Getting better outcomes on construction projects: suggestions for modification of World Bank procurement procedures

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In the past decade many developing countries have been reforming their procedures for public procurement to bring them into line with the World Bank's own procurement regulations. The default option for the procurement of both goods and works is open tendering, usually conducted through a sealed bid auction with the contract awarded to the bidder submitting the lowest price (open tender/lowest price). But there are problems, in practice and in theory, with open competition/lowest price in the award of construction (works) contracts and these are particularly serious in low income countries. The Bank is currently engaged in a process of consultation with a view to updating the procurement regulations. The objective of the paper is to clarify why the current procedures may not deliver value for clients or promote the development of emerging suppliers and to put forward some suggestions for change. These include rejecting abnormally low bids, paying greater attention to the performance of contractors and allowing controlled experiments with alternative approaches.

Introduction

In the past decade many developing countries have been reforming their procedures for public procurement with the support of the World Bank. New procurement laws have been drawn up based on the UNCITRAL Model Law. Under the Model Law, as well as the World Bank's own procurement regulations, the default option for the procurement of both goods and works is open tendering (usually conducted through a sealed bid auction) with the contract awarded to the bidder offering the lowest price (open tender/lowest price).[2] The presumed benefits of open competitive tendering have been strongly advocated. It is argued that opening competition to all is equitable and competition lowers price hence it promotes economy. Also awarding the contract to the lowest bidder eliminates discretion from the selection process and reduces the potential for favouritism. Hence it satisfies three recognised requirements of good procurement practice - equity, efficiency and integrity. Writing specifically on the procurement of works contracts in developing countries, Estache and Iimi (2011) argue that intense competition in bidding is the prerequisite for high economic efficiency: "Open competition is the basis for efficient public procurement" (*ibid.* p.33).

But there are problems, in practice and in theory, with open competition/lowest price in the award of construction contracts and these are particularly serious in low income countries. Writing more than 20 years ago, Kelman (1990) pointed out that the three objectives of good procurement practice cited above omit to mention the goal of excellence in the performance of the agency's substantive tasks. On the basis of nine detailed case studies of the procurement of computer hardware and systems by US government agencies, he concluded that open competition and awarding contracts on the basis of price alone, without consideration of the supplier's past performance, can prevent the government from obtaining better value from its vendors. This has long been recognised in the construction management and engineering literature as also being a problem in the award of contracts for construction (works) and it is increasingly being recognised by economists who have taken the views of the industry on board.[3]

Also missing from the three objectives of good procurement practice is the fourth objective of World Bank procurement which is to promote development and encourage the growth of local suppliers. A regime of open tender/lowest price is detrimental to the development of small enterprises in developing countries (Wells 1988; Shakantu 2012). Emerging contractors need a steady source of work in order to develop and grow, but intense competition in the market for small contracts means that a contractor has to put in a very low bid to win a contract and then might not win another for many years. Finding ways to provide regular work for the most promising contractors, while staying within the procurement regulations, is a problem facing concerned officials in many countries.

The objective of this paper is to clarify why the default option of open tender/lowest price in the award of contracts for works may not deliver value for money for clients, or promote the development of emerging suppliers, and to put forward some suggestions for alternatives. The focus is on low income countries in Sub-Saharan Africa (SSA) and the procedures and criteria for the award of contracts under the 'traditional' procurement system, whereby the involvement of actors is sequential with separate contracts issued for project design, for the actual construction and for the supervision of construction. But in the concluding section the discussion is inevitably opened out to consider alternative procurement systems, methods of payment and ways of allocating risks.

The paper draws on a small number of academic papers at the interface between construction management and economics, insights gained from the author's own experience over 40 years and from recent involvement with the Construction Sector Transparency initiative (CoST).[4] It is divided into three sections. The first section sets out some of the major problems with an open tender/lowest price approach to the award of contracts for works. This is followed by an investigation of the reasons for the

persistence of this approach in public procurement, focusing on the claim that awarding contracts to the lowest bidder in a sealed bid auction is a major barrier to corruption. The final section sets out some proposals for modifying current regulations. Alternative ways to address the corruption issue will be discussed in a separate paper.

What's wrong with open tender/lowest price

Incomplete contracts

Construction products - not unlike the computer systems examined by Kelman (1990) - are complex and hard to specify in advance, so changes are inevitably required after the contract is awarded and production begins (i.e. the contracts are incomplete). Empirical evidence in fact suggests that there are likely to be considerable discrepancies between the initial and final contract price. From an impressive data set of construction contracts worldwide, Flyvbjerg et.al. (2007) found average cost overruns to be huge in all regions (45% for rail, 34% for bridges and tunnels and 20% for roads). The average for 10 developing countries included in the sample was 64.6%. The baseline study for the pilot run of the Construction Sector Transparency (CoST) initiative found average cost overruns in some low income countries in SSA at a similar level – for example an average of 58% on 25 projects in Ethiopia (CoST 2011a).

The problem with incomplete contracts is that while competition may produce a low tender price, the benefit will be negated if it subsequently leads to a higher final price. Yet many continue to ignore this basic fact. A large number of econometric studies have been published that purport to show that public auctions increase competition which in turn leads to lower prices. A recent example comes from Estache and Iimi (2011). Writing on public infrastructure procurement in developing countries they use a data set of bids submitted in 211 procurement auctions in 29 developing countries to show a relationship between the number of bidders and the tender price, from which they conclude that competition is good as it delivers lower prices. The authors also present evidence on cost overruns, so it is not clear why they do not explore the relationship between the number of bidders, tender price and final contract price.[5] Maybe the data wasn't available, but failure to recognise the importance of the distinction between initial and final price is surprising. As Bajari et.al. (2006, p. 2) point out *"in both the theoretical and empirical auctions literature, the issue of contractual incompleteness is ignored almost without exception"*.

The high cost of post-contract changes

The award of construction contracts through sealed bid auctions on the basis of price (open tender, lowest price) requires that the design is sufficiently advanced for the contractor to price it. But in reality this is seldom the case. Clearly with large and complex projects all details cannot be confirmed in advance. But an early study of contractual relationships in the UK building industry (Tavistock Institute 1966) concluded that, even for small and straightforward projects, the costs of building cannot be predicted with any certainty at the tender stage. Even when designs are apparently complete, defective plans and specifications, changes in scope, and unpredictable site conditions mean that changes will invariably be required after the contract is signed.[6] These changes will incur costs which can be considerable. The total value of change orders in the US construction industry in a single year was estimated in 1998 at US$13 to US$ 36 billion, with a total cost reaching $50 billion when the additional financial resources spent on claims and disputes are included (Ibbs et.al. 1998).

The high cost of changes to a contract can be traced to the fact that such changes will incur not just production costs but also *adaptation* costs, which are defined as costs incurred above and beyond the direct production costs of the additional work (Bajari et.al. 2006). These include the costs of re-planning the work in order to coordinate workers, material supplies and subcontractors, as well as the costs involved in re-negotiating the contract. On the basis of data from a massive highway project in the US (known locally as the Boston Big Dig) the authors estimated adaptation costs and contractors' mark-up to allow for them at 10% of the contract price, which is considerably more than contractors' usual profit margins. Cost overruns on the Big Dig project amounted to $1.6 billion and could be traced back to unsatisfactory design and site conditions that differed from expectations (*ibid*).

In a separate study, Bajari et.al. (2008) build on an earlier work to make the link between adaptation costs, form of contract and award mechanism.[7] An important aspect of contractual arrangements is their ability to accommodate change and the costs that arise from *ex post* bargaining. Competitive bidding requires fixed price[8] contracts which do not easily accommodate changes post contract, resulting in large and inefficient levels of adaptation costs. This is the reason why this form of contract and award mechanism is not much used in the private sector. The authors analysed a comprehensive data set of private sector building contracts in Northern California between 1995 and 2000 and found that only18% were awarded using open competitive tender for fixed price contracts, compared with 97% of public sector contracts in their data set. They concluded that adaptation costs are one of the leading disadvantages of the traditional competitive bidding system. If post-contract changes are anticipated, as will be the case with complex projects or incomplete designs, then cost plus contracts are preferred because the reimbursement process is simple, well defined and leaves little room for haggling. But this form of contract does not lend itself to auctions, so buyers should rely on past performance and reputation to select a contractor for negotiation.

The authors add that these arguments are part of the conventional wisdom from the engineering and construction management literature, which has also applied a transaction cost approach to the study of production and the governance of production relationships in the construction industry. One of the pioneers of this approach (Winch 2001) notes that:

"The fundamental insight of the transaction cost approach is that in order to economise on the total cost of a good or service, both production costs and transaction costs must be taken into account. Thus total costs are the sum of the costs of production and the cost of governing the transactions inherent in that choice of production technique" (*ibid,* p.800).

Consequently, minimising the costs of disputes between contractors and clients over changes to the contract has been a preoccupation of construction managers for many years and is the fundamental objective of the move away from fixed price contracts in public procurement in many countries.

Impact on communication

Disputes arise in traditional contracting because of a failure to align the interests of the parties involved. The construction industry has for long been characterised by a strict division between the responsibility for design and responsibility for construction (Bowley 1966, Wells 1968, Tavistock Institute 1966). The award of contracts for works through sealed bid auctions after design is complete further cements this division. It stifles communication between buyers and sellers, and prevents the buyer from using the contractor's expertise when designing the project. Writing forty years ago, UNIDO (1969) argued that:

"competitive tendering (for a given design) amounts to neglecting the contribution the construction team could make to design and ignoring the skills, plant and equipment that they may use in achieving the objective. It presents therefore the risk of freezing technological progress in so far as it works satisfactorily only within well-accepted and therefore conventional, procedures and techniques".

The fact that the contractor is frozen out of all design decisions means that he has little incentive to go the extra mile – to offer advice on a better way of doing things or experiment with alternative techniques or materials – beyond simply delivering according to the contract and trying to make a profit. It also has to be borne in mind that an open tender/lowest price method of contract award gives the buyer no choice of supplier - the winning bidder may not deliver quality work, or be the best qualified person for the particular project and may even be someone that the buyer has had previous bad experience with. This inhibits the possibility of working together to share information and achieve a common goal.

The backwardness of the British construction industry at a time of unparalleled advance in science and technology in other fields has been attributed largely to this situation (Bowley 1966). Over the years it has given rise to a number of UK government sponsored or government supported enquiries and reports, the general conclusion of which is that traditional practice is inconsistent with the most efficient use of resources or with high productivity in the construction industry (Banwell 1964, Tavistock 1966, Latham 1994, Egan 1998). As a result public procurement practice in the UK has dramatically changed with serious efforts to more closely align the interests of buyers and sellers in construction through early contractor involvement and various forms of 'partnering'. These approaches have brought significant benefits in terms of time, cost and quality as well as the avoidance of potential claims and disputes (Bresnen and Marshall 2000).

Unrealistically low tender prices

A further problem can be found in the substantial evidence – both empirical and theoretical – that competitive tendering through sealed bid auctions is likely to force contractors to price work at unrealistically low levels. Using the framework of New Institutional Economics, Brockmann (2011) discusses many types of auction and concludes that a sealed bid auction is the worst situation a seller can be in. Contractors must submit a bid without any knowledge of the other bidders' behaviour - and with open tender, no knowledge of their competitors. They have only one shot. This means that the most difficult decision facing a contractor is deciding the price to submit to the client. The chance of making a profit increases with a higher price yet the chance of winning the competition decreases (Drew 2011).

The situation is further complicated by the fact that contractors simply do not know with any level of accuracy what their costs are going to be. This is a characteristic of a common value auctions, whereby the object being auctioned has roughly the same value for all bidders but the true value is unknown at the time of bidding (*ibid*). Brockmann (2011) reasons that all bidders will have estimating errors and while these errors are unbiased overall this is not so for the lowest bid which will inevitably lie below the mean. The contractor who wins the contract is the one with the largest estimating error, which will not necessarily be the one with the lowest actual costs or the highest level of efficiency. Hence when sealed bid auctions are used in contractor selection, the likely result is a price below the 'equilibrium price' - defined as the price resulting from the interaction of demand and supply in competitive markets (*ibid*).

Some contractors submit low bids expecting to make up the potential losses through claims. But Dyer and Kagel (1996) argue that simple survival principles suggest that systematic underbidding by individual contractors is unlikely. However it does happen at the level of the market as a whole. Bid prices will reflect local market conditions at the time that the tender is launched and when there is little work around, contractors may be willing to take a chance and bid low in order to keep their foremen employed and their labour gangs together. In low income countries in SSA, where there are often no significant barriers to entry to the industry, it is very common for inexperienced contractors to win contracts through the submission of low bids.

The acceptance of a price below the true costs of construction has very serious consequences for both the winning bidder and the client. A bid that is too low to cover costs can land the winning contractor in serious trouble, which is why it is often referred to as the 'winners curse'. It might lead to the contractor making a loss or, in the worst case scenario, default and collapse. But generally contractors will seek ways to cover potential losses. This may be by squeezing their subcontractors, putting in claims and becoming more aggressive in negotiations with the client. The more unscrupulous may cheat on the materials, compromise on quality and deliver below the specification, leading to poor quality assets and high maintenance costs. This is often with the collusion of the supervising engineer and possibly also the client (Mawenya 2007). The quality of the works provided cannot be guaranteed if the monies reimbursed under the contract do not cover the cost of providing them (Constructing Excellence 2011). In sum, unrealistically low prices can wreak havoc on both project outcomes and the fortunes of individual bidders (Dyer and Kagel 1996).

There may be even more serious consequences for the industry in the longer term as contractors fight back against an unfair pricing system. Brockmann (2011) argues that the only chance for contractors to counteract the market power of the client in the pre-contract stages is through collusive cooperation. The incentives in the auction game do not encourage contractors to stick to the rules. Evidence of collusion in the construction industry is overwhelming in most of the countries where the capacity for investigation exists, including Netherlands, Australia, Canada, UK, Germany, USA, South Africa, S, Korea and the Philippines. But the Integrity Department of the World Bank found evidence to suggest that it may also be widespread in the roads sector in a large

number of developing countries including Kenya, Tanzania, Uganda, Cambodia, Philippines, Indonesia, Nepal, Pakistan, some states of India, as well as Colombia and Peru (World Bank 2011). In some of these countries cartels are well established and have operated for many years. Brockmann (2011) argues that the problem is both ethical and structural and will persist as long as the institutions of procurement are not changed.

The persistence of collusion, even where it is illegal and participants are liable to incur heavy fines, suggests that it benefits the industry. Suppliers collude to decide two issues: who should win the contract and at what price. There is a rationale to the practice of allocating contracts among a group of bidders, so that each has some certainty about their future work load and can plan their work and keep their teams together. In a detailed investigation of collusion in the Dutch construction industry Dorée (2004) found that the reduction of risk was the key factor. Contractors argued that collusion made their businesses less vulnerable to the winner's curse and predatory pricing and helped to stabilize their workload and reduce uncertainty about future workload fluctuations. It reduced rivalry and created a more stable and predictable market environment. Collusion in bidding also means considerable savings on estimating costs at the industry level – costs which are inevitably passed on to clients in the longer term. Depending on the circumstances, the outcome of collusion can be monopoly pricing or a price not far from the equilibrium. When a fair price is bid the client may also benefit by avoiding the negative consequences that come with an unrealistically low price.

The adverse effects on industry development

In low income countries in sub-Saharan Africa (SSA) the construction industry is characterized by a few large construction companies (mostly foreign and increasingly Chinese) and a very large number of small and micro enterprises. Competition for construction contracts is not very effective in either of these situations. At the top end of the market, where there are very few firms and collusion is likely, it makes more sense to negotiate. At the bottom end, ease of entry into the industry and open tender procedures mean that there are very many small firms competing for contracts, a problem which is often exacerbated by 'down-raiding' on the part of large firms. A contractor who wins one contract may not be able to win another for many years, yet a continuous flow of work is essential if a firm is to develop and grow. Outside a few main cities there is little private sector work beyond the domestic household sector. The best opportunities to grow lie in accessing public sector contracts.

A number of countries in SSA have been trying for several decades to strengthen their domestic construction industry. These efforts have met with limited success. The numerous constraints to the growth of domestic contractors in low income countries are often seen to lie on the supply side, notably lack of finance, skilled labour, access to equipment etc. However, work with informal construction workers in Dar es Salaam (Tanzania) over an extended period found that the core issue is access to markets (Jason 2007). Only with some certainty of future workload will firms be encouraged to invest in equipment and stabilise their work force – both factors required to increase productivity and reduce costs in the longer term.

A further problem is that tenders in the countries we are concerned with are generally awarded on the basis of unit rates (often set out in Bills of Quantities) and estimated quantities for each unit. But the actual quantities invariably diverge from the estimates. Contractors may inflate their profits by placing higher rates on items that they think have been underestimated and lower rates on items that have been overestimated. They may also put a higher price on work items that occur early in the construction schedule – known as 'front-loading'. This has several implications. First it means that analysis of prices in tenders does not give clients access to an understanding of the real costs of construction. But it also means that the contractors who succeed in winning contracts are the ones who are best able to manipulate the tender process to their advantage, as opposed to those who are genuinely more productive and have lower costs. Under current procurement procedures competitive pressure does not necessarily lead to the emergence of the most productive firms - the 'Darwinian selection of the fittest' - and an innovative and efficient industry. It is far more likely to lead to a 'race to the bottom' leading to problems with quality, safety and compliance with the law (Dorée 2004).

Summary

This brief review of some of the most relevant literature concludes that open tender/lowest price may perform poorly when projects are complex or designs incomplete. Sealed bid auctions, under the traditional approach, also stifle communication between buyers and sellers, preventing the buyer from selecting a contractor with the required expertise and from using the contractor's expertise when designing the project. And because they require fixed price contracts, post contract changes are difficult and expensive. Sealed bid auctions also have a tendency to produce exceptionally low prices with negative consequences for the quality of the final product. Most commentators conclude that alternative approaches are preferable when there is a need for the contractor's input into the design and when adjustments are needed after the contract is signed. Evidence on cost overruns suggests that this might be the norm, rather than the exception, in many countries, particularly in low income countries in SSA. Finally awarding contracts to the bidder offering the lowest price encourages opportunism and prevents the emergence and growth of the most efficient firms.

The Corruption issue

The disadvantages of an open tender/lowest price procedure for the award of contracts as outlined above are now widely acknowledged. This method is seldom used in the private sector except for very small and straightforward projects, and the system has been at least partly abandoned in public procurement of construction contracts in many countries today (Brochner 2011). Yet there is still resistance to moving away from current practice. There are a number of reasons for this. Apart from the dominance of neo liberal economics and the persistence of the idea that *competition is good* (Dorée 2004), the most important reason would seem to be that open competition on the basis of price does appear to have the advantage of unbiased awarding of contracts (Kelman 1990, Piga 2011). Eliminating the exercise of discretion in contract award reduces the possibility for favouritism on the part of government officials and is therefore considered important in the fight against corruption. It may also be preferred by procurement officials as it provides a safeguard against politicians who demand favours, as they can say 'I'd like to help but I have to follow the rules' (Kelman 1990).

However, contract award is only one part of the procurement process (narrowly defined to mean the formulation, award and

execution of contracts). Piga (2011) distinguishes three stages: (i) estimating needs and deciding a strategy to meet them -what type of contract, how long should it be in force etc. which he calls demand management (ii) implementing and awarding the tender and (iii) monitoring to see that what is paid for is delivered to the required quality (supply management). Procurement laws and World Bank procurement rules focus mainly on (ii), the procedural moment of bidding and awarding. But the author demonstrates that there is an enormous amount of discretion involved in (i) and (iii). He concludes that the argument that lowest price avoids discretion does not really survive careful scrutiny.

When procurement is placed in an even broader context we can see that the opportunities for the exercise of discretion are multiplied many times over, starting with the selection and prioritising of projects, continuing through planning, design and construction to operation and maintenance. A compilation of the risks of corruption at each stage of the project selection and delivery process is beyond the scope of this paper but examples include: the approval of projects that are unnecessary (white elephants); biased selection of projects to suit political or private interests; over-design or design to favour a specific contractor; and collusion between contractor and supervising consultant to accept substandard work. This suggests that to address the corruption issue, procurement has to be seen in the broader context of Public Investment Management (PIM). In a series of papers published by the World Bank, Kenny (2006, 2009) argues that anti-corruption policy needs to shift away from the current focus on procurement to address the most damaging consequences of corruption which occur in the project selection and implementation stages.

It should be noted that many of the risks identified in the paragraph above involve the exercise of discretion on the part of planners, designers, engineers, surveyors and others who are awarded contracts for the provision of professional services. And yet there is little concern to reduce the level of discretion in the award of such contracts which, according to World Bank regulations, may be awarded on the basis of cost and quality, or even quality alone. This may be because professional service providers are assumed to be beyond suspicion (a hangover from the class distinctions identified by Bowley in 1966). But this clearly is not the case as it is very difficult for a contractor to cheat with an honest consultant. In the CoST pilot project almost half of the concerns raised on cost overruns related to consultants' contracts and consultants were also implicated in most of the issues that were raised in the pre-tender stage (CoST 2011b).

While the current insistence on awarding construction (works) contracts solely on the basis of price is clearly ineffectual in dealing with corruption in the construction industry, it is possible to argue that it may even be encouraging it. We have seen that competing for individual contracts through sealed bid auctions is the worst possible scenario from the view point of the suppliers and the construction industry fights back against what they perceive as an unfair pricing system by colluding. Contractors need continuity of work, or at least some certainty of their future workload, without which they cannot invest in equipment, stabilise their workforce or engage in research and development to improve efficiency. Collusion, whereby it is agreed to let one contractor win in return for a percentage payment or similar support on another contract, is one way of obtaining a more rational allocation of contracts. It may also produce more equitable prices, although monopoly pricing is a danger.[9]

Where collusion is more difficult and competition intense, contractors have a strong incentive to resort to bribery to win contracts in order to ensure their future workload and keep their workforce together. Discussion with contractors in Tanzania found an average of 10-15% is paid in bribes to win contracts (TACECA 2007), while contractors in Ghana and Nigeria reported that they pay between 10 and 20%, in addition to bribes to first get onto the list of approved contractors (Ladbury 2003). Bribery to win contracts leads on to further bribes to recover the cost through the delivery of substandard works. Davis (2004) found contractors paying additional bribes during construction of between 5 and 11% of contract value to cover acceptance of low quality work and materials not supplied, which seriously reduces the useful life of the product. Kenny (2009) suggests that bribery to win contracts may be far more damaging that collusion among suppliers to allocate contracts, even when the latter involves monopoly pricing. Using roads as an example, he calculates that a 20% increase in tender price through collusive bidding will reduce the Economic Rate of Return (ERR) by only 4%, whereas a 20% decrease in spending on materials due to the need to recover bribes halves the useful life of the road and reduces ERR by 15%.

Whether or not corruption is actually encouraged by the traditional approach to contract award (and some will disagree) Kelman (1990) argues that combating corruption through regulation of procurement is a bad idea for many reasons, chief of which is because *"……it is of dubious effectiveness….the current system does little to reduce corruption"*. Fear of corruption should not deter the desire for change. He concludes that *"The current system exacts such an enormous toll on the quality of performance that we are obliged to seek other ways of keeping corruption down"*(*ibid*.96).

These sentiments have been echoed recently by Piga (2011) who argues that *"'Transparency with little discretion' in public procurement has had limited success in curbing corruption"* (*Ibid* p.142). He maintains that transparency is important, but *sometimes it simply reduces the speed of change toward better practices in procurement by convincing procurement officials to concentrate on the mere formality of publishing tenders* (*ibid* p.171). Reducing discretion also reduces responsibility: rigid procedures may shield procurement officials from responsibility for poor performance ('not my fault, the rules fault'). He therefore proposes that *"governments should shift to a policy that gives ample discretion to officials combined with strong ex post accountability for procurement decisions"* (*ibid* p.142). This is a suggestion that we come back to in the concluding section of the paper.

Suggestions for reform

The above analysis has identified some major problems with an open tender/lowest price approach to the award of contracts for works:

- It requires fixed price contracts that that are difficult and costly to change
- It can throw up unrealistically low tender prices with serious consequences for project outcomes
- It inhibits the selection of the best contractor for the job
- It prevents flow of work to best contractors which inhibits investment and stabilisation of the workforce
- It stifles communication and collaboration between client and contractor and freezes the contractor out of the design process

In the final part of the paper some suggestions are made for reforms that could address the above issues. It is recognised that addressing all would require quite radical change, beyond a move away from competition based solely on price to consideration of alternative procurement systems and methods of pricing. But it is also possible that relatively small modifications to the existing system could bring substantial benefits. The construction industry embraces a wide variety of projects and the appropriate approach will vary according to the size and complexity of the project as well as local market conditions. The suggestions put forward below start with minor changes (some of which are merely good practice) and progress to radically different approaches. They are summarised in Table 1. All are geared to achieving the twin objectives of better value for clients on the particular project and a more efficient industry in the longer term.

Ensure design is complete

If the traditional system is to be used, good practice would require that designs are complete before starting the tender process. We have seen that it may be difficult to complete the design of complex projects without contractor involvement. But analysis of projects in four African countries included in the CoST pilot found that even small and standard projects are often put out to tender with incomplete designs. In fact a quarter of the 'causes for concern' related to incomplete project design, including situations where there had been no site visit prior to tender (CoST 2011b).

It has long been recognised that time spent on preparation will produce significant benefits during later stages of the project cycle and this means allowing more time for the design process. It is also recommended to introduce a checklist for clients to assess whether the design is substantially complete before progressing to tender. Several countries have introduced a Gateway System that provides a number of control points (gates) in the project life cycle where a decision is required before proceeding from one stage to the next (CIDB 2010). A formal process for deciding whether the design and documentation is sufficiently complete to proceed to tender could be introduced as part of such a system. This could even be integrated into the CoST programme which has identified a number of key points in the project cycle where information is required to be disclosed to the public, one of which is the end of the preparation phase and before the invitation to tender. A role for the CoST *assurance process* could be to check the state of design and planning documentation at this stage (CoST 2012).

Table 1: Summary of suggested changes

problem **Solution**	Requires fixed price contracts/ difficult to change	Unrealistically low tender prices harm both client and contractor	Inhibits selection of best contractor for the job	Prevents a flow of work to the best contractors	Stifles communication and neglects contractor's contribution
■ Ensure design is complete before tender, using checklist or Gateway System	✓				
■ Improve cost estimates and publish formula for rejecting bids, and ■ Ask bidders to explain low bids and reject unless justified		✓			
■ Disclose stricter criteria for post qualification, or ■ Extend prequalification and shortlist contractors to be invited to tender			✓	✓	
■ Develop robust methods for evaluating contractor performance, and ■ Appoint contractor on quality/price basis with transparent weights			✓	✓	
■ Greater use of framework contracts ■ Offer repeat contracts to good performers				✓	✓
■ Engage contractor early by negotiation or competition on fees					✓
■ If design complex or incomplete, use cost plus contracts with open book accounting, and ■ Guard against cost escalation by target costs with gain/pain	✓				✓

Reject or modify low bids

Provision to reject abnormally low tenders is built into the UNCITRAL Model Law. But it appears to be missing from World Bank guidelines. The Asian Development Bank specifically does not allow any procedure under which bids above or below a predetermined assessment of bid values are automatically disqualified (ADB 2010). It is not clear why this should be the case when accepting a bid considerably below the client's estimate of the true cost is so damaging.

Procuring entities should have the authority to reject tenders they consider to be too low. This will require more accurate estimates of cost than are usually available in many countries and an agreed and transparent acceptable range. Malaysia is one country where abnormally low (and high) bids are automatically eliminated prior to tender evaluation. Complains are common in Malaysia that this method penalises more efficient contractors. To counteract this possibility, the low bidder should be offered the opportunity to explain the reasons for his low costs and only be eliminated if the low price cannot be satisfactorily justified.

Contractor selection – excluding incompetent contractors

If contracts are awarded on the basis of price alone with open tender, some way has to be found of ensuring that the contractors submitting the lowest bid are actually capable of carrying out the work. Contractor registers can help so long as they are robust and well maintained. The World Bank does not really approve of mandatory registration of contractors, but many countries consider such registers essential and strong arguments have been made for them in developing countries including South Africa and Singapore. In fact it is difficult to see how a country could manage without some basic procedures for ensuring that contractors wishing to bid for public sector contracts are at least legally constituted, financially sound and technically competent. Companies that have been found guilty of corruption, involved in litigation or have a poor record on completion of works could be removed from the register. Where registers are stratified into various classes (as is commonly the case) clients may assume that those in a particular class have a minimum level of capacity and expertise.

The only possibility to eliminate contractors once bids have been received is through post-qualification. Under the current World Bank guidelines it does not seem to be possible to make greater use of the 'lowest evaluated bid' procedures to eliminate contractors the client considers incapable of undertaking the work. This is because the current guidelines (World Bank 2011, clause 2.52) require that factors other than price are allowed to be considered only in the evaluation of bids for goods and equipment. Hence in practice the term lowest evaluated bid is meaningless when referring to the procurement of works contracts. Post-qualification rules do allow a contractor to be eliminated for failing to meet the criteria but only if these were set out in the bidding documents (World Bank 2011, 2.58). It is therefore important for clients and procuring entities to ensure that bid documents do include relevant criteria.

Prequalification would seem to be a more efficient way (from the viewpoint of the industry) of weeding out incompetent contractors as only those who can demonstrate that they have adequate capabilities and resources are invited to tender. But it is expensive for the clients and usually only used on large and complex projects.

According to World Bank guidelines, factors to be taken into account on prequalification forms include past performance, successful completion of similar contracts, financial position, and technical capability. Inclusion of factors other than those directly related to ability to perform the works is specifically excluded, which means it is not possible to assess such factors as the quality of the contractors work, his attitude to making claims and sharing knowledge with the client and other members of the team. The guidelines also require that the invitation to prequalify should be advertised and all applicants who meet the specified criteria have to be invited to tender.

There is some evidence from the CoST pilot programme to suggest that prequalification could improve project outcomes. In four pilot countries (Ethiopia, Philippines, UK and Vietnam) a total of 13 procuring entities shortlisted firms bidding for the main contract for works on 40 projects. A comparison of the performance (measured by initial contract price, time and cost overruns) on these projects with all projects suggests that those with shortlisting performed better. It is not clear whether the shortlisted firms were selected from amongst those who prequalified or whether they included all who prequalified, but if there is other evidence that inviting only selected companies to tender leads to better project outcomes it has to be an option for clients. Selection has of course to be justified and transparent and criteria should be expanded to include assessments of past performance, as explained below.

Contractor Selection – getting the best contractor for the work

The quality of service offered by contractors, even with similar qualifications, can vary enormously.[10] To ensure that the selected contractor is the one most likely to deliver to client expectations of quality, past performance has to be assessed and included in the evaluation and selection process. This can be by short-listing the best performing companies to place on tender lists, as suggested above. More controversially, it can be by introducing quality criteria directly into the tender process.

Many countries today, while not moving away completely from competition on the basis of price, have introduced quality criteria into their evaluation of bids for public sector contracts. Quality can be based on absolute merits – such as whether bidders have quality assurance systems in place and whether these are certified by third parties. The alternative is relative merits, including performance on previous contracts. Piga (2011, pp. 167-8) provides some suggestions as to how an objective index of reputation can be built over several items of performance during the life of a contract. An increasing number of countries are in fact keeping records and developing registers of companies' past performance. A Construction Quality Assessment System (CONQUAS) was introduced in Singapore in 1989 and has been periodically refined. It is now widely accepted internationally as a benchmarking tool for quality (www.bca.gov.sg/professionals/iquas/conquas_abt.html). In Denmark the government and the construction industry have enforced the use of a 'benchmarking tool' on all companies in the public market. It contains the scorings at building sites regarding deadlines, quality, work environment, efficiency, earnings, customer satisfaction and price. From July 2005 companies with more than 10 employees have been required to keep such a book of marks to be able to bid on public tenders (Nijhof et.al.2009). A World Bank study of road construction projects in SSA suggested creating a similar register by tracking information on prime contractors in the

road industry in the region (Alexeeva et.al. 2008). The authors suggest that the information to be collected could include a firm's profile, the number and value of contract awards, unit costs of works, satisfactory completion of the work within schedule and to required quality. They add that *the ranking of major contractors and consultants could identify strong performers who could be encouraged to bid to be hired through direct contracting in case of emergencies* (*ibid* p.42). A recent study in Ethiopia has proposed the development of a similar register with information on contracts held and the performance of contractors on previous work (HABCON 2011). The Ethiopian Roads Authority is currently in the process of implementing a comprehensive control system that includes detailed assessments of the performance of contractors on all road projects.

Provided that evaluation procedures are transparent, the inclusion of quality assessments in tender evaluation can provide incentives for bidders to change their behaviour because of the chance of repeated contracts. Introducing criteria other than price into the evaluation can also be used to support the alignment of specific owner and contractor interests. Waara and Brochner (2006) analysed data from 386 bidding documents in Swedish municipalities in 2003 to explain how public owners use multiple criteria to award construction contracts - a typical pattern is 70% price weight combined with non-price criteria. The authors show how announcing the criteria for contract award in advance can create an incentive to bidders to increase their alignment with owner needs, and a way to incorporate public policy objectives into the procurement of construction. In one or two cases the contractor's record on health and safety was included in the criteria, something which has been discussed in a number of other countries (Wells and Hawkins 2009). Singapore also includes the contractor's health and safety record in the quality assessment it uses when evaluating tenders for public works contracts using the price/quality method.

Providing greater certainty of work for contractors

The consideration of past performance in the award of contracts should provide more regular work for the best contractors. But a more effective way of providing longer runs of work for contractors, while still remaining within the traditional competitive approach (open tender/lowest price) is through framework agreements. A framework is an agreement with one or more contractors which sets out terms and conditions under which specific procurements (call-offs) can be made throughout the term of the agreement. Such agreements enable the construction team to work together over a period of time and to pass on the lessons learned in one package to the next. They are an effective way to build the capacity and capability of domestic firms, but they are also attractive to foreign firms as they are looking for continuous work to be able to invest in a country or a region. There are also benefits to both clients and contractors from savings on tender costs.

Framework contracts are allowed by the World Bank under National Competitive Bidding (NCB) with Bank approval but only for small works contracts under emergency regulations and frameworks are limited to 3 years duration (World Bank 2011, clause 3.6) which is probably too short to realise any significant benefits (In such arrangements in the UK 5 years is more normal). It is not clear why these restrictions apply. Framework contracts fulfill World Bank requirements of equity and efficiency as they can be open to all and very competitive. The initial tender for a framework contract can attract many bids and subsequent selection of contractors from a framework can also be on a competitive basis through a mini tender. Alternatively, frameworks provide an opportunity for clients to assess contractors' in terms of quality and efficiency and to award subsequent contracts based on previous performance, providing strong incentives to contractors to perform well.

Serial contracts are an alternative to frameworks as a way of providing some continuity of work for contractors, building longer term relationships and reducing tender costs. They have the added advantage, when applied to a run of similar contracts, of allowing the experience gained on one project to be used to obtain an improved performance on the next. Emerging contractors interviewed in Kenya many years ago agreed that the award of a second contract similar to the first would enable them to reduce their costs by 10-15% (Wells 1968).

Serial contracts represent a move away from competition in that they involve the award of a second contract to a contractor who has satisfactorily completed the first without going to tender (known as direct or single source contracting). The World Bank does allow, under NCB, an existing contract for works that was awarded in procedures acceptable to the Bank to be extended for additional works of a similar nature, provided that the Bank is satisfied in such cases that no advantage could be obtained by further competition and that the prices on the extended contract are reasonable (World Bank 2011, p.30/31). The Asian Development Bank also allows direct contracting under NCB where civil works are to be contracted that are a natural extension of an earlier or on-going job and if it can be shown that the engagement of the same contractor will be more economical and will ensure compatibility of results in terms of quality of work (ADB 2010, p.36). But whether or not this is allowed in practice, and if not why not, is difficult to establish. These provisions should be taken full advantage of in developing countries trying to build their local construction capacity.

Towards more integrated approaches

Most of the above options still rely on fixed price contracts and require that the design is essentially complete before tender. To allow for contractor involvement in design, as well as to facilitate changes to the contract after it is signed a more radical approach is required, one that recognises the interdependence of the participants in the construction process.

A variety of procedures have been developed over the years to enable the processes of design and construction to be more closely integrated. Most widely recognised is the design-build form of contract, whereby the contractor undertakes most of the design and all of the construction in accordance with the client's brief. This option provides single point accountability and allows the construction to start before the design is complete. However it requires contractors with substantial experience and financial capacity to support the costs of tendering which can be considerable. For these reasons it has not yet been used a great deal in low income countries.

An alternative way for the design team to associate contractors with the early stages of the decision-making process is an arrangement whereby a nominated contractor joins the design consortia at the earliest possible stage, long before the design is complete, so that his knowledge of alternative materials and methods of construction are made available to the design team

from the start, which should result in a workable and more rational design. The contractor who has been involved at the planning and design stage can subsequently be awarded the contract for construction – or it can be opened out to competition with other contractors. But whoever is selected to construct the work the benefits will be greatly enhanced if the construction contract is let on a 'cost plus' basis with 'open book' accounting. Under a cost plus agreement the contractor is reimbursed for the actual cost of performing the work plus a fee to cover overhead and profit. Contractors can compete on fees or the fee can be negotiated between the client and the contractor. A cost plus contract with open book accounting has many advantages. It allows the client the flexibility to change designs and materials as the project proceeds. It also allows him to know the actual cost of labour and materials involved in making such changes so that design changes can be priced at the time that they are being considered. Hence this arrangement allows for a flexible and efficient building experience (Pfeffer 2010).

The biggest disadvantage of the cost-plus contract is that costs can rise quickly. But this can be addressed by the client and contractor agreeing a target cost once the design is substantially complete. Any difference between the final total cost of the project and the target cost is split between the client and the contractor according to the 'pain/gain' formula as set out in the contract. Such arrangements are now routinely adopted on major UK public construction projects (including the 2012 Olympics) using the New Engineering Contract (NEC3, Option C) developed by the Institution of Civil Engineers. NEC3 contracts are also increasingly used in the Gulf States, South Africa, Botswana, Australia, New Zealand, Hong Kong. In case studies of projects using cost plus contracts with risk/reward elements in the UK, Bresnen and Marshall (2000) found significant benefits in terms of time and cost as well as clear evidence *"of the avoidance of potential claims and disputes (due for example to unrealistically low tenders)"*. Where these arrangements were part of longer term collaboration between clients and contractors through framework agreements there was also *"the added benefit of early and repeat contractor involvement (namely reduced tender costs and greater contractor front end input into costing, design and value/risk management)"*.

There seems to be no inherent reason why cost plus contracts with risk/reward elements should not also be used with positive results on projects in low income countries in SSA. This would be particularly valuable where there is an urgent need for access to information on the real costs of construction in order to find ways of reducing them. Such arrangements do require well informed, able and committed clients who can converse on equal terms with the industry. But this should not be seen as an impenetrable barrier to their adoption in less developed countries, rather as recognition of the need for support for public sector clients to gain the necessary experience.

Conclusion

The World Bank is currently engaged in a process of consultation with a view to updating their procurement regulations to bring them into line with other agencies and the latest thinking on the issues. The background paper prepared for the consultation (World Bank 2012) and the agenda at the various consultation meetings suggests that the door may be open just a crack for a more radical and appropriate approach to the procurement of works contracts in developing countries. For example, in the concluding section the paper notes that:

"Public procurement is no longer viewed as a set of bureaucratic rules and regulations with which to be complied, with more and more governments seeing it as an important strategic function for realizing value for money and getting best fit for purpose, intertwined with measures to ensure accountability, probity, and integrity"(*ibid* p.51).

Many of the ideas and suggestions put forward in this paper are in line with this approach. Some of the proposed changes (summarised in Table 1) will present opportunities for nepotism and corruption, but possibly no more so than current practice. New ways will have to be found to deal with these issues, recognizing that procurement is only one small step in the full project cycle. More attention has to be paid to contract management and contractor performance as well as to the identification, planning and design of projects. To repeat the quote cited earlier:

"Fear of corruption should not deter the desire for change……. "The current system exacts such an enormous toll on the quality of performance that we are obliged to seek other ways of keeping corruption down"
(Kelman 1990, p.96).

The Bank is also now recognizing that one size does not fit all. The contexts in which procurement decisions have to be made are highly varied among countries (developed and developing) and construction sectors. Solutions to the procurement issue have to be tailored to the particular project and the particular local circumstances. Procurement officials therefore need to be given more discretion to choose the most appropriate approach and to justify their decisions, rather than remaining saddled with an oversimplified and bureaucratic system. There appears to be real scope for controlled experiments, even in the public sector and especially in the poorest countries in SSA where the need is greatest.

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http://siteresources.worldbank.org/PROJECTS/Resources/40940-1335363321725/ProcurementConsultationGuidingQuestions.pdf

CICA comments can be found at:
http://siteresources.worldbank.org/PROJECTS/Resources/40940-1335363321725/CICA_PositionPaper_WB_ProcurementReview.pdf

Civil society recommendations can be found at:
http://siteresources.worldbank.org/PROJECTS/Resources/40940-1335363321725/EURODAD_WB_procurement_review_VERSION_2.pdf

Endnotes:

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2 In principle the 'lowest evaluated bid' but in practice the 'lowest responsive bid' as consideration of issues other than price is not allowed in the evaluation of tenders for works contracts

3 For example, the basic issues have been well set out in a series of papers by Bajari et.al. (2006, 2008) who have not only read the literature but also spent time speaking to the industry.

4 The Construction Sector Transparency (CoST) initiative aims to improve value for money in infrastructure programmes by increasing transparency in the delivery of construction projects. It was piloted between 2008 and 2011 in 8 countries (Ethiopia, Guatemala, Malawi, the Philippines, Tanzania, the UK, Vietnam and Zambia) with support from the UK Department for International Development (DFID) and the World Bank. A new expanded programme will be launched in late October 2012.

5 If suitable data sets were available we would be interested to test the relationship between the price at contract start date (normalised by the engineer's cost estimate) and the price at contract finish date. We suspect an inverse relationship.

6 This fact has been reconfirmed by many subsequent studies, for example Latham 1994, Egan 1998.

7 The link between form of contract and award mechanism and the relative merits of fixed price and cost plus contracts was first discussed in Bajari and Tadelis (2001).

8 Fixed price contracts are distinguished from cost plus contracts. Contracts are considered as fixed price even if they include a cost escalation clause to allow for inflation, or if they are based on unit prices the quantities of which will be re-measured during contract implementation. In either case the contract price at completion can be above or below the tender price.

9 Collusion among contractors to allocate contracts is not always regarded as corruption but it often requires inside knowledge (for example, about the other bidders) which can only come from corrupt officials in the procurement agency (Lambert-Mogiliansky 2011).

10 This is amply demonstrated by a study of living and working conditions on 11 large construction projects in Tanzania, commissioned by the author (ILO 2005)

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