Competition Commission of India
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Competition Concerns in Public Private Partnerships: An economic perspective

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I. Motivation

Efficient and accessible Infrastructure is essential to a country’s economic performance and growth. In recent year, India has been investing heavily in developing its infrastructure base, more so at an increasing pace. Currently India’s infrastructure spending is 8% of GDP, while a level of 10% (of GDP) is projected to sustain economic growth. Investments in infrastructure in past ten years have made her second fastest growing economy of the world after China. Regardless, India still ranks 89th in basic infrastructure as per Global Competition Report 2011-12 indicating perhaps slower development, or suboptimum execution among other things, as compared to other countries of the world.

Therefore, financing resources to meet the infrastructure deficit has been one of the major challenged faced by India. Inviting private partners to invest in public infrastructure, under the banner of Public -Private Partnership, has been one of the major undertakings of GOI in recent years. Even though alien to Indian policy makers, the PPP model has captured their imagination and, in recent past, a large number of infrastructure projects have been executed following the PPP model.

Earlier, the infrastructure sector, completely controlled by Government, operated devoid of any competition from the public as well as the private sector. Very large initial investment, high operating cost, large sunk cost, improper risk diversifications, demand uncertainties and other such factors were responsible for not making it lucrative for private sector. This had led to the perception that competition is inherently infeasible in these sectors. Now, however, a number of infrastructure services which were previously treated as natural monopolies are no longer so. For e.g., unbundling of generation, transmission, distribution and retailing has made competition possible in power sector and hence paved way for private sector operatives. Similarly, in many other sectors, with the change of practices there is an emerging view that efficiency gains can be reaped by promoting competition, bringing them under the ambit of competition policy and law.

Even when competition is inherently infeasible, as in natural monopolies, the next best thing is to provide right to access to the public resource or right to supply to a particular market, allocated to a private operative selected through a competitive process. It is the functioning, and malfunctioning, of this competitive process that this present paper wishes to analyze. A concession grants a private operative, rights to operate a defined infrastructure service and receive the revenues generated, while the ownership of the assets remains with the government. However a concession creates, by its inherent exclusionary nature, a private monopoly or extreme dominance which is prone to be abused. There is a view that rather than combating the anti-competitive practices ex-post, one should try to design the concessionary agreement so that it reduces any incentive, or ability, to engage in any anti-competitive behavior.

The paper derives its motivation from the scenario, such as illustrated above, which is prevalent in infrastructure sector in India. Public-Private Partnerships are gaining more and more popularity by

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day, and the present paper tries to bring forward some competition issues pertaining to workings of Public-Private partnerships.

II. Public Private Partnerships

i. Introduction

The term "public-private partnership" carries a specific meaning: first, it relates to the provision of public services or public infrastructure. Second, it necessitates the transfer of risk between partners. Arrangements that do not include these two concepts are not technically "public-private partnerships".

“A cooperative venture between the public and private sectors, built on the expertise of each partner, that best meets clearly defined public needs through the appropriate allocation of resources, risks and rewards.”

Public-private partnerships span a spectrum of models that progressively engage the expertise or capital of the private sector. At one end, there is straight contracting out as an alternative to traditionally delivered public services. At the other end, there are arrangements that are publicly administered but within a framework that allows for private finance, design, building, operation and possibly temporary ownership of an asset.

Thus, the partners in a PPP, usually through a legally binding contract or some other mechanism, agree to share responsibilities related to implementation and/or operation and management of an infrastructure project. This collaboration or partnership is built on the expertise of each partner that meets clearly defined public needs through the appropriate allocation of:

- Resources
- Risks
- Responsibilities, and
- Rewards

It is important to emphasize here that a PPP is not a solution to an infrastructure problem but just a viable project implementation mechanism for a preferred solution option.

In an increasing competitive world, governments across the globe are under pressure to find new ways to finance infrastructure services in energy and power, transport, communication, etc. Moreover, not only it’s about the required financial resources, but also of technical expertise that drives public sector

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2 The Canadian Council for Public-Private Partnerships
to forge partnerships with private sector in order to build infrastructure and deliver services. In this way, Public-Private Partnerships (PPPs) are becoming a common method to bring together the strength of both public and private sector.

The following terms are commonly used to describe partnership agreements, although this should not be considered a definitive or complete listing:

**DESIGN-BUILD (DB):** The private sector designs and builds infrastructure to meet public sector performance specifications, often for a fixed price, so the risk of cost overruns is transferred to the private sector. (Many do not consider DB's to be within the spectrum of PPP's).

**FINANCE ONLY:** A private entity, usually a financial services company, funds a project directly or uses various mechanisms such as a long-term lease or bond issue.

**OPERATION & MAINTENANCE CONTRACT (O & M):** A private operator, under contract, operates a publicly-owned asset for a specified term. Ownership of the asset remains with the public entity.

**BUILD-FINANCE:** The private sector constructs an asset and finances the capital cost only during the construction period.

**DESIGN-BUILD-FINANCE-Maintain (DBFM):** The private sector designs, builds and finances an asset and provides hard facility management (hard fm) or maintenance services under a long-term agreement.

**DESIGN-BUILD-FINANCE-Maintain-Operate (DBFMO):** The private sector designs, builds and finances an asset, provides hard and/or soft facility management services as well as operations under a long-term agreement.

**BUILD-OWN-OPERATE (BOO):** The private sector finances, builds, owns and operates a facility or service in perpetuity. The public constraints are stated in the original agreement and through on-going regulatory authority.

**CONCESSION:** A private sector concessionaire undertakes investments and operates the facility for a fixed period of time after which the ownership reverts back to the public sector.

Other terms used in the PPP field:

**RFEI:** Request for Expressions of Interest

**RFQ:** Request for Qualifications

**RFP:** Request for Proposals

The options available for delivery of public infrastructure range from design-build to outright privatization, where the government transfers all responsibilities, risks and rewards for service delivery to the private sector. Within this spectrum, public-private partnerships can be categorized based on the

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3 For further details see, *A guidebook on Public-Private Partnerships in Infrastructure*, UN ESCAP
extent of public and private sector involvement and the degree of risk allocation. A simplified spectrum of public-private partnership models is as follows:

### ii. On the need of Public-Private Partnerships

Before proceeding any further, there is a fundamental question that needs to be addressed: Why do governments even need to opt for Public-Private Partnership?

Lack of government fund, or access to private sector funds, is often cited as one of most prominent reason for considering the PPP option. It is true that, should the government choose the PPP option, it will free up dear economic resources which it can deploy in its core economic and social programs. However, lack of government funding should not always be the sole criteria for deciding on PPP option for a project implementation. There are additional long term costs associated with an infrastructure
project which may very well wash up any short run saving that the PPP option has to offer. For e.g there are administrative costs for the management of PPP contractual regimes. Transaction costs of PPP projects can also be substantial. PPP projects may also impose many explicit and implicit liabilities on the government such as co-coordinating with a private entity and assuming much risk on its part. Infrastructure projects carry with them a high degree of risk owing to a number of factors such as state of financial markets, uncertain demand, etc and risk diversification is an important exercise in P-P partnerships. In absence of proper incentives, private entities would not be attracted to the partnerships, but there can also be scenarios where government is left with disproportionate amount of risk without any worthy asset to back it up. But most important reason, which denies the need of P-P partnership, is that government or a public entity (backed by government) can borrow money at a much lower cost than a private entity.

There is a growing concern over bureaucratic inefficiency, and even inability, to adapt to the changing needs of modern day infrastructure. Although not uncontroversial, there have been claims regarding superior productive capability of private sector because of greater incentive present for efficiency and innovation. Efficiency gain is one of the primary criteria when deciding on the PPP option for an infrastructure project. A project may not be considered for being implemented as a PPP project unless efficiency gains from improved project delivery, operation and management, and access to advanced technology can offset the above-mentioned additional costs. Public Private Partnership (PPP) is seen as an effective way to achieve value for money (VfM) in public projects. These benefits include introducing competition between prospective private bidders and exploiting the greater efficiency and innovation in the private sector. In fact, many countries have established Value for Money as the main criterion in judging the merits of a PPP option for a project.

The VfM incorporates a philosophy that deals with life cycle costs and benefits of an infrastructure project. The idea is to get the biggest mileage out of public money or resources. The concept is wide applied in public procurements, but is also very much relevant especially in case of P-P partnerships. Value for money (VfM) is about striking the best balance between the “three E’s” – economy, efficiency and effectiveness⁴. It is not a tool or a method, but a way of thinking about using resources well.

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⁴ These three terms – economy, efficiency and effectiveness – are used to mean three different things in this context. This is slightly different from some economic theories that consider economy and efficiency as both ways to increase the goal of productivity. In examining value for money it is important to distinguish between economy, as this refers to minimizing costs, and efficiency which relates more to getting more results for those costs.
A brief Primer for Value for Money analysis:

CONCEPTS

ECONOMY: Reducing the cost of resources used for an activity, with a regard for maintaining quality.

EFFICIENCY: Increasing output for a given input, or minimizing input for a given output, with a regard for maintaining quality.

EFFECTIVENESS: Successfully achieving the intended outcomes from an activity.

VALUE FOR MONEY: The optimum combination of whole-life cost and QUALITY (or fitness for purpose) to meet the user’s requirement. It can be assessed using the criteria of economy, efficiency and effectiveness.

TOOLS

COST-BENEFIT ANALYSIS: A method to evaluate the net economic impact of a project. Expected benefits are estimated and monetized with inflation accounted for, and offset against project costs. The approach is most commonly used to inform in major infrastructure investment in both developed and developing countries.

COST-EFFECTIVENESS ANALYSIS: This method is used where monetizing outcomes is not possible or appropriate, most commonly in health. Common measures include “quality-adjusted life years”.

Fundamentally, the notion of Value for Money (VfM) is associated with the concepts of whole life value of service provided for construction projects. VfM is associated in reducing life cycle costs; provide better allocation of risk, faster implementation, improved service quality and generating high revenue of the project outcomes. In achieving VfM of Public Private Partnership (PPP) projects, a mixture of financial and non-financial criteria are prerequisite in the evaluation of PPP bids to ensure the project provide VfM to project stakeholders.

iii. The basic structure of a PPP arrangement

A typical PPP structure can be quite complex involving contractual arrangements between a number of parties, including the government, project sponsor, project operator, financiers, suppliers, contractors, engineers, third parties, and customers.

A key feature of most PPPs is the creation of a commercial entity called Special Purpose Vehicle (SPV). A SPV is usually set up by participating agencies, public or private, by contributing to its long term equity capital in exchange of controlling shares. A project may be too large and complicated to be undertaken by one single investor considering its investment size, management and operational skills required and risks involved. In such a case, the SPV mechanism allows joining hands with other investors who could invest, bring in technical and management capacity and share risks, as necessary. One characteristic feature of SPV is that it cannot undertake any business that is not part of the project.

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5 Penny Jackson, OECD Report
6 A guidebook on Public-Private Partnerships in Infrastructure, UN ESCAP
iv. The Legal and Policy environment

A PPP contractual arrangement can involve lengthy and complex legal, policy and administrative exercises. Therefore to ensure efficient execution of project, it is necessary to have a proper legal and policy framework in place.

Following are some characteristics that are desired from such a framework7:

- Does it sufficiently meet the requirements/interests of the government and the private parties involved;
- How a contract would need to be structured around the provisions in all applicable laws;
- How difficult it would be to enforce the rights of the parties;
- What obligations are allowed to undertake and what government agency has the power to make an agreement and what government body has the authority to approve the project.

It is important to note that the PPP legal regime may, however, scatter over many legal instruments, not just the special law. These instruments may include the private contract law, infrastructure sector regulatory laws, company law, tax law, labor law, competition law, consumer protection law, insolvency law, infrastructure sector laws, property law, foreign investment law, intellectual property law, environmental law, public procurement law or rules, pledge law, acquisition or appropriation law and many other laws. Separate sets of operational rules and guidelines may also exist for many of such applicable laws. All such applicable laws, statutes, operational rules and guidelines and other specified institutional and administrative arrangements together constitute the legal regime of PPPs in a country. A PPP project has to be structured considering all such legal, regulatory and policy requirements.

III. Public Private Partnerships: Process

7 Refer 6
Before we can draw up an analysis of competition issues regarding P-P partnerships, we need to understand the nature of competition present in PPP process, and its genesis. Broadly, the PPP process can be broken into the following tasks:

- **TASK 1**: defining and designing the project.
- **TASK 2**: financing the cost of the project,
- **TASK 3**: building the infrastructure,
- **TASK 4**: maintaining and operating the physical asset in order to deliver product/services

At one end of the spectrum is government performing all of the tasks, while at the other end there is a complete free play of the market. People earn income and go to the market to buy goods and services they need from private entities that perform task 1-4. One of the most central exercises, in PPP process, is to allocate or distribute these tasks between government and private entity (or consortium of private entities). This allocation is usually administered by the government itself through contracting-out.

The prime reasons which have made PPP models a lucrative option are cost-cutting and innovation. The key reason for the success of PPP at reducing costs and increasing efficiency is competition. It is true that there will be only one private service provider for a certain period time—and therefore no competition “in the market”- but through the bidding process there will be competition “for the market”. As Damsetz (1968) pointed out, this ex-ante competition can replace competition in the market place to force bidders to provide low cost, innovative and better quality services. And if they fail to do so, deliberately or otherwise, they can be punished the way a competitive market punishes: termination for cause, lawsuits for contract breach, damage to reputation, and loss of future business, etc. This does not happen with public sector provision of the service (where each department has monopoly power within its sphere of influence). This is the essence of competition with respect to Public Private Partnerships.

This paper discusses two important stages in a PPP process: contract designing and bidding. Both of these exercises contribute heavily in shaping the form and characteristics of the following partnership, and hence it’s competitive nature, and at the same time also carries seeds of any incentive to indulge in anti-competitive behavior.

**i. Contract Designing:**
A well-functioning and flexible contract is the backbone of any successful PPP project. Since these partnerships are usually for long to very long term, running up to 25-30 years, it is essential to arrive at agreeable terms of contract. Therefore it is the most important exercise of the whole PPP process.

Several stakeholders are involved in implementation of a PPP project namely government agencies, project sponsor(s), banks and other financial institutions, experts, suppliers, off-taker(s) and third parties. As mentioned, a Special Purpose Vehicle (SPV) may be formed which would be unique to the project and responsible for the implementation and operation of the project. It would be the job of SPV to negotiate the details of implementation, risk sharing and entitlement of revenue generated, among all the stakeholders involved and prepare a written agreement. If the establishment of an SPV is not required, the concessionaire (or the private project company which sponsors the project) is at the centre of such agreements and negotiates the contract agreements with the other parties including the government.

Some salient features of a PPP contract/concession are:

- Underpins the whole structure of a PPP transaction;
- Defines the relationship between the public sector and the private sector;
- Identifies and allocates vital risks in a project; and
- Represents an important part of the security documents for the lenders.

**Relationship specific issues: Transaction costs and efficiency**

The claims regarding low-cost and better quality service of PPP projects heavily depend on the contractual relationship between the public and private entity. Thus it is imperative to have a discussion regarding features of PPP contracts that have effect on competition.

**Transaction Costs**

Developing a PPP project is a complex task requiring firms and governments to prepare proposals, market them, conduct bidding or negotiate deals, and arrange funding. The costs incurred in these processes —transaction costs—include staff costs, financing costs such as placement fees, and advisory fees for investment bankers, lawyers, and consultants, etc. Transaction costs, though being essential, are a kind of dead weight costs as they don’t contribute to any value addition to the project. Transaction costs are dominated by staff and travel costs, primarily reflecting the legal and financial complexity of reaching contractual agreements between numerous parties in essentially new and

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8 Transaction Costs in Private Infrastructure Projects—are They Too High?, Klein, So and Shin
unique environments. The cost of technical studies appears less important than expenses incurred in dealing with governments.

Transaction costs generally reflect the uncertainty and lack of transparency associated with the whole contractual process. Private entities may be made to jump through hoops depending upon the whims of bureaucracy or due to the lack of experience of private initiatives. These are the symptoms of a simple underlying fact: private infrastructure is a new way of doing business for most governments. Although many private firms are learning as well, government is the ultimate decision maker in most private infrastructure projects, given that these projects constitute a form of contracting out complex services. Governments must adjust a myriad of responsibilities and processes—sometimes drastically, sometimes just a little. As government officials confront the new ways of doing business, some feel threatened by the possible loss of their function and job, some are reluctant to admit ignorance, and others simply do not see the issues. Lack of clarity leaves scope for abuse by parties of ill repute, inside and outside government. Allegations of misdeeds become rife, often generating a vicious cycle of uncertainty and reluctance to assume responsibility.

Although primarily governance issues, these can potentially have cascading effects on the attitude and conduct of private sector, and consequently on state of the market. Spiraling transaction costs have potential to undermine cost advantage, making the whole exercise redundant. Moreover, getting fed up from lack of transparency, the private sector would have ever diminishing incentive for cost cutting and innovation.

Critics of private infrastructures points to this kind of disarray and consequent spiraling transaction cost as shortcomings of forming a partnership with private sector. But there are transaction costs in traditional public sector projects too. Private projects simply bring more of the previously hidden costs out into the open.

Introducing private participation in infrastructure seems to increase the transaction costs in developing projects, although this cost difference may be more apparent than real. Private participation may simply bring otherwise hidden public costs into the full light of day. Transaction costs seem to have more to do with the characteristics of the policy environment than with the characteristics of the project. Thus, they will naturally fall over time, and decline more where governments adopt better policy and enforce proper conduct. And the available evidence suggests that, even with higher transaction costs, private participation means overall gains because of the improved incentives for efficiency and cost-consciousness.

Another point of interest regarding PPP contracts is incentive to co-operate or defect during the contract period. Once both the parties have started working on a project, say building a bridge, it’s in their collective interest to reach to completion. The reason is that both the parties make relationship-specific investments that are more valuable if the project is brought to completion than if trade breaks down. And if the negotiation breaks down, both the parties would have trouble finding new partners. Searching for a partner and forming the partnership is a costly business and even more costly when
done all over again. Each partner has made relationship specific investments that are worth more with the current partner, than with a new one.

One way to mitigate these so-called ex post inefficiencies is to limit opportunities for negotiations and bargaining by writing long-term contracts. We limit transaction costs by reducing the number of transactions. For example, the government can mitigate transaction costs by writing a long-term contract with the (private) bridge operator, and by encouraging long-term contracts between the operator and other suppliers, such as the designer and/or the contractor, for example.

However, trade relationships are often very complex and uncertain. This level of complexity implies that first, it is impossible to plan for every potential contingency, and second, even if every contingency could be predicted, it would probably be difficult to write down these plans in a contract between the customer and the provider that is enforceable by law. In that case, long-term contracts such as the ones just described are less helpful because they cannot be made binding in every circumstance: this is a characteristic of an incomplete contract. Coase (1937) was the first to recognize the economic consequences of incomplete contracts, and his ideas, as well as those of Williamson (1975, 1979, 1985), and Klein, Crawford and Alchian (1978), sparked a new literature on the subject. It was argued that because of their incomplete nature, contracts must constantly be revised and/or renegotiated as time goes on (long-term contracts are infeasible), and the problem of ex post inefficiency generated by relationship specific investments cannot be easily mitigated.

Hence when contracts are highly incomplete, vertical integration, by avoiding renegotiation altogether, may offer the best alternative. In such cases it may be optimal to put the same party in charge of the different tasks, such as design, financing, construction, and operation. It avoids the bargaining cost that would be generated if the tasks were allocated to different parties.

But that just points to public provision of goods and services, with government being the sole provider, cutting out any transaction cost and thus any ex-post inefficiency. Thus it can be asserted, in presence of uncertain or complex policy environment, transaction costs can become too high to even sweep away any benefits of Public-private partnerships.

**Risk Allocation**

Heavy load infrastructure projects usually carry with themselves a large amount of risk. Under traditional public provisioning of these projects, these risks are not usually quantified and hence don’t get included in cost of the project. A key component of PPP process involves quantifying and transfer of certain risks from the public agency procuring the project to the private sector partner. The concept of “transferring risk” requires that the private partner will be responsible for cost overruns or expenses associated with the occurrence of that risk. Risk transfer can include, among others, construction risk
(i.e., risk that the project will not be completed on time or on budget), usage or traffic demand risk (i.e., risk of lower-than-expected revenues from users of the project), and operation and maintenance risk. For example, if the public agency transfers the risk of construction to the private sector partner, then any cost overruns or delays during construction will be borne by the private sector partner.

In planning for and developing PPP projects, a risk register is often prepared in advance, with public officials choosing among three options for each risk:

- Retain the risk, attempt to mitigate it, and/or insure against it.
- Transfer the risk to the private sector partner.
- Share the risks with the private partner.

In choosing among these options, the public agency values each risk and then evaluates which partner is better able to control, retain, or mitigate the risk factors at the lowest cost.

Risk allocation, between the public and private sector, is at the very core of the whole PPP exercise. It is the transfer of the risk, to the private sector, that provides incentive to private sector to innovate and provide better quality services at low cost. Transferring too little risk to the private sector would constrain the “value for money” that could be achieved. Conversely, transferring too much risk (e.g., a risk that the private sector is unable to manage) will result in high-risk premiums, making the project more costly and driving down the value for money. If a risk is difficult to assess or manage, it may be appropriate to share it between the public and private sectors.

Optimal risk allocation is all about incentive management, parties should be exposed to risk they are best able to handle, i.e. measure and, by their actions, minimize. Thus argument is regarding the gain in total efficiency by minimizing the net risk. For e.g., construction risk can be minimized by transferring it to the private party so that bearing this risk will give the private party a strong incentive to produce a low cost quality construction. If all risks are exogenous, for e.g. climate risk, it would hard to argue that there would be an efficiency gain by transferring it to private party, government or insurance companies, having deep pockets, is better suited to handle such risks.

Transferring of risk would not work without properly defined property rights. In the late 1980s Grossman and Hart (1986) and Hart and Moore (1990) gave new impetus to the literature by underlining the importance of property rights. Property rights confer ex-post bargaining powers, because should the negotiation breaks down, the owner keeps the control of the asset and thus have better option outside of the partnership. Consider the bridge example, if the private consortium owns the bridge it has some bargaining power in renegotiation because it keeps access to assets if trade

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9 Examples of the kinds of risks to be allocated in infrastructure projects, as described in Poschmann (2003), include: (i) technical risk (e.g., engineering or design failures); (ii) construction risk (e.g., higher than expected costs); (iii) operating risk (e.g., more costly or difficult to operate than expected); (iv) revenue risk (e.g., lower than anticipated levels of demand); (v) financial risk (e.g., inappropriate debt management); (vi) force majeure risk (e.g., acts of war, natural disasters); (vii) regulatory/political risk (e.g., changes in laws that make continued operation less profitable); (viii) environmental risk (e.g., risk of significant environmental damage and liability); and (ix) project default risk (e.g., failure through any combination of these risks).

10 P3 Toolkit, US DOT Federal Highways Administration
breaks down, and thus have an attractive outside alternative. In contrast, if the government owns the bridge, essentially the private consortium is just working for government, so the government can just fire the private party if the negotiations break down, thus private party doesn't have an attractive outside alternative and consequently poor bargaining power.

Bargaining power and asset ownerships, thus, have a strong effect on investment incentives. The more ex post bargaining power the private party anticipates, the less likely it is to be "held-up," and the greater incentive they have to make relationship specific investments in the first place. Of course, more bargaining power to the private party means less bargaining power to the government, and thus fewer incentives and less investment by the public sector. Thus, when the government chooses a PPP contract with a private party for the design and/or construction of a bridge instead of public provision, it transfers property rights and bargaining power to the private party. This increases the private party's incentives to invest, but reduces its own incentives.

The insight of Grossman and Hart (1986) and Hart and Moore (1990) is that property rights over an asset should be allocated to the agent whose marginal product of ex ante investment is the highest. The government should use a private sector provider for a particular task (e.g., design, financing, construction, or service provisioning) only if the marginal efficiency of the provider into this "relationship" is higher than that of the customer (government), because the transfer leads to a net efficiency improvement.11

ii. Auctions and Bid Rigging:

"An auction is a process of buying and selling goods or services by offering them up for bid, taking bids, and then selling the item to the highest bidder." 12

Auctions are the most prominent way for inviting bids from interested parties for Public-Private Partnership and seek out the most qualified among them. Universality and Anonymity are two characteristics that must be observed while conducting an auction, i.e, any item can be auctioned off and the outcome of the auction should not depend on the identity of the bidder.

There are fundamentally four types of auctions; a brief description is as follows13:

- **First-price sealed-bid auctions** in which bidders place their bid in a sealed envelope and simultaneously hand them to the auctioneer. The envelopes are opened and the individual with the highest bid wins, paying the amount bid.

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11 *The Economics of Public-Private Partnerships*, Bettignies and Ross
12 Wikipedia
• **SECOND-PRICE SEALED-BID AUCTIONS (VICKREY AUCTIONS)** in which bidders place their bid in a sealed envelope and simultaneously hand them to the auctioneer. The envelopes are opened and the individual with the highest bid wins, paying a price equal to the *second-highest* bid.

• **OPEN ASCENDING-BID AUCTIONS (ENGLISH AUCTIONS)** in which participants make increasingly higher bids, each stopping bidding when they are not prepared to pay more than the current highest bid. This continues until no participant is prepared to make a higher bid; the highest bidder wins the auction at the final amount bid. Sometimes the lot is only actually sold if the bidding reaches a reserve price set by the seller.

• **OPEN DESCENDING-BID AUCTIONS (DUTCH AUCTIONS)** in which the price is set by the auctioneer at a level sufficiently high to deter all bidders, and is progressively lowered until a bidder is prepared to buy at the current price, winning the auction.

There are, now, many more models of auction but they mostly revolve around the four ‘fundamental’ models presented\(^\text{14}\).

Once tenders are submitted by the private parties, they are screened in order to arrive at the selection of the preferred bidder. Bids are generally assessed first on a number of pass/fail criteria before a list of preferred bidders is decided on. For example:

- Even if the evaluation score is not based on a technical evaluation, a determination must be made that the technical solution proposed by a bidder is feasible, deliverable and robust, that it is based on reliable technologies, that it meets all minimum technical requirements set and that the costs and financial structure are consistent with the technical solution; and
- It is important to look at the proposed project management: the bidding consortium must come across as a cohesive entity rather than just a collection of companies put together for bidding purposes.

The submission of tenders by private parties and the subsequent bidding process effectively marks the beginning of the partnership. But the process of bidding deserves special attention because it is here that a lot of activity, having anti-competitive consequences, can potentially happen.

Malpractices in bidding process have been infamous for infesting and corrupting the very essence of Public procurement process in general, and P-P partnerships deals in particular. In effect, Bid Rigging falls on the far end of the causal spectrum with practices such as cartels, collusions, price fixation, etc acting as causes.

\(^{14}\) ibid
Bid Rigging:

Competition Act, 2002 identifies bid rigging as one of the four types of horizontal agreement. It says,

“...any agreement, between enterprises or persons referred to in sub-section (3) engaged in identical or similar production or trading of goods or provision of services, which has the effect of eliminating or reducing competition for bids or adversely affecting or manipulating the process for bidding.”

Bid rigging is a form of fraud in which a commercial contract is promised to one party even though for the sake of appearance several other parties also present a bid. This form of collusion is illegal in most countries. It is a form of price fixing and market allocation, often practiced where contracts are determined by a call for bids, for example in the case of government construction contracts.

Bid rigging almost always results in economic harm to the agency which is seeking the bids, and to the public, who ultimately bear the costs as taxpayers or consumers.\(^\text{15}\)

Bid rigging takes place when bidders collude and keep the bid amount at a pre-determined level. Such pre-determination is by way of intentional manipulation by the members of the bidding group. Bidders could be actual or potential ones, but they collude and act in concert.

The prime purpose of a bidding process, in context of public procurement, is to secure the most favorable price. But it may be negated if the bidders collude or act in concert. Such collusive bidding or bid rigging negates the very purpose of inviting tenders and is inherently anti-competitive.\(^\text{16}\)

Although there are a number of deployable bid rigging schemes, it is done in one or more of the following ways. It is to be noted that these techniques are not mutually exclusive: \(^\text{17}\)

- \textbf{COVER BIDDING}. Cover (also called complementary, courtesy, token, or symbolic) bidding is the most frequent way in which bid-rigging schemes are implemented. It occurs when individuals or firms agree to submit bids that involve at least one of the following: (1) a competitor agrees to submit a bid that is higher than the bid of the designated winner, (2) a competitor submits a bid that is known to be too high to be accepted, or (3) a competitor submits a bid that contains special terms that are known to be unacceptable to the purchaser. Cover bidding is designed to give the appearance of genuine competition.

- \textbf{BID SUPPRESSION}. Bid-suppression schemes involve agreements among competitors in which one or more companies agree to refrain from bidding or to withdraw a previously submitted bid so

\(^\text{15}\) Bid Rigging, Wikipedia
\(^\text{16}\) Bid Rigging, CCI Brochure
\(^\text{17}\) OECD, \textit{Guideline for Fighting Bid Rigging in Public Procurement}
that the designated winner’s bid will be accepted. In essence, bid suppression means that a company does not submit a bid for final consideration.

- **Bid Rotation.** In bid-rotation schemes, conspiring firms continue to bid, but they agree to take turns being the winning (i.e., lowest qualifying) bidder. The way in which bid-rotation agreements are implemented can vary. For example, conspirators might choose to allocate approximately equal monetary values from a certain group of contracts to each firm or to allocate volumes that correspond to the size of each company.

- **Market Allocation.** Competitors carve up the market and agree not to compete for certain customers or in certain geographic areas. Competing firms may, for example, allocate specific customers or types of customers to different firms, so that competitors will not bid (or will submit only a cover bid) on contracts offered by a certain class of potential customers which are allocated to a specific firm. In return, that competitor will not competitively bid to a designated group of customers allocated to other firms in the agreement.

In order for firms to implement a successful collusive agreement, they must agree on a common course of action for implementing the agreement, monitor whether other firms are abiding by the agreement, and establish a way to punish firms that cheat on the agreement. Although bid rigging can occur in any economic sector, there are some sectors in which it is more likely to occur due to particular features of the industry or of the product involved. Such characteristics tend to support the efforts of firms to rig bids. In context of PPP market, these characteristics can be:

- **Small Number of Companies.** Bid rigging is more likely to occur when a small number of companies supply the good or service. The fewer the number of sellers, the easier it is for them to reach an agreement on how to rig bids.

- **Little or No Entry.** When it is costly, hard or slow to enter the concerned market, firms in that market are protected from the competitive pressure of potential new entrants. The protective barrier helps support bid-rigging efforts.

- **Market Conditions.** A constant, predictable flow of demand from the public sector tends to facilitate the practice of market allocation and increase the risk of collusion. At the same time, during periods of economic upheaval or uncertainty, incentives for competitors to rig bids increase as they seek to replace lost business with collusive gains, although at such times they may not always be able to do so. On the other hand, significant changes in demand or supply conditions tend to destabilize ongoing bid-rigging agreements.

- **Industry Associations.** Industry associations can be used as legitimate, pro-competitive mechanisms for members of a business or service sector to promote standards, innovation and competition. Conversely, when subverted to illegal, anticompetitive purposes, these

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18 Ibid
associations have been used by company officials to meet and conceal their discussions about ways and means to reach and implement a bid rigging agreement.

- **Repetitive Bidding.** The bidding frequency helps members of a bid-rigging agreement allocate contracts among themselves. In addition, the members of the cartel can punish a cheater by targeting the bids originally allocated to him. Thus, contracts for goods or services that are regular and recurring may require special tools and vigilance to discourage collusive tendering.

- **Identical or Non-substitutable Products or Services.** When the firms involved in the bidding process are offering identical or non-substitutable products or services, they are more secure in colluding and their efforts to subvert the bidding process is likely to be more successful.

An exercise with any indicators of bid rigging will be much more comprehensive if it is accompanied by market conditions such as described above.

**Detection of Bid Rigging:**

There are a number of econometric test developed namely by Porter & Zona, Bajari & Ye, Baldwin et al, etc. to detect the presence of price fixing or bid rigging activity. An exercise with any indicators of bid rigging will be much more comprehensive if it is accompanied by market conditions such as described above. Moreover, competitive as well collusive tendency really depends on the rule of the game i.e. rules of the auctions and more.

Nevertheless, following are some characteristics that would be desirable from an econometric indicator of bid rigging:

- **Controlled Indication of Collusive Activities.** The test should clearly indicate, within reasonable doubt, any collusive activity controlled for the effects of other actions and events in the market that might have effect on the prices, etc.
- **Efficiency.** The test should be efficient. By efficiency we mean, it should have an agreeable mixture of false positive (type 1 error) and false negative (type 2 error).
- **Objective Analysis.** Even though the investigation into collusive activities may be followed, or accompanied, by observed suspicious activities, it must nevertheless rely on objective information.

Following are some brief descriptions of some of such tests:
**Porter & Zona**

Porter and Zona proposed an econometric model to examine bid rigging practices in auctions for state highway constructions in US during 1980s.

The assumptions of this model are:

- The set of bidders for any particular auction is a common knowledge.
- Firm’s cost is random with a known distribution.
- Costs are independently distributed across firms.
- Firms are risk neutral.

A competitive bidder must determine an optimal bid given his likely costs and the probable distribution of other firms’ bids. The model examines differences in bidding behavior between (bid rigging) ring members and non-members with respect to their estimated cost.

The test intends to establish patterns of bid rotation or relatively constant market share as an irrefutable evidence for bid rigging. However, it will still be considered to be a poor substitute as compared with a wiretap or a disclosure by a dissident ring member.

**BAJARI & YE19**

Bajari and Ye applied theory of competitive bidding with asymmetric bidders to distinguish between competitive and collusive bidding. They proposed two eligibility criterion for deciding suspicious bidding behavior, conditional independence and exchangeability. When bidding satisfies these conditions, it is always possible that a competitive bidding process generated the observed pattern of bidding. Conversely, bidding that does not satisfy these conditions was not generated by the fully competitive process modeled by Bajari & Ye; indicating the possibility of collusion. But, while these tests can help to detect departures from the competitive behavior, they do not directly establish that the departure is the result of an illegal agreement. Nonetheless these methods can be used as a first step to determine whether suspicious bidding has occurred and if further investigation and analysis is warranted.

Some of the assumptions followed by Bajari & Ye are:

- The bids submitted are sealed and the contract is awarded to the lowest bidder.
- Bidders are aware of their private cost which is only known to them.
- The bids submitted are rational and arrived by considering their private costs and predictions about other’s bids based on the information which is publically available.

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Taking into consideration the above assumptions, Bajari & Ye identify two conditions, conditional independence and exchangeability. They are both necessary and sufficient for a set of bids to be considered competitive bids.

**CONDITIONAL INDEPENDENCE**

Conditional independence implies that after adjusting for all the information about the projects and firms’ costs that is publicly available to the bidders, the bids should not be correlated. This would be because before submitting bid for a contract, a firm typically estimates costs for itself (due to the private information available exclusively to itself) and other firms (on the basis of publicly available information). If there is no collusion, each firm independently arrives at its cost estimates and bid.

To test for conditional independence, one needs to analyze the bidding patterns of firms as the deciding factors, such as cost etc., varies. If there is collusive tendency of any kind then bidding patterns of colluding firms would not be independent from each other, and the bids would probably be higher than what would be predicted from pricing information.

**EXCHANGEABILITY**

Exchangeability means that all firms behave identically when faced with the same cost structure for both themselves and rival firms. If the publicly observed factors affecting costs or other information that firms use to compute their bids is permuted or exchanged among the firms, then the bids should permute among the firms in the same way when exchangeability holds. It implies that costs alone should determine how firms bid and that the identities of a firm’s competitors, holding information about costs constant, should not change how a firm bids.

For example, consider three firms A, B & C with following information,

<table>
<thead>
<tr>
<th>Firm Identity</th>
<th>Distance from the construction site (unit)</th>
<th>Cost of the bid (unit)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>10</td>
<td>1.0</td>
</tr>
<tr>
<td>B</td>
<td>12</td>
<td>1.2</td>
</tr>
<tr>
<td>C</td>
<td>13</td>
<td>1.3</td>
</tr>
</tbody>
</table>

Given the above information, it is inferred that Firm A has the lowest cost and will win the bid only if it bids just below Firm B. Firm A is the only firm which is willing to bid this low because it is the only firm that can do so and still make a profit.
This situation would change, if Firm A and Firm B collude, deciding the former to win the bid. Hence, Firm A does not have to worry that its bid will be undercut by Firm B. Firm A has to bid just under 1.3, Firm C to bid or more and Firm B to submit a complementary bid.

<table>
<thead>
<tr>
<th>Firm</th>
<th>Distance from the construction site (unit)</th>
<th>Cost of the bid (unit)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>10</td>
<td>1.0</td>
</tr>
<tr>
<td>B</td>
<td>13</td>
<td>1.3</td>
</tr>
<tr>
<td>C</td>
<td>12</td>
<td>1.2</td>
</tr>
</tbody>
</table>

If bidding is competitive, Firms B and C will simply exchange the bids, in the similar way as they have exchanged the costs.

This situation would change if Firms A and B collude. Unlike the previous example on collusion, Firm A should bid not below Firm B, but below Firm C, who has the second lowest cost and is not a part of the cartel. The following table would summarize the above discussion

<table>
<thead>
<tr>
<th>Firm</th>
<th>Cost for First project (unit)</th>
<th>Competitive Bid(unit)</th>
<th>Collusive Bid (unit)</th>
<th>Cost for second project(unit)</th>
<th>Competitive Bid(unit)</th>
<th>Collusive Bid(unit)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1.00</td>
<td>1.19</td>
<td>1.29</td>
<td>1.00</td>
<td>1.19</td>
<td>1.19</td>
</tr>
<tr>
<td>B</td>
<td>1.20</td>
<td>1.20</td>
<td>1.29</td>
<td>1.30</td>
<td>1.30</td>
<td>1.30</td>
</tr>
<tr>
<td>C</td>
<td>1.30</td>
<td>1.30</td>
<td>1.30</td>
<td>1.20</td>
<td>1.20</td>
<td>1.20</td>
</tr>
</tbody>
</table>

Hence, it can be seen that when two competing firms have the same cost and face the same costs for rival firms, they will bid the same. It demonstrates that when bidding is collusive, the exchangeability between costs and bids breaks down. For instance, when in collusion with Firm B, Firm A bids 1.29 on the first project and 1.19 on the second project, even though the ‘cost’ of the closest rival remains unchanged. What has changed is whether the closest rival is a part of the cartel or not. Hence, if
collusion occurs, it is observed, that cartel members do not bid against each other as aggressively as a control group of non-cartel firms.

IV. Suggestions

Let us revert back to one of the most fundamental question dealt in this report: Why do governments need the PPP option?

The primary reason, as the report observes, is that P-P partnerships provide better efficiency and value for money for public resources. A project may not be considered for being implemented as a PPP project unless there are efficiency gains from improved project delivery, operation and management, and access to advanced technology as compared to public provisioning. Public Private Partnership (PPP) is seen as an effective way to achieve value for money (VFM) in public projects.

We now have working knowledge of how does a PPP achieve this higher level of efficiency and better value for money as compared to public sector entities.

This section goes a step further and explores causal relationships between various factor and state of competition in PPP process. Many of these relationships are informal in nature, in the sense that they affect behavior of parties involved and incentives faced by them.

i. Bid Rigging

The bidding process is the corner stone of whole PPP process. It is here, at the bidding stage, that much of characteristics of following partnership get defined. The process of inviting bids and holding an auction is essentially an exercise to achieve fair pricing through competition among prospective bidders. In PPP process, even though there is only firm operating at a time and there is no competition ‘in the market’, through the bidding process we can generate competition ‘for entry in the market’. It is here, from the very beginning, we have competitive prices and quality prevailing in the market.

Thus malpractices in bidding process, such as bid rigging, have potential to subvert the fundamental essence of bidding rendering it a futile exercise. Therefore it’s important to look into the process of bidding and understand the exercises that can contribute into fending off malpractices.

Designing bidding process to reduce bid rigging

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20 Fighting Bid Rigging, OECD guide
There are many steps that can be taken to promote more effective competition in PPP bidding exercises and reduce the risk of bid rigging.

- **Being informed before designing the bidding process.** There is really no alternative for knowing the state of the market with which partnership is going to be formed into. Bidding officials should have an adequate knowledge of current costs, prices prevailing in the market. Furthermore, they should also know of leading firms, any dominance by them, if there are entry barriers, past tenders for the same or similar products or any other characteristics that might make collusion more likely.

- **Maximizing potential participation of genuinely competitive bidders.** Effective competition can be enhanced if a sufficient number of credible bidders are able to respond to the invitation to tender and have an incentive to compete for the contract. For example, participation in the tender can be facilitated if bidding officials reduce the costs of bidding, establish participation requirements that do not unreasonably limit competition, allow firms from other regions or countries to participate, or devise ways of incentivizing smaller firms to participate even if they cannot bid for the entire contract. Any unnecessary restrictions that may reduce the number of qualified bidders can be avoided with minimum requirements that are proportional to the size and content of the project contract.

- **Clearly defined terms of requirement.** Drafting the specifications and the terms of reference (TOR) is a stage of the public procurement cycle which is vulnerable to bias, fraud and corruption. Specifications/TOR should be designed in a way to avoid bias and should be clear and comprehensive but not discriminatory. They should, as a general rule, focus on functional performance, namely on what is to be achieved rather than how it is to be done. This will encourage innovative solutions and value for money. How tender requirements are written affects the number and type of suppliers that are attracted to the tender and, therefore, affects the success of the selection process. The clearer the requirements, the easier it will be for potential suppliers to understand them, and the more confidence they will have when preparing and submitting bids.

**ii. Vertical Integration**

The very purpose of going through P-P partnerships is to have cost reduction and efficiency gains. Now there are some structural dilemmas when it comes to deciding on proper scale of the project per partnership.
PPPs are an exercise in exploring competitive forces, and it is essentially done through unbundling and reaching out to more firms in the market. In order to increasing competition, services along the project chain are unbundled and treated as separate projects. This exercise is essentially a boon for smaller firms in the market, can drastically bring down the entry barrier, and increase the degree of fairness in the whole endeavor.

But, at the same time, there is a downside that can very well subvert the whole exercise. As the project chain becomes more and more fragmented, transaction cost escalates. What was maybe a single project now comprises of various smaller projects operated by a number of firms. In such a scenario, the escalating transaction cost might threaten to undermine the savings in cost that comes from better efficiency.

Nevertheless, the actually experiences depends heavily on the sectors involved. Unbundling of services have resulted in significant gains in power sector. Earlier it was essentially a monopoly sector, but now with unbundling it into generation, transmission and distribution have enabled private players to develop domain specific expertise resulting into significant efficiency gains. Now if the firms were to collude vertically along a project chain, it can have detrimental effect on the price or the quality of service being offered.

For e.g. let’s say a toll road project of 200 km is broken up into two projects of 100km each. Now the firms operating different stretch of road will have different cost owing to difference in their efficiency, technical expertise and geography involved. But if they collude, they can fix the toll to the higher level and split the bounty between them.

**iii. Risk Allocation and Property Rights**

Risk allocation, between the public and private sector, is at the very core of the whole PPP exercise. It is only by proper risk sharing accompanied by awarding adequate property rights; the private firm is able to function properly. If the PPP negotiations doesn’t get the proper risk allocation or doesn’t confer adequate property rights, in order to provide incentive for those risks, to private entity, it can lead to distortions to the whole incentive structure and consequently to the state of the market.

**iv. Governance Issues**

Inefficient bureaucratic practices or simply lack of experience of government officials when it comes to dealing with private Initiatives in infrastructure services can have long lasting impacts on the whole PPP process. Although primarily governance issues, these can potentially have cascading effects on the
attitude and conduct of private sector, and consequently on state of the market. Private parties sensing inefficiencies or incompetency of bureaucracy are much more likely to indulge in anticompetitive behaviour.