are two possible forms that need to be considered. They are as follows;

Corporate debt for financing: this is the type of financial structure of a PPP infrastructure project whereby a project is set as an SPC within the company.

Large transaction cost: this is the another type of financial structure of a PPP infrastructure project whereby it provides some certain benefits that compensate for the inserted cost of the complicated structure of the SPC.

In the last decade, majority of PPP contracts have use project finance and investment because it is helpful when it comes to raising a significant sum of money for medium and long- term financing of crucial developmental projects.

10. Features of a project finance and investment

In PPP infrastructure development projects there are features that need to be present for such a project to succeed in the long run. We noted in previous session that some of the features of project finance include that; sponsors provide no guarantees beyond the right to be paid for the project's cash stream, sponsors requires to attract large sum of resources which will assist them to be highly leveraged, with 70 to 100 percent of the funds supplied by lenders.

10.1 What is Leverage?

Leverage is the use of a small initial investment, credit, or borrowed funds to gain a very high return in relation to one's investment, to control a much larger investment, or reduce one's own liability for, any loss. Leverage depends on the unpredictability of incomes and when these are very unpredictable, the project may not be financed by the banks. Governments in some cases offer incomes and proceeds insurance to raise the bankability of a project. Better substitutes in permitting for high levels of leverage are, for instance, PVR and availability contracts (AC). On the contrary, innovative scientific and complicated projects need huge levels of sponsor equity.

10.2 Reasons for the preference of SPC and Project Finance (PF) over corporate finance (CF) in PPPs

Research in and discussions about SPC and project finance and investment over corporate finance in PPPs have been partially conducted, but most of them over looked and skipped the reasons for the preference and concentrated more on the critical success factors (CSFs) for PPP infrastructure development. Berry (1991), Tiong et al. (1992); Morledge and Owen (1997); Zhang (2005). Tiong (1996) did identified six CSFs in winning Build-operate-transfer (BOT) contracts such as entrepreneurship and leadership, right project identification, strength of the consortium, technical solution advantage, financial package differentiation, and guarantees. On other hand, Gupta and Narasimham (1998) made it clearer by providing more CSFs for supporter to win BOT contracts; such as the ability to provide a suitable and sustainable transfer package, build-in flexibility for future growth and changes, supportive and understanding community, and short construction period (Zhang 2005).

One the reasons for preference of SPC and project finance / investment over corporate finance argues that there are different reasons as regards to this preference in PPPs. Thus, some of these reasons are as follows:

10.2.1 Construction stage

In this stage that has to do with construction, the stand-alone nature of an SPC prevent underinvestment in the project caused by competition for resources within a larger sponsoring company. Thus, when setting up a PPP as a division within a company, the large free cash streams produced by the PPP in the operational stage are likely to present some agency apprehension, which may divert the revenues from repaying the debt contractual agreement to finance the project. However, since the infrastructure SPC does not have growth opportunities, the likelihood of redirecting incomes from creditors is very limited, in contrast to the case of a separation within a large company. Indeed, the project's cash steam can be a realistically assurance on the payment to bond shareholders and this allows for a superior leverage.

10.2.2 Use of superior levels of leverage

The expected return on equity increases, even after adjusting for the higher investment costs. But it is less difficult to raise debt than to raise equity, particularly in infrastructure development projects with no previous history, and this situation leads to superior leverage.

10.2.3 The contamination syndrome

Another of the reason for separating the project within an SPC is that it decreases the prospect of polluting a vigorous company with the problems of a large project. We will like to bring to mind that when the difficulties and issues in a subsidiary of a large corporation do not threaten its fiscal strength, however fiscal distress in the subsidiary in one way or the other influences the credit circumstances facing the company.

Consequently, some of these financial merits of SPC would be undone if stand-alone projects lost economies of scope. But, as we discussed in the beginning of this section, just a few, if any, fruitful competence achievement can be realized by grouping multiple PPP/PFI infrastructure development projects whose demand is usually based in a certain area. Any achievements that can be realized by being the main sponsor of numerous stand-alone PPP projects such as previous background knowledge, project experience, technical know-how, lobbying skills and abilities, large financial base etc. – can be realized by supporting numerous stand-alone SPCs, which are legally independent from each another.

11. Criticism of PPP

11.1 What is a PPP premium?

Many notable scholars have debated over this issue of PPP premium, with both sides having different views to back up their respective arguments. We will discuss this with some persistent criticism leveled at PPPs, which includes that PPPs cost more per dollar of financing than traditional government debt- the so-called PPP premium (Engel et. 2010).

According to Klein (1997, p.29) “The other solution [to highway finance] is to finance the project wholly in the public sector, either with government or multilateral funds. It is, after all, more expensive to raise debt on a project finance basis. When considered alongside the guarantees and commitments which have to be provided to attract commercial finance, the best approach would be to borrow on a sovereign basis.” Here the exact numbers that have been cited for this difference in costs usually differs. Yescombe (2007) point out that the cost of capital investment for a PPP infrastructure development projects are typically 200-300 basis points higher than the expenditure of public funds. This demonstrates that the spread over the lender’s cost of funds mainly lies in the range of 75-150 basis points, with large dual carriage highway, underground railways and other capital inventive projects being at the upper limit (Yescombe 2007). Therefore, it would seem that when governments decide between public provision and PPPs, they substitute a lower cost of funds under public sector provision against the allegedly higher efficiency of a PPP project.

However, other scholars argue for and against that probably there is no PPP premium in real sense. One school of thought maintains that the alleged advantage of public funding rests on the government’s capability to tax its citizens. Kay (1993) believe that the view that “private sector capital investment costs more” is naïve because the cost of debt both to governments and to private firms is influenced mainly by the perceived risk of default rather than an evaluation of the quality of returns from the specific investment. We would loan to government even if we thought it would smolder the money or shred it and sink it into the depths of the ocean, and we will still loan it also for both these reasons (Klein 1997, Engel et al, 2010).

In addition, while numerous unsuccessful projects go unnoticed under public sector provision (PSP) due to the fact that taxpayers take for granted the expenditure of this risk, but under private sector provision (PPPs/PFIs) these risks are made open and valued, escalating the calculated financing cost of a PPP infrastructure development projects *ceterisparibus*. So the higher investment cost simply mirrors a just repayment for carrying those risks.

11.2 Differences between social welfare PSP and PPPs

Several literatures on public sector provision of infrastructure development have acknowledged reasons why social welfare under PSP and PPPs are different. We will bring out three of those reasons in this article. They are as follows;

11.2.1 Internalize life sequence cost considerations during construction stage

In PPP, it is the same company that builds, operates and maintains the projects. As this is the case, it has enormous supports to internalize the life sequence cost considerations during the construction stage. But these supports are not always present under PSP. When service quality is contractible bundling of construction and operations provides an argument in favour of PPPs (Engel et al. 2008). The rationale is that the company has an incentive to internalize life sequence costs and, at the same time, cannot skimp on the quality of service.

11.2.2 Ownership of the infrastructure assets during the life of the contract under PPP

Another argument in favour of PPPs states that companies own the infrastructure assets through out the

stipulated life duration of the contractual agreement, in contract to PSP where any innovation conducive to using the assets more competently requires a compromise with the regulator. Thus, under PPP there are more incentives for effective risk management than under a PSP.

According to Grout (1997); Hart (2003); Bennett and Iossa (2006); Bentz et al. (2005); Martimort and Pouyet (2008); Iossa and Martimort (2008) all their studies point out and consider internal life sequence cost consideration, ownership of the infrastructure and compensation costs as possible favourable arguments of PPPs.

11.2.3 Compensation costs and cost of the user fees

The third argument in favour of PPPs focuses on the block between the expenditure of compensating the private sector partner via government transfers versus the cost of user fees, due to agency costs connected with distributing government funds. The project organizers chooses contracts that rely mainly on user fees and less on government financial assistance, if government transfers are more costly to society, even if this outcomes in having the company bear some risk(Engel et al. 2007). Furtherance, in this entire situation, the financial provision imposes risk on the company, and this translates into a PPP premium. The higher financing expenses that result should not essentially be held against PPPs when comparing them with PSP. In exchange for the high expenditure of sponsor funds, the procuring bureau obtains the services of a company that is focused on reducing life sequence costs. The endogenous risks provide incentives and it is a mistake to consider a PPP premium while excluding the improved performance which reimburses for the lower risk premium required under public provision. *What is exogenous risk:* These are kinds of risks that are originating from outside, derived externally, having an external origin. Thus, there is no prima facie reason to consider that achieving equivalent incentives with public sector provision would be cheaper. Considering Klein (1997, p. 37): “[...] the cost of funds cannot be considered independently of the incentive system under which intermediaries collect them.” In substitute for superior cost of sponsor finances, society gets the services of a company focused on decreasing life sequence expenses.

12. Transaction costs

12.1 What is a transaction costs?

“It begins from the costs of seeking out buyers, sellers and arranging, policing and enforcing agreements or contracts in a world of imperfect information” (Cowen and Parker, 1997, p.37). During the 1960’s, Oliver Williamson popularized the transaction cost idea. (Williamson 1975, 1985; Williamson and Winters, 1993). Hence, the early expansion of transaction costs was initially centered on the idea of ‘small numbers contracts’ under conditions of imperfect and asymmetrically distributed information (Williamson, 1975, Parker D and Hartley K. 2003).

In other words, the intricate relationship between the sponsor, who owns the SPC, and the procurement bureau, which supervises the contractual agreement and certifies compliance, produces transaction costs. Indeed, issues like these could probably be elevated that they contradict the other advantages of PPPs.

12.1.1 Intricacy

Yescombe (2007) believe that argument has been rise in various quarters that PPPs/PFIs are financially more expensive because due to the requirement of legal, technical and financial advisors as well as an evaluation of demand risk. These expenditures can reach 10 percent of the whole cost of the project (Dos Santos Senna and Dutra Michel 2008). The size of the project do not scale down the cost, so for small infrastructure development projects a PPP is impossible unless a number of other development projects can be “packaged” as copies of a single project (Yescombe 2007, Engel et al, 2010). It is not clear that this expenditure, which duplicates the lessons of the procuring bureau, is wasted as it provides prove on the prospective over-optimistic numbers provided by the government and the sponsor of the infrastructure development project.

Furtherance, the more detailed nature of the contract, as compared to the contract under PSP, is useful because it confines the potentials of *ex post* renegotiations of the original contract. Therefore, when these features are measured, the supplementary disbursement might be partially acceptable by decreasing the life sequence costs of the infrastructure development project.

12.1.2 Guide time

In most construction projects including PPPs need a guide /lead time this is generally longer than the guide time for public sector provision. The intricacies inbuilt to the SPC form, plus the many possibilities that have to be measured in a contract relationship agreement that lasts for a very long time, clarify the longer preparation periods. As shown in Table 1, which illustrate the time to financial closure before the construction works begins,

in the United Kingdom. As investors generally recover these expenses through the fee they charge, this tends to amplify the PPP premium.

Insert Table 1 here

Consequently, besides this extended lead time, it is to some extent feasible that a project will be finished on time and on budget under PPPs/PFIs than under PSP, as demonstrated in Table 2. According to an in-depth study by the UK National Audit Office (NAO 2009) finds a slight advantage for Private Finance Initiatives (PFI), though, it is not overall clear that the supplementary lead times transform into higher life sequence expenses of the infrastructure project.

Insert Table 2 here

12.1.3 Bureau costs

We have previously point out that PPPs introduce a second relationship, the one between the sponsor, who owns the SPC, and the procurement bureau, which supervises the contract and judges compliance. This kind of relationship, not present under PSP, initiates possibility for conflicts which possibly will influence the stream of incomes, profits to the concessionaire and to debt stakeholders. Therefore, a range of supplementary contractual characteristics affect the rating and default premium required by bond shareholders, and elevate it above the premium insisted by the same bond shareholders when they buy sovereign debt.

These characteristics include the rationality of performance assessments, the penalty methods in the concession contractual agreement, the knowledge, understanding and experience of the sponsor and operator in the industry or the country, the transparency and clarity of the tender agreements, the strength of legal precedent, the power of the conflict resolution outline, and the political assistance and patronage for PPPs. Higher transaction costs under a PPP partly mirror more cautious project planning, which lowers the possibility of expensive ex post renegotiations.

13. Credit limitations, the arguments and claims that PPP allow credit rationed government

13.1 Why do PPPs allow credit-rationed government to invest in extra infrastructure development projects?

It is a widely-held view that PPPs allow credit-rationed government to invest in extra socially, or even private and profitable infrastructure development projects, which may be unattainable under public sector provision because of credit limitations. We discuss here that this argument hold little applicability.

Firstly, in a situation the project does not generate user fee profits; a credit-rationed government will be unable to find private financiers given that reimbursement needs a stream of finances which, by definition, a credit hampered agent cannot commit. This leaves the case of infrastructure development projects that generate sufficient user fee proceeds to pay for themselves (or for whatever portion that is not subsidized by donor support). Public sector provision is not straightforward given that there would have to be an apparent separation of the infrastructure development project cash stream from the left over government financial accounts. If not the profits of the project could be used for other functions. As it is roughly unfeasible to give guarantees preventing this prospect, an SPC is the suitable method to protect all the shareholders in the project. However, the stream of cash resulting from the sunk investment in lucrative infrastructure projects is an attractive target for expropriation by credit-constrained governments. But to reduce this option, these infrastructure projects are often cosseted by getting partial financial support from multilateral banks.

Thus, global financial investment banks look after the project from being expropriated by the clauses and sections connected to their lending. It is significant to state that the loans and equity participation of global financial investment banks are privileged (Buiter and Fries 2002). First, this is because of the repeated connections between borrowing countries and multilaterals, which pledge future lending only if the country abides by with the stipulations of current loans; though there are exemptions to this strategy (see Buiter and Fries 2002).

Second, it is because the claims that multilateral have precedence over the international reserves of the country and are superior to those of bilateral and commercial creditors in case of financial melancholy. Third, the global financial investment banks are very vigorous in shielding their equity investments in national and international courts of law, and the reputation for this guiding principle increases the cost of non-compliance. This elucidates the importance of the participation of the private investment arm of the global financial investment banks in PPP infrastructure projects in developing countries. By their generally careful and stringent lending procedures, global financial investment banks can also endorse funding by providing reliable information about the quality, worth and value of the projects in which they invest.

14. Conclusion discussion

Firstly, it may not out of place to say that the so-called financial advantages of PPPs have been one of the major rationales for its global popularity and acceptance. In the field of commentary, editorial critiques all over the world often mention that PPPs liberate government finances, therefore increasing the set of infrastructure development projects that governments can undertake. In dissimilarity, we finish off that there is no *prima facie* economic reason to desire PPPs over PSP and that PPPs hardly ever free public finances.

Our conclusion is also based on the analysis that PPPs affect the chronological government financial plan almost in the same manner as PSP. With a PPPs and PFIs the present government in power, saves in capital intensive investment expenditures. But subsequently, it both surrenders potential user fee incomes and proceeds (if the PPPs/PFIs are finance with user fees) or potential tax proceeds and profits (if the PPPs/PFIs are financed with expenditure from the government financial plan). However, there are some exemptions such as the circumstances of a credit-rationed administration even then, the improved accessibility of finances happen only beneath extraordinary situation.

Consequently, the traditional aura for PPPs/PFIs ought to rest on distinctive platform, conspicuously on the competence gains and intricate know-how associated to bundling construction, maintenance and operations, and not on their ostensibly financial advantages. Thus, coming from an angle of public / private-finance, there are various disadvantages associated with PPPs/PFIs just like any other programme and schemes. With the exclusion of major PPPs infrastructure project off the balance sheet due to some accounting rules, government manipulated them to foresee expenditure and to circumvent the standard budgetary procedure. These techniques are more or less the same way that off-balance sheet vehicle enables banks to dodge capital due process and prudent financial regulation. We finish off that, from the view point of the government financial plan, PPPs should be treated as usual government capital investment. We are not influenced that PPP infrastructure development project financing is intrinsically more expensive than public sector provision capital investment with government debt. In fact, with sufficient contracting, PPPs can reproduce the chronological risk profile of PSP.

Put succinctly, the alleged PPP premium may perhaps reveal defective and imperfect contractual schemes, which inefficiently assign exogenous risks to the private partner. Furthermore, the PPP premium may reveal those endogenous risks that cannot be significantly divided from the encouragement structure, which to a certain extent responsible for the competence gains under PPPs. On these rationales, the examined higher cost of capital infrastructure projects under PPP should not be interpreted as evidence against this contractual alternative.

To this end, PPPs need highly sophisticated financial engineering that are unique in all ramification. Unlike the PSP, a PPP effectively separate the infrastructure development projects and its cash streams by producing a special purpose company (SPC). This managerial structure matches well and provides a sound understanding to the fundamental contemporary economics of infrastructure development projects, which offers clear vision to improved accountability.

Last, it is anticipated that PPP modification will continue to advance in the future, when more detailed and specialize academic research has been adequately conducted with the aids of innovative ideas and results oriented outcomes reported accordingly.

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Table 1. The sector by sector guide times in PPP/PFI development projects

Sector	Procurement Dates Periods	Financial Close Periods	Lower-Upper bounds
Roads	March 1986 To November 1995	1 Year 6 Months	1 Year 3 Months To 1 Year 8 Months
Tram/Light Rail	March 1986 To November 1995	1 Year 10 Months Some Days	1 Year 1 Month To 2 Years 6 Months
Health	December 1994 To December 1999	3 Years 4 Months	1 Year 10 Months To 5 Years
Defence	November 1994 To September 1999	1 Year 11Months	1 Year 6 Months To 2 Years 8 Months
Custodial Services	March 1997 To November 1999	1 Year 9 Months Some Days	1 Year 2 Months To 2 Years 1 Month
Prisons and Correctional Services	March 1997 To November 1999	1 Year 9 Months Some Days	1 Year 2 Months To 2Years 1 Months
Schools	March 1997 To December 1999	1 Year 11 Months	1 Year 3 Months To 2 Years 1Month

Sources: HM Treasury (2003)

Table 2. The PPP/PFI ratio of on-time completion and on-precise budget development projects

	The HM Treasury 2003 Account		The NAO 2009 Account	
	Non PPP/PFI	PPP/PFI	Non PPP/PFI	PPP/PFI
On-Time Completion	30	88	65	69
On-Precise Budget	28	79	54	65

Sources: HM Treasury (2003), National Audit Office (2009)

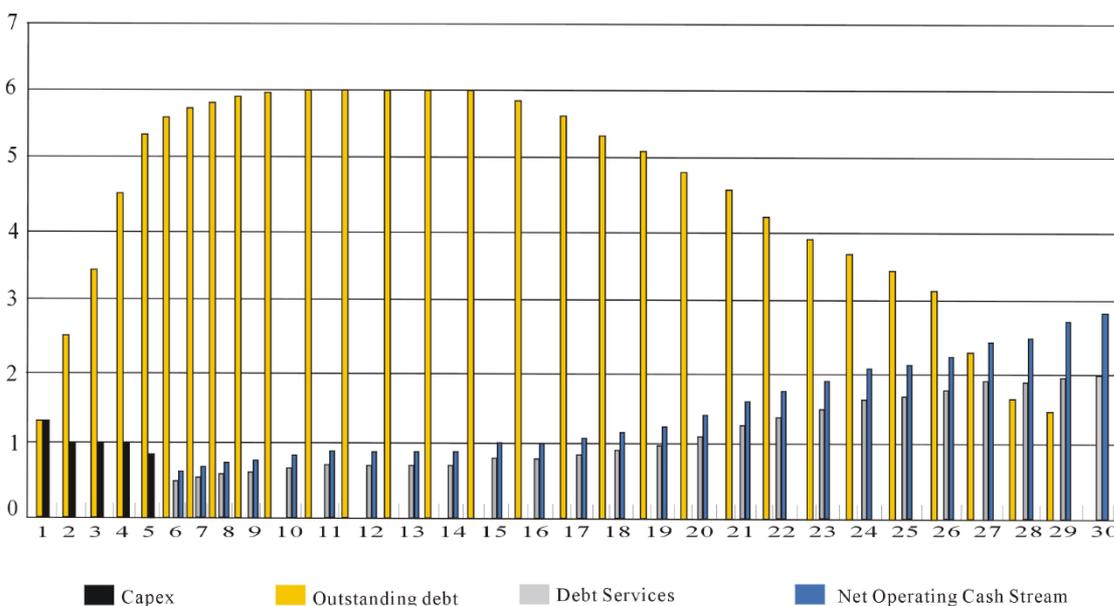


Figure 1. Time outline of financial streams

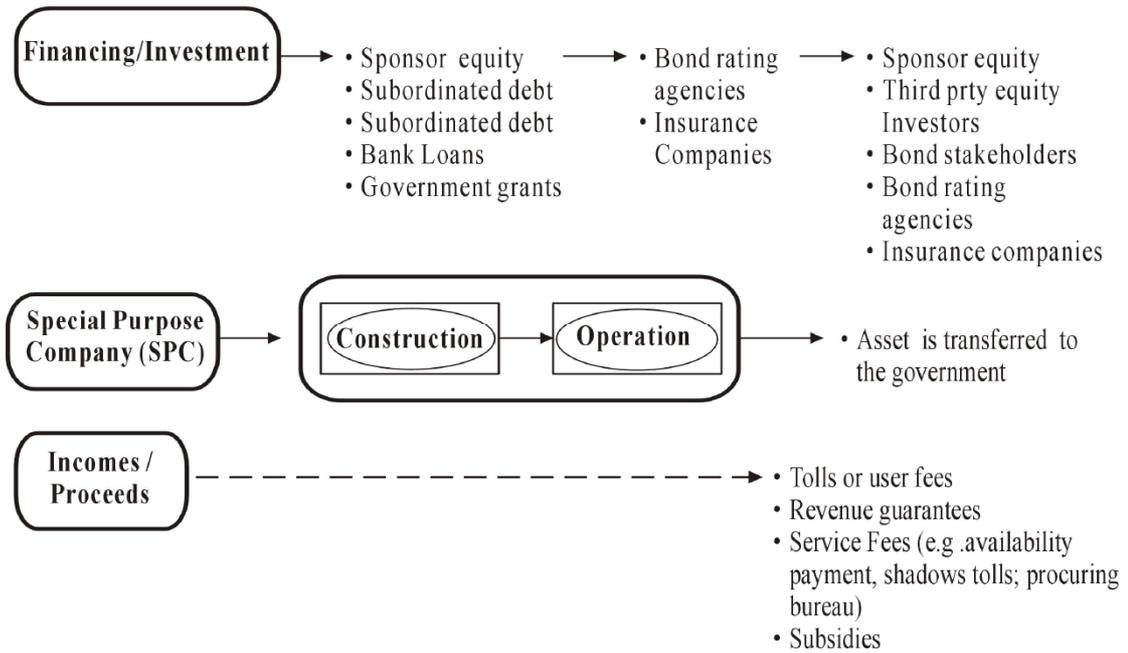


Figure 2. The Economic life sequence of a PPP in infrastructure development project

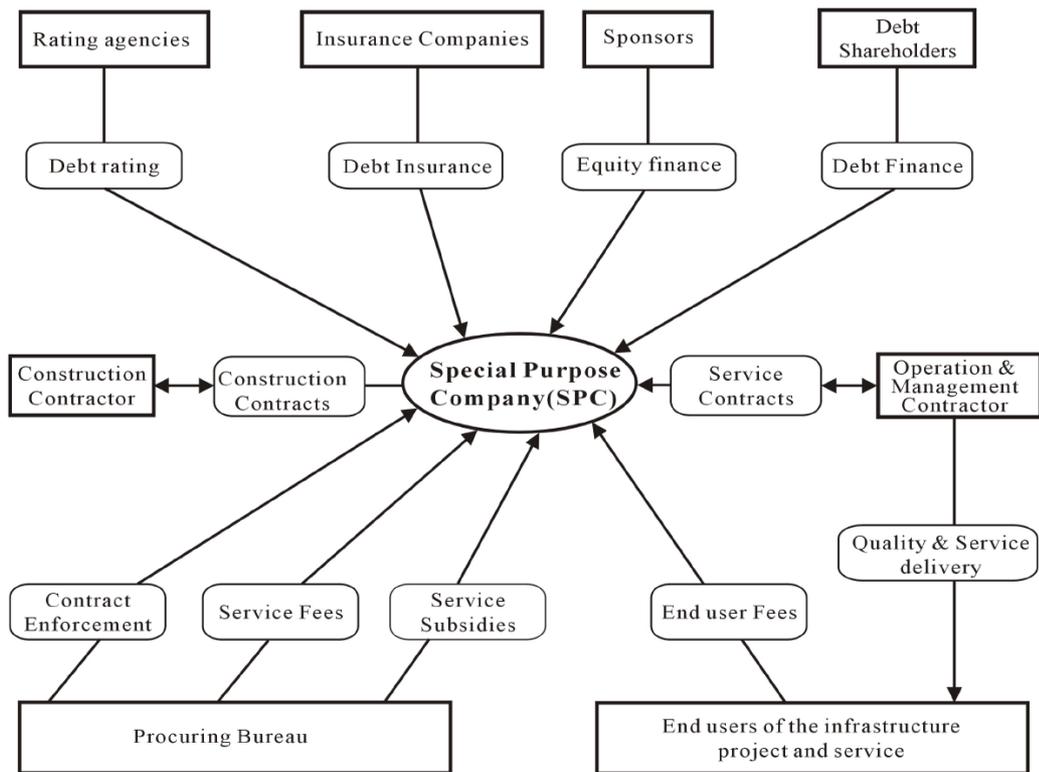


Figure 3. The contract grid of an SPC