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Gerard de Valence

University of Technology

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Project Procurement as a Market

Gerard de Valence
Faculty of Design, Architecture and Building
University of Technology, Sydney, Australia

ABSTRACT
When building and construction markets are analysed it is often at the project level, with markets defined by sector or structure type, procurement method or contract, size, complexity or other characteristic. Projects within a defined market are then grouped together to establish its importance, detached housing for example, or high-rise commercial. A distinction can be made, however, between a market made up of similar types of projects and the market for a single project. Such a market is created by a client as they go through the procurement process. This paper introduces the idea that procurement of a project creates a identifiable, though temporary, market for goods and services, and that such a market has distinctive characteristics that make it both interesting, as a source of testable hypotheses and further research, and important in developing our understanding of the industry and its dynamics. The research the paper reports on shows that the idea of project procurement as a mechanism for creating a market can utilise the elements of industry structure and competitive analysis that have traditionally been applied at the firm level. The paper concludes that this allows a new perspective on issues such as collusion, ruinous competition and cost uncertainty associated with the typical single price, sealed bid auction used for procurement in the building and construction industry.

KEYWORDS
construction, procurement, market, competition, auction

INTRODUCTION
Building and construction is a project-based industry. Building and construction markets are also analysed at the project level, defined by sector, building or structure type, procurement method or contract used, size, complexity or some other characteristic. Projects within a defined market are grouped together to establish its size and importance, detached housing for example, or high-rise commercial.
A distinction can be made, however, between a market made up of similar types of projects and the market for a single project. Such a market is created by a client as they go through the procurement process. This paper introduces the idea that procurement of a
project creates a identifiable, though temporary, market for goods and services, and that such a market has distinctive characteristics that make it both interesting, as a source of testable hypotheses and further research, and important in developing our understanding of the industry and its dynamics.

The research this paper reports on shows that the idea of project procurement as a mechanism for creating a market can utilise the elements of industry structure and competitive analysis that have traditionally been applied at the firm level. In particular, the extent of market power held, gained or lost by participants as the procurement process goes through the stages of pre-bid, tender, final bid and negotiation, or some variation of those stages, is an important factor. This has been recognised and discussed in previous research by Hillebrandt (2000), who was particularly interested in the client-contractor relationship pre and post tender.

The contribution this paper makes is to extend that earlier discussion by considering market power in the context of issues such as collusion, ruinous competition and cost uncertainty associated with the typical single price, sealed bid auction used for procurement in the building and construction industry.

THE MARKET FOR PROJECTS

When building and construction markets are analysed it is also often based on the types of project. Such markets can be, and have been, defined by a variety of characteristics. Government statistics are typically collected by sector, and then divided into building or structure type, shown in a generalised form in Table 1. Projects within a defined market are then grouped together to establish its size and importance, detached housing for example, or commercial developments. Because the data on industry activity and output is presented in these classifications, analysis of trends and forecasts of construction work are also usually found in this format. In Australia the Construction Forecasting Council (http://www.cfc.acif.com.au/summary.asp) provides bi-annual forecasts and data by sector and building type.

<table>
<thead>
<tr>
<th>Sector</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential building</td>
<td>Detached housing, medium density, high density, alterations and additions</td>
</tr>
<tr>
<td>Non-residential building</td>
<td>Private - Retail, commercial, industrial, hotels</td>
</tr>
<tr>
<td>Engineering construction</td>
<td>Public - Education, health, community</td>
</tr>
<tr>
<td></td>
<td>Bridges, ports, rail, electricity, roads, water and sewerage, dams, telecommunications, mining</td>
</tr>
</tbody>
</table>
Other typologies use the procurement system or contract used, financing method, size, complexity or some other characteristic of the project. Haas (2007), while not discussing construction directly, identified 10 “complexity dimensions” and three levels of risk for projects. Masterman (2002) has an exhaustive set of lists of project and client characteristics that can be used to classify projects. The public/private client distinction is one that is widely used. Flygberg et al. (2003) argue there is a separate and distinct set of megaprojects, and that the characteristics of these projects make them a focus of research in their own right.

In a review of the research by Runeson (2000), Hillebrandt (2000) and Ive and Gruneberg (2000) on the characteristics of construction markets, de Valence (2011) found a wide range of views on the types of markets, the role of firms and relationships between firms and the products and services they provide within those markets. There was, however, universal agreement that building and construction is an industry of projects, made up of a series of markets for projects.

**A MARKET FOR ONE PROJECT**

Can an individual project become a temporary market in its own right? The definition of a market found in a standard economics text such as Layton et al. (2009: 80) is “any arrangement in which the interaction of buyers and sellers determines the price and quantity of goods and services exchanged”. By this criterion the act of procurement is indeed a market transaction. Procurement comes from the Latin word *curare*, meaning to acquire or to take care of, and the decision to buy requires agreement on price.

The market for a single project is therefore created by a client as they go through the procurement process, regardless of the particular system or method of procurement followed. The client is the buyer of a bundle of goods and services from the contractor/s bidding or negotiating for the project, and their interaction on the scope (quantity) and price of the project is resolved when the agreement or contract is exchanged.

If procurement of a project creates an identifiable, though temporary, market for goods and services, what are the distinctive characteristics of such a market? Clearly it is not like a conventional market described in a textbook. The characteristics of markets, found in Layton for example, are the number of buyers and sellers, the distinctiveness and substitututability of products, forms of competition, barriers to entry and concentration ratio, and the information and mobility of customers.

A market with single buyer is known as a monopsony (the opposite of a monopoly with a single seller). The treatment of buyer power in economics is concerned with how downstream firms can affect the terms of trade with upstream suppliers. A buyer has monopsony power if they can reduce the price paid below competitive levels by
withholding demand. An important distinction is between monopsony power and bargaining power, or the bargaining strength that a buyer has with respect to suppliers. The lower price obtained from monopsony power is achieved by actually purchasing less, but with bargaining power is achieved by the threat of purchasing less (Inderst 2007).

There are two conditions a buyer will have to meet to have substantial buying power: it can easily switch to alternative suppliers, sponsor new entry or self supply without incurring substantial sunk costs; or it is a gateway to the downstream market for its suppliers. The ACCC report (2008: 313) identified two factors other than outside options that may also influence the conduct and outcome of bilateral bargaining between suppliers and retailers. These factors were:

- The role of information: are there information asymmetries regarding the different parties’ knowledge of the other parties, for instance, regarding other parties’ cost structures? An informational advantage may give rise to an advantage in terms of bargaining power.

- Coordination (tacit or explicit) among suppliers: the presence of incentives for suppliers to undercut any supplier collusion (e.g. to obtain a large order from a retailer) may increase buyer bargaining power.

The most important characteristic of a project as a market with the client as a single buyer is therefore the relative bargaining power on the buyer and seller sides of the negotiation. Unlike a monopsonist, the project client does not have extensive market power, defined as the ability to set prices. In fact, the construction client is often in a weak bargaining position because there is no market price available as a reference point when negotiating with potential suppliers.

The second key difference is the one-off nature of the project. While few projects are unique in the sense of entirely different, because the fundamental elements of a type of building are found in most buildings of that type (e.g. steel reinforced concrete floors in high-rise, wooden frames in houses) each project represents a particular set of requirements in a specific, possibly unique combination.

Two other characteristics are the opposite of conventional markets. Because of the one-off nature of the project, it follows that there is no substitute easily available to the client (especially once committed to going ahead). It is also probable that the contractor will be better informed about current prices of materials, plant and equipment, and labour than the client.

**BARGAINING POWER**

Bargaining power is different from monopsony power, and found in the bilateral negotiations over terms and conditions of supply between trading partners. In a
bargaining framework, buyer power is the ability to extract surplus from a supplier and
differences in buyer power are reflected in differences in individually negotiated
discounts. Inderst and Mazzarotto (2008: 1954) suggest a definition of buyer power as the
bargaining strength that a buyer has with respect to suppliers with whom it trades, where
its bargaining strength depends on its ability to credibly threaten to impose an opportunity
cost if it is not granted a concession.

The traditional economic treatment of bargaining power uses the concept of outside
options available to buyers and sellers, as summarised in Table 2. The ACCC (2008: 312)
described these as “the outside option is the best option that either the seller or buyer can
achieve if they walk away from the negotiations. These walk-away options are the
minimum negotiated outcome that the respective parties will accept.” The more outside
options the buyer or seller has the stronger will bargaining position relative to the other
party (ceteris paribus). Strong outside options for a buyer, or weak outside options for a
seller, will be a major source of buyer power in a bilateral bargaining framework.

Table 2 – Outside options

<table>
<thead>
<tr>
<th>Buyer’s Outside Options</th>
<th>Seller’s Outside Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size of the buyer</td>
<td>Relative size of buyer and seller</td>
</tr>
<tr>
<td>Competition upstream</td>
<td>Market power downstream</td>
</tr>
<tr>
<td>Relative size of buyer and seller</td>
<td>Financial dependency</td>
</tr>
</tbody>
</table>

Source: OECD (2008:40-41). See also ACCC (2008 Ch. 14)

Bargaining power cannot be exercised when suppliers are competitive, because it is not
possible to push suppliers to price below marginal cost. Bargaining power can only be
exercised when in its absence suppliers would exercise market power, and is a
countervailing power. This implies the procurement method used when tendering for a
building or construction project is a determining factor in establishing or depleting buyer
power.

As an aside, this is a different approach to the transaction cost economics used by
researchers such as Winch (1989) and Chang and Ive (2007a and b). Their findings on the
different characteristics of various procurement systems and the importance of the hold-
up problem and asset specificity when negotiating post-contract changes in specification
are not directly comparable to the negotiation discussed here.

**IMPLICATIONS**

This idea that the extent of bargaining power is the key characteristic in the market for a
project is discussed below in the context of three issues that have been suggested by other
researchers as important in relation to market power in construction procurement,
collusion, ruinous competition and cost uncertainty associated with the typical single price, sealed bid auction. Because public sector clients have to use open or selective tenders as their procurement method this discussion directly concerns them, private sector clients can and increasingly do use negotiation rather than tendering when awarding projects.

A traditional tender will be a single price, sealed bid auction, awarded to the lowest priced bid. In this case there are no negotiations and thus no opportunity to exercise buyer power. The conventional rationale for this form of procurement is that the tender itself, whether open or selective, creates a competitive market between contractors. When this works it is highly effective and can be expected to result in a price that is at or close to the market price for the project (implying the successful bid is will be at the contractors marginal cost).

There are two obvious problems with this outcome however. First, competitive tendering also creates a powerful incentive for contractors to collude; because that is the only way they can increase their profits (see Brockmann 2011 for a detailed explanation and analysis of collusion in construction). As a result collusion has been widespread and endemic in the industry (see OECD 1976 and 2008). In extreme cases it becomes organised on an industry-wide basis, as in the Dutch building and construction industry (Van den Heuvel 2005). The Japanese ‘dango’ system is another example of systemic collusion (Hasagawa 1988). In many countries there are examples of contractors, manufacturers and sub-contractors that have been caught and charged with bid-rigging, market sharing or price fixing (Transparency International 2005).

This link between the extensive use of competitive bidding and widespread collusion does not seem to have been made by clients and regulators. In Australia the ACCC sees pre mixed concrete as an ideal product for cartel arrangements and has found bid rigging, price fixing and market sharing arrangements several times. The ACCC has recently prosecuted cement firms (Queensland 2007), construction contractors (Queensland in 2009), air conditioning contractors (WA in 2008), and fire protection companies (NSW and Queensland 2000). Despite this track record there has been no discussion about reforming tendering practices, particularly in the public sector.

A second problem is the possibility that low-bid tendering competes away not just profits but the ability to invest in future development of industry capability. In his exhaustive detailing of the Dutch industry cartel Doree (2004) argued that conventional low-bid tendering causes “ruinous competition” between contractors. Such excessive competition reduces innovation and R&D, stunts industry development and leads to problems with quality, safety and compliance with the law. Controversially he concluded:
Industrial economics suggest that a sector of the construction industry, dominated by highly competitive price-driven public sector procurement, will have a natural tendency to drift towards ruinous competition. This situation is typically conducive to concentration and collusion (2004: 154).

It is unusual to find an economic argument against competition, as with Doree’s suggestion that increased competition might prove counterproductive in the long run. Unfortunately he does not provide an alternative procurement system, only that public sector agencies “integrity-policies and procedures are being evaluated and sharpened” and contractors’ associations “enforce codes of conduct on their members” (2004: 155).

The ruinous competition argument is the extreme version of the one above, where Doree suggested that the relationship between competitive tendering and collusion has not been properly understood, and should be investigated further. While it might be the case that competitive tendering produces a race to the bottom, the fact that most contractors survive to tender another project suggests that this is not the key issue.

An alternative is that it just may be that building and construction projects have a significant degree of cost uncertainty associated with them. Cost uncertainty can come from site conditions, weather, change orders, poor quality documentation, problems in the supply chain, breakdown of plant and equipment, price changes for materials over the life of the project and so on. There are many possible factors that can affect the final price of a project, particularly when it may take a year or more to deliver. It is the reality of this cost uncertainty that leads to the idea of the ‘winners curse’ when successful with a low-bid tender¹.

Nagle and Holden (1995: 205) point out that a bidder is much more likely to win jobs for which they have underestimated costs, and are unlikely to win those for which they have overestimated the cost. They suggest the only solution is to add a ‘fudge factor’ to each bid to reflect an estimate of how much the bidder is likely to have underestimated costs if they actually win a bid. This argument was restated by Flygberg et al. (2003) as ‘optimism bias’ when pricing and bidding for large projects.

Dyer and Kagel (1996) argued construction contract bidding is usually treated as a common value auction. What makes the auction interesting is that bidders have different estimates of the true value at the time they bid. If bids decrease with decreasing cost estimates, the low bidder faces an adverse selection problem, as they win only with the

¹ Drew (2011) says the term ‘winner’s curse’ was first used in a paper by Capen et al. (1971) who used it to describe the outcome of common value auctions in which large petroleum companies were competing for drilling rights. The volume of oil contained in the well underground is the same for all bidders but at the time of bidding none of the competing bidders knew its true value and some bidders eventually made a loss.
lowest estimate of the cost of construction. Thus the low bidder is likely to suffer ‘winner’s curse’, winning the item but making below normal or even negative profits.

CONCLUSIONS
The distinction between a market made up of similar types of projects and the market for a single project is not one that has been developed so far. This paper has argued a market is created by the client as they go through the procurement process, and introduced the idea that procurement of a project creates an identifiable, though temporary, market for goods and services. The discussion pointed out that such a market has distinctive characteristics that make it different from other markets.

In a market with a single buyer, as with a building or construction client, it is possible to gain market power through bargaining with potential suppliers. Such bargaining power cannot be exercised when suppliers are competitive, and can only be exercised when in its absence suppliers would exercise market power. It is therefore a countervailing power and thus constrained in its use by circumstances.

Nonetheless, it is a strange situation when an industry whose clients sacrifice the opportunity to negotiate and exercise buyer power is also seen as being too competitive. Normally these would be mutually exclusive. However in traditional low-bid tendering for building and construction projects this can be the case. From the analysis and argument in this paper that outcome can be seen as two distinct but inter-related problems.

The first problem is not the degree of competition but the prevalence of collusion. This can be explained in part by the many characteristics of the industry that facilitate collusion between contractors (see OECD 2008: 20-22 for details), but it is also a strategy contractors can resort to in order to increase profits when tendering competes away not just excess returns but also normal profits.

One reason profits get competed away to nothing, or less than nothing, is the high level of cost uncertainty for building and construction work. The eventual profitability of a project cannot be known at commencement. Cost uncertainty is an unavoidable fact in building and construction projects. There are many factors, including potential issues with the physical site, that are unknown when commencing, and supplier and subcontractor performance and prices on a project that may take a year or more to deliver while market conditions fluctuate. It is cost uncertainty that leads to the idea of the ‘winners curse’ when successful with a low-bid tender.

This paper has argued that there has not been much previous research into the dynamics of the project as a temporary market, despite the importance of projects in the industry. The propositions that procurement creates a market, that the roles of participants in that
market, and the price and profitability outcomes have been suggested as important in
developing our understanding of the industry and its dynamics. They are also interesting,
as a source of testable hypotheses and further research.

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