PUBLIC PROCUREMENT AND AUCTION SALES: A STUDY OF BID RIGGING AND COLLUSION IN TENDERS

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SUMMARY

The paper aims at addressing the problems of bid rigging and collusion in tenders with special emphasis on public procurement and sale of national resources through auctions. The enquiry begins by establishing the need for such a study in light of the recent developments and in case of a country such as India where the public sector is important in terms of both magnitude and relevance.

The paper seeks to develop a simple model of decision making under uncertainty assuming rationality on the part of players involved, capturing the incentive for collusive behaviour and analysing their choice problems in the bidding market. The model being a simple embodiment of thought experiments may prove useful as an advocacy tool for all stakeholders in various forms without being technically demanding. The paper argues against predictability in the name of transparency and rigidity in the name of clarity and thus counts on a more ‘case- by- case’ analysis of the procurement processes in the face of the dynamism of this market on the part of the players. The model is then used to make suggestions on two possible bidding mechanisms and the cases where they may be relevant.

The paper proposes to rely on econometric models to test cases of rigging and collusion that exist in literature for preventing as well as detecting instances of anti-competitive practices in order to act appropriately and the text that follows lists down possible areas of action where the competition authority of the country may have a role to play.
PUBLIC PROCUREMENT AND AUCTION SALES

Public procurement can be defined as procurement made by utilising public funds to fulfil needs and requirements of a public authority. Procurement is a key economic tool available with the governments for execution of developmental programmes including delivery of socially important goods & services like Public health, Education, Public Transport etc. Public procurement plays an important role in facilitating use of private sector for public sector goals and acts as a catalyst towards development of particular societal groups and regions. Various Government Agencies, Ministries, Departments and Public Sector Undertakings indulge in large scale procurement of Goods and Services on a regular basis.

Apart from this, sale of various National Resources such as oil fields, coal mines and telecom spectrums along with divestment of government shares in public undertakings is done through auctions to the industrial players for them to exploit and undertake economic activities. This results in revenue generation for the government and leads to a move towards a more efficient way of functioning.

It is estimated that public procurement constitutes about 15% -20% of GDP in developed and developing jurisdictions. Public procurement is estimated at approximately 20% of Gross Domestic Product in OECD countries. In India, public procurement has been estimated to constitute about 30% of GDP. The large volume of money involved in the process of procurement of goods and services by the government and the large efficiency gains sought in the process of selling out of the national resources call for an effective and efficient way of tendering and bidding that seeks to reap the best benefits of competition that this way of market setting has to offer. This becomes even more important in light of the fact that in many industries, the Government becomes the sole buyer for goods and services and hence a healthy process of procurement becomes essential for the functioning of the market in spirit and sense.

The primary objective of any effective procurement policy is to obtain goods, works and services with a view to shunning mismanagement, avoiding waste of public funds and in process getting the best value for money. Competition among supplier firms would enable governments accomplish this objective and therefore it is imperative that the procurement process is not affected by any endeavour to embrace practices such as collusion, bid rigging, fraud and corruption. While strict enforcement of competition law is crucial, advocacy in terms of informing and educating public procurement agencies about the needs and benefits of competition would help in designing efficient procurement processes and in turn bring down the cost of procurement at desirable level.


2 “Enhancing value in public procurement”, special address by Shri Pratyush Sinha, Central Vigilance Commissioner, Conference on Competition, Public Policy and Common Men, 16th November 2009 organised by Competition Commission of India in Delhi. Although an Article by Vivek Srivastava, Titled, “India’s accession to the Government Procurement Agreement: Identifying Costs and Benefits”, published in „India and WTO” by Aditya Mattoo and Robet M. Stern published in 2003 had estimated it at 20%.
PROCUREMENT POLICY IN INDIA

India has a federal constitution, with the responsibility for governance divided between the central and state governments. The Union List, the State List, and the Concurrent List in the Indian Constitution govern the legislative functions of the central, union and state governments. State procurement does not figure in any of the lists as a distinct subject. Under such circumstances the Union Parliament has the exclusive power to make any laws on the subject of procurement. Parliament has not enacted any specific legislation on the subject. Hence Public Procurement is performed through Government policies³. The subject is primarily covered by: the General Financial Rules 1963, framed by the Ministry of Finance by executive order, and the Delegation of Financial Powers Rules 1978 (again framed by the said Ministry). Further, the Directorate General of Supplies & Disposals (DGS&D) Manual on Procurement and the Central Vigilance Commission (CVC) Guidelines prescribe the procurement procedure to be followed by all central ministries. In furtherance to these Rules, in August 2006 the Central Government, through the Ministry of Finance carried out a detailed exercise and issued three Manuals providing for procurement of Goods, Works and Services. These Manuals are meant to be guidelines to the Government Ministries / Department / Public Sector Undertakings.

There are three types of tenders prescribed in the rules: Advertised Tender Enquiry (ATE); Limited Tender Enquiry (LTE) and Single Tender Enquiry (STE). The general rule in procurement is that any tender above a value of Rs. 25,00,000 must be through invitation by public advertisement. Restricted or limited tenders are prescribed for procurement of goods exceeding Rs.1 lakh but below Rs. 25 lakh or in exceptional circumstances and single tenders are prescribed in the case of exceptional circumstances like urgency and proprietary items. The basic procedural framework, therefore, is no different from World Bank Guidelines or UNCITRAL model law or the other good models of public procurement and it can be said that there is a reasonably good framework of rules, procedures and documents in place.

The Defence Procurement Procedure - 2008⁴ provides comprehensive policy guidelines for all capital acquisitions undertaken by the Ministry of Defence, Defence Services, Indian Coast Guard, Defence Research and Development Organisation (DRDO), and the Ordinance Factory Board (OFB). Defence Procurement Manual governs the procedure for revenue procurement in these organisations. The Government of India has also evolved special procedures and guidelines for procurement of PPP Projects.

The basic guiding principles of public procurement in India, inter alia, include maximising economy, efficiency and effectiveness, fairness, competition among suppliers for supply of goods/services to be procured and transparency in the procedures. The rules governing public procurement are binding only on the State as defined in Article 12 of the Constitution of India. The expression "State"

³ Tamil Nadu and Kamataka, have recently enacted Acts on „Transparency in Public Procurement“.

⁴ The Defence Procurement Procedure – 2002 (DPP- 2002) came into effect from 30 December 2002. The scope of the same was enlarged in June 2003 to include procurements flowing out of ‘Buy and Make through Imported Transfer of Technology (TOT)’ decisions. This procedure was reviewed in 2005 and later in 2006. The Defence Procurement Procedure – 2006, was again reviewed and revised based on experience gained in implementation and DPP 2008 came into existence with effect from August 2008.
is widely defined and interpreted to include not only the Government but also agencies and other autonomous bodies directly or indirectly controlled by it. Hence private bodies not under the control of the Government are not bound by the procurement procedures prescribed under the rules prescribed by the Government.

The tendering authority has to proceed in accordance with the limitations contained in the tender document or in the applicable Manuals or Rules. The general rule is that the tender is awarded to the lowest bidder (L-1). Post tender negotiations are severely discouraged and even L-1 post tender negotiations are not permitted except for reasons to be recorded in writing. Judicial review of administrative action is vested in the high courts. A tenderer shall have a right to be heard in case it feels that the proper tendering process has not been followed or that its bid has been wrongly rejected. The general rule prescribed by Courts, is that any person having a conflict of interest will not be part of the bid evaluation or award process.

Procurement of goods and services in India is carried out by the Ministries, Departments, Local Bodies, Statutory Corporations and Public Undertakings both at Central and state level. The Ministry of Finance at the Centre and the Department of Finance in the States lay down broad rules in the matters of government expenditures including expenditure on the procurement of goods, works and services. The procuring agencies may issue elaborate guidelines based on these rules. The office of Comptroller and Auditor General of India (CAG) carries out ex-post audit of government expenditures and publish annual and special reports highlighting instances of irregular and wasteful expenditures. Central Vigilance Commission (CVC) was set up in India in 1964 to guide the central government and its agencies in tackling corruption by public officials. It supervises investigations under the Prevention of Corruption Act, 1988. The CVC has also issued guidelines and instructions to curb corruption in procurement. Each Ministry or Department has its own vigilance machinery which looks into the procurement related misdemeanours. CVC has issued “Standard Operating Procedure” laying guidelines for adoption of Integrity Pact and role of independent external monitor in respect of all major procurements. Department of Personnel and Training has suggested to all State Chief Secretaries to consider IP adoption in respect of State Public Sector Undertakings (PSUs) as outlined by CVC. Ministry of Defence in its 2008 Procurement Policy has proposed to adopt IP in all defence deals of Rs 100 crore and above. So far, 38 Central PSUs have committed to adopt IP.
THE COMPETITION COMMISSION OF INDIA AND ITS MANDATE

The Competition Commission of India has been entrusted with the mandate (Section 18 of the Act):

“It shall be the duty of the Commission to eliminate practices having adverse effect on competition, promote and sustain competition in markets, protect the interests of consumers and ensure freedom of trade carried on by other participants, in markets in India”

According to section 2(h) of the Act, the definition of “enterprise” includes Government Departments and PSUs, except matters relating to sovereign functions of the Government. Globally, it is the interest of anti-trust bodies like Competition Commission of India to look into matters connected with bid rigging and collusive bidding in the Government procurement and thereby help the Government and Government agencies in achieving the best value for money. In various reports like of OECD, and International Conferences, like in Russia, it has been highlighted how such practices have helped in achieving up to 15-20% economy in public procurement. Further, economically, Government has a pre-eminent role as a major buyer of goods and services in the Country, and their procurement operations have a direct and strong effect on the behavior of the market, and other activities down the line. There could be collusion and bid rigging (covered u/s 3 of the Act) by the supplier in certain situations involving rigid and inadequately designed procurement processes which may germinate such practices. Similarly, designing standards and specifications without adequate care could facilitate abuse of dominance in procurement, which is covered by Section 4. Thus, both the dimensions of Government procurement could be covered by two different Sections of Competition Act i.e. Section 3 which deals with the anti-competitive behavior of bidders including bid rigging or collusive bidding, and Section 4 which deals with abuse of dominant position and prohibits unfair or discriminatory conditions in purchase/sale or in purchase/sale price or practices further resulting in denial of market access.

To enforce these provisions, the Commission may pass appropriate orders and impose penalties after the enquiry under section 27 of the Act. This could be “up to three times of its profit for each year of the continuance of such agreement or ten per cent of its turnover of each year of the continuance of such agreement, whichever is higher”. The penalty can therefore be severe, and result in heavy financial and other cost on the erring party. The Commission has also been entrusted with the task of undertaking competition advocacy, creating awareness, and imparting training about competition issues, under Section 49 which provides for competition advocacy and inculcating competition culture in the country. Sensitization of public agencies is equally important from the point of view of avoiding litigation by private sector agencies against them in procurement.

Gains from Competitive Bidding:

The central public sector enterprises in India contribute about 6%-7% to the GDP and more than 1.50 lakh crore to the exchequer in the form of dividends, interests, customs, excise duty, sales tax and other taxes and duties. The size of the procurement of central PSEs during 2008-09 was more than Rs 8 lac crore. An effective public procurement can help the PSEs in improving their margin and further improve their contribution to the public good.
The international experience also suggests huge potential gains from improvements in the procurement processes. As per the findings of an OECD survey, savings to public treasuries between 17% and 43% have been achieved in some developing countries through the implementation of more transparent and competitive government procurement regimes. Given below are some of the instances wherein the impact of introduction of competition in various procurement processes has been assessed.

- An independent external study for the European Commission found that increased competition and transparency resulting from implementation of the “Public Procurement Directives” of the European Communities in the period between 1993 and 2002 generated cost savings of between € 5 billion to € 25 billion. On the other hand collusion in public procurement markets has been conservatively estimated to raise prices on the order of 20% or more above competitive levels.

- In Russia, as a result of the reform in the field of public procurements, in 2008 an amount of $7 billion of the Russian budget was saved

- In Pakistan, a saving of more than Rs.187 million (US $3.1m) for the Karachi Water and Sewerage Board through the introduction of an open transparent bidding process

- A substantial reduction in the budget for expenditures on pharmaceuticals in Nicaragua, due to the establishment of a transparent procurement agency accompanied by the effective implementation of an essential drug list

**Competitive Concerns:**

Bid rigging/Collusive bidding is a particular but highly pernicious form of collusive price-fixing behavior by which firms coordinate their bids on procurement or project contracts. Bid-rigging schemes often include mechanisms to apportion and distribute the additional profits obtained as a result of the higher final contracted price among the conspirators. Anti-competitive behavior in procurement process can take many forms, some of which are as follows:

- **Collusive bidding:** Collusive bidding can take form of an agreement among firms to divide the market, set prices, or limit production. It can involve "wage fixing, kickbacks, or misrepresenting the independence of the relationship between the colluding parties." In legal terms, all acts affected by collusion are considered void.

- **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.

- **Cover bidding:** Cover (also called complementary, courtesy, token, or symbolic) bidding 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.

- **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 that the designated winner’s bid will be accepted.

- **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 etc. Besides, Public Sector Enterprises have been the victim of International Cartels which often reflects monopolistic behavior of the suppliers in the market who often co-ordinates the production to maintain high level of prices. In the past, such behavior has been noticed in sectors like Fertilizers, Sugar, Wheat, Pulses, and Construction Material etc. In many countries, as in Canada, price fixing and supply restrictions are criminal offences but export cartels are exempted from competition law and they can impose huge costs on developing countries.
THE MODEL

The model captures the various decision making problems of the firms and individuals in the simplest form possible. The different variables that are used are then expressed as functions of various facets that can be impacted directly and indirectly through auction designs and public policy and thus may prove to be a useful tool in the advocacy function of the Commission.

\[ E(\pi) = p. y = p. [B(C) - C] \]

\( p \): Probability of bid being selected.

\( C \): Cost of the bidder.

\( B(C) \): Bid amount which is a constant function of \( C \) (to maintain a minimum level of profit).

\[ [B(C) - C = y \text{ which can be called the minimum amount of profit}] \]

Fixed costs are assumed to be zero.

\( \pi \) is the profit and hence \( E(\pi) \) is the expected value of the profit which is an increasing function of \( p \) and \( B(C) \) and is decreasing in \( C \).

\( C \) comprises desirable costs (dc) and undesirable costs (udc). The desirable costs are ‘desirable’ in the sense that these are costs which are legitimately incurred for provision of the services demanded by the tender whereas the undesirable component of costs is the one that is incurred on account of entering into collusions, paying bribes etc.

\[ C = dc + udc \]

An increase in \( dc \) causes an increase in \( C \) which in turn causes \( B(C) \) to rise. An increase in \( B(C) \) should ideally lead to a decline in the probability of the bid being selected (if we consider a sufficiently large number of bids) but when the increase in \( C \) is brought about by a rise in \( udc \), the value of \( B(C) \) increases but the value of \( p \) simultaneously increases to approach 1 (the surety of the bid being selected i.e. the bid is rigged!) and as \( p \) approaches 1, the expected value of the profit approaches \( y \). This captures the incentive of increasing \( udc \) in tender biddings.

Therefore any effective methodology adopted to counter anti-competitive behaviour in the procurement process aims at breaking the link between the ‘udc’ component of cost and ‘\( p \)’, the probability of the bid being selected.

The manifestation of ‘udc’ is in two major forms:

1) Corruption

2) Collusion

We can further model the two ways in which these caveats need to be addressed.

For the idea to capture corruption, we need to consider the following:
The procurement official/s will not enter into corruption if:

\[ I > \delta \cdot \pi_{\text{coll}} - q \cdot f \]

Where \( I \) is the total incentive of the procuring agent.

\( \delta \) : is the fraction of the collusive profit (\( \pi_{\text{coll}} \)) that the agent will get

\( q \) : is the probability of being caught after entering into corruption.

\( f \) : is the total fine that the procuring agent will have to pay on being caught.

The problem with Public Procurement is that it suffers from the Principal-Agent problem of decision making where the cost of the decisions taken by the agent (the procurement officials) is actually borne by the Principal (the public exchequer).

Therefore, we suggest that the incentive structure should be linked to the size of the procurement project in order to do away with this problem with a simultaneous increase in the fine value (\( f \)) without which it would be difficult to do away with this problem of moral hazard.

But our major concern is with the problem of collusion where we delve in some detail. As far as the process of collusion is concerned,

We can model the problem facing any potential bidder in the following manner:

For a bidder to not enter into collusive behaviour:

\[ r_i \cdot \pi_c > \delta_i \cdot \pi_{\text{coll}} - q \cdot f \]

where \( r_i \) can be thought of as the probability that the firm \( i \)’s bid will be selected, \( \pi_c \) is the competitive profit that the firm expects to gain by bidding competitively and hence is similar across the industry for all firms.

\( \delta_i \) : is the fraction of the collusive profit (\( \pi_{\text{coll}} \)) that the firm \( i \) will get

\( q \) : is the probability of being caught after entering into collusion

\( f \) : is the total fine (in terms of monetary value) that the bidder will have to pay on being caught.

\( f \) can be written as some multiple of the share of the collusive profit that the firm will gain. i.e.

\[ f = x \cdot \delta_i \cdot \pi_{\text{coll}} \]

and the collusive profit is itself some multiple of the competitive profit

\[ \pi_{\text{coll}} = y \cdot \pi_c \]

where \( y > 1 \)
therefore, the relation becomes:

\[ r_i > (1 - q \cdot x) \cdot \delta_i \cdot y \]

\[ x > \frac{\delta_i \cdot y - r_i}{\delta_i \cdot y \cdot q} \]

This relation tells us that the minimum level of \( x \) that would prevent a firm from entering into collusive behaviour is given by the value on the right hand side of the relation. Given the constraints that exist in the availability of data and the present standard of fine structures in place, an \textit{ex-ante} role calls on to play with the other side of the relation in the sense that we seek to minimize the value on the right hand side.

Now the variables on the right hand side of this relation are:

\( \delta_i \), \( y \), \( r_i \) and \( q \).

\( \delta_i \) (\( n \)): a function of the number of players in the collusive ring (\( n \)).

This fraction of the collusive profit that the firm stands to gain is out of the direct control of any government agency, except from the sense that we design a mechanism where we facilitate the maximum number of firms to participate in the bidding process which is bound to lead to either an increase in the number of participants that need to be included in the collusive ring or a breakdown of the ring itself, something that is in conformity with the theory.

\( y \) (\( mc,c \)): a function of the market concentration (\( mc \)) and the cost structures prevailing in the market(\( c \)).

It can be restricted by the effective use of reserve price ceiling (in the case of procurement of goods and services) and reserve price floor in case of auction sales. This needs to be coupled with stringent quality checks that ensure that quality is not compromised in order to bring down the costs.

\( q \) (\( v,j,e \)): a function of vigilance(\( v \)) and judicial efficiency (\( j,e \))

Since \( q \) depends largely on the state of vigilance, the technology available for the same and the efficiency of the judicial system to book the culprits it can be changed through a longer term perspective of reforms, innovation, up gradation and spans across agencies, functionaries and different arms of the government.

The only variable that is left therefore is \( r_i \). The relation that we have presented here suggests for a higher value of \( r_i \). The interpretation of \( r_i \) is to be made on the basis of a theoretical analysis of the same. The value denoted by \( r_i \) rather than being the probability of the bid being selected is the 'expectation' of the bidder that his bid will be selected, this belief being based on the signals that he may get about his valuation of the cost structures, the information about the bidding mechanism available to him and also by some beliefs about the valuation of the cost structures of his rivals. It is assumed that the expectations that are formed after the announcement of the bidding process, remain constant till the end of the auction.
Therefore,  
\[ r_i = r_i^e \]

The person will be indifferent between colluding and competing if:
\[ r_i^e . \pi_c = \delta_i^e . \pi_{coll} - q . f \]

Where \( \delta_i^e \) is the expectation about share of profit which is a function of the beliefs \( (r_i^e) \) and the number of bidders in the collusive ring \( (n) \).

Where the fine is a multiple of the expected share of collusive profit
\[ f = x . \delta_i^e . \pi_{colli} \]

And the collusive profit is itself some multiple of the competitive profit
\[ y = \frac{\pi_{coll}}{\pi_c} \quad 1 \leq y < \infty \text{ and } \pi_c \neq 0 \]

Therefore, the equation becomes:
\[ r_i^e . \pi_c = \delta_i^e . y . \pi_c - q . x . \delta_i^e . y . \pi_c \]
\[ r_i^e = \delta_i^e . y - q . x . \delta_i^e . y \]
\[ r_i^e = (1 - q . x) . \delta_i^e . y \]
\[ x = \frac{(\delta_i^e . y - r_i^e)}{\delta_i^e . y . q} \]

The last equation gives the equilibrium condition for the bidder to be indifferent between collusion and competitive bidding. This equilibrium is attained with a higher expectation about the share of profit that a bidder \( i \) can get (higher \( \delta_i^e \)) based on a higher value of \( r_i^e \). Although a higher value of \( \delta_i \) cannot be attained simultaneously for all players in the bidding process (because \( \sum_i \delta_i = 1 \)). Therefore the realization of the expectations about the share of profit would not be possible for at least some players in the market for whom the relation would become:
\[ x > \frac{(\delta_i^e . y - r_i^e)}{\delta_i^e . y . q} \quad \forall i \text{ whose } \delta_i < \delta_i^e \]

In a situation where all bidders choose their actions simultaneously and the decision is a one-time irreversible one, all these players would choose to compete rather than collude in the bidding process.

A more cautious approach is called for to alter the valuations of \( r_i \) or rather the beliefs about the same through the design of auction schemes. The mere nature of the variable calls for a case by case analysis of the procurement process being looked at and consequently aims at developing niche
auction schemes for various types of procurement requirements rather than adopting a “One Size Fits All Approach”.

We can differentiate the procurement processes according to the scale, type, relevance, importance, market structure and time durations that the project would take and look to alter the auction schemes to suit the case.

To set the stage, we seek to make two suggestions about possible bidding mechanisms and instances where they could be put to use. As a word of caution, these are neither fool-proof nor sufficient for all forms of procurement processes but the idea behind presenting them is to demonstrate the applicability of the model that is developed to enrich our understanding about the adaptability of decisions and bidding mechanisms to suit our needs.

The Two Bid Auction Model:

In this auction scheme, the procurer should look to spell out the minimum level of specifications that it needs and then allow for every bidder to submit two bids:

The ‘Base Bid’ which fulfils those very specifications and the ‘Custom Bid’ which the sellers or the service providers seek to submit with whatever extra frills that they can offer over and above the minimum specifications.

This way of procurement may have the following benefits:

1) The idea of offering goods/services over and above buyer specifications leads to a market driven way of innovation, one of the major objectives that Competition seeks to achieve.

2) The uncertainty about whose bid will be selected even after a concerted effort may lead to break down of the collusion among players.

3) A more effective way of busting any construction in the bidding process may result simply because it would be difficult for players to coordinate the pricing of different set of services, a similar pattern of bidding at two points may be enough ground for suspicion and further inquiry.

This kind of bidding model may prove useful in procurement of consumer durables where the kind of bid rigging is done mostly in the form of cover bidding/complimentary bidding.

First Winner Informational Advantage:

In Common Value procurement schemes, there is a downward pressure on the bids of all buyers due to the presence of Winner’s Curse but at the same time, if there are more than one rounds of such bidding, getting the contract in the first round of bidding may become useful in terms of an advantage that is brought out by the informational gains that the winning bidder may have over others in subsequent rounds due to additional information that may be lacking to the other bidders.
These gains could be thought of as valuation of oil fields/ coal mines etc. to winners of bids of surrounding areas, cost valuation of a piece of land to a constructor who has undertaken public infrastructure projects in a surrounding area. The need is to highlight the large value of benefits that can accrue to the winner of the first round of bidding to increase the competition in the first round of bidding itself. In a paper by Sudip Gupta (2008), he highlights that such informational advantages led firms to overbid in case of oil field procurements and indeed the “strong” bidders did gain higher profits in the digging of those oil fields at a later stage. This idea can be effectively used to counter instances of bid rotation where the first winner will have significant advantages in winning the first procurement round. We should further minimize the clauses of previous experience as a ‘requirement’ for potential bidders and instead seek to ‘incentivise’ the efficiency advantages to winners of previous bids thereby making it important for them to win those bids.

The gains that accrue to the Government in the first round of bidding may be more than offset by the consequent losses due to the common knowledge that the strong bidder has an informational advantage in the next round of biddings. By designing the auction mechanism such that it takes care of the asymmetries and more importantly, by making this common knowledge just before the second round of bidding may lead to increase amount of competition in the second round as well leading to a higher cost effectiveness/ revenue generation for the government in the second round too.

The major theme that runs behind these procurement designs is the management of the beliefs about \( r \). It is important to control those beliefs. The idea is to lose predictability on the part of the procurer so that it becomes difficult for suppliers or buyers to ensure a mechanism that suits them. Uncertainty in tenders can be thought of to increase the incentive to collude and hence ensure a minimum amount of profit but the right timing of introducing uncertainty can be an effective tool to double guess the potential players in the market. A more important thing that is brought out is the need to develop tools to find out the various kinds of collusive behaviours and the types of market that they target and then act accordingly.
THE WAY AHEAD

There exist econometric models in literature on various ways of capturing collusions in procurements and auctions such as Zona (1986); Porter and Zona (1993 and 1997) which use correlation techniques to capture complimentary bidding; Marx and Marshall (2008); Bajari and Ye (2001 and 2003). These sophisticated models along with a statistical analysis of Sudip Gupta (2008) trying to capture the level of asymmetries of information and suggesting means to remedy them and Paolo Buccirossi (2004) with his paper modelling auction size and collusion provide enough scope for useful application to the existing data on public procurement and further the need to collate data in instances where it is not being done. This can help us better understand the dynamics of the various procurement and auction processes conditioned according to the market structure and thus help us design a better method of auctions.

Sealed-Bid first price auctions are a preferred format of bidding in most of the procurement processes to minimise the chances of collusion and the Swiss Challenge method, a form of ascending(descending) auction format is best suited for considerations of revenue generation in case of auction sale or cost efficiency in case of public procurement. Other considerations such as the priority of the project, good or service may also impact the format of bidding and the choice of selection mechanism. But the more relevant point here is that for every case there exist certain beliefs on the part of the bidders which shape their expectations of the bidding result, therefore it becomes important to identify a strategy to manipulate those beliefs to the advantage of the auctioneer.

- The usefulness of the model lies in helping the auctioneer identify the key variables that impact the entire decision making process. It gives him some flexibility to design a procurement method that maybe suitable for the case at hand but at the same time demands a greater level of commitment and responsibility in order to optimally utilize the information available to him. This makes robustness, dynamism and up gradation an essential feature of the entire procurement process. This along with a greater amount of trust vested in the auctioneer can give us the most desirable results. This is further consistent with our earlier proposition of having better designed incentive structures for the procuring agents.

KOREA: “Bid Rigging Indicator Analysis System (BRIAS) automatically and statistically analyses bid-rigging indicators based on data concerning bids placed by public institutions. With the data delivered online from the public institutions, the analysis system calculates the probability of bid rigging by giving weightings to various indicators like bid-winning probability, the number of bidders, bid prices, competition methods, the number of unsuccessful bids and hikes in reserve prices, transition into private contracts, etc.”

CANADA: “Shared “ownership” has been a key to success in promoting more effective competition in public procurement and in reducing the risk of bid-rigging.”

The citations of country experiences that follow are taken from the OECD report on Collusion and Corruption in Public Procurement (2010).
• There should be a constant interaction between auctioneers operating in similar markets but located far away geographically. A common web portal dedicated to procurement and auctioning prices can be effective in undertaking a better form of cost analysis on the part of procurers. This becomes more of a need if we think of Government as a single consumer with the task of spending public money.

SINGAPORE: “Open and fair competition is achieved through Government Electronic Business (“GeBIZ”) (http://www.gebiz.gov.sg), an e-procurement web portal for the whole of government where all procurement operations from the announcement of a tender to the award of the contract are conducted. All tender notices published online will contain information on the procuring entity, description of products, services, or works to be procured, dates of tender opening and closing, and venue for the collection of tender documents.”

• A further need is to enhance cooperation and interaction between the Competition Authority and the Anti-Corruption wing of the government owing to the large amount of complementarities that exist in procurement processes. A streamlined effort in this regard is essential to attain desirable results.

CANADA: “Over the past year alone, the Bureau has given approximately 50 outreach presentations to more than 1,700 government officials.”

• A separate wing of the competition authority to look into matters regarding public procurement or procurement in general with special emphasis on curbing anti-competitive activities should be constituted in view of the large gains that it can potentially have.

Box 5. The German Bundeskartellamt as Public Procurement Tribunal

In Germany, for example, the competition authority has three public procurement chambers which act as a public procurement review body (i.e. as an appeal court against decisions of public procurement agencies). The guiding principles of the Bundeskartellamt’s public procurement tribunals are competition, transparency, non-discrimination and fair tendering procedures.

In Germany, public contracts principally have to be awarded under competitive conditions through a public tender in a transparent and non-discriminatory way. In principle the contract is awarded to the bidder submitting the economically most advantageous offer.

The three public procurement tribunals set up at the Bundeskartellamt, review, upon request, whether public contracting entities have met their obligations in the award procedure. The tribunals are entitled to take suitable measures to remedy a violation of rights and to prevent any impairment of the interests affected.

ROMANIA: “Another initiative of the RCC for improving the efficiency of the public procurement process envisages the creation in 2010 of a special unit within the RCC for the specific purpose of fighting bid rigging in public procurement. An important early goal of the unit will be to establish a close working relationship between officials within the RCC and key
officials within other parts of the Romanian government with attributions in public procurement.”

- Owing to the complexity and uniqueness of the procurement processes any public contract above a certain threshold should be judged and designed by specialised auction theorists who have the best knowledge of the subject in order to avoid being trumped into past experience traps.

- Auctioneers on their part need to undertake effective study of the market in order to find out the most suitable type of auction design. The market organisation and structure, knowledge of the costs involved and clarity about the desirable outcomes are extremely important to design an effective auction mechanism.

- Advocacy plays a very significant role in the larger scheme of things, it is useful to remember that ‘beliefs’ play a very important role in the entire decision making process. A regular series of seminars with public procurement agents and potential bidders about the costs that they face in case of being caught should give out clear signals that the government is serious on the issue of curbing anti-competitive practices in contracts which in turn alters their valuations of expected returns in the favour of the procurer.

CANADA: “In addition, in association with the Treasury Board Secretariat, the federal government department responsible for setting Canada’s procurement policy, the Bureau has been successful in incorporating anti bid-rigging material into educational programmes designed for federal government employees involved in procurement. The Bureau seeks to ensure that all courses relevant to federal procurement officers provide a comprehensive explanation of bid-rigging, are explicit about associated risks and outline the Bureau’s bid-rigging mandate.”
CONCLUSION

Public procurement and auction sale of national resources, owing to their sheer size and nature fall prey to the perils of collusion and corruption. The good part of the story is that the players who indulge in these activities do so for private gains as purely rational entities and therefore it is not impossible to alter the way they make their choices. Practical difficulties will be encountered on the way, but to learn by experience has been a luxury to mankind. Every bidding activity differs by the number of players, type of market, the desirability, urgency and the importance that the society places on the same. Not just this, even markets evolve over time in terms of the aforementioned attributes. It becomes important therefore that every process be treated according to the merit it deserves which thereby increases the responsibility in the hands of those who are directly involved with conducting this process. The design of the procurement process, the dissemination of information and the choice of selection criterion are tools that are directly in the hands of the auctioneer which may alter choices immediately while other policy implications may take a while to bear results and therefore it is essential that these be used in the most diligent manner possible.

The paper is in no slight sense an attempt to solve the problem of mechanism design, simply because there is no single solution to the variety of problems known and unknown to bidding mechanisms, nevertheless, it is a humble attempt to structure the thought process in order to attain clarity of objectives and the tools available. The diligence of human mind is a necessity to put them to the best use.
REFERENCES:


