Competition and Procurement

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Healthy competition is the lifeblood of commerce – it ensures (or at least increases the likelihood of) efficiency, fairness and innovation. But what is competition? It is useful to distinguish three perspectives: *forms*, *effectiveness* and hoped-for *effects*. Where government and the economy interact, additional considerations come into force: in particular, where markets fail to deliver the hoped-for benefits, there is often scope for public intervention. This is particularly true when government is itself a market participant. In balancing these considerations, it is important to identify public-sector concerns that are affected by procurement activity. These include the value for money achieved by the procurement, the competitive health of the supplying sector (and those linked to it), the distribution of returns to supplying activity and the pace and direction of innovation.

The following discussion addresses these objectives in turn, taking three distinct perspectives on procurement[1]; markets, contracts and auctions. The discussion is linked to the specifics of IT procurement and towards some pragmatic policy recommendations.

Markets

The government can view procurement as a market activity in which it adopts the perspective of a buyer[2]. In this view, it would be interested in increasing supply-side competition in order to drive ahead quality, timeliness and innovation and drive down price. Secondary considerations would include the minimisation of deadweight loss (lost gains from trade due to the exercise of market power) and achieving an equitable distribution of profits for societal reasons. These considerations are related to the primary objectives: in perfectly competitive markets, deadweight loss and average production cost are minimised and dynamic efficiency assured by marginal cost pricing and free entry. However, this comforting linkage fails when markets are imperfectly competitive, and when participants are not equally informed. Moreover, the logic of procurement policy often dictates that equity considerations be justified in efficiency term – in particular, the allocation of procurement contracts to possibly less-efficient firms – is often linked to assumptions about the innovations or employment generated by such allocation.

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[1] A third perspective, developed at length in Laffont, J-J. and J. Tirole (1994) A Theory of Incentives in Procurement and Regulation, MIT Press, London, is that procurement is a special case of regulation in which the roles of principal (regulator or designer of contract mechanisms) and buyer are combined.
[2] This approach underlies e.g. the December 2003 OGC report to the Chancellor of the Exchequer: "Increasing competition and improving long-term capacity planning in the government market place"

From this perspective, it has been recommended that: government should co-ordinate its purchasing activity; different purchasing entities (e.g. Departments) should pool information; and government should communicate its future demands to the supply side as clearly as possible.

First consider *allocational* efficiency – whether alternative arrangements could make all parties better off. From this standpoint, the first recommendation should be approached cautiously; on its face it seems to call for "countervailing monopsony power." This resulting 'bilateral monopoly[3]' can produce many outcomes, and the exercise of price leadership by either side can generate high levels of deadweight loss – especially when the government, in effect, uses the inputs it acquires to provide downstream outputs in markets where it holds monopoly power[4]. If both parties negotiate to maximise their mutual return, the deadweight loss is reduced, but not eliminated. The argument for buyer coordination comes from Galbraith's claim that the main force driving competitors to behave efficiently is not seller competition but strong countervailing buyer power. This will improve the outcome if the government itself supplies its services 'at cost' – in other words, at the marginal opportunity cost of providing them. This suggests that the use of such power should be accompanied by close negotiation and might not be appropriate for all forms of procurement. It should also be mentioned that these considerations are most forceful where government demand represents a substantial fraction of total demand (i.e. where procurement co-ordination can actually generate market power) and where the resulting demand is inelastic (i.e. where there are few good substitutes for procured goods and services).

A second possible inefficiency is *productive* – are goods produced at lowest average cost? Where there are elements of increasing returns to scale, there is no guarantee that competition will lead to efficiency – indeed, in the 'natural monopoly' case where demand is small relative to the scale at which unit cost is minimised, competition may be undesirable. The main issues here are the size of total demand and the effectiveness of possible tools for regulating market activity directly.

A third type of efficiency is *dynamic* – whether the market provides adequate signals for technological development. There is an extensive literature on the extent to which competition encourages innovation, the degree to which such innovation favours process improvement (cost reduction) or product development (value enhancement) and the extent to which competitive mechanisms force the supply side to share these improvements with the demand side. In short, innovation requires firms to invest resources now in

[3] See e.g. Scherer, F. (1990) Industrial Market Structure and Economic Performance, Houghton-Mifflin, pp 519-522.

[4] This is the "double marginalisation" problem, and to a recommendation for in-house production or a strong preference for increasing competition in supply markets rather than accumulating "countervailing market power." While it is not suggested that government acts as a profit-maximiser, budget pressures may nonetheless force some departure from strict marginal cost pricing to users and taxpayers.

anticipation of future profits, which depend on the extent of monopoly power. This causes a tension between the static perspective (where monopoly imposed deadweight loss) and the dynamic perspective, where monopoly profits increase the attractiveness of innovation[5]. This is one reason why intellectual property (which extends monopoly power) is justifiable from a societal perspective. Finally, the process of competition itself erodes monopoly power, as Schumpeter's concept of 'creative destruction' implies. From the procurement standpoint, the relevant questions are the extent to which government demand 'follows the market' in terms of specifications, the degree to which government support for R&D in advance of the market will either induce useful innovation by firms or secure their market dominance in general, and the degree to which innovation will further 'lock-in' the relationship between the government and the firm. The correctives for procurements involving innovation are likely to include: i) inclusion of technological neutrality or 'open-system' requirements[6]; ii) the use of 'design competition' tendering procedures on major procurements; and the inclusion of some form of compulsory licensing or IPR option arrangement in procurement contracts.

One final point in regard to IT procurement is that IT markets exhibit strong *network externalities* relating to interoperability – this means that competition may drive both standardisation and coordination on the supply side. In addition, the (often very-) low marginal costs of production after the first unit lend an element of natural monopoly, all of which leads towards a 'tipping equilibrium' tendency – in other words, effective competition on the supply side is likely to be somewhat fragile. The word 'effective' highlights the fact that the competitive health of such markets cannot be measured merely by the number of firms. It is perfectly possible for a large number of firms to share a standard 'owned' by a single firm; equally, the pressure of potential competition may make even monopolised markets perform well in terms of efficiency and innovation. To support a diversity of approaches, it may be well to co-ordinate procurement without necessarily pooling it – in other words, aggregating demand may magnify technological risk, economic distortion and dependence. Providing experience is shared (in the benchmarking sense), the possibility of winning additional (as opposed to longer or larger) orders may well keep suppliers 'on their toes.'

Contracts

Procurement often results in contracts. Again, the literature is vast – for current purposes, it suffices to distinguish considerations within the contracting procedure from those running across contracts. Here we discuss only the former. Dependence on a single supplier magnifies the effect of informational asymmetry and can lead to 'lock-in' – if an incumbent supplier has 'inside information' about government demand or has built in legacy dependencies in existing supplies, potential competitors may face high entry

[5] Arrow (1962)
[6] The Brazilian government has been especially pro-active in this aspect of IT procurement.

barriers and incentives towards efficiency are weakened. Moreover, dependence on a single supplier throughout government may weaken the credibility of contractual monitoring or enforcement mechanisms by limiting the salience of external comparators and increasing the costs of imposing penalties. The result may be a tendency for incumbents to win repeat business. This is not necessarily bad, because long-term contracts (or effective long-term contracts composed of repeated short-term ones) provides scope for better incentive mechanisms – the supplier can anticipate a return on up-front investment in investment, for example, and has incentives to engage in deeper partnership with the government client. On the other hand, in developing sectors such as IT the 'learning curve' drives down costs as a function of experience, and suppliers may use government contracts to reduce their costs in advance of open-market competition[7] or to provide advantages in bidding for future contracts. These gains are real – the job of contracting is to ensure that they do not convey an unfair advantage. The recommendations that follow are to consider, where possible, the use of multiple-sourcing arrangements to keep the competitive pressure on during the contract lifetime. For instance, if two suppliers are selected, they can be allocated shares of the total contract volume that vary with delivered performance and required to share information as part of the contract. This encourages continual improvement during the contract and limits the 'endpoint effect' whereby the supplier either over invests to win the continuation contract or under invests in anticipation of losing the business.

Another point in respect of contracts is that the influence of contractual form on the power of efficiency and innovation incentives – roughly, the extremes are cost-plus contracts and fixed-price contracts, with a range of incentive contracts in between. Roughly low-powered contracts provide the least incentive to reduce costs, but the greatest to invest in innovation – for this reason, they tend to prevail early in the procurement life-cycle. The point here is that the competitive environment influences both the need for and the effectiveness of such incentives.

A final point is that modern procurement 'good practice' typically involves some combination of framework contracting (which economises on evaluation delays and costs and strengthens consistency) and prime contracting (in which risks and management associated with the value chain are passed to a private partner). Each of these raises competition issues. Framework contracts must carefully be structured to ensure healthy competition to enter the framework and within the framework. Similarly, competition to become prime contractor should be run along competitive lines (e.g. by using a suitable auction mechanism) precisely because the prime contractor will assume some responsibility for the subsequent competition to supply – in this case, it may be useful to include in the prime contract a specification of the mechanism(s) to be used for allocating subcontracts.

[7] This was alleged against Texas Instruments in the US.

Auctions

Most procurement arrangements are set up through a mechanism that lies between the extremes of buying in an open market and negotiating a specific contract. The theory and practice of auction design have advanced the understanding of such tendering procedures in a number of directions. In this brief discussion, we limit ourselves to three main observations.

First, genuine competition is essential to successful tendering. It has been shown[8] that it is better to simply accept the result of an auction with k bidders than to exercise maximum market power by making a take-it-or-leave-it ultimatum offer (based on all information revealed) to the winner of an auction with k bidders. In other words, competition may be more important than strategic bargaining power.

Second, the *form* of the optimal tendering procedure (or the performance of a specific procedure) is affected by bidder asymmetry. Dominant firms can, e.g. through 'jump bidding' drive new entrants out of competition even when those entrants may be more efficient and offer greater value for money to the government. The implication of these two observations is that tendering procedures that encourage entry should be pursued – for instance, the use of an initial phase of open bidding followed by a final sealed-bid tender when the number of active bidders has fallen[9], or precommitment to use a default supplier if the number of bidders is insufficient.

Finally, the greatest problem with recent large-scale public auction and tendering mechanisms is not monopoly but *collusion*. The likelihood of avoiding collusion is strengthened when market structures are not concentrated (in other words, when there are many participants of roughly equal sizes), but not wholly eliminated. Again, design of tendering procedures and vigilance in searching out collusion[10] can greatly improve procurement performance.

[8] Klemperer, P. and J. Bulow (1996) "Auctions vs. Negotiations" *American Economic Review*, **86**, 180-94.
[9] This is the "Anglo-Dutch" procedure recommended by Klempere.
[10] See Bajari, P. and G, Summers (2002) "Detecting collusion in procurement auctions," *Antitrust Law Journal*, **70**, 143-170.