COMPETITION POLICY IN PUBLIC PROCUREMENT

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COMPETITION POLICY IN PUBLIC PROCUREMENT

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ABSTRACT

In the following research paper, the author develops a macro view of the procurement process of India examining in detail how the mechanism of procurement works and in particular how the tendering process is conducted. The meaning and significance of the procurement policy of India and the dual problems of corruption and collusion bringing in anti-competitiveness in the procurement policy is highlighted. The issue of bid rigging and collusion both between bidders and between bidders and procurers is discussed. The ambit and scope of regulation of the country’s procurement policy is then examined with due focus on certain emerging grey areas. Seeing the scope of similar policies in international jurisdictions, the author raises the issue of whether we need and can incorporate changes in our procurement policy. In such a context, the role of the Competition Commission is explored. Then the author undertakes a non-exhaustive survey of econometric literature relating to auctions and collusive bidding examining in detail the Porter Zona test for detecting collusion and concluding that with the availability of requisite data for a particular procurement project, possibility of collusion can be detected and this test can be replicated in the Indian context, such analyses serving to validate closer legal study to support the prosecution of the colluding companies. However bidder and contract characteristics are difficult to obtain and proxy variables are often not sufficient to capture the actual working of the procurement process and conclude whether it is suspect to collusion or not.
INTRODUCTION

‘In general, if any branch of trade, or any division of labour, be advantageous to the public, the freer and more general the competition, it will always be the more so.’- Adam Smith(The Wealth of Nations, Book II, Chapter II)

The benefits of competition are greater than ex-ante claims of lower price with technological advances and innovation yielding new opportunities for resourceful entrepreneurs to exploit. This is of particular significance for a rapidly burgeoning economy like India with an economic past comprising controls and regulations.

With most countries bringing regulations to ensure fair trade within their jurisdiction, the benefits of perfect competition-allocative, productive and dynamic efficiency-have have been the driving force in the background of dystopic elements of reality like cartels, mergers and acquisitions, price discrimination and dumping.

Since the 20th century, competition law has become global with the two largest and most influential systems of competition regulation being the US anti-trust law and European Union competition law. With the gigantic merger wave of the 1990s which gripped the world economy, some kind of competition policy became imperative for developed as well as developing countries. Whether mergers are taking place in US or UK or cross border takeovers are taking place in the developing countries themselves, there are competition policy concerns for developing countries.

The US which has long experience in competition policy -- the first US legislation was passed nearly a hundred years ago in response to the merger movement at the turn of the 19th century (referred to earlier) -- takes a so-called structural approach to this issue. Competition is regarded as being a good thing in itself and anti-trust laws (including Federal Trade Commission (FTC) rulings and Supreme Court judgements) attempt to discourage anti-competitive practices.

Competition policy in the UK and in Western Europe has traditionally been based on a rather different philosophy. It does not regard competition as an end in itself, but a means to an end. This leads to a trade-off approach -- encroachments on competition are acceptable if they are
adequately counterbalanced by benefits to the community. Thus, in the simplest case, mergers between two large firms in the same industry -- which by the traditional US anti-trust policy would be ruled out *per se* -- may be permitted under traditional UK competition laws, if it can be shown that the welfare reducing effect of increased market power resulting from the merger is more than matched by gains to society, as a consequence of reduced costs of production because of economies of scale and/or because of synergy.

Japan’s approach to competition policy has been different. Professor Okimoto explains the philosophy behind the Japanese approach to the subject:

“…the Japanese government takes a more pragmatic approach to anti-trust enforcement, one that makes allowances for national goals such as industrial catch-up. It takes into account other collective values and extenuating circumstances in weighing enforcement decisions against the letter and spirit of anti-trust laws. Included here are such considerations as economies of scale, enhanced efficiency, and optimal use of scarce resources, international competitiveness, heightened productivity, business cycle stabilization, industrial orderliness, price stabilization and economic security”¹

This brings us to the case of semi-industrial countries which are now fairly advanced with respect to industrial development among which number India, Korea, China, Brazil and Mexico. A key issue that has been under consideration is whether the kind of competition policy adopted and exercised by developed countries should also be followed by the above mentioned economies. The essential focus of competition policy in advanced countries such as the US is the promotion of allocative efficiency and reduced prices for consumers (WTO, 1997). However, from the standpoint of economic development, this perspective is too narrow and static. In order to raise their people’s standard of living, a central objective of developing countries must necessarily be the promotion of long term growth of productivity. The pursuit of this objective of dynamic rather than static efficiency requires, among other things, high rates of investment. In a private enterprise economy, this necessitates encouragement of entrepreneurs’ propensity to

¹ (Okimoto, 1989, p. 12-13).
invest. However, the private sector’s ‘animal spirits’\(^2\) are likely to be dampened if, as a result of competition, profits became too low, even if only temporarily.

Against the background of the competition policy of India, the author examines the following ideas-

**A. MACRO VIEW ON PUBLIC PROCUREMENT**
- The meaning and significance of the procurement policy of India.
- The dual problems of corruption and collusion bringing in anti-competitiveness in the procurement policy.
- The meaning and mechanism of bid-rigging.
- The ambit and scope of regulation of the country’s procurement policy

**B. ADDENDUM:** As an addendum, an econometric survey of auction literature is undertaken to highlight the fact that there are with a more holistic database, there is scope of generating similar models for the Indian economy and hence bettering our understanding of the variables affecting the procurement process.

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PUBLIC PROCUREMENT: ITS MEANING AND SCOPE

For the success of competition policy, in terms of economic theory, strict boundary conditions would be prerequisites which have been summarized by Prof. Laffont\(^3\) as

“Competition is an unambiguously good thing in the first best world of economists. That would assume large number of participants in all markets, no public goods, no externalities, no information asymmetries, no natural monopolies, complete markets, fully rational agents and a benevolent court system to enforce contracts and a benevolent government providing lump sum transfers to achieve any desirable redistribution.”

However these ideals while useful as benchmarks are hard to achieve. Hence what we try and examine hereafter are the deviations from the ideal situations as encountered in India with particular focus on the process of procurement and the anti-competitive practices that enter in this process via collusion and bid-rigging.

Procurement is the acquisition of goods and/or services at the best possible total cost of ownership, in the right quality and quantity, at the right time, in the right place and from the right source for the direct benefit or use of corporations, individuals, or even governments, generally via a contract. Government procurement, also called public tendering or public procurement, is the procurement of goods and services on behalf of a public authority, such as a government agency.

Public procurement facilitates the use of private sector for public sector goals and enables the development of particular groups and regions. Procurement encompasses the acquisition of goods, real property, capital equipment, built assets and services and quality, timeliness and appropriateness of the procured inputs largely determine if the public investment succeeds. With an open procurement machinery and greater competition, better quality of goods and services and lower prices along with reduced tax burden and increased access to world markets are the

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\(^3\) Jean Jacques Laffont (1947-2004) was a French economist specializing in public economics and information economics.
theorized gains. In fact, public procurement and competition law intertwine to create the internal market.

Through public procurement, public sector organizations acquire goods, services and works from third parties. It includes much that supports the work of government and ranges from routine items (e.g. stationery, temporary office staff, furniture or printed forms), to complex spend areas (e.g. construction, Private Finance Initiative projects, aircraft carriers or support to major change initiatives). It is a multi-step process of established procedures to acquire goods, works and services, including consultancies, by a government entity. It involves the full cycle through needs assessments, process design and bid-document preparation to the awarding and the execution of contracts and the final accounting and auditing of a completed contract.

With Railways, Defence, Telecom and Health budgets giving 30-50% of their budget to procurement, public procurement majorly impacts national security, health of citizens, safety of passengers and quality of infrastructure and services. There is a threefold approach to the objectives that are envisaged as being fulfilled by public procurement: maximize public welfare by providing quality services and products, maximize growth opportunities for the private sector and have efficient spending of government money.

India’s public procurement system accounts for 8 lakh crore of business every year which is roughly 30% of the country’s GDP. Infrastructure of the country is created through this process. Looking at the magnitude of India’s procurement activity, other developed countries want to join in the procurement process. The GPA which is the General Procurement Agreement is a voluntary agreement within the WTO. China is a party to this agreement but India is as of yet an observer country.
THREE DISTINCT PERSPECTIVES ON PUBLIC PROCUREMENT

- **Markets:** The government can view procurement as a market activity in which it adopts the perspective of a buyer\(^4\). Hence it would be interested in increasing supply-side competition in order to drive ahead quality, timeliness and innovation and drive down price. Secondary considerations are minimization of dead-weight loss\(^5\) and achieving an equitable distribution of profit. In perfectly competitive markets, dead-weight loss and average production cost are minimized and dynamic efficiency assured by marginal cost pricing and free entry. However, not only does this linkage fail with imperfectly competitive markets and information asymmetry but also the logic of procurement policy often dictates that equity considerations be justified in efficiency terms. In this context, the ideal situation is that the government coordinates its purchasing activity, different purchasing entities pool information and the government communicates its future demands to the supply side as clearly as possible.

- **Contracts:** Procurement often results in contracts. Dependence on a single supplier magnifies the effect of informational asymmetry\(^6\) and can lead to a ‘lock in’-if an incumbent supplier has ‘insider information’ about government demand or has built in legacy dependencies in existing supplies, potential competitors may face high entry barriers and incentives towards efficiency are weakened. To eliminate this problem, the usage of multiple-sourcing arrangements is ideal to keep the competitive pressure on during the contract lifetime.

- **Auctions:** Most procurement arrangements are set up through a mechanism that lies between the extremes of buying in an open market and negotiating a specific contract. Government contracts are typically awarded by procurement auctions. Genuine

\(^4\) This approach was expressed in the December 2003 OGC report to the Chancellor of the Exchequer: “Increasing competition and improving long term capacity planning in the government market place”

\(^5\) Dead-weight loss: Lost gains from trade due to the exercise of market power.

\(^6\) Asymmetric Information is a situation in which one party in a transaction has more or superior knowledge compared to another. This creates an imbalance of power in transactions which can cause the transactions to go awry.
competition is essential to successful tendering. It has been shown\(^7\) that it is better to simply accept the result of an auction with \(k\) bidders than to exercise maximum market power by making it a take-it-or-leave-it ultimatum offer (based on all information revealed) to the winner of an auction with \(k\) bidders. In other words, competition may be more important than strategic bargaining power.

WHY PROCUREMENT MATTERS

Public procurement has a real impact on everyday lives as the creation of both social and economic infrastructure like roads, schools, hospitals and provisions for drinking water and sanitation are but examples of government investment in public goods. The ultimate goal of public procurement is to satisfy the public interest. Like any government action should be. In this sense, good procurement should satisfy the needs of the people, should be fair to businesses, should save and avoid wastage of public funds. Good public procurement is a good tool to implement public policy in all areas, and should be an instrument for good governance.

The importance of public procurement is enormous. Government procurement accounts for a substantial part of the economy and this leads to two implications:

- Such large-scale buying often decides the standards that get adapted in an economy. Therefore the quality of procurement becomes crucial. Moreover the enormous financial amounts involved with procurement automatically attract rent-seeking behavior. Hence procurement processes are regulated and monitored to prevent fraud, waste and corruption and make the procurement process simple, transparent and efficient. Procurement guidelines almost always require the procuring authority to issue public tenders if the value of procurement exceeds a certain threshold.\(^8\) Much of this public procurement has historically been in physical infrastructure and therefore plays a role in national development. However recently, one of the most important areas of government procurement is information-related infrastructure to help e-governance, e-commerce and e-banking.

- The role of the buyer in the transaction is a crucial part of public procurement. Government procurement in most cases means that it is the sole buyer. Being the single buyer, it becomes the monopolist with considerable bargaining power. Moreover the

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\(^8\) In India, as per the General Financial Rules of 1963, any procurement of over Rs. 200,000 needs open tendering.
quality of the procurement becomes the standard of the economy. Sellers also become ‘locked in’ to the Government’s procurement specification.

Functionally, the nature of goods procured by the Government can be classified into the following categories:

Procurement processes cannot be uniform. It will depend on various things – nature of goods to be procured, why they are being procured and the economic and legal framework of the country. The quality, timeliness, local appropriateness and affordability of those procured commodities can largely determine whether the public expenditure will succeed or fail.

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9 The object they have designed or manufactured can only be sold to the Government. This has a prominent effect on the sellers’ decision to invest in specific designs or processes.
The government devotes a large share of taxpayers’ money to public procurement and hence it has to make sure it gets good value for money. The main objective is to create a system founded on transparency, competition and objective criteria in decision-making which is effective in preventing corruption. They clearly spell out that the cornerstone principles of open, transparent and non-discriminatory procurement based on open competitive bidding are the best tools to achieve value for money and quality benefits as it optimizes fair and equal competition.

Effective public procurement avoids mismanagement and waste of public funds. It is therefore important that the procurement process is not affected by practices such as collusion and bid-rigging. Through bid-rigging practices, the price paid by public administration for goods or services is artificially raised, forcing the public sector to pay above market rates. These practices have a direct and immediate impact on public expenditure and therefore on the public’s resources.

The challenges public procurement faces are twofold-

- Internal factors like types of goods, services and capital assets required for an agency’s mission, quality of procurement workforce, staffing levels i.e. ratio of procurement practitioners to contract actions and budget resources etc.

- External factors like market conditions, legal environment, political environment, socio economic and other environment forces etc.
HOW THE PROCUREMENT PROCESS WORKS

Procurement processes go through the following stages: internal consensus about procurement standards (specification), identification of the potential contractors (information gathering), awarding of the contract (the procurement design) and the post-procurement evaluation of the contracts (the evaluation stage).

- The first stage prescribes the technological specification or the minimum acceptable quality. For example, in defence procurements, procurement of computer hardware, setting up of electrical power plants etc, quality standard is objectively verifiable. In awarding contracts that involve large amounts of human capital, the criteria of evaluation are specified. Interestingly enough, while objectively verifiable specifications are more transparent, there is the possibility of the problem of ‘over-specification’ that discourages bidders to compete and reduces ex-ante competition.

- Information gathering takes place with a process of background review and requests for information. When suitable suppliers have been identified, requests for quotation (RFQ), requests for proposals (RFP), requests for information (RFI) and requests for tender (RFT) are advertised.

- The third stage involves awarding the contract and determining the price. In some cases, the technical and financial bids are opened and evaluated simultaneously while in some others; it is a two-step process with a list of bidders being screened and shortlisted bidders evaluated on their financial bids.
• The final stage involves evaluation and renewal. Most contracts are not single shot outcomes. In the post-contracting period, the buyer evaluates the performance of the project for any accompanying service support.

• A potential fifth stage can arise regarding dispute settlement related to procurement outcomes. In that case the role of CCI becomes very important.

**PRE-PROCUREMENT:** Prior to procurement, effective planning is needed with

• Consultation with stakeholders about what is needed and the budget that is available to fulfill the need.
• Engagement with the market to understand the solutions that may be available and to get feedback on how the requirement may be best met.
• Establishment of effective governance arrangements and resourcing plans.
THE TENDER PROCESS: Ideally, the tendering process should have the following principles:

- Equal treatment
- Non-discrimination
- Mutual Recognition
- Transparency

CONTRACT AND SUPPLIER MANAGEMENT: There needs to be a strong understanding of the supplier’s incentives, commercial model and profit margins. It must be ensured that IPR and asset ownership provisions allow for a smooth transition to a new supplier.
A well designed auction is the method most likely to allocate resources to those who can use them most valuably. ‘Rather than relying on government bureaucrats to assess the merit of competing firms’ business plans, an auction forces businessmen to ‘put their money where their mouths are’ when they make their bids.’

Moreover, an auction can raise large sums of money for to support public finances. The 3G licensing auction in India is currently underway after being stalled for over two years now. The Government expects revenue of Rs. 35,000 crore from auctioning these licenses.

Since such a vast amount of public services and goods are contracted through auctions, it is very important to design these procurement auctions in an optimal way. Typically, we are interested in two different objectives. The first objective is efficiency. Efficiency means that the contract is awarded to the bidder that values it the most, which in the procurement setting means the bidder that has the lowest cost of providing a service with a given quality or achieving a given quality improvement. The second objective is to maximize the public revenue. Maximizing public revenue means minimizing the costs of procurement. Also this goal is important from the welfare point of view because public revenue is a substitute for taxation and taxes induce welfare losses through incentive effects and collection costs.

Most auctions have the feature that participants submit a bid i.e. amounts of money they are willing to pay. Standard auctions require that the winner of the auction is the participant with the highest bid. There are traditionally four types of auctions that are used for the allocation of a single item by the auctioneer (seller).

- **First price sealed bid auctions:** The bidders place their bids in a sealed envelope and hand them to the auctioneer. The individual with the highest bid wins, paying a price equal to the exact amount that he or she bid.

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11 This issue is further discussed on page 19.
• **Second price sealed bid auction (Vickrey Auction):** The bidders place their bids in a sealed envelope and hand them to the auctioneer. The individual with the highest bid wins, paying a price equal to the second highest bid.

• **Open ascending bid auction (English Auction):** Here the price is steadily raised by the auctioneer with bidders dropping out once the price becomes too high. This continues until there remains only one bidder who wins the auction at the current price.

• **Open descending bid auction (Dutch Auction):** Here the price starts at a level sufficiently high to deter all bidders and is progressively lowered until a bidder indicates that she is prepared to buy at the current price. She wins the auction and pays the price at which she has entered.

Procurement auctions typically use the first price sealed bid auction.

The Revenue Equivalence Theorem\(^\text{12}\) is very important in the context of designing auctions. It suggests that as long as a set of auctions satisfy the four conditions, the seller can expect the same revenue across all the auctions. This allows the flexibility to design auctions.

There are two problems that confront auction design:

- The winners’ curse distorts ex-post competitiveness. This is because if the eventual winner, owing to heavy losses suffered on account of the winners’ curse\(^\text{13}\) is unable to operate, the number of players in the industry reduces.

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\(^{12}\) The theorem states that any allocation mechanism or auction in which (a) the highest bidder always wins (b) the bidder with the lowest possible type or valuation expects zero surplus (c) all bidders are risk-neutral and (d) all bidders are drawn from a strictly increasing and ‘atomless’ distribution will lead to the same expected revenue for the seller.
• Preventing collusive behaviour among bidders.

Even an optimally designed auction may result in very low revenue for the auctioneer if the bidders collude. Many cartels have been under legal prosecution and probably many more operate undetected in auctions. Collusion is one of the main reasons why theorists think that the first-price sealed bid auctions are so popular in public procurement. Robinson (1985) shows that cartels are stable when open auctions are used but not in sealed bid auctions. Milgrom (1987) argues that repeated second-price auctions are more susceptible to collusion than repeated first-price auctions.

13 The winners’ curse arises in a situation where bidders bid in a common values environment only according to their own value estimates. With unbiased estimates and symmetric bidders, the bidder who underestimates his values the most wins the auctions and may receive a negative payoff.
BID RIGGING AND COLLUSIVE BIDDING

Competitive procurements are commonly designed to select the most efficient contractor in a pool of competing firms and to maximize the buyer’s savings. However firms would rather collude and raise joint profit. Collusion can be thought of as any conduct adopted by a group of firms that aims at reproducing or approximating the market outcome induced by a single, dominant firm. To achieve such an objective, firms need to coordinate their strategies either tacitly or explicitly.

In competitive procurements, such coordination may take several forms:

- Price-fixing or bid rigging whereby colluding firms select the winning bidder and the winning bid. All other cartel members are instructed to bid higher prices or less favourable conditions. This collusive scheme requires the definition of a sharing rule according to which the winning bidder transfers some of the rent to other cartel members. This could be achieved in a scenario of repeated competitive bidding, for example, by a rotating mechanism that selects a different winner at each single date.
- Market-sharing agreements, whereby customers are divided according to some relevant characteristics (say location) and assigned to a predetermined winning bidder. Each cartel member different from the designated winner also agrees to submit a phoney bid.
- ‘Bidding fees’ whereby a trade association charges a fee for the privilege of submitting a bid. Bidders add this fee to their bid. Funds accumulated through bidding fees are later returned to the cartel members according to some predetermined sharing rule.

Point 3 (3) (d) in Chapter II of the Competition Act, 2002 No. 12 of 2003 says:

14 Albano et al 2006 “Preventing Collusion in Procurement: a Primer”
Any agreement entered into between enterprises or associations of enterprises or persons or associations of persons or between any person and enterprise or practice carried on, or decision taken by, any association of enterprises or association of persons, including cartels, engaged in identical or similar trade of goods or provision of services, which—directly or indirectly results in bid rigging or collusive bidding, shall be presumed to have an appreciable adverse effect on competition.

The European Commission defines collusive bidding as a “particular form of coordination between firms which can adversely affect the outcome of any sale or purchasing process in which firms bid in advance, deciding which firm will be the lowest bidder.” The prevalent forms of bid-rigging are discussed below.

a) *Bid Suppression*: In bid suppression or bid limiting schemes, one of several competitors (who would otherwise be expected to tender or who have previously made a bid) refrain from tendering or withdraw a previously submitted tender so that the competitor’s tender will be submitted.

b) *Complementary Tendering*: Complementary/protective/shadow bidding occurs when competitors submit token tenders that are too high to be accepted. Such tenders are not intended to secure the buyer’s acceptance but are merely designed to give an appearance of genuine tendering. This enables another competitor’s tender being accepted when the contracting authority requires a minimum number of bidders.

c) *Bid Rotation*: All vendors participating in this scheme submit tenders but by agreement take turns at being the lowest bidder. Competitors may also take turns on contracts according to the size of the contract, allocating equal amounts to each conspirator or allocating volumes that correspond to the size of each conspirator’s company.

d) *Subcontracting*: Competitors who agree not to bid or who submit a losing bid frequently receive sub-contracts from the successful low bidder. In some schemes, a low bidder will agree to withdraw his or her bid in favour of the next low bidder in exchange of a lucrative sub-contract that divides the illegally obtained higher price between them.
e) **Market Division**: Market division or allocation schemes are agreements in which the competitors divide the market among themselves. In such schemes, competing firms allocate specific customers or types of customers, products or territories among themselves.

All forms of bid rigging have one thing in common: an agreement among some or all of the bidders which predetermines the winning bidder and limits or eliminates competition among the conspiring bidders. Let us see how this process works:

Let three investors A, B and C decide to rig a bid on a particular auction. They agree on the following three things:

1. Not to bid against each other.
2. That one of them (Say C) gets to buy the property.
3. That C pays a fee to A and B for staying out of the bid.

Let’s assume that the opening bid was Rs. 50,000 on a property worth Rs. 90,000 and that C was the highest bidder at Rs. 51,000 because A and B did not bid. C pays a fee (Say Rs. 3000) each to A and B, for a total of Rs. 6,000 for their role as colluding partners. Total cost incurred by C for buying the property is Rs. 57,000. She then sells the property for Rs. 85,000 (say) and makes a profit of Rs. 28,000. On the next deal, the group might decide to follow the same plan and allow A to get the property. Then B would get the next deal by a rotation basis.

Had there been fair competition, the highest bid could have been higher. By their collusion, however, A, B and C have artificially lowered the bid for the property. The effect of such arrangements is an increase in the price which public enterprises have to pay for goods, the ultimate burden of which reverts to the general public. This leads to undervaluation of net worth of enterprises and hence leads to wastage of tax payers’ money.
HOW COLLUSION BETWEEN BIDDERS AND PROCURERS WORKS

Procurement corruption can take place at every stage in the contracting process. At the first stage, a corrupt agent can inflate demand or create artificial demand for goods and services.\(^{15}\) Corruption often takes place at the tendering stage when either the specifications are restrict competition, confidentiality of bids are abused, bids are rigged and often the entire tendering process is cancelled by rejecting the bids on frivolous grounds. A Purchasing official, probably as the result of corruption, can manipulate the tendering process in a number of ways to benefit a favored contractor or supplier. These include leaking information regarding competing tenders, accepting late tenders, changing tenders, re-bidding work and so on.

- **Favoring the contractor:** Purchasing officials can leak tender information from other bidders, or confidential pre-tender information, to a favored contractor giving him an unfair advantage in the tendering process. Such plan usually occurs as the result of corruption.
- **Submission of low bid:** A tenderer can also submit a “low” bid with the understanding that the corrupt purchasing official will approve later contract amendments and price increases.
- **The mirage effect:** In a poorly controlled purchasing office, an official with procurement responsibilities, or in accounts payable, or /and with the help of an outsider, can submit bills from a non-existent contractor. Normally mirage contractors claim to provide services or consumables, rather than goods or works that can be verified. Dishonest contractors also can submit “bids” from fictitious bidders as part of tender rigging plan. Mirage contractors’ plans occur more often than thought, and can be detected relatively easily through automated proactive fraud detection programs.
- **Substitution of products or materials:** A contractor or supplier can substitute products or materials of lower quality than specified in the contract, or use counterfeit, defective or used parts, in order to increase profits or comply with contract time schedule. The

\(^{15}\) Naylor (1999) observes that in businesses sensitive to fluctuating cycles, the creation of artificial demand through forgery and fabrication of false evidence regarding security threats, as well as inducement by bribery, has been quite common.
dishonest contractor might give gifts or favor to the inspecting authority or pay kickbacks to contracting officials to facilitate the plan, and will submit false documentation to conceal it.

The post-tender alteration of contract conditions, acceptance of inferior goods or services and the waiver of penalties can be committed in the post tendering stage.

Exclusive arrangements between bidders and procurers coming together and fixing terms leads to a deviation from competitive bidding and can even override collusion between bidders.
INSTITUTIONAL FRAMEWORK GOVERNING THE COUNTRY’S PROCUREMENT POLICY

Constituting a core area of public policy programming and implementation, government procurement and contracting in India forms 13% of the national budgets and over 20% of the Gross Domestic Product (GDP) as highlighted in the World Bank India Country Procurement Assessment Report, 2003. The Union Ministry of Finance, in 2005, drafted the General Financial Rules (GFR), wherein it formally established certain yardsticks of fairness, integrity and transparency through competition, efficiency and economy to achieve the best results in public procurement.

However, there is still no national law exclusively governing the public procurement of goods. Public procurement is regulated through a series of executive directives, mainly instructive in nature.

In India, different procurement rules apply at the federal level, in the states and territories, to the central public sector units, and to public sector enterprises.

- At the federal level, procurement is regulated through executive directives. The *General Financial Rules*, issued by the Ministry of Finance, lay down the principles for financial management, and—in chapters 6 and 8—broad rules and procedures for the procurement of goods and services and for contract management. The Rules were revised in 2005 to provide greater flexibility while ensuring accountability in government transactions. A Manual on Policies and Procedures for Purchase of Goods has been published to assist the procurement entities and their officers in procurement.

- The CBI.
- C &AG
- An important number of instructions, issued by the *Central Vigilance Commission (CVC)*, supplement these regulations. Specific sectoral procurement regulations exist in some areas, such as defense procurement.
These agencies have ex post roles and deal with the issues of corruption. They are doing post mortem without having any preventive power.
CCI on the other hand is the only agency to deal with the competitive challenges. CCI is empowered under Competition Law to deal with collusion and bid rigging. It has preventive power.

At the federal level, procurement is administered by the individual government agencies. These agencies may issue more detailed instructions in conformity with the Rules; the individual procuring agencies are also responsible for developing their own handbooks, model forms, and model contracts. At the time of writing, most of these agencies had developed model tender documents. Certain control and oversight functions are carried out by central authorities such as the Comptroller and Auditor General (CAG) and the CVC. At the federal level, India has not established an authority that is exclusively responsible for defining procurement policies and for overseeing compliance with the established procedures.

The grey areas and issues that merit consideration:

a) When bidders collude taking in consultation procurement agents, this results in bid-rigging, an anti-competitive practice arising out of corruption. In such a case can there be some way to fill this lacuna in the act?

b) While international jurisdictions like US and Brazil have made anti-competitive practices in procurement a criminal act while India considers it a civil liability only. Does this need amendment and can this be amended?
ANTI-COMPETITIVE ISSUES AND CHALLENGES IN PROCUREMENT

Collusion and corruption are distinct challenges within public procurement. While corruption is not within the ambit of competition policy as governed by the Competition Commission of India, the anti-competitive issues arising due to the problem of corruption have merited discussion as above.

While collusive or corrupt conduct may occur during any procurement procedure, whether public or private, certain aspects of the public procurement process render it particularly vulnerable to distortion via anticompetitive conduct.

- On the one hand, the sheer volume of high value public procurement projects – many of which relate to sectors that have, historically, been prone to anticompetitive conduct – creates attractive opportunities for corruption and collusion.
- On the other hand, public entities are typically more constrained as to their range of permissible actions than private procurers, because of the highly regulated nature of public procurement, and therefore have limited strategic options available to address these threats.

The competition concern which arises in the context of public procurement is as follows:

*Collusive agreements between bidders during the auction process or across various auction processes*- Whereas a private purchaser can choose his purchasing strategy flexibly, the public sector is subject to transparency requirements and generally constrained by legislation and administrative regulations on public procurement. These rules are set to avoid any abuse of discretion by the public sector. However, full transparency of the procurement process and its outcome can promote collusion. Disclosing information such as the identity of the bidders and the terms and conditions of each bid allows competitors to detect deviations from a collusive agreement, punish those firms and better coordinate future tenders. The lack of flexibility which
may result from strict regulation of the procurement process limits the opportunities for the public purchaser to react strategically when confronted with unlawful cooperation among potential bidders seeking to increase profits.

While the provisions regulating competition policy address the collusion between bidders, there is no such regulation to prevent collusion between bidders and procurers. The limitation of competition law is that it can address only bidders and not procurers.

Public procurement is conducted largely through contracting which involves a government purchasing agency and a seller firm, either domestic or international. Public servants responsible for awarding contracts are often in an advantageous position of framing procurement rules, which in turn provides them with ample opportunities for corruption which manifests itself in various forms: bribe-seeking, influence peddling, illicit enrichment and embezzlement. ‘Corruption specific to public procurement harms the poor more directly than other types of corruption because it distorts the allocation of scarce resources.’16

There are two aspects to the role of CCI in this aspect:

**The Enforcement Role:**

The primary objective of CCI is to prevent unfair competition by way of imposing fines, cease and desist order, division of enterprises so it can also play a more direct role.

CCI can issue general guiding principles for public procurement that will prevent anti-competitive bidding practices. CCI can stop a procurement process mid way if it finds anti competitive behaviour. It can impose heavy penalty. It can design a more desirable bidding system. CCI has preventive powers that other agencies do not possess.

In the post procurement stage, CCI’s intervention is only when there is a possibility of charges of anti competitive practice followed during contract awarding. Then CCI has a clear mandate

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regarding how competitive the process has been and how competitive the market should have been.

*The Advocacy Role:*

Stakeholders have to be made aware of the harms of anti-competitive behaviour in procurement and how to achieve the best VFM for all players.

In most international jurisdictions, competition authorities have regular bid-rigging educational programs for procurement agencies; others organize ad hoc seminars and training courses. This education effort includes documentation describing collusion and bid rigging, the forms it can take and how to detect it. A number of countries such as Canada, Switzerland, Sweden and the US have developed checklists to help procurement agencies to spot instances of possible collusion. These checklists contain indications of potentially collusive conduct which are not conclusive but certainly a strong beginning.
THE COMMONWEALTH GAMES 2010: A CASE STUDY

The Commonwealth Games 2010 have been subject to numerous charges of anti-competitive practices in its procurement process. The CAG has estimated the cost of creating venues and city infrastructure as well as the operational expense of hosting the Games at Rs. 12,888 crore. There have been irregularities made by the Organizing Committee (OC) in the procurement of various items for the CWG which include the hiring of treadmills for 45 days for Rs. 9,75,000 when such machines can be bought for Rs. 7 lakh, hiring of cross trainers for Rs. 8.8 lakh, procurement of air-conditioners and generation of diesel power at Rs. 80 per unit as against a prevailing rate of less than Rs. 8 per unit. There has been subversion of fair procurement practices on the following grounds:

- Tenders were awarded bypassing usual bidding norms
- In many cases there was no written contract, nor was there a tendering process. There was no tendering made for the hiring of vehicles for example.
- In some cases, the successful bidder was allowed to tamper with the figures post auction.
- In the construction of flyovers, stadiums, lane strengthening and widening, upgrading street light, power plants, sewage plants, water treatment plants and bus parking lots, bidding norms were bypassed.
- Works have been awarded at higher rates despite which there have been poor site management, delays and quality compromises.
- In the bid of L1, rates of some items were overwritten in the price bid after opening in order to avail the difference between the next higher quoted amounts without changing the overall status.

There has been usage of sub-standard material, rigging of bids, gold plating and sanctioning of projects that were not needed at all and submission of phony bids. According to the CVC report, there has been scanning of sixteen Games projects and there has been discovery of competition issues with one or more of the scenarios manifesting themselves:

a) Either open tender has not been floated
b) Either bidders have colluded among themselves or both bidders and procurers have colluded.

While the challenge of corruption is indeed a big one and is being dealt with by the vigilance bodies of our country, I have focused on the issue of collusion and submission of phony bids which can be modeled and detected using econometric analysis and in the addendum\textsuperscript{17} which follows; I have examined a well known econometric test for collusion and considered its replication potential in an Indian context.

\textsuperscript{17} See page 37.
A question of prime interest is this-What can improve the efficiency of the procurement process?

Efficiency of the process depends on the bidding model adopted and how the tender process is designed and carried out. While designing public tenders, procurement officials should consider limiting joint bids and sub contracting while at the same time imposing a reserve price. The risk of collusion can be reduced by ensuring that the procurement activity is designed and carried out to achieve three main objectives:

- Reducing barriers to entry and increasing bidder’s participation
- Reducing procurement process transparency and the flows of competitively sensitive information.
- Reducing the frequency of procurement opportunities.

The issue of transparency is a very contentious one-on the one hand we have the gains from transparency namely, more potential suppliers resulting in more competition, lower prices & better quality goods and services and access to a broader pool of talent and technology. This translates into reduced tax burden and/or ability to provide more, better government services with same resources and increased access to foreign markets by domestic producers. On the other hand, as has been pointed out by the OECD, transparency may be anti-competitive. Signals and threats may be possible if the auction rules give bidders a language in their bids. In one auction, bidders used insignificant digits in the bid amount to communicate. Disclosing the identities of losing bidders helps bidders monitor possible collusion but makes it easier to monitor possible corruption between bid-takers and bidders. Procurement procedures can inadvertently make coordination easier. For example, a bid taker announcing a reference price can provide a price on which rivals can base their coordination.

Hence this brings us to the question- Are e-procurements then the solution? With e procurements the anonymity of bidders is maintained. Railways have announced that henceforth procurement activity will be carried out via e procurement. However here too there are limitations. E procurements work when there are big players like in a 3G spectrum auction. But in smaller
scaled procurements, this format is not user friendly. It requires the usage of electronic media, networking which is not always accessible to all.

What we have seen in the course of this paper is the enormous importance public procurement holds in the context of our country and its subsequent growth and development and the welfare of its citizens. I have examined the mechanism of the procurement process and have tried to identify the weaknesses in the process and how anti competitive practices creep in and distort the entire system and its outcome. In this process, I have identified some ambiguous areas which merit further discussion. Moreover I have undertaken an econometric analysis of auction literature and collusive bidding which while non-exhaustive, has enabled me to identify certain tests to detect collusion in the bidding process, one of which I have examined in detail and tried to show that with the requisite data, it can be replicated to test for collusion in any of our procurement processes.
ADDENDUM

EMPIRICAL ANALYSIS OF AUCTIONS AND COLLUSIVE BIDDING

Although not as extensively studied as the theoretical models on auctions, the econometrics of auctions have gained significant and ever increasing attention in economics in the last two decades or so. The most important characterization of the methods used in the empirical analysis of auctions focuses on whether they use the structural econometric approach or the reduced form approach. In the structural approach the theoretical model is mapped seamlessly to the econometric model. In the reduced form approach, this is not true and the econometric model makes assumptions that are not necessarily exactly in line with the theoretical results. On the other hand, sometimes the theoretical models are too complex for the parameters of interest to be identifiable when used as econometric models. Typically, a reduced form approach utilizes regression techniques. These provide descriptive results on what is going on in the field data on auctions when the structural analysis is not feasible.

Another important decision the econometrician has to make is whether to use parametric or nonparametric methods. With nonparametric methods, the analysis is flexible and the results are not driven by preliminary assumptions. However, due to limitations in the data or the complexity of the theoretical model, one often has to make parametric assumptions to simplify the estimation. Typically parametric assumptions are made about the distribution from which the bidders draw their valuations. That allows closed form solutions to the equilibrium bid functions and therefore the use of maximum likelihood methods.

What the author does from here on is undertake a brief, non-exhaustive survey of auction of the methods of detecting collusion. Then a general model for detecting collusion is presented based on the Porter-Zona (PZ) Test and the issue of whether such a model can be applied to the Indian economy is considered.
This econometric model to detect collusion is a binary response model. It tries to capture the bidding behaviour and since participation can either be present or absent, we have the dependent variable taking only 2 values: 0 and 1. Here $y_i$ is the dependent variable representing participation decision of bidders. Bidders can either choose to bid or not to bid.

In general in such cases where there are dichotomous variables like $y_i$, the linear regression model

$$y_i = x_i \beta + u_i$$

is called a linear probability model.

Binary response models\(^{18}\) directly describe the response probabilities of the dependent variable $y_i$. There are three Linear Probability Models that are used:

- Logit
- Probit
- Tobit

We will be working within the framework of the probit model.\(^{19}\)

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\(^{18}\) A binary response model is a regression model in which the dependent variable $Y$ is a binary random variable that takes on only the values zero and one. The econometric problem is to estimate the conditional probability that $Y = 1$ considered as a function of the explanatory variables. The most commonly used approach, notably logit and probit models, assumes that the functional form of the dependence on the explanatory variables is known.

\(^{19}\) A probit model is an econometric model in which the dependent variable $y_i$ can be only one or zero, and the continuous independent variable $x_i$ are estimated in: $\Pr(y_i=1)=F(x_i;b)$ Here $b$ is a parameter to be estimated, and $F$ is the normal cdf.
DETECTING COLLUSION

Typically, cartel behavior decreases the public revenue in a significant way and is therefore detrimental to welfare, even though the bidders in the cartel get these public losses as profits. Therefore policies that hinder the work of cartels are beneficial. One such policy is to be able to detect the collusive behavior. This poses a threat that may prevent the cartel from forming in the first place and helps prosecute those guilty of collusive behavior.

Literature Survey

- In their analysis on the detection of cartels, Hendricks and Porter (1989) argue that the detection of cartels is necessary case specific. Methods that are suitable for the detection of some collusive behavior do not necessarily work for other collusive schemes or other markets. Literature on the detection of collusion in auctions has focused on more sophisticated collusive schemes where the bidders submit phony bids to avoid detection.

- In his survey on detecting cartels, Harrington (2005) states that "it has been shown that cartel formation is more likely with fewer firms, more homogenous products and more stable demand". Therefore, when the market is suspect to collusion, inducing more entry could be beneficial even in such a common value auction where the competition effect would decrease the revenue if the firms did not collude. In most cases cartels decrease the public revenue. In an auction setting, first-price sealed-bid auctions seem to be more resistant to collusion than other standard auctions, but far from immune. There are at least two ways to fight against cartels.

  - To plan the auction in a way that collusion is hard to agree upon or sustain.
  - To use policies to detect and prosecute the guilty bidders.
- There has been some work on empirically detecting collusion in auctions. **Porter and Zona** (1993) examine bidding in auctions for state highway construction contracts in order to determine whether bid rigging occurred. They find that the bids of non-cartel firms, as well as their rank distribution, were related to cost measures whereas the rank distribution of higher cartel bids was not. They present two different analyzes. The first is based on the level of bids and other on the rank of bids. They test differences between the behavior of the cartel and non-cartel firms. They use rank distributions because they cannot control for the contract characteristics.

- **Porter and Zona** (1999) examine the institutional details of a school milk procurement process. They compare the bidding behavior of a group of firms with a control group and find them different. They argue that behavior is consistent with collusion. The approach is similar to Porter and Zona (1993) though in this case the reduced form model of firms’ bid levels is estimated together with a model for whether a bid was submitted. They test whether the bids of the suspected cartel firms are determined differently from the bids of the control group of the non-defendant firms. They also study whether the submission decision was correlated between the cartel firms.

- **Bajari and Ye** (2003) introduce a general auction model with asymmetric bidders and independent private values. They state the conditions that are both necessary and sufficient for a distribution of bids to be generated by a model with competitive bidding. They also discuss how to elicit a prior distribution over firm’s structural cost parameters from industry experts and use this to compare collusive and competitive models. They apply their methodology to a data set of seal coat contracts. They use reduced form bid functions to test for conditional independence\(^{20}\) and exchangeability\(^{21}\). After Bajari and Ye (2003) have identified the suspect firms they use structural models to decide between

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\(^{20}\) Conditional independence means that conditional on the set of covariates observable to the firms, their bids are independently distributed. The test of conditional independence is equivalent to testing that the OLS residuals of firm i’s bid function are uncorrelated with the residuals of firm j’s bid function.

\(^{21}\) Exchangeability means that firm characteristics should enter the bid function in a symmetric way.
the alternative models of industry equilibrium. Their estimation strategy depends on observing engineer estimates of the cost of the contract.

- Some authors compare competitive and collusive models to determine which better fits the data. Among earlier of these studies are (Porter 1983) and (Ellison 1994). The general strategy is to specify structural competitive and collusive models of firms’ bids and to estimate them using cost shifters. Baldwin, Marshall and Richard (1997) and Banerji and Meenakshi (2004) use this approach for oral ascending auctions. Bajari and Ye (2003) use it for the first-price sealed-bid procurement auctions. Athey, Levin and Seira (2004) find evidence of mild degree of cooperative behavior in U.S. Forest Service sealed bid timber auctions when they compare open and sealed bid auctions. They also quantify the effects of collusion and find them significant.

**The Model**

**a) What is being tested:**

Due to their simultaneous nature, auctions are particularly well suited for the static estimation methods that are applied here. Moreover, in auctions it is easy to argue the independence of the markets under scrutiny. These tests are based on the participation decision of the bidders instead of the bid levels. Collusion is defined here as an explicit arrangement among a group of bidders that limits competition between the participants. Collusion can take many forms in auctions. Typical methods include different contract allocation mechanisms, like territorial allocation or job rotation, and submitting phony bids.

I am considering a general test as to whether the participation of one bidder affects the participation decision of other bidders. In the competitive setting the identity of competitors should not affect the participation decision, given that the auctioned contracts are identical and the bidders are symmetric. For strategic reasons bidders would like to avoid each other, but if they are symmetric, bidder C has no reason to avoid bidder A more than bidder B. Porter and
Zona (1999) (denoted PZ) propose a test based on the correlation of the residuals of single equation participation choice models. Negative correlation between two bidders’ residuals implies territorial allocation and positive correlation phony bidding. PZ use it to detect phony bidding.

The central difficulty in detecting collusion is that similar market outcomes can be a result of either collusive or competitive behavior.Territorial allocation can be a result of either an explicit agreement or due to cost advantages that firms have in different areas. Due to transaction costs for example, firms could decide to bid only on those markets that are near the location of their operations. With different locations, territorial allocation emerges as a competitive result. We get suspicious if the territories overlap, but firms still systematically avoid bidding for the same contracts. Unfortunately, this can be again a result of competitive behavior if the contracts are heterogenous.

Some firms may have costs advantages in some types of contracts. Therefore with heterogenous contracts and asymmetric bidders, participation patterns of any kind may emerge in the competitive setting. However, if we control for bidder and contract heterogeneity, then the identity of other participants should not affect the participation decision of any bidder in the competitive setting. This makes testing for collusion possible.

_The model:_

Assume that there are two competing firms, denoted 1 and 2, that do not know ex ante to which markets the other firms are going to bid. Assuming that the value of the outside option is zero and the payoffs are linear, a standard simultaneous single market entry game can be presented with the following payoffs:
This game maps directly into a following model:

\[ y_1^* = x_1 \beta_1 + y_2 \delta_1 + u_1, \]
\[ y_2^* = x_2 \beta_2 + y_1 \delta_2 + u_2, \]
\[ y_i = 1 \text{ if } y_i^* \geq 0, \text{ otherwise } y_i = 0, \text{ } i = 1, 2 \]

Now \( y_i^* \) denotes the latent continuous variable that determines the participation decision. In an auction setting, \( y_i^* \) is the expected profit of bidder \( i \) from submitting a bid. Bidder \( i \) submits a bid to an auction if \( y_i^* > 0 \). \( x \) includes all the observable variables that affect the bidder’s costs and its probability of winning the auction. These include the contract and bidder characteristics. We observe \( y_i = 1 \) if the bidder \( i \) submitted a bid and \( y_i = 0 \) if it did not.
The PZ Test:

PZ state:
"Under the null hypothesis of independent action based on public information and the maintained specifications of our probit submission model, knowledge of whether one particular firm bids should not help predict whether another firm has also bid. In the case of complementary bidding, if one cartel member bids, then other ring members also bid. In this case the unexplained portion of the competitive bidding equation is positively correlated across cartel firms. In the case of territorial allocation, if a particular cartel member bids, then other cartel members will tend to not bid. Then the unexplained portion of the competitive bidding equation is negatively correlated across cartel firms." They propose to use the Spearman correlation coefficients computed using pairs of weighted residuals based on the control group probit models.

To get the PZ test from the system of equations (1), define $C_1 = y_2 \delta_1 + u_1$ and $C_2 = y_1 \delta_2 + u_2$ and assume a bivariate normal distribution of these new error terms $C_i$. The PZ test is a test of correlation between the error terms $C_i$. This they carry out by estimating the two equations of the system (2) separately by univariate probit and then calculating a Spearman correlation between the error terms of these two probit equations.

$$y_1^* = x_1 \beta_1 + C_1,$$

$$y_2^* = x_2 \beta_2 + C_2,$$

$y_i = 1$ if $y_i^* \geq 0$, otherwise $y_i = 0$, $i=1, 2$

$$\begin{bmatrix} C_1 \\ C_2 \end{bmatrix} \sim \text{IIDN} \left( \begin{bmatrix} 0 \\ 0 \end{bmatrix}, \begin{bmatrix} 1 & p_c \\ p_c & 1 \end{bmatrix} \right)$$

If the Spearman correlation is negative and statistically significant, we can conclude that we are missing some variable from the estimation that affects the bidders differently and significantly. If we have no other missing variables, this is the competitor’s decision to bid. For example, firm 1 bids on those contracts that are allocated to it in the collusion scheme and firm 2 avoids those
contracts as agreed. The benefit of this test is that it does not require many observations and that
it is identifiable even when the firms under scrutiny never bid to the same contracts. It is also
computationally very fast, easy to implement and has better convergence properties than
simultaneous equation methods. The test hypothesis in PZ case is:

No collusion, H0: Corr (€1, €2) = 0,

Collusion, H1: Corr (€1, €2) ≠ 0

PZ detect positive correlation and thus conclude phony bidding

Identification in the PZ Test

PZ make the following key assumptions:

Identification assumption 1:

x₁ and x₂ capture entirely the competitive effect.

Firms would prefer being the only bidder to competing against other firms. If this is not
controlled for in the estimation, it creates negative correlation in the residuals that would make
us point out innocent firms as guilty of territorial allocation or make it harder to detect phony
bidding. For this reason PZ include the observed competitors’ characteristics in x. They seem to
implicitly assume that this captures all the strategic reasons for the bidders to avoid each other in
a competitive setting. With these assumptions, δₑ is a measure of collusion since it captures the
effect of the δᵢ’s. It means that knowledge of whether one particular firm bids should not help to
predict whether another firm has also bid when firms are not colluding.

Identification assumption 2:
\[(\xi_1, \xi_2) \sim \text{IIDN} \left( \begin{bmatrix} 0 \\ 0 \\ \beta e \\ 1 \end{bmatrix} \right) \] where \( C_i = y_i \delta_i + u_{1i}, \) \( i = 1, 2 \)

**Identification assumption 3:**

\[
\text{Cov} (u_1, u_2) = \beta_u = 0.
\]

**Conclusion:**

We thus see that a test for collusion as conducted on the framework of the Porter-Zona method would yield the strong result of whether firms are colluding or not depending on whether the \( \delta \)'s differ significantly from 0 or not. In order to actually conduct the test we need a whole range of explanatory variables as captured by the term \( x \) in the Porter-Zona model. These explanatory variables will of course differ depending on the type of procurement process we are considering. For example, Porter and Zona had considered a transportation procurement project originally in which data requirements had included all of the following:
• Number of auctions held
• Number of bids submitted
• Number of auctions which did not receive any bids
• Number of bidders participating in the auctions
• Number of firms entering and exiting the markets
• Number of contracts won
• Number of contracts won conditional on facing any competition and bid level information for each bidder
• The mean bid
• Standard deviation of the bids
• The minimum and maximum bids submitted
• Data on contract and bidder characteristics are also required.

If all such data are available for a particular procurement project then possibility of collusion can be detected and this test can be replicated in the Indian context. However bidder and contract characteristics are difficult to obtain and proxy variables are often not sufficient to capture the actual working of the procurement process and conclude whether it is suspect to collusion or not. Hence while we have here a well known and highly applicable test for detecting collusion based on participation decisions which can be applied to all environments where independent and mutually exclusive markets can be defined, we have to define a better database or at least have a better standard of proxy variables so that we can detect very relevant problems like phony bids and territorial allocation schemes. If we are able to achieve the above objective then such analyses should validate closer legal study to support the prosecution of the colluding companies.
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