

Assessing the impact of public sector procurement on competition

Volume 1: main report

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Prepared for the Office of Fair Trading by •econ

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1 SUMMARY

Background

- 1.1 Public procurement – the purchase of goods and services by the public sector – accounts for a significant proportion of both public expenditure and demand for good and services in the economy. Although there is some degree of uncertainty over the total size of public procurement in the United Kingdom (estimates range from 11 per cent to 18 per cent of GDP¹), in some markets the public sector is likely to be by far the largest buyer, and thus in a position to affect competition through its purchasing behaviour.
- 1.2 The precise nature of competition effects from public procurement can be expected to vary considerably across different procurement settings, reflecting that:
- procurement covers a wide range of very different goods and services
 - procurement practices vary considerably with the nature of the goods and services bought, and
 - the potential impact of procurement on competition depends on market conditions.

¹ HM Treasury estimates that public procurement, excluding public corporations, was worth £117 billion in the financial year 2002-3, which is around 11 per cent of GDP. Figures used by the European Commission (2004, p.4 f) suggests that public procurement in UK was worth 18.4 per cent of GDP in 2002.

- 1.3 Competition may be defined in most general terms as process of rivalry between firms to sell their products or services to customers – end users, other firms or, indeed, the public sector. This rivalry can take place in many dimensions – price, quality, innovation – and its intensity depends on a number of factors such as the ease with which customers can switch between suppliers, the ease with which suppliers of a particular product can switch to supplying a different one, whether new firms can start supplying customers without much difficulty, and so forth. There are no hard and fast rules that would allow one to assess whether competition becomes more or less intense as a result of a particular change in market conditions.
- 1.4 Competition effects from procurement can be both positive and negative. The public sector, by virtue of its overall demand in certain markets, may be in a position to protect and promote competition, for example by maintaining a competitive market structure through deliberately sourcing its requirements from a range of suppliers, by providing incentives to suppliers to invest and innovate, or by helping firms to overcome barriers to entry. It may, however, also restrict and distort competition, e.g. by adopting procurement practices that have the effect of restricting participation in public tenders and that might even discriminate against particular types of firms. Last but not least, the public sector may fail to contribute towards an improvement of competitive conditions where it could in principle do so.
- 1.5 Owing to the complexity of competition effects of public procurement, there are few (if any) hard and fast rules that would suggest where public procurement might raise competition concerns. This means that procurement practices will ultimately have to be assessed on a case-by-case basis, and against the background of the specific market within which procurement takes place.

1.6 Even though ultimately a detailed assessment of individual procurement practices is required, a more general and conceptual analysis of the basic mechanisms through which public procurement can affect competition is helpful because it:

- provides a framework for the detailed review of specific procurement practices in particular markets
- might provide guidance to the public sector in its decisions how to buy and how to design procurement processes, and
- assists in the identification of markets where competition concerns are most likely to arise, and where further investigation might be most appropriate.

1.7 This report, commissioned by the Office of Fair Trading:

- provides a detailed economic analysis of when and how public procurement might affect competition, including an analysis of the differences between public and private sector buyer power and an assessment of some key procurement practices
- suggests an approach for identifying sectors in which further investigation of public procurement processes might be justified, and uses readily available sectoral data for the United Kingdom to identify a number of sectors for further consideration by the OFT.

1.8 In the course of our research, we have conducted a number of case studies into specific procurement processes or procurement settings. These case studies are provided in a separate document. The purpose of these case studies has been to inform the theoretical analysis and provide a valuable cross-check. For the avoidance of doubt, our selection of case studies was in no way based on a preconception of where competition issues might arise. There is no relationship between the case study selection and the identification of markets for further investigation.

1.9 Perhaps closest to the research agenda covered in this report is the Kelly report (OGC, 2003), which explicitly addressed the question how public procurement could contribute to a strengthening of competition and an improvement in long-term capacity planning. The main findings of the Kelly report suggest that, at present, the public sector does not take sufficient account of the impact of its procurement decisions on the long-term structure of supply markets. The report explicitly states that the public sector needs to show 'a greater willingness to take a view about the market structures best suited to competition and security of supply, and a willingness to use legitimate ways of influencing those structures.' Developing a better understanding of how competition can be affected by procurement decisions – which is one of the main themes of this report - should help achieve this.

Public and private sector buyer power

1.10 For public procurement to be capable of affecting competition in a market, the public sector needs to possess buyer power. Like private sector buyer power, public sector buyer power may arise for many reasons, but all of these fall in one of two main categories:

- buyer power may be related to the size of demand of the public sector relative to the total demand in a particular market, or
- a buyer may enjoy power because it is a strategically important customer for its suppliers.

The two categories are closely related, though, because the strategic importance of a buyer tends to be associated with its size. Thus, in practical terms a powerful buyer is a buyer who is large relative to the total demand within a market.

1.11 The 'public sector' comprises many independent agents. It would therefore be inappropriate to conclude from the fact that public sector demand is large that the public sector enjoys buyer power. If public sector demand is fragmented, and if different public sector bodies act in

an un-coordinated fashion, there may not be any significant public sector buyer power (although there would be the prospect of attaining buyer power through consolidation of demand and co-ordinated action where the public sector accounts for a large proportion of demand in a market).

1.12 Whereas the sources of buyer power may be broadly similar in the public and the private sector, public sector buyer power can be expected to differ from private sector buyer power in two respects.

1.13 First, there is a legal and regulatory framework for public sector procurement that does not apply to the private sector. The EU Directives on public procurement define rules that have to be followed by contracting authorities, and which may make it more difficult for the public sector to exercise buyer power. Transparency and non-discrimination obligations together with formal requirements with which procurement processes have to comply may limit the exercise of public sector buyer power.

1.14 Second, decisions about how to organise purchases by the public sector may differ from those that a private sector buyer with similar buyer power would make, for a number of reasons:

- The public sector may be more risk averse and reluctant to experiment with novel ways of organising its procurement, or to choose new suppliers. Where customers of private firms are normally able to seek out alternative suppliers if any particular firm cannot deliver, this option does not normally exist in the case of public services. Any failure of procurement that jeopardises the ability of the public sector to provide services to the public is highly visible, and may have significant detrimental effects. As a result, avoiding failures is a high priority for the public sector. This may lead to an overly strong incentive to limit participation in public tenders to large and reputable firms, or to stick with incumbent suppliers.

- Public sector procurement decisions are not driven by a desire to maximise profits. As a result, the public sector may be considered less likely to engage in the exercise of buyer power with the objective of gaining unfair advantages over other buyers of similar goods and services. Where a powerful private sector buyer might extract concessions from its suppliers to discriminate against other buyers, which would then make it more difficult for them to compete downstream, the public sector typically does not have such incentives.
- Unlike private sector buyers, the public sector may pursue other policy objectives through its procurement. Such objectives could potentially lead to (or perhaps even require) a restriction or distortion of competition amongst suppliers. In some instances, these policy objectives are embodied in regulations governing the supply of goods or services (e.g. the Drug Tariff or the Pharmaceutical Price Regulation Scheme), which arguably have an impact on competition. Although some policy objectives may be in line with the broad objective of improving competition, for example minimising barriers for SMEs to participate in public tenders, others may have an adverse impact on competition.

Competition effects of procurement

1.15 Public procurement can affect competition in a number of ways. Our analysis distinguishes between:

- short-term effects on competition amongst potential suppliers, i.e. effects on the intensity of competition amongst existing suppliers in a particular tender, for example, taking the number of firms in the market, the range of products available and the underlying production technology as given
- long-term effects on investment, innovation and the competitiveness of the market, i.e. effects that capture changes in market structure and technology caused by public procurement,

which would be reflected, for example, in the level of competition in future tenders

- knock-on effects on competition in the supply of other buyers; other buyers are, for example, affected by changes in market competitiveness or technology. They might both benefit from, or be harmed by, attempts by the public sector to use buyer power in order to obtain better terms and conditions from its suppliers.

These effects can sometimes work in opposite directions. Notably, strong promotion of short-term competition amongst suppliers can reduce long-term competitiveness, or may discourage innovation and investment.

- 1.16 Where the public sector, through its procurement, exercises countervailing buyer power, it keeps a check on supplier market power, making suppliers compete more vigorously for public contracts than they otherwise would. The exercise of countervailing buyer power may sustain a competitive market in the long term, or even help new suppliers overcome entry barriers. On the other hand, a strong public sector buyer may also reduce competition, e.g. by increasing the gap between large and small firms within a market, or by forcing some firms to leave the market altogether.
- 1.17 An obvious question is why the public sector might possibly want to restrict or distort competition amongst suppliers. More intense competition should result in lower prices and better quality, and thus promoting competition amongst suppliers is an obvious strategy for achieving value for money. However, the competition effects of choices made in the design of procurement processes are complex and often require a trade-off between costs (e.g. the administrative cost of running a tender with more bidders) and benefits (e.g. the expected reduction in price as a result of more intense competition). Where these decisions are made on the basis of distorted incentives, it may be the case that public procurement fails to promote competition as much as it could, or leads to avoidable restrictions or distortions of competition.

Short-term effects

1.18 In the short-term, the main competition effects from public procurement relate to the impact of procurement decisions on:

- the level of participation in a particular tender
- the similarity of bidders, and
- the incentives and ability of bidders to engage in tacit collusion.

1.19 A rule of thumb is that more bidders make for more intense competition, resulting in lower prices and better quality. Even though the incremental benefits from having more participants in a tender may become smaller as the number of bidders increases, in most circumstances adding bidders increases the level of competition. This suggests that any feature of public procurement processes that limits participation has a detrimental impact on competition in the short-term.

1.20 However, there are also good reasons for limiting participation:

- Evaluating bids is costly, in particular where the buyer's needs are complex and requirements cannot be specified in a simple way. The buyer therefore has to trade off the higher costs of assessing a larger number of bids against the likely decrease in purchase cost as a result of fiercer competition amongst bidders
- Limiting the number of bidders on the basis of criteria such as reputation and a proven ability to meet the particular requirements may be efficient in cases where the characteristics of the goods or services are difficult to define contractually
- More bidders may not always lead to lower prices. There are conditions in which increasing the number of bidders can lead to higher prices because everyone bids more cautiously. This is the case where bidders are concerned about the risk of winner's

curse – an outcome in which the winner of a competitive tender has bid too low and will make a loss as a result of having won the tender.²

- Competition in a tender is generally more intense the more similar the bidders are. This means that increasing the number of bidders may not necessarily increase competition where the additional bidders are known to be weaker.

1.21 More generally, designing procurement processes in a way that ensures that participants are more alike tends to increase competition, whereas processes that lead to participants being very dissimilar are likely to reduce competition. This may be particularly important with regard to setting prequalification criteria for restricted tenders, which determine not just the likely number of bidders, but also their characteristics and thus their similarity.

1.22 The design of the procurement process can also affect the likelihood of collusion, which appears to be a frequent concern in procurement auctions. Generally, it is more difficult to sustain collusion as the number of bidders increases, and as bidders become more dissimilar (which may counteract the positive impact on competition as a result of more similarity across bidders). Other factors that may impact on the likelihood of collusion include:

² Such concerns arise, for example, where there is considerable uncertainty about the likely cost of meeting the buyer's requirements, and bidders differ largely with respect to their best estimate of this cost. If bidders were simply to bid in line with their cost estimates, the bidder with the lowest cost estimate would win the tender, but this bidder would most likely have under-estimated the cost of delivering the required goods or services. Therefore, rational bidders will bid with a sufficient safety margin to avoid an outcome in which having won a tender will lead to losses. This safety margin is larger the more uncertain is the true cost, and the larger the number of bidders, so that the price paid by the buyer can increase as a result of allowing more participants to submit bids.

- **Transparency:** collusion is more easily sustained if bidders can observe when other firms are trying to charge prices below the collusive level. The more likely such under-bidding would be detected, the more effective is the threat of retaliation by other firms which ultimately sustains the collusive outcome. This means that increased transparency such as information about the terms and conditions offered by winning and losing bidders in a competitive tender may increase the risk of collusion.
- **Frequency of interaction:** collusion is more easily sustained when bidders interact repeatedly, either in the same market over time, or in different markets, because repeated interaction allows for more effective punishment of firms trying to charge prices below the collusive level. This means that splitting up a requirement across multiple tenders can increase the risk of collusion.
- **Stability of demand:** collusion is more easily sustained in markets where demand is relatively stable and predictable. This is because demand volatility makes it more difficult to detect attempts by firms to grab a larger share of the market by charging lower prices, and the incentives to under-bid competitors are larger if demand is large at present, but expected to fall in the future. This means that a constant, predictable flow of demand from the public sector may increase the risk of collusion.

1.23 One implication of this is that excluding smaller firms does not have a significant impact on competition (although it would clearly affect these firms as competitors) where such firms are at a disadvantage in providing the goods or services required. For example, excluding SMEs in cases where the buyer's requirements are subject to strong economies of scale or scope, or where size and reputation are essential from the perspective of the public sector buyer, would not significantly reduce competition. By contrast, excluding such firms where they are in a comparable position to larger competitors (e.g. in cases where the focus is on innovation, and there are no reasons to expect that smaller firms

are at a disadvantage in this regard), excluding small firms could potentially reduce competition significantly.

Long-term effects

- 1.234 Long-term effects require that changes in market structure and market position caused by short-term restrictions or distortions cannot be easily reversed, and that the threat of potential competition from new entrants is not effective. If, for example, entry barriers were low or absent, then it would not matter if unsuccessful bidders for a public tender were forced to leave the market – the threat of potential competition from new entrants would persist and would constrain the market power of firms in the market. However, where there are significant entry barriers, and where winning public contracts is crucial for the viability of firms, the public sector can affect market structure by awarding contracts to a larger or smaller number of firms.
- 1.25 In these cases, the public sector may also help firms to overcome entry barriers. For example, NHS Supplies assisted a new supplier of medical gases in entering the UK market through facilitating contact between the firm and the agencies responsible for regulation of supply of such gases, and by seeking commitment from NHS trusts to purchase from the new entrant.
- 1.26 Even without changing the number of suppliers in the market, public procurement can have long-term effects on competitiveness by increasing the gap between market leaders and other suppliers, or by creating incumbency advantages for public contractors in future tenders. Such incumbency advantages may be due to the public contractor developing a better understanding of the public sector's requirements, or having made investments that give it a cost advantage over other firms. If the incumbent is in a privileged position when it comes to the re-tendering of a particular contract, this may discourage participation of firms with low chances of winning, and may weaken competition overall.

- 1.27 Where repeated selection of the same firm increases incumbency advantages (e.g. through learning-by-doing, or as a result of specific investments made by the successful bidder), a buyer awarding a contract to the cheapest supplier in a series of tenders may find itself with a rather restricted choice of suppliers in the long term. To the extent that sector bidders anticipate such an outcome, they have an incentive to reduce their price when a new requirement is first put out to tender in the expectation of little competition and higher profits in the future. Where the public sector is focused on short-term value-for-money gains, there may be a risk that competition is reduced over time. This may affect not only the public sector at the re-procurement stage, but also other buyers as a result of an increasing gap between market leader and smaller firms, resulting in less vigorous competition in the market as a whole. Systematic discrimination against smaller firms where such firms would be viable competitors can be expected to have similar effects.
- 1.28 Such a reduction of competition can be prevented by awarding multiple contracts and by selecting a different bidder for each of those contracts, even if bidders do not offer the lowest price (even though this implies that the public sector is not realising some cost savings in the short term). Where incumbency advantages have developed, they may have to be neutralised, e.g. by paying new entrants to invest in getting up to speed with requirements, as in the case of the Inland Revenue re-tendering its IT outsourcing contract. In order to enable more firms to compete effectively, the IR paid for bidders to undertake design and implementation studies, and decided to fund the unique costs caused by the transition and not to take such costs into account in the evaluation of bids.
- 1.29 Through bundling its requirements, the public sector may also affect the vertical organisation of supply. Buying bundles of services across the value chain can provide advantages to vertically integrated suppliers, and affect decisions of firms to integrate vertically. Conversely, by insisting on purchasing services unbundled, the public sector might remove or weaken incentives for vertical integration.

- 1.30 For example, we observe that local authorities are increasingly procuring integrated waste management services, often combining waste collection and disposal contracts, and that this goes hand in hand with increasing vertical integration amongst suppliers. This might limit the number of competitors that can be sustained in the long term because of potentially significant scale economies in waste disposal. Even if many more firms could provide efficient collection services (as there are no pronounced scale economies in this activity), discrimination in favour of firms capable of supplying both collection and disposal services might eventually force such firms out of the market and lead to a supply sector that consists of only a small number of vertically integrated firms.
- 1.31 Public procurement can also have significant effects on investment and innovation. An overly strong focus on price in public tenders, for example, may discourage innovation because bidders might not be able to recoup their investments. At the same time, significant public sector demand can be used to provide incentives for investment and innovation, not least in order to ensure that capacity in the long term is sufficient to meet the public sector's needs (as discussed in the Kelly report, OGC 2003).
- 1.32 Where procurement is used in order to promote investment and innovation (as, for example, in the case of public procurement of broadband services, where public demand was initially regarded as one of the main drivers of roll-out), it may determine the range of products available, and the firms supplying them. Thus, public procurement decisions may be the main factor determining competition in the market at large, having helped to create it in the first place.

Knock-on effects on other buyers

- 1.33 Where the public sector accounts for much, but not all demand in a market, other buyers will be affected by the impact of procurement decisions on the number of suppliers, the range of products available, and the technologies used. To the extent that other buyers do not enjoy

buyer power, they may be much more exposed to a long-term lessening of competition than the strong public sector buyer.

- 1.34 In addition to these side-effects, there may also be cases in which the public sector benefits at the expense of other buyers. For example, where public contractors gain advantages over those firms not supplying the public sector, and these advantages result in restricted or distorted competition in the supply of other buyers, intense competition for the public sector contract may arise. Expected profits from restricted competition in the supply of other buyers would be competed away in the form of better terms and conditions for the public sector.
- 1.35 It is at least theoretically possible that the public sector could improve the terms and conditions it obtains from bidders in public tenders by increasing the extent to which public contractors are advantaged in the supply of other buyers. An example of the underlying mechanism is given by the procurement of continence care products for hospitals. Because being selected as a supplier into the hospital sector is an important determinant of a firm's market share in the much larger supply to the community, and because the selection of suppliers into the hospital sector is relatively competitive, the terms and conditions offered for hospital supplies are significantly better than those that apply to supply into the community (where price competition is muted as a result of the Drug Tariff).

An assessment of some key procurement practices

- 1.36 We demonstrate the interaction of competition effects of public procurement by analysing a number of key procurement practices. In doing so, we focus on general practices that have raised concerns with regard to their effects on potential bidders for public contracts and the extent to which the public sector obtains value for money, namely:
- participation restrictions and artificially inflated participation costs
 - contract aggregation, and

- the decision to self-supply rather than buy certain services.

Restriction of participation and increasing participation costs

1.37 Public procurement is often said to restrict participation unnecessarily and to increase participation costs, in particular for smaller bidders, thus discriminating in favour of larger firms who regularly take part in public tenders. Factors that are said unnecessarily to increase participation costs and to discriminate against smaller firms include:

- restricted communication and publication of contract opportunities
- excessive information requirements (although this would in effect be against Government procurement policy), and
- overly narrow pre-qualification criteria, placing too much emphasis on past experience or firm size

1.38 We know that there are both benefits and costs associated with increasing participation. The key question is therefore whether the public sector achieves the right balance between the increased costs of having more bidders and the expected reduction in prices as a result of fiercer competition, both in the short and the long term.

1.39 Pursuing a value-for-money objective should normally ensure that this trade-off is made correctly, but there are a number of reasons why it might be distorted:

- The administrative costs of procurement may be more visible than the cost savings achieved as a result of more intense competition. This might lead to too much weight being given to administrative procurement costs, and too much restriction of participation
- Risk aversion may result in favouring well-established suppliers and incumbents over new entrants, restricting participation too much

(and perhaps not doing enough to ensure a level playing field). Fear of delivery failure may also make the public sector particularly sensitive to winner's curse concerns, contributing further to a situation in which participation is restricted too much.

- 1.40 Concerns may arise in particular where the public sector is reluctant to use novel ways of purchasing (such as electronic auctions, where appropriate), which could significantly reduce the administrative costs of procurement and would thus allow greater participation. In these instances, the justification for choosing procurement processes that limit participation are weak, and the potential benefits from increased participation should be a major driver for the public sector.
- 1.41 In addition to distorted incentives, the procurement rules might prevent the public sector from making the right trade-off. For example, because a strong incumbent is expected to win, other bidders might be reluctant even to incur the cost of participating in a tender. In this case, incumbency advantages limit participation. Although the obvious solution to this problem would be to remove or neutralise incumbency advantages, the EU Directives may limit what the public sector can do to achieve this. Explicit discrimination against the incumbent or in favour of new suppliers, which might well be the most efficient way of dealing with the problem, would not be possible under the EU Directives. Although the public sector might be able to employ other mechanisms (e.g. encouraging new entrants to participate in the tender), these might be costly and their effects might be limited.

Contract aggregation

- 1.42 Contract aggregation refers to the bundling of requirements into fewer, larger contracts being tendered less frequently. The effects of contract aggregation, and the costs and benefits associated with such a practice, are complex.

1.43 Contract aggregation may lead to lower prices paid to the extent that there are economies of scale or scope in the provision of the goods and services procured, which are reflected in lower prices for larger quantities.

1.44 Contract aggregation also tends to reduce the cost of procurement in terms of:

- the cost of conducting tenders, reducing the number of tender processes that need to be conducted, which would tend to reduce total tender cost (even allowing for the fact that the cost involved in tendering a larger contract may be higher)
- the on-going contract management costs, through reducing the number of contracts that need to be managed.

1.45 The competition effects of contract aggregation are ambiguous. It may have a negative impact on competition for the following reasons:

- It limits participation, both directly by excluding smaller firms who are unable to meet all of the requirements bundled together, and indirectly by reducing the chances of winning a contract.
- It removes the scope for yardstick competition, comparing the performance of different contractors providing similar requirements, or for in-contract competition where demand may be moved between contractors at the margin, or where a contractor may take over if another fails to perform. The threat of moving demand at the margin may be a powerful incentive to ensure compliance with the supply contract. Being able to benchmark performance can help reduce the cost of monitoring and enforcing compliance with the contractual obligations. These advantages are lost if a single contract is being awarded. The decision by the NHS to award regional contracts under its NPfIT provides a good example for the value associated with maintaining in-contract competition, which is foregone if the public sector opts for contract aggregation.

- Contract aggregation amplifies the extent of incumbency advantages compared with letting multiple contracts, where a number of firms can draw on their expertise in providing the services at the re-procurement stage.

1.46 However, contract aggregation can also promote competition through:

- reducing the scope for tacit collusion, making bidders compete more aggressively for the market; letting fewer but larger contracts more infrequently removes the scope for frequent interaction between the same bidders. It introduces a certain volatility in demand and increases the cost of losing compared to smaller, more frequent tenders – after a large contract has been awarded, there will be no further demand for a number of years
- providing the scope for helping firms to overcome entry barriers through committing a significant amount of business to the successful bidder
- stimulating investment by committing a significant volume of demand to a single supplier. A single long-term contract creates a situation in which the buyer is as dependent on the supplier as the supplier is on the buyer. This may limit the risk of opportunism on behalf of the buyer (and the seller) in terms of renegotiating the contract terms, and encourage investment and innovation in the long term. By contrast, if the buyer had the choice of moving demand to another supplier, it would be in a better bargaining position relative to the supplier, and may be tempted to re-negotiate contract terms after the supplier had made an investment specific to the supply relationship, which in turn would undermine the incentives for making such an investment in the first place.

1.47 As in the case of participation restrictions, the right trade-off balances the costs and benefits associated with bundling requirements in terms of the positive and negative effects on competition (and thus expected prices), the administrative costs of procurement, and the likely extent of

scale and scope economies. As these effects are more complex in the case of contract aggregation, making the right trade-off is more difficult, but again one should expect that value-for-money considerations would imply that the right balance is struck.

- 1.48 Nevertheless, the same reasons that might lead to distorted choices with regard to participation restrictions might lead to too much contract aggregation. Too much emphasis on the administrative costs of procurement might be responsible for too much contract aggregation. In addition, there may be concerns about too much emphasis being given on short-term cost savings at the expense of maintaining competitiveness in the long term, both in terms of in-contract competition and a potentially larger number of firms at the stage of re-tendering associated with letting multiple contracts.
- 1.49 Contract aggregation may be of particular concern where the public sector has been reluctant to explore the possibility of using alternative methods for market-testing the extent of scale and scope economies, such as, for example, various auction formats. If carefully designed such methods can increase participation and intensify competition. However, setting an appropriate auction format with the necessary detailed rules is a complex task and becomes more so, the more difficult it is to specify the required goods and services. Even the simple case of allowing tenderers to bid only for parts of the requirement put out to tender might help increase participation and competition, and contract aggregation may raise concerns where this option is not available to bidders. Currently, only 22 per cent of tenders allow bidders to bid for less than the entire contract.
- 1.50 Encouraging successful bidders for large contracts to seek sub-contractors is sometimes regarded as a way of mitigating the potential negative impact of contract aggregation on long-term competitiveness. However, measures to facilitate subcontracting (or an explicit requirement to sub-contract) may have undesirable competition effects because they could reduce participation and facilitate collusion. For example, such arrangements may provide incentives for bidders to form consortia, which will limit the number of bids the procuring agency will

receive. Where the main contractor engages in significant sub-contracting, that may indicate that there are no strong economies of scale or scope for one contractor to undertake the contract.

Self-supply

- 1.51 In many cases, the public sector may have the option to satisfy its requirements through self-supply rather than procurement. The self-supply option can be a very effective measure to limit the risk of tacit collusion. It provides a credible fall-back option for the public sector if bids are considered to be inflated, as well as a benchmark for assessing whether the terms and conditions offered by bidders are realistic. Even where self-supply is not feasible (as in tenders for prisons built under the PFI), calculating the cost of self-supply can help to reduce collusion risks (and Prison Services are indeed calculating a so-called 'public sector comparator' in these cases, reflecting the cost that would have to be incurred for in-house provision).
- 1.52 Self-supply may also impact on competition in the supply of other buyers to the extent that the decision by the public sector not to procure goods and services externally limits the size of the market, and reduces the number of suppliers that the market can sustain. If the public sector engaged in extensive self-supply, this might imply that other buyers face less competition than if the public sector decided to source a significant part of its requirements from third parties.
- 1.53 Whether self-supply decisions strike the right balance is closely linked to the question of efficient self-supply and market-testing of in-house provision. Such market-testing seems to be relatively straightforward in the case of a competitive supply market where the market price can be compared with the cost of in-house provision and the cheaper option can be chosen.
- 1.54 Where the supply market is not perfectly competitive, such a simple comparison is not possible. Rather than using current market prices, the public sector would have to consider the prices it could obtain as a

powerful buyer, taking account of the impact its demand would have on market size and competition. However, predicting the terms and conditions that the public sector might achieve may be difficult. Thus, self-supply decisions may be biased in favour of in-house provision where the market is very uncompetitive at present, even though market competitiveness might improve dramatically in response to significant public sector demand. Thus, there might be a case of inefficient self-supply in the case where the cost of in-house provision is below current market prices, but above market prices that would result if the public sector were to purchase externally and use its buyer power to promote competition.

- 1.55 Another case of inefficient self-supply could exist where the cost of in-house provision is above the current market price, and where the public sector appears to be discriminating in favour of in-house provision and against external suppliers, as has been alleged, for example, in the BetterCare case.³ In principle, such inefficient self supply might arise in the case where the public sector faces a perfectly competitive supply market with increasing marginal costs, and where the decision to reduce external demand may be driven by the desire to reduce the overall cost of providing a certain level of public services. However, the conditions under which such behaviour would be rational are very restrictive, and such an outcome is therefore not very likely.⁴

³ See Decision of the Office of Fair Trading under the Competition Act 1998 (CA98/09/2003) of 18 December 2003 in BetterCare Group Ltd/North & West Belfast Health & Social Services Trust (Case no CE/1836-02).

⁴ This case of inefficient self-supply corresponds to the standard textbook case of a monopsonist pursuing a strategy of strategic demand reduction in order to reduce input prices.

Screening methodology for procurement-related competition problems

- 1.56 The discussion of potential competition effects of procurement demonstrates clearly that such effects are often complex, that they depend on the particular details of the procurement settings, and that they can be both positive and negative. Thus, a detailed analysis of procurement practices in a particular market would be required in order to establish whether they cause competition concerns.
- 1.57 Clearly, it would not be possible (nor efficient) to undertake such a detailed analysis of all public procurement. Rather, a detailed investigation should only be undertaken where there are sufficient reasons to suspect that procurement could cause competition problems. For this reason, the OFT has requested the development of a screening approach that would allow one to identify those markets in which procurement is most likely to cause competition concerns.
- 1.58 Obviously, such a screening approach has to be based on information that is available prior to undertaking a more detailed analysis - detailed and market specific data would have to be collected as part of the investigation. This creates severe limitations because generally available statistical indicators are not normally collected on the basis of economic markets, but according to industry classifications. Thus, any feasible screening approach will have to look at sectors rather than markets. Because industry boundaries are not normally aligned with boundaries of economic markets, this requires some caution in the interpretation of screening results.

Competition effects and competition concerns

- 1.59 The way in which public procurement can 'cause' restrictions of competition includes both the failure to exercise countervailing buyer power (e.g. in cases where the public sector could promote competition, but fails to do so) and the exercise of buyer power in a way that gives

too little emphasis to the promotion of competition (and, for example, too much emphasis on limiting the administrative costs of procurement). This leads us to the following classification of competition concerns:

- Category I: failure by the public sector to exercise countervailing buyer power against suppliers with market power
- Category II: restrictions on competition arising from procurement practices such as participation restrictions, high participation costs, excessive contract aggregation or long-term contracts. There may be additional long-term effects, and effects on other buyers, and
- Category III: excessive focus on short-run price competition at the expense of long-run, non-price competition. There may be additional long-run effects in some cases.

Table 1.1 below maps the three categories of competition concerns discussed above to the principal mechanisms by which procurement can impact competition, and indicates how they are related to the extent to which the public sector obtains value for money.

Conditions that suggest competition concerns

1.60 **Category I:** Assuming that the public sector is generally aiming to exercise its buyer power to achieve value for money, failure to exercise countervailing buyer power is most likely to arise in the case where public sector demand is fragmented. The procurement process does not in itself have a negative impact on competition, but fails to produce the positive impact on competition it could have. The main features of this situation are that:

- the public sector accounts for a significant proportion of demand within a sector, but
- this demand is fragmented across individual purchasing agencies, acting in an un-coordinated way, and
- supply is uncompetitive.

Table 1.1: Competition effects, competition concerns and the relationship to value for money

	Category I	Category II	Category III
Short-run effects	Public sector fails to ensure that suppliers compete effectively; Failure to achieve value for money	Public sector contributes to reduced competition amongst suppliers (e.g. by restricting participation too much); May fail to produce value for money.	Public sector makes suppliers compete too aggressively, for example by offering few large contracts; Value for money achieved
Long-run effects	Failure to maintain competition or promote competition; Failure to achieve value for money	Competition in the long run does not improve; May fail to achieve value for money, but could sustain good terms and conditions at expense of other buyers	Reduction in competition over time, resulting in strong incumbency advantages or reduced incentives for investment and innovation; Less good at achieving value-for-money to the extent that effects of reduced competition cannot be overcome by countervailing buyer power
Knock-on effects	Other buyers miss out on benefits from improvements in competition, which the public sector could bring about	Other buyers obtain worse terms because of reduced competition and choice.	Other buyers suffer from lessening of competition in the long run without benefiting from strong competition in the short run

1.61 **Category II:** There are a variety of ways in which public procurement could contribute to a restriction of competition between suppliers. For example, contracts may be aggregated to an extent where only a subset

of competitors in the market can fulfil the requirements or public procurement may restrict participation in public tenders through unnecessary pre-qualification criteria. The main features of a situation in which there are possible restrictions on competition are:

- the public sector accounts for a significant proportion of demand within a sector
- procurement is centralised/co-ordinated and buyer power is being exercised, and
- supply is uncompetitive.

1.62 **Category III:** Procurement processes may place undue emphasis on short-run competition at the expense of long-run, non-price competition. A narrow focus on short-run cost savings may undermine investment and innovation incentives or may even force unsuccessful bidders out of the market. The main features of this situation are:

- the public sector accounts for a significant proportion of demand within a sector
- procurement is centralised/coordinated and buyer power is being exercised, and
- suppliers are not making excess profits although there is likely to be significant and possibly increasing concentration.

Indicators

1.63 Having established in very broad terms the conditions that would have to hold for there to be competition concerns, our next step is to identify indicators that would suggest where these conditions hold and where there may be competition problems. Ideally such indicators should be based on data relating to particular economic markets, but such data are unlikely to be available prior to undertaking a market investigation.

1.64 However, even at the sectoral level, there are a number of useful indicators for identifying conditions that suggest potential competition problems, namely:

- the share of domestic supply purchased by the public sector
- whether this is centralised
- the level and trend in supplier concentration
- the extent of supplier churn
- openness to imports
- market growth, especially growth in residual demand (which comprises private sector demand and exports), and
- various indicators of entry barriers unrelated to procurement.

1.65 We propose a screening approach that first uses the share of domestic supply consumed by the public sector to identify sectors in which the public sector is, or could be, enjoying buyer power. The share of supply purchased by the public sector needs to be sufficiently large for any of the three categories of problems to occur. A sufficiently high share of public sector demand is therefore a precondition for sectors to be considered for further investigation.

1.66 In a second step, we propose to use measures of industry concentration, international openness and churn to eliminate sectors in which competition problems are unlikely to occur, and to identify how likely competition concerns might be in the others. All three categories of competition problems are likely to require that there is a sufficient level of concentration amongst suppliers.

- Category I concerns can only arise where there is supplier market power, for which high levels of concentration can be used as a proxy.
- Category II concerns would be associated with moderate to high (and potentially increasing) levels of concentration, reflecting restrictions of competition flowing from procurement decisions.
- Category III concerns would lead to strong increases in concentration (perhaps starting from a relatively lower level).

1.67 Similarly, competition concerns in all three categories require that churn is relatively low (suggesting that the market is not open to entry and exit) and that it is not internationally open (in which case strong competition from foreign suppliers could reduce the scope for public procurement to impact on competition). If the churn measure includes both firms entering and leaving the market, we might see higher levels of churn in combination with increasing concentration in the case of Category III concerns, suggesting that churn is mainly driven by firms exiting the market.

1.68 The remaining indicators are then used to identify the potential competition concerns, and their severity:

- Where public sector demand is fragmented, the most likely concern is failure to exercise countervailing buyer power (Category I).
- There are a range of potential indicators of market entry barriers. Although imperfect, the most common measures used are: the investment to output ratio; the advertising to sales ratio; and the R&D to turnover ratio. Where concentration is high in the face of low entry barriers, this may indicate that public procurement is contributing towards restrictions of competition (Category II/III).
- Where residual demand is growing strongly, competition concerns related to public procurement may be transient. Fast growing private demand may provide opportunities for new entrants, and

may help to overcome any restriction of competition caused by public procurement.

1.69 Table 1.2 provides an overview of competition concerns and the corresponding indicators.

Table 1.2: Competition concerns and indicators

Indicator	Category I	Category II	Category III
Public sector demand	High and fragmented	High	High
Concentration	High and not decreasing	Moderate to high and possibly increasing	Increasing
International openness	Low	Low	Low
Churn	Low	Low	Medium (if including firms exiting the market)
Growth in private demand	Low	Low	Low
Indicators of entry barriers unrelated to procurement	Medium to high	Low to medium	Medium to high

Screening results

- 1.70 Application of the screening methodology described above is complicated by the fact that data on public procurement is sparse. Although data have been collected, for example in the context of the Kelly report (OGC, 2003), and the OGC collects data on contracts awarded by public authorities in the UK on an on-going basis, there is no comprehensive dataset that would allow us to identify the value of all public procurement on a sectoral basis (let alone by economic market). For this reason, we have used the UK input-output tables compiled by the ONS as a source of information on government expenditure, despite a number of shortcomings such as the relatively long reporting delay and the relatively coarse sector classification.⁵ Expenditure figures combine government final consumption and gross capital formation.
- 1.71 The first step of our screening analysis is to select sectors in which government expenditure accounts for a significant proportion of domestic supply. Given that we are reliant on sectoral data rather than data reflecting economic markets, and that industry sectors tend to be wider than relevant economic markets, we use a conservative threshold for classifying the public sector as a significant purchaser. Specifically, we discard all sectors in which government expenditure accounts for less than 10 per cent of domestic supply (domestic production plus imports).
- 1.72 We consider a number of competition metrics in order to establish where public procurement faces supply markets that are insufficiently competitive (and where, therefore, the public sector could fail to exercise countervailing buyer power), or where procurement is

⁵ The most recent available input-output tables include data for 2001, and separately identify 123 different sectors.

potentially contributing to a lessening of competition (at least in the long term). Specifically, we compute:

- the proportion of total turnover accounted for by the five largest firms (C5) in each sector, and the average annual change in this proportion, as a measure of the level and trend of concentration
- import penetration (measured as the proportion of domestic supply accounted for by inputs) as a measure of international openness
- sector-wide churn (the number of firms leaving the sector in the previous year plus the number of entrants in this year as a proportion of the number of firms in the previous year), which measures the extent to which firms enter and leave the market, and which reflects the likely magnitude of entry barriers.

Competition problems are more likely where concentration is high and increasing, churn is low and the market is not very open internationally. Therefore, further investigation of sectors which have these characteristics is likely to be more appropriate, compared with sectors where concentration is relatively low, or where churn and international openness are high.⁶

1.73 For the purposes of our screening approach, we compare the levels of these indicators for each sector with the corresponding values across all sectors, defining various cut-off points for our competition metrics. Our classification scheme combining the relative size of public sector expenditure and prima facie indicators of competition problems is summarised in Table 1.3. Based on this classification scheme, we would

⁶ Given the way in which we measure churn, high levels of churn combined with high and increasing penetration would give cause for concern as they would indicate that churn is large driven by firms exiting the market.

suggest that there is a good case for a detailed investigation of sectors in groups A to C.

Table 1.3: Sector classification scheme

Public sector expenditure as a proportion of domestic supply	Indicators of competition problems	Group
More than 10 per cent	Strong indication of competition problems	A
	Concentration very high and not falling	
	Sector not at all open Churn not very high	
More than 10 per cent	Reasonable indication of competition problems	B
	Concentration high and not falling	
	Sector not particularly open Churn not very high	
More than 10 per cent	Weak indication of competition problems	C
	Concentration significant	
	Sector not very open	
Less than 10 per cent	No evidence of competition problems	D
	Not applicable	E

1.74 In order to prioritise sectors, and in order to help in identifying the likely nature of the potential competition concern, we have looked at further metrics such as:

- the proportion of government final consumption accounted for by local government, which we can use as a measure of the extent to which public sector demand might be fragmented
- the average growth of residual (private) demand, and
- a ranking of the likely barriers to entry based on measures of investment, advertising and R&D.

1.75 Group A contains only one sector, namely sewage and refuse disposal, sanitation and similar activities, with a share of government expenditure of 22.5 per cent, a very high and increasing level of concentration, and very low import penetration. Public sector demand in this sector is highly fragmented, and therefore there might be concerns about failure to exercise countervailing buyer power (Category I).

1.76 Group B contains the following sectors:

- Manufacture of weapons and ammunition, with a share of government expenditure of more than 70 per cent, and high and increasing levels of concentration. Entry barriers are above average, but in terms of the measures available do not seem to be extremely high, and therefore there may be concerns that the public sector contributes towards restricting competition through its procurement (Category II).
- Human health services, with a share of government expenditure of somewhat below 40 per cent, with a moderate but strongly increasing level of concentration. This sector does not rank very highly in terms of indicators of entry barriers, and public procurement may contribute towards increasing concentration (Category III), or fail to counter such a trend (Category I).
- Building and repairing of ships and boats, with a share of government expenditure of slightly less than 25 per cent, moderate but increasing levels of concentration, and very little indication of

non-procurement related entry barriers. The main concerns in this sector are likely to be that public procurement contributes towards restrictions of competition in the long term (Category III).

- Manufacture of pharmaceuticals, medical chemicals and botanical products, with a share of government expenditure of somewhat above 20 per cent. Concentration is high and increasing, and entry barriers unrelated to public procurement in this sector are high as well. In this case, one might be more concerned about failure by the public sector to exercise countervailing buyer power (Category I), not least because of the role played by regulation in the pharmaceutical sector.

1.77 Group C contains the following sectors (government share in parentheses):

- Manufacture of electronic industrial process control equipment (20.9 per cent)
- Manufacture of cement, lime and plaster (15.0 per cent)
- Manufacture of aircraft and spacecraft (14.8 per cent)
- Site preparation (14.5 per cent)
- Building of complete constructions or parts thereof; civil engineering (14.5 per cent)
- Manufacture of office machinery and computers (12.3 per cent)
- Research and experimental development on natural sciences and engineering (11.9 per cent) and
- Research and experimental development on social sciences and humanities (11.9 per cent).

- 1.78 The last two of these (research in natural and social sciences respectively) would seem to have relatively low priority. Concentration is only just above the cut-off point, and stationary or decreasing. These sectors have only just met the criteria for being included in group C.
- 1.79 In the case of the manufacture of aircraft and spacecraft, there is strong growth in residual demand, which might suggest a declining role of public sector demand. However, private demand is likely to be of little relevance in markets where the public sector is a major buyer (e.g. military aircraft, in particular those that are not based on civilian designs). Non-procurement related entry barriers in this sector are, however, high, and therefore one might be mainly concerned about the extent to which the public sector exercises countervailing buyer power. With procurement very centralised, however, there should be little reason to suspect problems in this area. Therefore, this sector, too, may be given relatively low priority.
- 1.80 In the construction-related sectors and the procurement of office machinery, public sector demand is significantly fragmented. Thus, concerns may be related mainly to the failure to exercise countervailing buyer power (Category I). In the manufacture of electronic industrial process and control equipment, concentration is only moderately high, but increasing strongly. Given the presence of some entry barriers, this could suggest that public procurement might contribute to a lessening of competition in this sector (Category II/III).
- 1.81 Table 1.4 summarises those sectors for further investigation identified by our screening approach.

Table 1.4: Sectors for further investigation

Group	Sector	Potential concern
A	Sewage and refuse disposal, sanitation and similar activities	Failure to exercise countervailing buyer power (Category I)
B	Manufacture of weapons and ammunition	Restriction of competition, in the short run (Category II)
	Human health activities	Failure to prevent, or contribution towards, reduction in competition (Category I/III)
	Building and repairing of ships and boats	Lessening of competition in the long term (Category III)
	Manufacture of pharmaceuticals, medicinal chemicals and botanical products	Failure to exercise countervailing buyer power to help overcome entry barriers and arrest increasing concentration (Category I)
	Manufacture of cement, lime and plaster	Failure to exercise countervailing buyer power (Category I)
	Site preparation	
	Building of complete constructions or parts thereof, civil engineering	
Manufacture of office machinery and computers		

2 INTRODUCTION

- 2.1 In the broadest sense, 'public procurement' covers any purchase of goods and services by the public sector, i.e. any good or service provided by a supplier for remuneration. For example, the Gershon review of procurement in central government (HM Treasury, 1999) defined procurement as 'the whole process of acquisition from third parties (including logistical aspects) [covering] goods, services and construction projects. This process spans the whole life cycle from initial concept and definition of business needs through to the end of the useful life of an asset or end of a services contract. Both conventionally funded and more innovative types (e.g. PFI/PP) of funded projects are included.'
- 2.2 Procurement of goods and services by the public sector accounts for a significant proportion of overall demand. For the UK, HM Treasury estimates that public procurement (excluding public corporations such as NHS trusts) in the financial year 2002-2003 was worth £117 billion, corresponding to around 30 per cent of total public sector current expenditure.⁷ In some markets, the public sector is the largest buyer.
- 2.3 Where public sector demand accounts for a significant share of the total market, the way in which public procurement is organised can have a

⁷ See http://www.hm-treasury.gov.uk/economic_data_and_tools/national_statistics/spending_by_economic_category/natstat_spenecon_sum.cfm. Figures used by the European Commission (2004, p 4 f) suggest that public procurement in the UK in 2002 was worth 18.4 per cent of GDP, corresponding to more than £190 billion. The EU report, despite stressing the fact that any measure of the size of public procurement depends crucially on how procurement is defined, does not provide a definition of what is included in its measure of expenditure on procurement. Across the EU, public procurement in 2002 amounted to 1,500 billion euro – approximately 16 per cent of the Union's GDP. This share has remained fairly stable over the last eight years. The importance of public procurement varies across Member States, with public procurement accounting for 11.9 per cent of GDP in Italy and 21.5 per cent in the Netherlands.

profound impact on competition amongst suppliers. As the Government pointed out in its 2002 Pre-Budget Report, 'in markets where the Government is a major procurer of goods and services, its own actions may greatly influence how the market operates and therefore impact on competition and on the long-term value for money it can secure.'⁸ Put differently, the public sector's potential buying power gives it the opportunity to affect competition amongst its suppliers, and may have knock-on effects in other markets.

- 2.4 As part of its proactive approach to promoting competition across the economy and to making markets work, the OFT has commissioned research into how public procurement may impact on competition. The overall research objective is to identify markets where public sector procurement might be raising competition concerns and where the OFT should investigate further. This comprises an in-depth economic analysis of when and how public sector procurement might affect competition and, based on this analysis, the identification of actual markets where public sector procurement might be affecting competition in practice. The research does not include a formal legal analysis of procurement rules and practices.
- 2.5 Procurement covers a wide range of goods and services from those that are relatively simple to the on-going delivery of complex services whose characteristics are difficult to specify and where buyer and seller need to work together in order to define requirements and ensure efficient delivery.⁹ Procurement includes services provided directly to the public on behalf of the public sector (such as, for example, prisons run by private sector firms, or waste collection services run by private

⁸ HM Treasury (2002), paragraph 3.31

⁹ In public-private partnerships the private sector not just provides a service with defined characteristics, but determines the quality and cost of services through making investments (see Bentz et al., 2001).

contractors on behalf of the local authority) as well as inputs for the public sector provision of services (such as, for example, syringes and wound dressings for the NHS, or IT services for a government department). Given this variety of purchase settings, it is clearly impossible to consider each and every choice made by the public sector in its decision of what and how to buy from external suppliers that might potentially have a competition impact. We therefore focus on a number of generic features of public procurement (such as contract aggregation) in our discussion of competition effects.

2.6 If public procurement encompasses a wide range of different purchasing activities, the notion of competition is similarly complex. Competition may be defined in most general terms as 'a contest between firms to sell their products or services to customers, who may be individuals or other companies' (OFT, 2002) or, indeed, the public sector. This rivalry can take place in many dimensions – price, quality, innovation – and its intensity depends on a number of factors such as the ease with which customers can switch between suppliers, the ease with which suppliers of a particular product can switch to supplying a different one, whether new firms can start supplying customers without much difficulty, and so forth. There are no hard and fast rules that would allow one to assess whether competition becomes more or less intense as a result of a particular change in market conditions, and therefore we will have to focus on indicators such as the number of suppliers in a market, whether they are similar or different, or the level of entry barriers which generally affect the level of competition.¹⁰

2.7 Given the focus of this report is on the competition effects of procurement, which is different from, albeit related to, existing analyses of buyer power, and the role and efficiency of public procurement:

¹⁰ This broadly follows the OFT's guidelines for the analysis of competition effects as part of *Regulatory Impact Assessments* (OFT, 2002).

- Our analysis focuses on the impact of public procurement on the process of competition rather than market outcomes benchmarked against those achieved in the textbook case of perfect competition. Unlike studies focusing on the welfare consequences of buyer power (such as the eponymous study by Dobson *et al.* (1998) prepared for the OFT), we are not primarily concerned with the question whether public sector buyer power generates welfare losses other than through its impact on the competitive process.
- Unlike analyses assessing the performance of procurers in terms of obtaining value for money (such as, for example, Sir Peter Gershon's 1999 review of civil central government procurement (HM Treasury, 1999), the Cabinet Office efficiency review currently in progress, or regular investigations by the National Audit Office into specific procurement projects), we do not aim to assess the success or failure of public sector procurement as such, other than in the context of whether failure is likely to suggest an impact on competition amongst suppliers, or is indicative of a failure to exploit countervailing buyer power in dealing with an uncompetitive supply market. Not every failure of procurement has an impact on competition. On the other hand, procurement exercised that might be considered to be highly successful in obtaining value for money could distort competition.
- Promoting particular types of competitors is not necessarily the same as promoting competition; on the contrary, restricting the number of competitors may in some circumstances intensify rather than reduce competition.¹¹ Unlike studies assessing the difficulties

¹¹ Of course, there may be good public policy reasons for promoting particular types of firms, including promoting their access to public contracts. However, we believe that such policy objectives should not be confused with the objective of promoting competition, and should therefore be kept separate when analysing the impact of public procurement on competition.

faced by particular types of firms in competing for public sector contracts (such as the BRTF/SBC 2003 study on small and medium sized enterprises and public procurement), we focus on the impact of procurement on competition rather than on the impact on competitors.

- 2.8 Perhaps closest to the research agenda covered in this report is the Kelly report (OGC, 2003), which explicitly addressed the question how public procurement could contribute to a strengthening of competition and an improvement in long-term capacity planning. The main findings of the Kelly report suggest that, at present, the public sector does not take sufficient account of the impact of its procurement decisions on the long-term structure of supply markets. The report explicitly states that the public sector needs to show 'a greater willingness to take a view about the market structures best suited to competition and security of supply, and a willingness to use legitimate ways of influencing those structures.'
- 2.9 Public procurement can only have an impact on competition where the public sector enjoys buyer power (which is defined as the ability of a buyer, through its purchasing behaviour, to affect market outcomes). One of the specific questions this research is meant to address is whether there are any differences between public and private sector buyer power. We consider the sources of public sector buyer power, and the legal constraints on public procurement and the specific incentives faced by the public sector that might result in such differences between private and public sector buyer power in Chapter 3
- 2.10 The choices made by the public sector about how to procure goods and services affect participation and the behaviour of suppliers in the procurement process, i.e. short-term competition amongst suppliers in a particular procurement setting, but may also have an impact on the viability or market position of firms, and incentives for investment and innovation, thereby affecting market competitiveness in the long term. Moreover, other buyers may be affected through the impact of public procurement on competition in the supply they are facing, in both the

short and the long term. We discuss each of these potential competition effects in more detail in paragraph 3.41.

- 2.11 Reflecting the variety of requirements that the public sector satisfies through procurement, public procurement processes are varied, and often complicated. Any of the specific details of a particular procurement process may have an impact on competition, and it would be impossible to draw up an exhaustive list of choices made in the context of public procurement that might affect competition. However, drawing on concerns that have been raised about effects of public procurement, it is possible to identify a range of generic features of procurement processes and analyse the effect that they have on competition. In Chapter 4 we apply our analysis of possible competition effects of procurement to a number of key procurement practices, namely designing procurement processes in a way that might have the effect of limiting participation, aggregating requirements into single, large contracts, and using self-supply as an alternative to purchasing from third parties.
- 2.12 In addition to highlighting the impact of particular choices made in the design of procurement process on competition, which might provide guidance to those making decisions about how the public sector should buy goods and services, our analysis of the competition effects of procurement allows us to identify a set of criteria that help identify where procurement-related competition concerns are most likely. Mapping these criteria onto statistical indicators, we develop an approach for identifying sectors in which further investigation of public procurements might be justified. Chapter 6 discusses appropriate screening criteria for the identification of markets where procurement-related competition problems are likely to exist.
- 2.13 In Chapter 7 we apply the screening methodology using sectoral data for the United Kingdom. This leads to list of sectors in which further investigation of the procurement effects on competition by the OFT might be justified.

2.14 In the course of our research, we have conducted a number of case studies into specific procurement processes or procurement settings. These case studies are provided in a separate document. The purpose of these case studies has been to inform the theoretical analysis and provide a valuable cross-check. For the avoidance of doubt, we should point out that our selection of case studies was in no way based on a preconception of where competition issues might arise, and that there is no relationship between the case study selection and the identification of markets for further investigation.

3 PUBLIC SECTOR BUYER POWER, AND HOW IT DIFFERS FROM PRIVATE SECTOR BUYER POWER

3.1 A necessary prerequisite for public procurement to have an impact on competition is that the public sector possesses buyer power. In very general terms, buyer power encompasses:

- the ability to affect the market price for an input by strategically withholding or placing demand; as well as
- the ability of strong buyers to obtain more favourable conditions from their suppliers than other buyers with whom they might compete in the downstream market (for a discussion of why larger buyers get better deals see Box 3.1; a brief overview of the economic analysis of buyer power is provided in Annexe A).

3.2 Although there should be no difference in principle between the sources of public and private sector buyer power, the way in which such buyer power can be exercised by a public sector buyer may be different from the exercise of buyer power in the private sector. For example:

- public procurement has to comply with certain rules, which potentially limit the extent to which a strong public sector buyer power can distort competition, but which may also limit its ability to exercise countervailing buyer power;
- the public sector is likely to have different incentives to that of a profit maximising firm and these affect how it exercises any buyer power it might have. For example, incentives to reduce demand, reduce input prices below the competitive level and so increase profits might motivate a powerful private sector buyer, but are less likely to drive public sector purchasing decisions. Similarly, the incentives of a powerful private sector buyer to exploit its position vis-à-vis sellers in order to acquire or strengthen downstream market power may be less likely to exist in the case of a powerful public sector buyer.

- 3.3 In this chapter, we identify the potential sources of public sector buyer power, and then review the constraints faced by the public sector in its procurement decisions as well as the likely difference in incentives between private sector and public sector buyers.

Box 3.1: Why larger buyers get better deals

Although intuitively plausible, it is far from clear why larger buyers obtain better conditions from their suppliers. A number of alternative explanations have been provided for this.

The most obvious explanation relates to economies of scale, or other cost advantages, in the supply of larger buyers: the cost savings enjoyed by the supplier are being passed on to the buyer. Where buyers can threaten to integrate backwards, a similar argument holds with regard to scale economies in production (see Katz, 1987): the discounts obtained by buyers need to reflect these scale economies, even if the unit cost of a supplier serving a large buyer is not lower than the unit cost of selling the same output to a number of smaller buyers. Volume-related discounts are a typical form of these scale economy effects.

Another explanation relates to the fact that larger buyers may have more bargaining power in negotiations with suppliers. Chipty and Snyder (1996) examine the case where buyers negotiate with a single seller, and show that large buyers have more bargaining power if the surplus function of the seller is concave (i.e. if marginal profits decrease with increasing volume). In this case, the loss (per unit) from a breakdown of negotiations with a buyer is greater the larger the buyer, and therefore the seller is prepared to make the larger buyer a better offer.

Snyder (1996) notes that this approach may not be appropriate in the case of an upstream oligopoly (rather than the monopoly assumed in the bargaining models). He develops a model in which buyers, by accumulating a backlog of unfulfilled orders, can impose a constraint on the maximum collusive price that can be sustained in an infinitely repeated procurement game. A large stock of unfulfilled orders increases incentives to deviate from the collusive outcome, and in order to prevent the buyer from accumulating a backlog, suppliers need to

offer a lower price. As larger buyers have a greater ability to create an artificial 'boom' through accumulating and then tendering for a backlog of orders, suppliers need to offer them lower prices.

Tyagi (2001) argues that suppliers may have an incentive to favour larger buyers in order to increase heterogeneity amongst buyers, thus reducing the likelihood of collusion in the downstream market (which would reduce their profits as a result of the additional mark-up). In this view, better terms offered to larger buyers are a device of maintaining a heterogeneous downstream market, avoiding the double-mark up and its negative impact on upstream profits that would result from downstream collusion.

Chae and Heidhues (2003) argue that risk aversion amongst buyers may explain the benefits from grouping together in buyer alliances. Where buyers are risk averse, they may bargain more aggressively in joint negotiations because, for each negotiation with a supplier, the fall-back position in case they fail to reach an agreement is improved (taking the outcomes of all other negotiations as given), and the risk of breakdown is shared. Put differently, where negotiations with suppliers would be an instance of all-or-nothing for each individual buyer, the buyer's outside option is significantly improved when the same negotiation takes place through the alliance.

By contrast, Raskovich (2003) provides an argument why larger buyers may have to pay more to suppliers. In his setting, suppliers would need to ensure a critical mass of orders before commencing production (and making the necessary investments). Where a large buyer is pivotal in the sense that its demand would be sufficient for the seller to invest and produce, the large buyer is in a worse bargaining position than smaller buyers. Whereas the seller, in the worst case, would be prepared to supply smaller buyers at incremental costs, it would need to recover fixed and common costs from the large buyer. Therefore, the large buyer has an absolute-scale disadvantage, which may reduce or even outweigh any relative-scale advantage it might enjoy, for example, as a result of a better negotiation position.

Sources of public sector buyer power

3.4 As in the private sector, the public sector may enjoy buyer power for a variety of reasons, which can be broadly separated into two categories:

- factors related to the size of a buyer relative to the total demand within a market
- factors related to the strategic importance for suppliers in a market of dealing with a particular buyer.

Size as a source of buyer power

3.5 Buyer power is normally associated with the size of a buyer relative to the market: a buyer is powerful if it controls a substantial portion of total demand in a relevant market. Total public sector procurement accounts for more than 10 per cent of GDP, so it is to be expected that, in some markets, the public sector will account for most, if not all of demand, and could therefore enjoy buyer power, provided it were to act as one single buyer, or at least in a sufficiently co-ordinated manner.

3.6 However, unlike a single big firm, the 'public sector' may not act in a co-ordinated way, consolidating all its purchase requirements in a particular market and thereby achieving buyer power. Thus, even if the public sector accounts for a significant proportion of total demand in a particular market it does not necessarily possess buyer power. In addition, the public sector's needs within a particular market must be aggregated and consolidated, and procurement decisions must be made in explicit recognition of the fact that the public sector controls a significant proportion of market demand. Where different branches of government, or different local authorities, buy the same goods and services individually and in an un-coordinated fashion, there would be no public sector buyer power even if the public sector accounted for the entirety of market demand.

3.7 Purchasing decisions in the public sector are typically widely dispersed over a large number of decision makers, and it requires conscious efforts to consolidate and co-ordinate demand (see Box 3.2). However, there is an increasing recognition that benefits can be obtained from reorganising government procurement, by aggregating together the government's demand for goods and services, and merging procurement authorities. For example:

- The Byatt report (DETR/LGA, 2001) identified the need for a more strategic approach to procurement in local government, and the value for money benefits that might be achieved by aggregating and bundling contracts.¹²
- The Kelly report (OGC, 2003) reiterates the message that consolidation of public sector demand and a stronger lead from the centre is an important factor in ensuring that the public sector obtains value for money and promotes competition.

Implementation of these recommendations will increase the likelihood of public sector buyer power as a result of size.

Box 3.2: Decentralised procurement

In central government, each Department is responsible for its own procurement. Some Departments have a specialist procurement unit, which procures some or all goods and services on behalf of the Department and sets the specific procurement policy for that Department. The Department of Health also sponsors the National Health Service (NHS) Purchasing and Supply Agency

¹² In response to these findings, the ODPM developed a national procurement strategy for local government (ODPM, 2003), which might be expected to contribute to a co-ordination of local government procurement.

(PASA), a specialist procurement unit for the NHS. The Ministry of Defence (MoD) sponsors the Defence Procurement Agency, a specialist procurement unit for the armed forces.

The Gershon review of procurement in central government (HM Treasury, 1999) led to the creation of the Office of Government Commerce (OGC), an independent Office of the Treasury. The OGC's primary function is to promote best practice in procurement by central civil government excluding the NHS and MoD. The OGC also has an executive agency, OGC Buying Solutions, which offers procurement advisory services to public sector bodies and puts in place framework agreements under which bodies across the public sector can procure goods and services.

In local government, each local authority is likewise responsible for its own procurement. However, local authorities may draw on a number of organisations (namely the Local Government Association (LGA), the Office of the Deputy Prime Minister, the Public Private Partnerships Programme and the Improvement and Development Agency) for procurement support, and may use purchasing consortia in order to consolidate and co-ordinate their demand. Only 39 per cent of local authorities have some form of a central specialist procurement unit (ODPM, no year) with the remaining delegating procurement to individual service departments (e.g. education, social services).

Sixty-seven per cent of local authorities are members of, or use purchasing consortia to source at least some of their requirements, but this relates primarily to low cost/low importance goods such as stationery. There are no published figures available for the overall share of public procurement that is undertaken through consortia. However, estimates suggest that the value of spending by local authorities in England through consortia is only around £1.1 billion per year out of an estimated £25 billion spent by Local Authorities on buying goods or services (ODPM, 2001).

Strategic importance as a source of buyer power

- 3.8 Size is, however, not the only source of buyer power. A buyer may enjoy buyer power because supplying that particular buyer is of strategic importance for upstream firms. For example, being selected as a supplier by a reputable firm may provide reputational advantages in competing for other business¹³, or may make it easier for a firm (in particular a small firm) to obtain access to finance. Although larger buyers are more likely to be in a position to confer those benefits onto their suppliers, size is not necessarily the crucial factor in this regard.
- 3.9 Supplying the public sector is often regarded as having such effects. Public contractors are said to benefit from reputational advantages helping them in their everyday business dealings. Without doubt, the institutional constraints on public procurement imply that suppliers chosen by the public sector are known to have undergone a relatively strict and comprehensive selection process. However, little empirical evidence exists to substantiate the claim that being a public contractor is associated with significant prestige benefits, or that such benefits would be significantly different from being selected as a supplier of a large and reputable private sector firm.¹⁴
- 3.10 Other effects might be more important in the case of public procurement. For reasons discussed in more detail below, the public

¹³ So-called 'reference customers' exist across a wide range of industries, and are of particular importance where the quality of products and services may be difficult or costly to verify ex ante and where therefore the supplier selection of a buyer who itself enjoys a good reputation can serve as a valuable quality signal.

¹⁴ Demonstrating a close correlation between supplier reputation and public contractor status is not particularly instructive in this regard. The supplier's reputation may as often as not be the precondition for winning a high-profile public contract. Rather than the supplier gaining reputation from being selected as a public contractor, the public sector relies on the contractor's reputation in order to reduce the risk of failure.

sector may be more prepared to offer long-term contracts (and contracts with a longer duration), which may benefit the supplier in terms of a guaranteed and certain revenue stream. This may enable public sector contractors to take risks in their other business dealings, or allow them to obtain access to credit at much lower costs, giving them a competitive edge over their rivals. For similar reasons, the public sector may require (and pay for) the contractor to hold excess capacity, some of which may be used for the supply of other buyers (subject, of course, to the supplier being able to honour its commitments under the public sector contract). All of these factors may give the public contractor advantages over its competitors. Again, however, there is little evidence showing the extent of any difference in terms of advantages enjoyed by suppliers of the public sector and firms supplying large and reputable private sector firms.

- 3.11 A source of buyer power that seems to be unique to the public sector is the ability of some public sector buyers to affect demand of other buyers, as is sometimes the case in the health sector (see Box 3.3). Although it is far from clear how common such cases are, they need to be borne in mind when looking at public procurement.

Box 3.3: Pull-through effect and buyer power

The case study on procurement of continence care provides an example how buyer power could arise from the strategic importance of supplying (a particular part of) the public sector.

Continence care products are procured by the public sector through two channels, the Hospital channel and the Community channel. There is no private demand.

Procurement of continence care products for use in hospitals is undertaken by the NHS' centralised Purchasing and Supply Agency (PASA) through open competitive tender. The use of continence care products in hospitals accounts for about 10 per cent of total demand.

Because many patients become familiar with a particular continence care product whilst in hospital they will typically prefer to continue using the same brand when subsequently discharged into the community. Thus, even though hospitals only account for a small proportion of NHS spend on continence care products, hospital sales derive an additional significant benefit for suppliers because such sales may 'pull through' sales to the community sector. Sales to the community are driven to a significant extent by whether or not a particular supplier's products are being used in hospitals. This could give PASA a strong position when choosing suppliers to be included in the hospital supply.

A similar effect was considered to be important in *Napp*¹⁵, where the company argued that significant discounts to hospitals, which the OFT claimed were abusive as they prevented entry into the hospital sector, were commercially motivated by a so-called 'follow-on' effect: hospital sales of sustained release morphine product generated additional sales in the community. The Competition Commission Appeal Tribunal (CCAT) disputed the magnitude of this effect, but accepted that hospitals play 'a central role in facilitating entry to the relevant market and represent a key strategic entry point for new competitors' (paragraph 267). One of the factors considered by the CCAT was that hospitals, which were relatively price sensitive and more willing to assess the effectiveness of new products, offered new entrants a way to enhance their product's reputation, which would not be possible with general practitioners (GPs) who tend to be risk averse and rely on the reputation of a brand.

¹⁵ Judgment by the Competition Commission Appeal Tribunal in *Napp Pharmaceutical Holdings Limited and Subsidiarie v Director General of Fair Trading* (Case No 1001/1/1/01) of 15 January 2002.

Legal framework for public procurement

3.12 Public procurement processes are subject to a number of legal requirements, most notably the EU Directives on public procurement, which apply to contracts whose value is above certain thresholds (summarised in Table **3.13.1**). The EU Directives are aimed at ensuring that public procurement is open and fair, and contributes towards the common market by eliminating discrimination against suppliers from other Member States. Even in the case where the value of contracts is below these thresholds, and where procurement therefore is not formally covered by the EU Directives, the general principles of free movement of goods and services, non-discrimination, equal treatment, transparency and proportionality laid down in the Treaty of Amsterdam apply to all public procurement.¹⁶

¹⁶ The proportion of procurement activity not explicitly covered by the EU Directives is potentially significant. Data collected by the OGC on a subset of contracts awarded by central government institutions suggest that around half of supplies and services contracts and about two thirds of contracts for public works are below the threshold. Although the proportion of procurement covered by this data is small, and therefore the results cannot be generalised, this suggests that a considerable amount of procurement activity is taking place below the threshold values.

Table 3.1: Contract value thresholds for the applicability of public sector procurement regulations as of 1 January 2004

	Supplies	Services	Works
Central government bodies	99,695.00	99,695.00	3,834,411.00
Other public sector contracting authorities	153,376.00	153,376.00	3,834,411.00

Note that these are headline thresholds only in the sense that there are a number of exemptions where different thresholds apply, particularly for the utility sector, or where procurement is not subject to the EU rules, for example in the case of goods and services relating to national security.

3.13 A new Directive on procurement was adopted on 31 March 2004. This will need to be implemented in the United Kingdom by 31 January 2006. The objective of the new Directive is to consolidate, simplify and clarify the existing EU directives, and to update them to reflect modern procurement techniques such as electronic auctions. The new Directive

includes explicit rules on framework agreements¹⁷, which have been common practice in procurement for some time but for which no explicit provisions existed under the old directives.¹⁸ It also takes into consideration existing case law on the right of public bodies to include relevant environmental and social criteria in specification, selection and evaluation. The new Directive has to be transposed into national law by 31 January 2006.

- 3.14 Under the EU Procurement Rules, the public sector has to organise procurement in the form of competitive tenders (except under specific circumstances discussed below). These tenders can be completely open in the sense that all suppliers¹⁹ can submit bids, or restricted in the sense that only short-listed bidders can do so. A short-list of bidders from whom bids are accepted is usually drawn up by applying pre-qualification criteria to submissions received in response to an open call for expressions of interest.

¹⁷ Framework agreements are intended to make the procurement simpler and faster for individual public agencies whilst remaining fully compliant with the EU rules. They allow the public sector to purchase from a restricted number of suppliers without having to go through a full procurement process for each subsequent call-off following a formal procurement competition. Examples of framework agreements are the S-Cat electronic supplier catalogue of IT and professional services managed by OGC Buying Solutions, the Broadband framework agreements put in place by the DTI for use by Regional Broadband Aggregation Boards (Adits), or supplier frameworks with the NHS Purchasing and Supply Agency for use by NHS hospital trusts. A framework agreement usually sets out terms and conditions on which the supplier or suppliers are prepared to provide goods or services to the public sector. The public sector can then call off supplies under this agreement, but is not committed to making purchases. Where the framework agreement is concluded with multiple suppliers, these may be invited to submit competitive bids for specific purchases where the terms and conditions are supplemented or refined.

¹⁸ In the past there was some debate about compliance of public sector procurement under framework agreements with the EU directives, in particular where contract terms re-negotiated for call-offs under the framework agreement were better for the suppliers than those set out in the framework. The explicit provisions on frameworks in the new directive more or less follows the UK practice, albeit with some extra restrictions.

¹⁹ Tenders from suppliers who do not meet minimum selection may be rejected.

3.15 The restricted procedure is the most commonly used procedure, accommodating projects where the contract cannot be awarded on the basis of a single criterion (such as price) and where therefore the cost of preparing and evaluating bids is potentially significant. The procurement rules state that the number of short-listed bidders may not normally be restricted to less than five without good reason. The pre-qualification criteria that can be used are limited by the EU rules to measures allowing the assessment of economic and financial standing, technical capability and, for services, capability. Firms can also be ruled out on grounds of criminal convictions, grave misconduct findings etc. The criteria that can be used for prequalification may impose significant constraints on public bodies, as discussed in Box 3.4.

Box 3.4: Limits on prequalification criteria – no black or white lists

The use of black lists (or white lists) for excluding companies that have in the past broken competition rules from bidding for public contracts has been considered in the Netherlands. In particular, when trying to promote voluntary notification of (past) cartel behaviour in the construction industry in the Netherlands, the Dutch competition authority considered the use of black or white lists for public construction projects. The intention was to allow firms having voluntarily notified such infringements by a certain date to bid for public contracts, but to exclude those found guilty of infringement later on.

However, such an approach was considered to be incompatible with the EU Directives. As stated in a letter from the Minister of Economic Affairs and the Minister of Justice to the Chairman of the Lower House of the States General, '[d]ue to the nature of the European directives in relation to tenders and the principle of proportionality in administrative law, a decision to exclude a company must always be in proportion of the size of the commission and the seriousness of the fraudulent practice or infringement. A company which has

acted fraudulently may not therefore simply be excluded from one or more tender procedures (or for a certain period).²⁰ This prevents the use of black lists (or white lists), and requires a case-by-case analysis of any decision to exclude a particular firm from participating in a tender.

3.16 The public sector may use the negotiated procedure (with or without prior publication of a contract notice) under specific circumstances set out in the EU Directives. This procedure may be used, for example, where services cannot be specified in sufficient detail to allow for a competitive tender, and where no (or no suitable) tenders have been received in response to a call under the open or restricted procedure. Large scale IT services and systems contracts with central government departments are examples of instances where a negotiated procedure might be appropriate. This procedure may also be used, in limited circumstances, to extend existing contracts, either for an additional period in time or to include additional services.²¹

²⁰ Lower House, Parliamentary Year 2003 – 2004, 28 244, No 64.

²¹ Limiting the scope for use of the negotiated procedure reflects the view that competition is generally superior to negotiations, provided there is a sufficient number of bidders. Bulow and Klemperer (1996) show that an auction (i.e. a competitive tender), in most circumstances, is preferable to negotiations with one less bidder, which suggests that the benefits of competition tend to outweigh what can be achieved with negotiating skills. However, experimental evidence suggests that multilateral negotiations, where a buyer can invite a seller to make an offer and then play bidders off against each other, may be as good as auctions in the case of a few bidders. Thomas and Wilson (2002) compare experimentally the outcome in a situation where a buyer plays off sellers against each other in a series of negotiations, and the results of a first price sealed bid auction. They find that prices are undistinguishable with four sellers (but lower when using an auction in the case of only two sellers), and that multilateral negotiations are slightly more efficient in the case of four sellers.

3.17 Of particular note in the EU Directives are the following rules:

- Tender opportunities and contract awards have to be published in the Official Journal of the European Union in a specified format that would make it easy for potential contractors to identify opportunities. For example, requirements have to be classified according to the CPV²² nomenclature. The (estimated) value of the contract and the criteria used in selecting tenderers and making an award have to be specified. Contract award notices need to give the name/address of the contractor, as well as an estimate of the proportion of requirements likely to be subcontracted.
- The procurement process has to comply with certain time limits. For example, where procurement takes place under the restricted procedure (discussed below), a minimum of 37 days has to pass between publication of a tender notice and receipt of requests to participate, and the deadline for tenders cannot generally be less than 40 days from dispatch of the invitation to tender.²³ However, where a Prior Information Notice has been published, this may be reduced to 26 days.
- Contracts may be awarded based on the lowest price, or on the 'most economically advantageous offer'²⁴. The latter criterion allows procuring agencies to consider quality and other non-financial dimensions in the award of contracts as long as these can be

²² Common Procurement Vocabulary

²³ Accelerated versions of tender procedures can be used where, for operational reasons, the contracting authority would not be able to adhere to the normal time scales. Taking recourse to an accelerated procedure has to be justified with reasons that are objective. These reasons have to be stated in the contract notice. The accelerated procedure reduces the minimum time between publication of notice to receipt of participation requests to 15 days, and the minimum deadline for receipt of tenders to 10 days.

²⁴ See for example, Council Directive 93/36/EEC regarding procedures for the award of public supply contracts, Chapter 3, article 26.

specified as objective and transparent criteria for evaluation and do not discriminate in favour of a particular supplier. There is no exhaustive list of criteria, but they must be relevant to the subject of the contract and provide a benefit to the contracting authority.

3.18 It is worth noting that the EU rules do not prevent the public sector from pursuing particular policy objectives through procurement, though the need to comply with formal requirements may make it more difficult to use procurement as a policy instrument.²⁵

3.19 In summary, the EU Directives set out a number of requirements with which contracting authorities have to comply, and favour the use of competitive tenders in procurement. They do not explicitly limit the extent to which the public sector could exercise buyer power. The principles of transparency and non-discrimination may make the exercise of strategic buyer power more difficult, but they do not appear to protect other buyers who might be adversely affected by the exercise of public sector buyer power. At the same time, compliance with formal requirements may make it more difficult in some instances for the public sector to exercise countervailing buyer power, but again the rules do not appear to create insurmountable barriers in this regard. In particular, taking account of long-term effects of procurement decisions on market competitiveness appears to be a difficult issue.²⁶ It seems to be unclear what scope exists for taking account of wider benefits from sustaining a

²⁵ For example in *Gebroeder Beentjes BV v State of the Netherlands* (Case 31/1987), the European Court of Justice, in its Judgment of 20 September 1988, held that a condition 'relating to the unemployment of long-term unemployed persons is compatible with the directive if it has no direct or indirect discriminatory effect on tenderers from other Member States of the Community' (paragraph 37(iii)). The ECJ also stated that a condition such as the employment of long-term unemployed persons would be 'an additional specific condition and must therefore mentioned in the [contract] notice so that contractors may become aware of its existence' (paragraph 36).

²⁶The OGC is in the process of preparing guidelines on the scope for avoiding over-dependency on particular suppliers.

competitive supply market that might accrue to smaller, private sector buyers.

Incentives and constraints in public procurement

- 3.20 The EU Directives and UK Regulations limit what contracting authorities can do when purchasing goods and services. How procurement is organised within the boundaries set by these regulations and guidelines depends on the specific incentives faced by contracting authorities.²⁷
- 3.21 The objective set out in the Government's Procurement Policy is to achieve 'value for money', where value for money is defined as 'the optimum combination of whole-life cost and quality (or fitness for purpose) to meet the user's requirement'.²⁸ The procurement policy

²⁷ The incentives faced by those responsible for public procurement have been examined, for example, by the Audit Commission (2002), the Better Regulation Task Force (BRTF/SBC, 2003); and the OGC (2003).

²⁸ Government Accounting, Chapter 22 on Procurement

- 3.22 further specifies that '[g]oods and services should be acquired by competition unless there are convincing reasons to the contrary'.²⁹
- 3.23 It should therefore be in the natural interest of the public sector as a buyer, through its procurement decisions, to promote competition. Taking a strategic view, procuring agencies should also consider the long-term effects of their procurement choices on competition, investment and innovation. One would not expect procurement processes to be designed in a way that deliberately reduces competition in the short term, or has a detrimental impact on long-term competitiveness. Rather, one would expect the public sector wherever possible to constrain seller power and to seek to maintain a competitive supply market in the long term.
- 3.24 However, incentives faced by individual decision makers within organisations may differ from the objectives of the organisation,³⁰ and

²⁹ This corresponds to the notion of the 'most economically advantageous offer' in the terminology of the EU Directives. The 'value for money' policy equivalent for local authorities is Best Value. Best Value replaced compulsory competitive tendering (CCT) as a policy in 1999. From the early 1980s, specified local authority services were subject to CCT. This compelled relevant public bodies either to seek external tenders for specified services or to 'market test' in-house provision of services against bids from external contractors. Initially, CCT only covered construction and maintenance services; refuse collection, street cleaning, catering and other so-called 'blue-collar' services were added in 1988, and in 1995 a number of white collar services were added (Audit Commission, 2002). CCT was meant to bring about cost savings and efficiency gains as a result of putting competitive pressure on the provision of public services, but the majority of local authorities perceived it as a threat to in-house service provision as well as a threat of worsened employment conditions for workers. Boyne (1998) examines the effects of CCT on spending efficiency. Given that there are theoretical arguments for and against CCT, he claims that empirical research is required in order to provide clear cut conclusions. However, he finds that empirical studies covering the effects of competitive tendering in local government are 'few in number, cover a limited range of services, and are methodologically flawed', leading to the conclusion that neither the case for CCT nor the case for its replacement by best value requirements are based on a solid empirical and theoretical foundation.

³⁰ For an accessible treatment of the problems that result from the delegation of decisions to agents see Milgrom and Roberts (1992).

procurement decisions may therefore not always be perfectly aligned with the promotion of competition, although they must be based on value for money and consistent with the EU requirements. This is an issue common to the private and public sectors, but it has been argued that some features of the public sector might affect the scope for resolving differences in objectives through high-powered incentive schemes.³¹ For example, if there were a lower degree of functional specialisation so that those responsible for procurement in the public sector were also performing other tasks, it might not be advisable to provide them with strong incentives to achieve cost savings as this might divert most of their effort towards the procurement function and away from their other tasks.³²

- 3.25 In addition, where the costs and benefits associated with procurement decisions vary in their visibility. The additional administrative costs of running a tender with a larger number of bidders may be relatively obvious, whereas the cost savings achieved by inviting more bidders may be much less so. Depending on the size and nature of the contract, very low headline prices offered by a supplier are highly visible, but additional costs that will be incurred over the lifetime of a project, e.g. in order to improve quality, will be more difficult to establish. This may distort choices made by individuals.
- 3.26 Constraints may also arise from the structure (rather than the level) of budgets. Cost savings in the long term may be difficult to achieve if they require spending more now and budget constraints begin to bite. The scope for contracting with specialist suppliers may be limited if constraints on personnel budgets imply that the necessary skills for

³¹ For an overview of these arguments in the wider context of the provision of public services see, for example, Grout and Stevens (2003).

³² Insufficient specialisation has been the focus of many analyses of public procurement (e.g. by the Audit Commission, 2002, or the OGC, 20003), but emphasising the lack of procurement skills rather than appropriate incentives.

managing these suppliers and delivering projects that might of considerable complexity are not available. Thus, even though the use of specialist firms may be more cost-effective overall, letting a single integrated contract may sometimes be the only practical option.³³

Increased risk aversion

- 3.27 One area of significant difference between public and private sector is the impact of failed procurement decisions. Where services or goods procured are crucial in the supply of public services, the failure of the selected supplier to meet requirements is highly visible and has a significant impact. If the supplier of an IT system for a large retailer fails to deliver, the retailer will suffer (in terms of higher costs, reduced stock availability etc), but its customers have the option to buy from another retailer. If similar problems arise in the case of the public benefits administration, those affected do not have an alternative.³⁴
- 3.27 This means that avoiding failures is a high priority for the public sector, and the focus on ensuring security of supply may lead to the public sector seeking excessive levels of quality assurance through the qualification criteria it expects its suppliers to meet. It may also create incentives to stick with incumbent suppliers rather than trying out new

³³ This boils down to the public sector 'procuring' systems integration services even if such services might be more effectively be provided in-house.

³⁴ Of course, there are examples of privately supplied services where customers face little choice (e.g. the supply of water by a private company or commuter train services run by a private franchise holder). However, these sectors also tend to be regulated, reflecting the lack of competitive pressure, and regulators are often tasked with ensuring that the regulated firm is able to maintain a secure supply. The need to comply with regulatory obligations may make such firms behave more like the public sector than private sector firms, and the change in incentives is often considered to be one of the reasons why regulation is only a poor substitute for competition.

firms whose ability to deliver is unknown, thus creating entry barriers that are higher than in a comparable private sector context.

- 3.28 It may also lead to a reluctance to experiment with novel ways of organising procurement processes, and instead to stick with the tried and tested. For example, e-auctions are generally seen to provide a significant benefit in terms of reducing procurement costs (and thereby allowing wider participation) for many of the public sector's requirements. Despite potential cost savings of around 20 to 25 per cent, however, the appetite to make use of e-auctions so far appears limited, and this has been attributed to a sceptical attitude within the civil service.³⁵
- 3.29 Such risk-aversion may be reinforced by the ex-post scrutiny of procurement decisions by a number of institutions such as the NAO or the Audit Commission. The potentially significant publicity surrounding large-scale procurement decisions may create a considerable degree of risk aversion amongst public sector buyers. There may be an incentive to focus not on doing things right, but on being seen to have done things right, and to comply with certain accepted rules of behaviour rather than seeking to obtain best value where this might require one to deviate from these.³⁶ Although the 'no-one-has-ever-been-sacked-for-buying-XXX' syndrome is not a preserve of the public sector, it may have a significant impact on public procurement decisions.

³⁵ 'Martin Sykes, executive director of supply relations at the OGC, said the concept of using online auctions to drive down prices was still new. But his department had been "disappointed" by the lack of enthusiasm from other central government departments, given Chancellor Gordon Brown's pledge to cut costs. "There are still sceptics out there who are not convince they can make this happen," he said' (see 'Civil service 'ignoring online savings', Daily Telegraph, 20 May 2004).

³⁶ For example, the Audit Commission (2002) refers to a narrow approach to procurement, focused on ticking boxes rather than taking account of the full set of effects of particular decisions.

- 3.30 Increased risk aversion may mean that the public sector is less likely than private sector buyers to take full account of the benefits from increasing the level of competition in procurement, in particular in the long run, where this requires novel and unusual actions and a willingness to try out new firms and procurement methods.

No profit maximisation objective

- 3.31 The second main difference between the public and the private sector is that the former is not guided by the aim of maximising profits. This has a number of implications.
- 3.32 The public sector may be considered to be less likely to exercise buyer power by strategically reducing demand in order to push down input prices and maximise profits (see Annexe A). For example, where a private monopsonist chooses its input demand (and thereby its output) so as to maximise profits,³⁷ the demand of a public sector buyer is likely to be determined by the level of inputs that are needed in order to provide a level of services that has been set through the political process. Lacking the profit maximisation objective, a public sector monopsonist should not have incentives to reduce its input demand (and thereby its output) in order to generate profits.
- 3.33 Similarly, concerns about the use of buyer power in order to distort downstream competition may be of limited relevance in the context of public procurement. Where a profit-maximising buyer might wish to exercise its buyer power in a way that disadvantages other buyers with whom it competes in the downstream market, a public sector buyer should not have such incentives. In the same way as a public buyer

³⁷ Note that the reduction in the output provided by a monopsonistic firm does not, in the traditional monopsony model, affect total industry output, which is determined by the competitive output price over which the monopsonist has no control.

should not be driven to reduce demand by a desire to maximise profits, there would appear to be little incentive for a public sector buyer to obtain market power in the provision of its services. Although there may be instances where similar services are supplied by the private and the public sector, one would not expect there to be much competition in the provision of genuine public services. Indeed, if there were strong competition between the public and the private sector, this should cast doubt on the justification for supplies by the public sector in the first place.

3.34 However, this conclusion may not hold in cases where considerable emphasis is put on cost savings, without due regard to the impact on service level and quality, and the effect on other buyers:

- Where public authorities have considerable discretion in determining the level of output they wish to provide, or where the public sector can bridge any gap between procurement and what would be required to provide a certain level of services through self-supply. For example, where the self-supply option exists, a public sector body may well have an incentive to reduce its demand for private sector provision in order to achieve overall cost savings (as we will explain in more detail below).
- Where the public sector is a significant, but not the only buyer of particular goods or services, where upstream firms supplying the public sector obtain significant advantages in supplying the private sector, and where the public sector buyer is able to extract a sufficient portion of the surplus gained from such advantages, it may obtain a better deal by restricting or distorting competition in the supply of smaller private sector buyers.

Other policy objectives

3.35 Finally, the public sector, through its procurement, might wish to pursue other policy objectives which could conflict with the objective of maximising competition. Although the legal and policy framework impose

some limits on the extent to which public sector procurement can be made to contribute to policy objectives such as reducing long-term unemployment, and in particular the form in which such policy objectives need to be pursued,³⁸ there appears to be significant scope to achieve such objectives through procurement where they are relevant to the subject of the contract.

3.36 In some cases, public procurement may take place through schemes such as the Pharmaceutical Price Regulation Scheme (PPRS), which governs the prices of branded medicines paid by the NHS. The PPRS is an agreement between the Department of Health and the pharmaceutical industry (represented through the Association of the British Pharmaceutical Industry). The objective of the scheme is to

- 'secure the provision of safe and effective medicines for the NHS at reasonable prices'
- 'promote a strong and profitable pharmaceutical industry capable of such sustained research and development expenditure as should lead to the future availability of new and improved medicines'
- 'encourage the efficient and competitive development and supply of medicines to pharmaceutical markets in this and other countries.'³⁹

3.37 The PPRS sets out the conditions under which scheme members may supply branded medicines to the NHS, and thus, the PPRS governs terms and conditions that would otherwise be determined through the

³⁸ Case 31/1987, Judgment of the European Court of Justice of 20 September 1988.

³⁹ See 'Introduction to the 1999 PPRS', http://www.dh.gov.uk/PolicyAndGuidance/MedicinesPharmacyAndIndustry/PharmaceuticalPriceRegulationScheme/ThePPRSScheme/ThePPRSSchemeArticle/fs/en?CONTENT_ID=4015447&chk=bYWR8n

procurement process. The Drug Tariff, which lists products that can be prescribed by GPs and nurses, including their list prices, has similar effects, as described in our case study on the procurement of continence care products.

- 3.38 To the extent that such other policy objectives impose additional constraints on the participation of firms, or the selection of the successful bidder, or pre-determine prices (or other terms of supply) that would normally be set through a competitive tender process, they conflict with the objective of promoting competition. Some objectives such as, for example, the promotion of SMEs may be in line with the objective of promoting competition where they aim at removing obstacles that unduly limit SME participation in public tenders. However, they might conflict in the case where they would effectively require that preferential treatment is given to such firms (to the extent that this would be possible under the EU Directives and the EC Treaty).

Summary

- 3.39 Like a private sector buyer, the public sector may enjoy buyer power because of the sheer size of its demand in some markets or because being awarded a public contract is strategically important for suppliers.
- 3.40 Unlike a private sector buyer, however, the public sector is subject to a number of legal and policy requirements which can affect the way it can organise its procurement. Rules, for example, on the procurement procedures and criteria that can be used, may make it more difficult for the public sector to exercise buyer power, which can have both positive effects (where the exercise of buyer power could potentially distort competition) and negative effects (where the exercise of buyer power would constrain seller power and make competition more effective).
- 3.41 In addition, the public sector may (perhaps for good reasons) be more risk averse than the private sector in terms of experimenting with new suppliers and novel ways of purchasing. It is not driven by the objective of maximising profits and is not, for the most part, facing downstream

competition in the provision of public services, which would undermine if not remove incentives for using buyer power strategically to gain competitive advantages. Finally, there may be pressure for the public sector to use procurement in the pursuit of other policy objectives, which may not always be perfectly aligned with the objective of maximising competition in order to obtain value for money.

4 COMPETITION EFFECTS OF PROCUREMENT

4.1 In order to analyse the competition effects of procurement it is helpful to distinguish between:

- **short term effects** on competition amongst potential suppliers in the provision of the goods or services for a particular requirement. These effects capture the impact on the intensity of competition for a given number of suppliers and a given technology
- **long term effects** on investment, innovation and the competitiveness of the market, which are reflected in competition amongst suppliers in future procurement processes. These effects capture the impact on changes in market structure and technology caused by public procurement
- **knock-on effects** on competition in the supply of **other buyers**, which may be unintentional (e.g. other buyers may be affected by the extent to which procurement provides innovation incentives or affects market competitiveness in the long term) or aimed at obtaining better terms and conditions at the expense of others (which would amount to a transfer of rents from other buyers to the public sector).

4.2 This distinction is useful because the various effects can go in opposite directions. For example, long-term competitiveness can suffer even (or perhaps even because) competition in the short term is too intense. Other buyers might benefit from the exercise of buyer power to maintain or promote long-term competitiveness, or may be harmed if suppliers' incentives to invest and innovate are undermined through public procurement.

Short-term effects

- 4.3 The main short-term effects on competition arise from the impact of procurement decisions on the level of participation in a particular tender, whether or not bidders compete on a level playing field, and the presence or absence of incentives to collude.

Competition and participation

- 4.4 A rule of thumb is that more bidders make for more intense competition, resulting in lower prices and better quality. Even though the incremental benefits from allowing more bidders to participate may become smaller as the number of firms increases, in most circumstances adding bidders increases the level of competition.⁴⁰ This would suggest that any feature of public procurement processes that limits participation has a detrimental impact on competition in the short term.
- 4.5 The exception to the rule that more bidders make for more intense competition arises in the case where the value of the contract is likely to be the same for all bidders (e.g. because the cost of delivery is the same for all bidders), but bidders are uncertain about this value (e.g. because the cost of delivering the service is unknown ex ante). In this case, differences between bidders arise from differences in their estimates of

⁴⁰ Gupta (2002), using data from highway construction projects in Florida, shows that winning bids decrease in the number of bidders (as long as the number of bidders is small), but that adding further bidders has no impact when the number is large. Gupta finds a decrease in the winning bid until there are about six to eight bidders, which, in his view, suggests that the highway construction market becomes competitive with about eight bidders.

the likely contract value.⁴¹ Increasing the number of bidders increases the risk that the winner of a tender has overestimated the true value of the contract and will regret having won. This tends to make bidders more cautious, and therefore increasing participation above a certain level may actually reduce the intensity of competition (in the sense that bidders build in a larger safety margin, and therefore the buyer pays a larger mark-up over the cost of service delivery). Box 4.1 provides a more detailed explanation and Box 4.2 shows that winner's curse issues are relevant in the context of public procurement.

Box 4.1: The winner's curse

The winner's curse refers to the risk of the winning bidder in an auction having overpaid for the item he or she has won. Competitive tenders for public contracts can be regarded as auctions in which bidders submit bids to supply services at particular terms and conditions, and the bidder with the lowest bid (e.g. the lowest price offered) wins the contest.

The winner's curse is an issue in so-called common value auctions. These are auctions where the value of an item is the same for all bidders, but bidders have different expectations regarding this value, and need to bid on the basis of their expectation. In practice, many procurement contests are likely to be 'almost common value' settings, where bidders have similar values but there are known differences between bidders.

The standard classroom illustration is the auction of a jam jar full of pennies: obviously, the monetary value is the same for all participants in the auction, but everybody may have a different estimation of the number of pennies in the jar,

⁴¹ In economic terms, this is referred to as a 'common value' setting, as opposed to a 'private value' setting where differences between bidders are due to differences in their cost of delivering the service, which is known to each bidder. For a more detailed explanation of the difference between common and private value auctions see Box 4.1

and hence its value. Assume that bidders are identical (in the sense that they draw their best estimates from a common distribution), and that their expectation is, on average, correct (i.e. the mean of this distribution is exactly the value of the jar). How much should a bidder be prepared to pay (at most) for the jar?

Compare this problem to one in which the value of the item is different for each bidder (e.g. a painting, whose value depends only on personal tastes), and bidders differ with regard to their valuation (a so-called private value auction). In this case, a simple and optimal rule is to be prepared to bid up to one's value. The optimal bidding strategy in a so-called open auction, e.g. a typical fine art auction at one of the big auction houses where bidders keep increasing their bids in response to requests from the auctioneer until only one bidder remains, would be to raise one's bid up to one's value. The bidder with the highest valuation would win the auction, paying the value of the second highest bidder (at which this bidder drops out of the auction).⁴² As each bidder knows its own value for certain, there is no risk of winning the auction and paying more than the item is worth.

Applying the same rule but using one's own best estimate of the value of the item in a common value auction, however, would result in paying more than the item's value. This is because the winner is the bidder with the most optimistic expectation (paying the valuation of the second most optimistic bidder). Assuming that expectations are, on average, correct, this unfortunately implies that the winning bidder will most likely have over-estimated the true value, and pay more than the item is actually worth. Thus, a rational response is to reduce

⁴² By contrast, the optimal bidding strategy in a so-called first-price sealed-bid auction would be different. In such an auction, each bidder writes the amount it is prepared to pay on a piece of paper and hands it to the auctioneer in a sealed envelope. The bidder with the highest bid wins, and pays the amount it put on its bid. In this case, bidding one's value would not be optimal because it would not leave the bidder with any surplus: a winning bidder would pay exactly its value. Therefore, in a sealed bid auction, the optimal bid will be somewhat below one's value, with the difference depending on the bids others are expected to make.

the amount one is prepared to bid below one's own best estimate. The risk of over-paying increases with the number of bidders who participate in a common-value auction – with only three bidders, for example, the winning bidder will have had a more optimistic estimate than two others, whereas with thirty bidders the winner will have to have been more optimistic than 29 other bidders. Thus, the more bidders there are, winning implies that the winning bidder's best estimate is more likely to be at the extreme upper end of possible valuations. Put differently, winning in a common value auction suggests that one's own estimate has been more over-optimistic the more other bidders have been beaten.

Therefore, bidders should be more cautious when there are more competitors, thus leading to the situation where more competition for the item can actually reduce the price it fetches in an auction (see Bulow and Klemperer, 2002, who also consider cases in which bidders are different).

The winner's curse not only results in bidders bidding more cautiously, but also increases the risk that an auction produces an inefficient outcome, awarding the contract not to the most efficient firm but rather to the most optimistic one. This may increase the risk of the winning bidder defaulting on its obligations.

Box 4.2: Winner's curse in procurement of highway maintenance

Competitive tenders used in public procurement have very clear common value elements. The cost of providing a particular service are very often identical or very similar for all participants, but they may be rather uncertain in advance in the case of long-term projects. Therefore, bidders must submit their bids using their best estimates of the likely cost. More uncertainty about the true cost of delivering the buyer's requirements makes bidders more cautious, and so does potentially increasing the number of bidders.

Hong and Shum (2002) analyse data from procurement auctions for highway maintenance contracts held by the State of New Jersey. It is reasonable to assume that the cost of carrying out the required work is largely the same for all bidders, but that bidders may differ with respect to their estimates of these costs. In such a setting, the winner, having offered the lowest price, runs the greatest risk of having under-estimated true cost.

Hong and Sum show that, for a large subset of the auctions in their dataset, the average unit cost (the price paid by the buyer) increases with the number of bidders: more participants lead to higher bids, i.e. a higher mark-up on bidder's estimate of costs and therefore higher prices paid by the procuring agency. This suggests that bidders respond rationally to winner's curse problems by bidding more cautiously, and that this outweighs the effect of increasing the pro-competitive effect of increasing the number of bidders.

4.6 Of course, even ignoring the case where adding more participants makes bidders more cautious, there may be good reasons for limiting participation:

- Bidding for a public contract can be very costly, and bidders will ultimately have to recover these costs (e.g. through a mark-up on the contract price). More bidders may therefore imply higher prices as total participation costs (measured across all bidders) increase.⁴³
- In addition, where tenders are complex, bid evaluation tends to be difficult, time-consuming and costly. Where bids have to be

⁴³ In a perfectly competitive market where bidders will, on average, need to recover the costs of bidding, any increase in participation costs will have to be borne by the public sector. If the cost of preparing a bid is x , and the probability of winning a tender is p , a bidder will need to include a mark-up for the recovery of bidding costs of $x * 1/p$ in its bid. A lower mark-up will result in an expected loss, and a higher mark-up would result in an expected profit which is not sustainable as we have assumed perfect competition amongst bidders. Thus, if competition amongst bidders is effective, a buyer will always pay the full cost of bidders regardless of whether there are 10, 100 or 1000 bidders. This conclusion does not hold if bidders have some market power, and where participation costs may partly be funded from profits.

assessed and evaluated according to a large range of criteria, adding another bidder can add significantly to the procurement cost.⁴⁴

Competition and similarity across bidders

4.7 The effect that more bidders make for more intensive competition in a tender tends to be stronger the more similar the bidders are.⁴⁵ Inviting

⁴⁴ Soudry (2003) discusses the rule of participation costs as a potential argument for restricting participation. Whenever quality criteria are relevant in the award decision, restricting the number of bidders can be beneficial if there are variable costs associated with the tender process (i.e. the costs of conducting the tender increase with the number of bidders). This is a straightforward trade-off between the benefits from lower prices and better quality that would result from increasing the number of bidders, and the increase in the administrative costs of procurement from doing so.

Kim (1998) argues that increasing the number of bidders can contribute to cost-overruns through subsequent re-negotiation of contracts. The intuition behind this argument is that in a world where contracts are inevitably incomplete (i.e. do not contain a provision for each circumstance that might arise during the contract period), contractor reputation is an important guarantor of performance. A contractor may try to re-negotiate contract terms after having been awarded the contract in order to increase its profits (e.g. try to extract additional payments from the buyer, threatening non-performance otherwise), but will do so only if the short-term gains in terms of increased profits exceed the long-term losses in terms of lost reputation, leading to a potential loss of future business. The higher the number of bidders, the lower the long-term gain, and therefore the higher the likelihood of re-negotiation. Put differently, an increasing number of bidders increases the incentives for winning bidders to behave opportunistically after the contract has been awarded. The threat of opportunistic behaviour is a potential cost of increasing the level of participation. Similar issues could arise when increasing participation might make it more likely that the winning bidder has underestimated the cost of providing the services (i.e. where it exacerbates winner's curse).

⁴⁵ The general result that competition in auctions is fiercer the greater the number of homogenous bidders there are may be weakened or even reversed in the case where the buyer can use a discriminatory auction format. Ganuza and Pechlivanos (2000) find that 'the more tilted in favour of a competitor is the design [of the contract], the more discriminatory against this competitor the optimal mechanism will be.' The buyer's ability to discriminate against particular bidders through the auction mechanism will level the playing field, thus giving the buyer more flexibility to specify its requirements in a way that increases the chance that one bidder is naturally advantaged and thus will be able to provide at lower costs.

additional bidders who are weak (e.g. firms that are generally assumed to be subject to a cost disadvantage), and are generally known to be weak, does not contribute much to competition (see Maskin and Riley, 2000). The underlying mechanism is described in Box 4.3 Thus, choices in the conduct of public procurement processes that, everything else being equal, lead to bidders becoming more dissimilar are likely to have a negative impact on competition.⁴⁶

Box 4.3: The impact of bidder similarity on competition

The reason why adding weaker bidders does not have much impact on the intensity of competition and the outcome of a competitive tender is easy to see in the case of an open auction where the buyer reduces the price until only one bidder is prepared to supply the service at the announced price: weak bidders will drop out at an early stage without affecting the eventual price of the contract, or the identity of the winning bidder.

The effect of adding weak bidders in a sealed-bid tender is more complicated. In a sealed-bid tender, each bidder is aiming to maximise its expected surplus, which in a procurement setting is the difference between the price quoted in the tender, and the cost of supply multiplied by the probability of winning. A higher bid increases the difference between costs and price, but reduces the probability of winning. At the optimal bid level, the increase in expected surplus from increasing the price-cost margin exactly offsets the resulting decrease as a result of a reduced probability of winning (given expected bids from other

⁴⁶ If adding bidders increases bidder heterogeneity, the overall welfare effect may even be negative. Compte and Jehiel (2002) demonstrate that the impact of adding another bidder on overall welfare depends on whether the additional bidder is similar to existing bidders, or may possess information that is unavailable to existing bidders. While adding another bidder in the first case always increases welfare, adding another bidder in the second case increases bidder heterogeneity and may therefore lead to a welfare loss. It should be noted, however, that this analysis does not take account of the impact of similarity amongst bidders on the likelihood of collusion (see below).

bidders). A corollary of this is that higher-cost bidders tend to bid closer to their cost than stronger bidders (i.e. firms with lower costs).

For any given bid level, adding more bidders increases the probability of losing with that bid. Thus, the optimal bid to supply needs to be adjusted downwards (closer to cost), and this adjustment is larger the stronger the new bidder is expected to be.

The analysis of bidding behaviour of incumbents and entrants in road construction auctions by de Silva et al. (2003) confirms these theoretical predictions. Compared with incumbents (who might be expected to enjoy some cost advantages because they have previous experience and may be better informed than entrants about the likely cost of meeting requirements), entrants are found to bid more aggressively, i.e. bid a higher proportion of their value. Nevertheless, the winning bid tends to be lower the more bidders participate (though the impact of the number of bidders on individual bids is not significant), and the presence of entrants does not have a significant impact on bids, or winning bids. Conversely, the presence of strong rivals (firms with a strong track record of winning previous auctions) makes bidders behave more aggressively, lowering bids. The impact of strong rivals is even larger when considering the winning bid.

4.8 One of the main sources of dissimilarity amongst bidders is that existing suppliers of the public sector may enjoy advantages over firms who not previously have won public contracts, and the effect of procurement on the extent of such incumbency advantages is discussed below. Failure to neutralise such advantages may have a significant impact on competition in the short run, potentially even discouraging other bidders from participating.⁴⁷ The efforts made by the Inland Revenue to overcome

⁴⁷ See Klemperer (1998) for the analysis of 'almost common value auctions' where there is a systematic and commonly known difference between bidders.

advantages ascribed to its existing supplier of IT services clearly show the impact of incumbency and heterogeneity on competition (see Box 4.4).⁴⁸

Box 4.4: Overcoming incumbency advantages in the procurement of IT services - the example of ASPIRE

Our case study on procurement of IT services provides an example of the importance of overcoming incumbency advantages.

The Inland Revenue (IR) first outsourced IT operations to a private contractor in 1994, and the chosen supplier, EDS, was given a 10 year contract. With this contract coming to an end, the IR announced its intention to re-tender the provision of IT services for the next 10 years. The value of the contract was estimated to be £3bn over 10 years.

Despite the size of the contract, the incumbent suppliers (EDS and Accenture, which had been awarded a contract by the Contributions Agency, which was merged with the IR in 1998) were perceived to have such strong incumbency advantages that other potential suppliers showed little immediate interest in tendering. For a new entrant, the chance of winning was perceived to be too low to justify the significant cost of participating in the tender.

In addition to marketing the opportunity actively to other firms, the IR decided to pay short-listed bidders for conducting a Design and Implementation Study, allowing the IR to better understand bidder's capabilities but at the same time funding part of the costs incurred by new entrants in gathering information

⁴⁸ Where incumbency advantages exist, measures to remove these in order to incentivise more firms to participate in the tender may obviously increase costs where the incumbent would indeed be the most efficient supplier because, for example, it has invested in specific assets or is generally better informed about the public sector's requirements.

about the IR's requirements and neutralising the advantage enjoyed by the incumbents. Perhaps more importantly, the IR committed to evaluate the transition costs associated with moving to a new supplier separately from the main tender. Both of these measures were aimed at levelling the playing field between incumbents and new entrants in order to ensure effective competition for a sizeable contract.

Competition and collusion

4.9 Collusion, even though often difficult to detect⁴⁹, appears to have been identified as a concern in many procurement processes.⁵⁰ Generally, collusion is more difficult to sustain if the number of competitors increases (and is therefore closely linked to the level of participation), but there are a number of factors that affect the likelihood of collusion for a given number of bidders:⁵¹

- Collusion is more likely where bidders are similar. This effect partly offsets the benefits from reducing differences between bidders, and implies that in cases where collusion is likely, it might be desirable to have rather different bidders participate in a tender.
- Collusion is easier to sustain when bidders interact repeatedly, either in the same market over time, or in different markets (so-called multi-market contact). This is because repeated interaction

⁴⁹ For example, it may be natural to suspect collusion in a market where a buyer rotates through different suppliers. However, as Davis and Wilson (2002) show in an experimental setting, market rotations may be observed with and without collusion (even though collusion may be inferred from an examination of losing bids).

⁵⁰ See, for example, McMillan (1991), Porter and Zona, (1993) or Pesendorfer, (2000).

⁵¹ For a very accessible discussion of factors that make collusion more or less likely see Rey (2002).

allows for more effective punishment of firms deviating from the collusive outcome.

- Collusion is easier to sustain where deviations from the collusive outcome are more easily identifiable. This means that increased transparency (e.g. information about the terms and conditions offered by winning and losing bidders in a competitive tender) increases the risk of collusion. For this reason, collusion is generally more difficult to sustain in sealed-bid tenders compared with auctions in which bidders can observe each others' behaviour, and is generally more likely where the product or service procured is relatively standardised and requirements are clearly specified, and where therefore competition takes place in few dimensions (e.g. mainly on price rather than on a complex set of quality criteria).⁵²
- Collusion is more likely in relatively mature markets with stable and predictable demand. This is because demand volatility increases the incentives to deviate from the collusive outcome (gains from doing so are high, and costs are low, where current demand is high, but expected to fall in the future), and makes detection of such behaviour more difficult.⁵³ Thus, a constant, predictable flow of demand may support collusion, whereas fluctuating demand (e.g. as

⁵² Fabra (2003) demonstrates that collusion is more likely in the case of uniform price auctions (e.g. where each bidder receives the highest price bid by any of the selected bids) compared with discriminatory auction where each bidder receives the price it bid. (Note that this effect is additional to the effect that uniform price auctions are more susceptible to strategic manipulation than discriminatory auctions.)

⁵³ It is worth remembering that one of the explanations for why larger buyers get better deals is that a large buyer is in a better position to break collusion by creating artificial fluctuations in demand (see Snyder, 1996; for a more detailed explanation see Box 3.1 in Annex A).

a result of larger one-off purchases instead of a steady stream of purchases) can make collusion more difficult.⁵⁴

- 4.10 The public sector, through the design of its procurement processes (including the option to self-supply services), can affect many of these factors, and can thus increase or reduce the risk of collusion.

Long-term effects

- 4.11 In the long term, competition effects arise from the incentives provided to public contractors to invest and to innovate, and the extent to which participation in public tenders and selection as a contractor affects the viability and competitive position of firms, and thus affects market structure or competitiveness.

Viability, entry and exit

- 4.12 Where the public sector is a major buyer, winning public contracts can be crucial for the commercial viability of firms. Not being selected as a public contractor might mean that a firm has to leave the market, or that at the very least it is severely handicapped in its commercial activities.
- 4.13 Long-term effects on the number of firms can also arise from the decision to self-supply services. Where the public sector decides to satisfy a significant proportion of its requirements through self-supply, this may limit the overall size of the market available to private suppliers. In the presence of significant scale economies, this will affect the number of suppliers the market can sustain, which in turn can affect

⁵⁴ The ability of large buyers to generate such fluctuations in demand has been identified as one of the reasons why larger buyers get better deals (see Snyder, 1996, and the discussion in Box 3.1 above).

market competitiveness. Similarly, being able to engage in self-supply may allow the public sector to reduce demand facing external suppliers in order to improve the terms and conditions it obtains from private suppliers. This may drive private suppliers out of the market. We discuss the role of self-supply and the impact it may have on competition in more detail in paragraphs 5.50 – 5.57.

- 4.14 In a similar vein, winning a public contract can affect a firm's decision to enter a geographic market, and the public sector can even break a monopoly through its procurement decisions (see Box 4.5 for an example from the health sector).

Box 4.5: Entry assistance through public procurement

Assisting a new entrant into the market was the explicit objective of NHS supplies in the case of medical gases. During the 1990s, there was concern that the traditional monopoly in the supply of medical gases in the UK was stifling innovation and leading to high prices. In 1997, NHS Supplies facilitated contact between a new supplier and two agencies involved in regulation (the Medical Devices Agency and the Medicines Control Agency), and sought to obtain commitment from trusts to use the new supplier. As a result, the supplier entered the market in 1997, and started delivery in February 1999. By 2000, it accounted for 15 per cent of the supply of medical gases in England (this was less than expected, owing to technical problems). Having been awarded contracts in England, the new supplier also won contracts in Scotland, and competition is expected to bring about significant savings and innovation, in particular replacement of low pressure/high weight cylinders with high pressure/low weight cylinders (see NHS, 2000).

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- 4.15 The example in Box 4.5 very clearly shows how (public sector) buyer power can be used in order to overcome competition problems and make markets more competitive. The example of medical gases, at the same time, highlights the teething problems that might be encountered when bringing a new supplier into the market. Although the expected benefits

from more competition in the long run may outweigh the costs of bringing in new entry and overcoming initial problems, fragmented buyers may not be prepared to incur this cost. This is because the benefits from increased competition are a positive externality – even those who do not contribute to the cost of bringing in new entrants enjoy the benefits from more competition. The corresponding incentives to free-ride on each other's contribution may undermine the ability of fragmented buyers to achieve the desired outcome.

4.16 It is worth noting that long-term effects on the number of firms and market competitiveness can be associated with both too little and too much competition in the short term. Firms may be driven out of the market in the long term because those who win public contracts have significant advantages which cannot be matched by those who fail to be selected by the public sector, or because the public sector imposes terms and conditions on its suppliers that threaten their long-term viability. In all of this, one has of course to bear in mind that undermining the viability of a substantial proportion of suppliers is not likely to be in the interest of the public sector. As we will discuss, such effects may arise as a result of distorted incentives, and would therefore not be likely to occur on a significant scale.

4.17 It is further worth noting that, for short-term competition to have long-term effects, it must be the case that:

- market developments are difficult to reverse (i.e. that the market is susceptible to hysteresis)
- there are entry barriers that limit the impact of potential competition.

For example: in the case of strong learning-by-doing effects, or with network effects that result in 'tipping', advantages or disadvantages experienced by winners of public contracts in the short term would translate into long-term effects on competitiveness. If, by contrast, potential competition limits the extent to which firms in the market could obtain market power, or if market leaders would not have any advantage

over smaller rivals, then procurement decisions could not have any lasting impact on competition, even if they might affect competitiveness in a particular tender.

- 4.18 The obvious question is what incentives the public sector has to maintain a sufficient number of competitors or to increase competitiveness through assisting entrants. As a more competitive supply sector tends to create benefits for buyers, it would seem that a rational buyer should not have an incentive to behave in a way that reduces competitiveness in the long term. However, a strong buyer may not suffer much from reduced competitiveness provided that it retains sufficient buyer power to constrain the exercise of seller power. This may somewhat undermine the incentives to maintain a competitive supply. However, even if a strong buyer were in a position to extract low prices from an increasingly uncompetitive market, it may not be able to maintain the same pressure on suppliers to reduce costs and innovate as would arise from effective competition. Therefore, one would expect that, by and large, the public sector should have an incentive to maintain a competitive supply market, even though this does not rule out that distorted incentives may lead to too little attention being given to long-term effects of particular practices, as we discuss below.

Incumbency advantages

- 4.19 Assisting entry or forcing exit of firms are extreme cases of procurement effects on competition. However, even without changing market structure, procurement can contribute to changes in competitive conditions through creating advantages for firms selected as public contractors. Firms who have been awarded public sector contracts in the past may enjoy advantages in bidding for public tenders in the future. This creates future short-term effects in terms of restricting competition or making bidders more dissimilar, which will also reduce competition as discussed in paragraphs 4.7 – 4.8.

- 4.20 There are many ways in which incumbency advantages can emerge – the incumbent supplier may have earned its reputation as a supplier of the public sector, it may have developed a better understanding of the requirements of the public sector, or it may have invested in specific assets that reduce its costs in meeting these requirements. The contractor may benefit from learning-by-doing, giving it a cost advantage over new entrants in future tenders. All of these effects mean that the incumbent is in a privileged position when it comes to re-tendering a particular contract.⁵⁵
- 4.21 Although such incumbency advantages may reflect genuine efficiencies developed by incumbent suppliers, from which the public sector should be able to benefit, they may also distort competition to an extent that benefits accrue mainly to the supplier. As noted above, this is because incumbency advantages are likely to increase bidder heterogeneity, and may even discourage participation of new entrants in public tenders. Awarding a contract to the lowest-cost bidder in a sequence of simple auctions may reduce competitiveness in the long term, and lead to

⁵⁵ Normally, incumbency advantages may be reduced by making available as much information as possible. This is because providing bidders with more information is presumed to reduce the difference in their expectations, thus making them more similar and thereby increasing competition (see Milgrom and Weber, 1982, for an analysis of this effect in a pure common value auction, i.e. where the value of the contract is the same to all bidders). However, where there is a private value component, i.e. where the value of the contract is similar, but not the same for all bidders as a result, for example, of some bidders enjoying cost advantages in providing the services, and where therefore the impact of releasing more information about the project specification may differ across bidders (e.g. where providing information may allow some, but not all bidders to arrive at more precise cost estimates) the opposite may be true. For example, if incumbents are better able to narrow down their cost estimates in response to a more precise design specification, it may be appropriate not to provide a full specification and leave similar levels of uncertainty for incumbents and new entrants (see Ganuza, 2003), even though this may lead to cost-overruns as a result of the required re-negotiation of a detailed specification after the tender.

higher prices.⁵⁶ As discussed in Box 4.6, the public sector may sometimes have to make a conscious decision not to award contracts to the bidder offering the lowest price.

Box 4.6: Trading off cost savings and long-term competitiveness

Our case study on the procurement of prison services – the provision and management of facilities for the custody of adults convicted for criminal offences – discusses an instance in which the Prison Service, the sole buyer of prison services, chose not to award a contract to the cheapest bidder. When awarding DCMF (design, construct, manage and finance) contracts for new prisons under the PFI, the Prison service decided to award one of these contracts each to Securicor and GSL, even though one of the two bidders had offered a lower price for both facilities. The NAO criticised this decision, but the Prison Service justified it by the desire to encourage bidders to participate in future tenders. Maintaining sufficient competition in future tenders may be of particular importance in a relatively immature market, which only just came into existence, and where other entry barriers might severely limit the number of firms potentially bidding for contracts, as is the case in the provision of prison services under the PFI.

⁵⁶ Incumbency advantages can be reinforced when firms can invest in cost reduction. Arozamena and Cantillon (2004) show that, starting from identical bidders, incentives to invest in cost reduction are weakened if the investment is observable by other bidders and the procurement process is organised as a first-price sealed bid auction. (By contrast, a second-price sealed bid auction provides stronger incentives to invest in cost reductions because the negative strategic effect that an increase in the relative strength of one bidder will make other bidders behave more aggressively is absent). However, because the negative strategic effect of reducing costs is less pronounced for those firms who already have cost advantages, their incentives to invest should be greater than for those firms who would, through an investment, catch up. Thus, incumbents have a stronger incentive to invest in cost-reduction than weaker bidders, thus further increasing heterogeneity (note that heterogeneity would increase over time as a result of differential incentives to invest in cost reduction under both first and second-price sealed bid auctions).

- 4.22 Thus, even though it may be efficient to allow incumbency advantages to develop and to continue purchasing from the incumbent supplier(s), as the incumbent acquires an ever-stronger position relative to the buyer, these efficiencies largely turn into profits earned by the incumbent. The challenge for the procuring body is to maintain these efficiencies and competitive pressure on the incumbent to pass them on at the same time.
- 4.23 The ability of the public sector to limit the extent of incumbency advantages may be constrained by the procurement rules in the EU Directives. In particular, the non-discrimination requirement can make it difficult for a public sector buyer to neutralise incumbency advantages because doing so might require explicit discrimination against the incumbent (whereas the discriminatory effect of incumbency advantages is often less transparent).⁵⁷
- 4.24 The OGC has published a note with advice on how to use the flexibility under the EU rules to level the playing field and avoid becoming over-dependent on any one supplier as a result of ever-increasing incumbency advantages. The main areas, which the OGC points to as being prone to creating incumbency advantages are the weighting of award criteria and the contract documentation. The procuring agency needs to be careful to avoid such effects, noting that 'it will not be easy to decide the correct

⁵⁷ Note that incumbency advantages may depend on the type of contract on offer. For example, if the public sector offers a fixed-price contract where the bidder is fully exposed to the fact that costs may be uncertain ex-ante, incumbents may benefit from being able to produce more accurate estimates. A cost-plus contract would remove these incumbency advantages. Thus, the choice of contract format may be affected by considerations about incumbency advantage in addition to factors such as the cost of providing a more detailed specification up-front, and the cost of re-negotiation as discussed by Bajari and Tadelis (2001).

Otherwise, adopting an auction format that discriminates against the incumbent might be the best option in terms of enjoying the efficiencies that are associated with continued supply by the incumbent, and the benefits from intense competition (see Ganuza and Pechlivanos, 2000). However, the use of a discriminatory award procedure is likely to violate the constraints on public procurement, and therefore the general rule that more homogeneous bidders generate more competition holds true.

balance [of award criteria] as the dividing line between improving the competitiveness of a particular market and discriminating against the incumbent will always be a fine one.⁵⁸

- 4.25 One clear option available to the public sector is to separate out the costs of switching between suppliers in the assessment of tenders, as has been done by the Inland Revenue in the procurement of IT services under its ASPIRE program (see paragraph 4.4 above).⁵⁹
- 4.26 Although it may create benefits in the long term, the costs of helping a new entrant into the market (e.g. the costs incurred in switching suppliers) are potentially significant, and will to a large part have to be borne by the pivotal buyer.⁶⁰ This means that supply from the new entrant is potentially more expensive than supply from incumbent firms, even if competition amongst them is imperfect. Of course, the credible threat of entry would in itself intensify competition amongst incumbents, and to the extent that contract aggregation can help make this threat credible it will benefit the procuring body.
- 4.27 Where the additional costs that are due to switching supplier are highly transparent, but the benefits from improved competition for the project in the short term, and perhaps a more competitive market structure in the long term, are difficult to quantify, there may be an incentive to stick with incumbents even if this reduces competitiveness over time.

⁵⁸ OGC, Scope for flexibility under the EC rules, Note by the Procurement Policy Unit, available from <http://www.gov.uk>.

⁵⁹ In a similar vein, Cabral and Greenstein (1990) analyse the US General Services Administration's policy of fully accounting for switching costs in the bids invited from prospective suppliers, concluding that it might be appropriate to ignore switching costs in the selection of supplier if doing so elicits more aggressive bids. However, the obvious question is whether the reduced payments outweigh the switching costs that have to be borne in case a new supplier is chosen.

⁶⁰ See Raskovich (2003).

Moreover, to the extent that incumbents can expect such behaviour, there may be a strong incentive for firms to reduce their price when a new requirement is first put out to tender in order to win the contract and thereby enjoy profits in the future. Where the public sector is focused on short-term value-for-money gains, such behaviour may be particularly successful.

Bundling and vertical integration

- 4.28 The way in which the public sector purchases goods and services may affect the vertical organisation of the supply market. For example, if the public sector requires services across the value chain (e.g. waste collection and waste disposal services – see Box 4.7 – or software development and systems integration), then vertically integrated suppliers may be advantaged. Even though other firms may be able to replicate the offering of vertically integrated firms through subcontracting, this may be too costly and too uncertain a proposition for the public sector to accept. In this case, the preference of the public sector for a 'one stop shop' may contribute towards vertical integration (and perhaps consolidation) amongst suppliers. Conversely, by insisting on purchasing services unbundled, the public sector might remove incentives for vertical integration amongst suppliers.

Box 4.7: Procurement of integrated waste management services and vertical organisation of supply

Our case study on procurement of waste management services provides an example of how the preferences of local authorities for contracts that integrate multiple services can influence consolidation in the market for provision of those services.

The UK waste management industry has gone through a major restructuring over the last 15 years, with local authorities contracting out services to private suppliers. At the same time, government policy objectives aimed at waste reduction, recycling and recovery require local authorities to pursue integrated

waste management strategies, which supersede the traditional collection – disposal dichotomy.

As a result local authorities increasingly let contracts for integrated waste management services, which usually combine collection of household waste of various types (e.g. recyclable material such as glass or paper, or organic waste), other services such as street cleaning, and, where appropriate, waste disposal services. This is matched by structural changes in the supply sector, partly trying to realise economies of scale and scope in the delivery of waste management services, but also in order to be able to match the demand from local authorities for integrated service contracts. There has been a number of mergers between waste companies recently, leading to the creation of companies that can provide multiple services.

It is unclear to what extent the preference for integrated service provision is a driving force of changes in the vertical structure of the waste services industry, but there is certainly a co-evolution of buyers demand and what suppliers are capable of offering. To the extent that local authorities' preferences are based on the desire to establish clear responsibility for service delivery (rather than having to incentivise and monitor individual suppliers to work together to achieve the desired outcome) and to reduce the administrative cost of dealing with multiple suppliers, this might contribute to the creation of an industry structure where the level of vertical integration does not necessarily reflect cost conditions (e.g. scope economies across different services).

4.29 Where public procurement affects the degree of vertical integration or the development of multi-service firms, competition may be affected to the extent that the level of scale economies differs across the value chain. For example, where waste collection and disposal contracts are bundled, the number of firms who could compete for such contracts is determined by the number of competitors that can be sustained in the market for waste disposal services, where scale economies are potentially significant. Even if many more firms could sustainably provide collection services (given that there are no pronounced scale economies in this activity), discrimination in favour of firms capable of supplying

both collection and disposal services might eventually force such firms out of the market, leaving a supply sector that consists of vertically integrated firms only.

Investment and innovation

- 4.30 The most obvious impact from procurement on investment and innovation arises in the case where procurement is explicitly used as an instrument of industrial policy⁶¹ and technology policy.⁶² In many cases, the use of procurement to promote innovation and investment is motivated by the spill-over benefits created for the private sector. In these cases, there may be a temptation to consider the needs of the private sector when specifying the requirements. However, this might not be efficient. As Geroski (1990) has pointed out, 'civil servants are in a poor position to second-guess civilian or commercial needs (which is why R&D subsidies are frequently a waste of money), but there is no reason to think that they are necessarily less competent than anyone else when seeking to act as an informed purchaser of goods and services destined for their "own" use.'⁶³

⁶¹ See Geroski (1990).

⁶² See Edquist (1996), who provides a number of examples of procurement projects that have helped in the development of the physical infrastructure that promotes innovation, and that have promoted the capability of domestic firms. One example given by Edquist, is that of the Swedish national telephone operator, which in the early 1970s co-operated with Ericsson to develop the AXE switching system. This system subsequently became the basis of Ericsson's international competitiveness. Another example is the procurement by the Swedish national railways of high-speed trains from ABB. The required train type did not exist, but ABB developed it based on the output specification given by the Railways.

Branco (1997) analyses the effect of discrimination in favour of domestic firms in cases where firms can invest in R&D before the auction. He identifies conditions under which discrimination in favour of the domestic firm is in the interest of the buyer because it stimulates investment in R&D.

⁶³ It is for this reason that Geroski considers procurement policy to be a better tool for stimulating innovation than R&D subsidies.

4.31 Where public procurement is used in order to promote innovation and investment, care needs to be given to the effects that promoting particular technologies might have on the long-term competitiveness of the market. For example, public sector demand, which is considered to be a contributor to roll-out of broadband services, may have a significant impact on the future development of market conditions (see Box 4.8).

Box 4.8: Procurement of broadband services for the public sector as a driver of roll-out

The case study on procurement of broadband services through the broadband aggregation programme discusses how procurement can affect technology choice.

Although the primary driver behind the broadband aggregation programme is to achieve better value for money, there is also the notion that by aggregating demand across different public sector organisations, public sector demand can trigger investment in roll-out of broadband to hitherto un-served areas. In such areas, the public sector's choice of supplier may also affect the range of platforms available (e.g. fixed wireless or xDSL) to other customers.

Because a considerable proportion of infrastructure investments are sunk, any impact on the incentives to invest in broadband roll-out will have a lasting effect. If a supplier invests in considerable excess capacity on the basis of public sector procurement requirements, it will face a relatively low marginal cost of supply compared to other potential suppliers. New entrants may not be able to compete with an existing supplier if the incumbent could increase supply at little additional cost.

4.32 In addition to considered and deliberate effects on investment and innovation, procurement can affect the incentives of firms to engage in product or process innovation. As explained in Annexe A, one of the potential problems associated with buyer power is that the supplier may

be concerned about exposing itself to opportunistic behaviour by the buyer through making investments that are specific to the particular supply relationship. Without a commitment by the public sector not to re-negotiate terms and conditions after a contractor has sunk investments in a technology that would reduce costs, such investments may not be made.

- 4.33 In many cases, such investments will create incumbency advantages, and the expectation of being able to win a new contract at re-procurement with a bid that leaves sufficient profits to the supplier may create strong incentives for making the investment.⁶⁴ Such an outcome, even if it led to vigorous competition in the first tender, might be undesirable from the perspective of the buyer, and therefore the procuring body may wish to put in place provisions that neutralise incumbency advantages (e.g. requirements to make available certain information to other bidders at the re-procurement stage, or provisions governing the transfer of assets in case of change of supplier). Such measures, or the expectation of attempts to neutralise incumbency advantages at the point where a contract comes up for renewal, may undermine investment incentives.
- 4.34 This points towards a delicate balance between encouraging investment which may lead to genuine cost savings by incumbents, and ensuring that incumbency advantages do not weaken competition at the re-procurement stage to an extent that significant profits remain with the incumbent. This tension between static efficiency – making sure that

⁶⁴ This effect may be responsible for the pattern of investment by UK train operating companies. As Affuso and Newbery (2000) observe, discretionary investment is higher when contracts are shorter. According to Affuso and Newbery, one 'possible explanation is that TOCs facing re-procurement sooner (i.e. those with the shortest contracts) respond with increased investment to signal their commitment to the regulator and thus increase their probability of being rewarded with the franchise. Investing near the end of the franchise is also a way to signal aggressive behaviour to potential entrants to the market and to raise their entry costs.'

goods and services are available at the lowest possible cost – and dynamic efficiency – making sure that sufficient profits remain to provide incentives for investment and innovation – is of course not just present in the case of procurement, but is endemic in all markets where there is scope for innovation and cost-reduction.

- 4.35 More generally, an overly strong focus on price – often alleged to be the case in public procurement – can discourage investment in R&D and quality improvements because such investments could not be recouped through higher prices. Public procurement is often accused of putting too much emphasis on price at the expense of other criteria such as investment and innovation. As we have argued above, this may in the end lead not only to less innovation and fewer products, but also to higher prices if incentives to invest in technologies that reduce production costs, but require assets that are highly relationship-specific, are undermined.
- 4.36 It is not clear to what extent an overly narrow focus on price is characteristic for public procurement. The compulsory competitive tendering (CCT) regime, which applied to the procurement of a number of services by local authorities from the early 1980s to 1999, may have had such an effect. However, wider value-for-money considerations, where value for money is defined over the lifetime of the asset, including the Best Value criterion which has replaced CCT, should allow public sector buyers to employ a richer set of criteria. As shown in Table 2.1, few of the tenders above the EU thresholds specify 'lowest price' as the award criterion.

Table 2.1: UK Procurement (no of contracts) by award criterion, 2003

Award criterion	No of contracts	Percentage
Lowest Price	105	2
Value for money	4,136	79
Not defined or not applicable	1,023	19
Total	5,264	100

Source: Tenders Electronic Daily, the online database of the Supplement to the Official Journal of the European Union

4.37 However, even in the case where the contract is not awarded explicitly on the basis of lowest price, bidders need to form expectations about the relative weight given to price and other characteristics. In this regard, at least the perception appears to be that too much emphasis is given to the price component of bids. As noted in the Kelly report (OGC, 2003), 'there is still a wide-spread supplier perception that many public sector procurers continue to over-emphasise lowest cost at the expense of other factors.

Departments sometimes claim that they cannot afford to do anything else. If true, the implication is either that those willing the ends are not providing the means, or that the departments concerned are trying to do too much.'

(OGC, 2003, paragraph 32)

4.38 A further issue that has been raised repeatedly in the context of the innovation impact of procurement is that discrimination against SMEs significantly reduces the scope for innovation. This is of course based on the assumption that SMEs are better at innovating than larger firms (or, as the Kelly report (OGC, 2003) states, a 'widely-held belief, including amongst suppliers, that there is a link between innovation and SMEs since, in many areas, SMEs are an acknowledged source of new ideas and different ways of doing things'). Although SMEs clearly contribute

to innovation, there seems to be little empirical support for the claim that they are systematically better at innovation than larger firms.⁶⁵

- 4.39 A distinct concern in relation to public procurement is to ensure that sufficient capacity is available to meet government needs, which makes capacity planning and investment by suppliers an important issue. One of the key recommendations of the Kelly report (OGC, 2003) is that departments should think innovatively about how they can provide information about their future needs commensurate with industry lead times, engage early with suppliers and take suppliers' needs into account in their business planning. Throughout, the Kelly report places significant emphasis on engaging in a dialogue with suppliers, providing information about the public sector requirements early and in a way that would allow suppliers to plan their capacities accordingly.
- 4.40 This recommendation appears to a large extent to be driven by the concern that demand might outstrip supply and that requirements may exceed capabilities. The failure of many large IT projects is considered to be the result of expectations and requirements out of line with what the market could deliver. Supply security plays an important role.
- 4.41 Although this recommendation should assist suppliers in their capacity planning, and should alert buyers to limitations of what is available, its effect on competition is unclear. This is because advance notification of public sector requirements, down to the specification of forthcoming tenders, might facilitate collusion amongst suppliers. Being faced with a steady and predictable stream of demand, suppliers may find it easier to come to an implicit understanding on how the market could be shared. As mentioned above (see Box 3.1), the ability of a large buyer to create

⁶⁵ Peters (1997), for example, suggests that, in the case of suppliers to the automobile industry, smaller firms invest more in their innovation activities, but have a lower probability to realise innovations than larger firms.

artificial fluctuations in demand is a potentially significant source of buyer power, and giving up this option may therefore weaken the public sector's position in relation to strong suppliers.

- 4.42 These effects should be taken into account when considering the amount and type of information provided to suppliers, and the timing of such provision. The challenge is to make suppliers better informed about needs and requirements in order to give them incentives to compete for public contracts and to plan ahead, without increasing the risk of collusion amongst them. Unfortunately, there are no hard and fast rules about what information should be provided when, and only a case-by-case assessment considering the impact of additional information on capacity planning and collusion incentives is required.

Effects on other buyers

- 4.43 Where the public sector is a significant, but not the only buyer, many of the effects discussed above will impact on other buyers in the market. For example, where procurement helps to sustain a competitive market place, or even helps entrants into the market, other buyers will benefit. Conversely, where the public sector fails to exercise buyer power in this way, other buyers would be harmed. In this regard it is worth emphasising that smaller private sector buyers may feel these effects much more strongly than the large public sector buyer. For example, smaller buyers may suffer more from reduced market competitiveness than a powerful public sector buyer whose buyer power may provide a significant constraint on the ability of suppliers to exploit their market power.
- 4.44 In a similar vein, innovation and investment incentives created through procurement decisions will affect other buyers through their impact on production costs and the range of products and services available. Unlike in the case of effects on market competitiveness, they are not necessarily more exposed than the large public sector buyer to these effects. The benefits from better products or reduced production costs are enjoyed in proportion to overall demand, and failure to provide

incentives for product or process innovation therefore is likely to affect the large public sector buyer proportionately more than smaller buyers – which is why a large buyer should, in principle, have better incentives actively to promote investment and innovation.

- 4.45 In addition to these side-effects of procurement decisions on other buyers, there may also be effects from attempts by the public sector to obtain better terms and conditions at the expense of other buyers. If the public sector, through its buyer power, can extract some of the additional profits that suppliers could earn in a less competitive market, it may have an incentive to reduce competition.⁶⁶
- 4.46 How a contracting agency can extract (at least some) of the profits made by suppliers through its procurement can be seen in the case of continence care products, where hospitals obtain much better prices than are available to the community as a result of their importance in driving overall demand, and the price-focused procurement process (see Box 4.9).

Box 4.9: Rent transfer between buyers in the case of NHS procurement

As described in Box 3.3, supply of continence care products to hospitals is a crucial driver of total demand, even though hospitals account for only about 10 per cent of demand. As a result of this pull-through effect, PASA's use of competitive tendering may extract some of the rents available to suppliers from the fact that prices for supply to the community are not set competitively, but rather fixed through the Drug Tariff.

⁶⁶ See Annexe A for a more detailed description of the underlying mechanism.

Indeed, the Competition Commission (in its report on the completed acquisition by Coloplast A/S of the continence care business of SSL International plc⁶⁷) found evidence of significant price differences, showing that in 2001 Coloplast's unit revenues from sales to the community exceeded unit revenues from sales to hospitals by between 32 per cent for sheaths and 87 per cent for urobags. However, the Competition Commission also found that manufacturers' supplies of continence care products to hospitals were still profitable, suggesting that they do not deliberately price below cost when bidding to supply hospitals (to benefit from the pull-through effect). This might be because the pull-through effect is not as strong as is claimed, or because PASA fails to extract all profits made on supplies to the community.

Even though in this case the 'other buyer' paying more is the public sector as well (making this an instance where procurement is not sufficiently joined-up), the underlying mechanism could in principle, damage other buyers, e.g. in the case of products where private insurance covers a significant proportion of supplies into the community, and yet private buyers are not able to remove restrictions on price competition such as those arising from the operation of the Drug Tariff.

4.47 In very general terms, to the extent that winning public contracts creates an advantage in supplying other buyers (e.g. because of the reputational benefits of supplying the public sector), public procurement will affect competition in the supply of other buyers.

4.48 The welfare effects from such a distortion are ambiguous and case-specific. If a public contractor becomes a more effective competitor (e.g. because it faced lower unit cost, or had spare capacity), this might simply make competition in the supply of other buyers more effective.

⁶⁷ *Coloplast A/S and SSL International plc: A report on the merger situation* (14.06.02) available at www.competition-commission.org.uk/inquiries/completed/2002/index.htm

For example, to the extent that successful bidders for aggregated contracts are able to enjoy scale economies (or face a reduced risk having won a long-term supply contract with the public sector) this may allow them to provide services to the private sector at reduced unit costs. Thus, even in the case where winning a public contract provides cost, reputation or informational advantages to one supplier, the resulting distortion of competition may benefit other buyers (see the example in Box 4.10).

Box 4.10: Beneficial impact of advantages to public sector supplier on small buyers – a stylised example

This example is a variation of the example described in Box A2 in Annexe A (for notation refer there). There are two firms supplying the private sector, and competition between them can be modelled as a Cournot duopoly. Private sector demand is captured in the inverse demand function $p = 100 - q_1 - q_2$.

In addition to supplying the private sector, both firms supply half of the public sector requirement each. They face marginal cost of 10, so their profit-maximising strategy for the private sector is to supply $q_1 = q_2 = 30$ units. The resulting price is 40.

Now assume that public sector demand is aggregated and that the supply contract is let to one firm. As a result, this firm now faces lower unit costs, say 5. Clearly, this firm has now an advantage in supplying the private sector, and will accordingly increase its share of private sector supply. However, as a result, competition becomes more intense and the overall market price falls from 40 to 38.3, thus creating a benefit for the smaller private sector buyers.

Indeed, the private sector would benefit even if the firm failing to win the government contract were to experience an increase in unit costs. If the unit costs of the unsuccessful firm rose to 15, the original market price would remain unchanged, even though now the firm supplying the public sector would provide 35 out of the total 60 units sold to the private sector.

More generally, as long as the losing firm's increase in unit costs does not exceed the winning firm's reduction in unit costs, the private sector is not worse off as a result of the asymmetries created through contract aggregation. (Note that this would be the case in the example in A2 where any firm supplying the public sector has a lower unit cost and where excluding one firm only has the effect of raising that firm's costs).

4.49 Similarly, if the fact that some firms are serving the public sector increases asymmetry between suppliers, this may strengthen competition (e.g. by making collusion less sustainable) or weaken it (e.g. by turning weaker firms into a competitive fringe, following rather than competing with a few dominant firms).

Summary

4.50 In this chapter, we have identified a number of competition effects that might flow from public procurement. We have distinguished between an impact on competition in the short term, e.g. in bidding for a particular contract, and the effects that procurement decisions might have on long-term market competitiveness (through affecting market structure, increasing or reducing differences between suppliers, and changing technology and the range of services on offer). In addition, there may also be knock-on effects on other buyers in markets where the public sector is an important, but not the only buyer. These may be positive or negative.

4.51 In the short-term, procurement can affect competition between suppliers by affecting the number of firms participating in public tenders, and their similarity. More bidders, and bidders that are more similar, generally make for more intense competition. There are, however, good reasons for limiting participation in certain contexts, and we discuss these in more detail in the next chapter. Another important short-term effect arises from the way in which the design of the procurement process affects the likelihood of collusion between tenderers.

- 4.52 Long-term effects arise from the impact that participating in, and ultimately winning public tenders, has on the viability of firms, and their decisions to enter or exit the market. Procurement can increase the gap between market leaders and other firms, thus increasing dissimilarity and reducing competitiveness over time. Bundling requirements can affect the organisation of the market, e.g. by providing advantages to vertically integrated firms being able to meet the full set of requirements in a particular tender. Last but not least, public procurement can have a significant impact on the incentives of firms to invest and innovate, both as a result of using procurement explicitly as an instrument of technology and innovation policy, and because being faced with a powerful buyer affects the incentives of suppliers to undertake investment or develop new technologies or products.
- 4.53 Other buyers will be affected by changes in market competitiveness, and by investment and innovation incentives set through public procurement. In addition to these side effects, there may (at least in principle) be the possibility of exploiting advantages that public contractors might enjoy in the supply of other buyers in order to obtain better terms and conditions at the expense of other buyers. This would involve attempts to use public procurement to augment or increase advantages to public sector contractors in exchange for lower prices or better value.
- 4.54 Overall, the public sector pursuing value for money in its procurement should have strong incentives to promote competition, and avoid any distortion or restriction of competition that might afford market power to some suppliers. However, the competition effects of specific procurement practices are potentially complex and difficult to trace. Making the right choices is far from straightforward. In addition, the incentives faced by those making procurement decisions may not always be such that the right trade-off between short-term and long-term effects is made. In the next chapter, we apply the general considerations developed so far to some key procurement practices.

5 AN ASSESSMENT OF SOME KEY PROCUREMENT PRACTICES

5.1 As discussed in paragraphs 3.12 – 3.19 above, the EU rules generally require procurement processes to be competitive, and UK Policy suggests that competitive procurement is the best way of achieving value for money. This might be taken to imply that procurement practices are necessarily geared towards maximising competition. However, concerns have been raised with regard to a number of practices that are perceived to have a detrimental impact on competition. At the same time, the public sector is said not to make the most of the buyer power it could potentially wield in order to get the best from its suppliers.

5.2 Practices that have drawn attention are:

- limited publication of contract opportunities, overly onerous pre-qualification requirements (e.g. in terms of minimum turnover) and a general tendency towards discrimination against smaller firms through making submissions of tenders costly (e.g. in terms of the information that bidders are requested to provide and the format in which such information needs to be provided)
- excessive contract aggregation, which is also said to discriminate against smaller firms, and
- discrimination in favour of in-house provision in the face of lower prices paid to external suppliers.

5.3 As the discussion of the principal competition effects of procurement in the previous chapter has shown, the impact of procurement on competition can be complex. Some of the effects are ambiguous, e.g. increasing participation can lead to more or less intense competition, depending on the specific circumstances. Some of the effects work in opposite directions, e.g. focusing too much on short-run price competition may reduce market competitiveness over time, and may

undermine innovation incentives. And last but not least, some improvements in competition may not be worth having once one takes into account the cost associated with conducting the procurement process. This implies that the design of procurement processes requires a careful balance of costs and benefits, which is not easy to achieve.

- 5.4 Although only a case-by-case analysis can show whether a particular feature of a procurement process promotes or distorts competition, and whether this should be of concern, we identify a number of considerations that might be helpful in assessing the effects of procurement practices.

Factors that increase participation costs and restrict participation, especially for SMEs

- 5.5 Even where there are no formal restrictions, participating in a public tender is often costly, and this cost can discourage firms, especially smaller ones, from responding to a call for expressions of interest or submitting a bid in response to a call for tenders. In many cases, these costs are unavoidable, and simply reflect the complexity of the public sector's requirements, and would have to be incurred in the same way when trying to bid for a large private sector project.
- 5.6 However, public procurement is often criticised for raising these costs unnecessarily, and in a way that discriminates against certain types of firms. As a result, participation may be restricted to firms better suited for the particular requirement and who consider themselves to have a sufficient chance of winning to justify incurring the participation costs.⁶⁸ In particular, SMEs complain about facing barriers to participation in

⁶⁸ Although such practices would be against the Government Procurement Policy Guidelines

public tenders that makes it difficult for them to bid, and ultimately win, public contracts (see BRTF/SBC, 2003).

5.7 Factors that are said to increase participation costs unnecessarily and to discriminate against smaller firms include the following:

- restricted communication of contract opportunities, which is said to favour larger firms who routinely monitor the relevant publications (e.g. the OJEU)
- excessive information requirements and form-filling, which make it difficult for smaller and less experienced firms to bid in a public tender, and favours firms who regularly take part in such tenders (sometimes pointing to the implicit conclusion that smaller specialists, who could provide a better and cheaper service, are excluded in favour of larger firms who simply can spread the cost of meeting the formal requirements of public tenders over a larger number of bids)
- overly narrow pre-qualification criteria, placing too much emphasis on past experience of supplying the public sector or firm size, perhaps reflecting the belief that contracting with larger firms is regarded as being less risky than relying on smaller ones.⁶⁹

5.8 As discussed in chapter 4, there may of course be good reasons for limiting participation, e.g. in order to reduce procurement costs. Also,

⁶⁹ The role of pre-qualification criteria is important, given that most procurement is based on the restricted procedure. An analysis of UK tender opportunities in 2003 from the online database supplementing the OJEU shows that 82 per cent of central government tenders, 59 per cent of local government tenders and 76 per cent of tenders put out by other public bodies use the restricted procedure. The corresponding figures for the open procedure are 12 per cent, 32 per cent and 18 per cent respectively, with the difference accounted for by tenders using the negotiated procedure.

limiting participation does not have a significant impact on competition where a sufficient number of competitors remains. This is because the increase in competition from adding an additional bidder may become negligible once the number of bidders exceeds a certain level. In particular where the excluded firms are likely to be (and are likely to be known to be) weaker bidders, their exclusion may not have a significant impact on competition.

- 5.9 In addition to reducing procurement costs, limiting the number of bidders on the basis of criteria such as reputation and a proven ability to meet the particular requirements of a particular tender may be beneficial in cases where the characteristics of the goods or services are difficult to define contractually. In this case, there may be concerns that fierce competition over measurable characteristics (e.g. price) may lead to inappropriate outcomes over other characteristics (e.g. quality). In these cases, some mechanism may be employed to ensure that prospective suppliers meet minimum quality thresholds, even though this may result in reduced competition.
- 5.10 Normally one would expect that a procuring agency, aiming to achieve value for money, would try to find the right balance between making a tender more competitive through increasing participation and increasing the cost incurred in the procurement process. In certain cases, participation has been restricted based on weighing the benefits of maintaining sufficient competition against the cost of increasing the number of participants; for example, as in the case of NHS contracts described in Box 5.1.

Box 5.1: Balancing competition and procurement costs

The case study on the procurement of IT services indicates the importance of balancing procurement costs and benefits from increased participation. Under its NPfIT, the NHS initially reduced the number of participants in tenders for five regional service provider contracts through two common pre-qualification rounds. This was done to keep procurement costs manageable by

restricting the number of bids the NPfIT would have to evaluate in the final round.

However, at the same time, the NPfIT was clear that it wanted a minimum of three bids for each tender to be sufficiently competitive. Following the announcement of the second stage shortlist, the remaining candidates were therefore asked to indicate which particular region or regions they would bid for, allowing NPfIT to check that it would receive a minimum of three bids for each region.

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- 5.11 However, it would be mistaken to assume that every decision about factors that potentially restrict participation is based on the correct trade-off, given that the incentives faced by agents making procurement decisions might be distorted, and that knock-on effects on other buyers might exist.
- 5.12 First, the procuring agency may place undue emphasis on keeping down procurement costs, which would tend to result in excessive restriction of participation. A strong incentive to reduce highly visible procurement costs would have this effect. This is more of a concern where long-term effects of restricting participation are not given appropriate attention and where the procuring agencies are not exploiting mechanisms that would reduce procurement costs, and therefore may unduly restrict participation. For example, reluctance to use online auctions for standardised goods and services where award criteria are simple and straightforward (e.g. price) are likely to be a cause for concern.
- 5.13 Second, the procuring agency may discriminate in favour of particular suppliers in order to minimise the risk of failure in delivery, or in case this happens to minimise the risk of being found not to have done whatever it could to avoid such a risk. As discussed in paragraph 3.26 – 3.30, the public sector may have good reasons to be more risk averse in procurement than the private sector. Risk-aversion may not only make the procuring body reluctant to explore novel methods of awarding contracts, but also provide incentives for overly restrictive pre-qualification criteria. The temptation to limit participation to a select

group of 'reputable' firms may not only restrict competition in a particular tender, but also deny other companies the reputational benefits that might be associated with participating in, and perhaps winning, a public tender.

- 5.14 The public sector may be particularly concerned about the consequences of winner's curse (see Box 4.1), not only in terms of overly cautious bidding, but also (and perhaps mainly) because of concerns about awarding a contract to a firm that has failed to adjust its bidding behaviour appropriately and has therefore underestimated its costs. In such a case, the contracting agency may face the choice between having to make additional payments, leading to cost over-runs, or trigger bidder default and jeopardise the success of the project. In particular, where front-line services are concerned, the risk of facing either option may be unacceptable. This too could lead to the adoption of a relatively large safety margin in terms of financial standing and capability, thereby excluding smaller and less experienced bidders who might conceivably be better able to meet the specific tender requirements.⁷⁰
- 5.15 Third, the procuring agency may not take account of distortions of competition in the supply of other buyers that might result from restricting participation. Reputational benefits from participating, and perhaps winning, a public tender, or other benefits from distortions of competition in the supply of other buyers that accrue to participants in a public tender, might be greatest where participation is restricted. The value of being associated with bidding for a public contract would be

⁷⁰ It is worth stressing, though, that the social cost of inefficient procurement (which could result from winner's curse problems) is potentially significant. Ekloef (2003) estimates the social costs of inefficient procurement design that would lead to the selection of inefficient firms at around 2 to 3 percent of procurement costs. This would be similar to the social costs of inefficient self-supply if the (inefficient) public sector supplier were as efficient as the firm that would be chosen in an inefficiently designed procurement process, and might therefore provide a lower bound of the cost of inefficient self-supply.

rather lower if being invited to participate were nothing special but something open to all firms. To the extent that the strong buyer can extract some of these benefits accruing to participants, this may create an incentive to limit participation by more than would be justified on the basis of the costs and benefits related to procurement costs and the effects of participation on the intensity of competition.⁷¹

- 5.16 An overly strong focus on achieving value for money might even lead public sector buyers artificially to restrict participation in cases where participation in public tenders provides advantages to participating firms in the supply of other buyers. Rather than devalue these advantages by widening participation and achieving lower prices through more intense competition, a public sector buyer might limit participation provided it can extract a sufficient proportion of the rent earned by participating firms from supplying other buyers.
- 5.17 Last but not least, an existing supplier may have strong incumbency advantages that discourage other firms from participating in a public tender (thus saving the potentially considerable cost of preparing a tender where the probability of winning is small). Although the public sector may draw some initial benefits from firms enjoying (or expecting to enjoy) incumbency advantages, such advantages are most likely to turn into increased profits for the supplier in the long run. The public sector may have to pay special attention to measures that it can legally apply in the procurement process in order to neutralise the incumbency

⁷¹ Soudry (2003) suggests that there is a case for limiting the number of bidders in the case where the decision to participate is driven by the desire to gain reputation and prestige. He classifies the effort spent on participating in public tenders in order to obtain such benefits as rent-seeking without any social value. Soudry claims that there may be excessive participation (taking into account the socially relevant costs and benefits from participation), so that reducing participation can increase welfare. It should be noted, however, that the second argument rests strongly on the assumption that the reputation acquired by firms has no social value (e.g. in terms of reducing search costs for other buyers) and only leads to redistribution. This assumption is questionable.

advantages. For example, in its advice on how the flexibilities offered by the EU rules might be used, the OGC points out that 'the EC rules do not prevent contracting authorities from encouraging candidates to express an interest in a particular competition, or disabusing them of the perception that the market is in fact 'closed' to all bar the incumbent.'⁷²

Contract aggregation

5.18 Reviews of public procurement, such as the Byatt Report (DETR/LGA, 2001), the Gershon review (HM Treasury, 1999) or the Kelly report (OGC, 2003), having identified a lack of co-ordination and consolidation of public sector procurement, have identified contract aggregation – bundling requirements under a single contract rather than letting multiple contracts to a number of suppliers – as an instrument for streamlining procurement and reducing costs, potentially by a significant amount. Contracts may be aggregated:

- Horizontally within or across public sector bodies, i.e. identical requirements are pooled and put out to a single tender. Horizontal contract aggregation may have a geographical dimension, for example where a number of local authorities purchase jointly from a single supplier.
- Vertically where requirements covering different stages of the value chain may be sourced together. For example, our case study on the procurement of waste services shows that there is an increasing trend towards the procurement of integrated waste management services, covering both waste collection and waste disposal (see Box 4.7). Or

⁷² OGC, Scope for flexibility under the EC rules, Note by the Procurement Policy Unit, available from <http://www.ogc.gov.uk>.

- Over time, where requirements are bundled over a longer period of time.

5.19 It is worth distinguishing contract aggregation from demand aggregation. Demand aggregation – the consolidation of requirements across and within different parts of the public sector – is a precondition for deriving public sector buyer power from overall significant demand. By contrast, contract aggregation is a particular way in which a (large) buyer (or a group of buyers) bundles requirements. The OGC, in its guidelines on aggregation (OGC, no year), very clearly distinguishes between the two, and highlights that aggregation and co-ordination of demand within and across public sector organisations is an important step towards achieving more efficient procurement processes and better value for money, but that decisions about aggregation of supply (i.e. bundling of requirements into a single contract let to a single supplier) have to be taken on a case by case basis, giving due consideration to the nature of specific markets and the likely impact of contract aggregation on competition.⁷³

The costs and benefits of contract aggregation

5.20 By definition, contract aggregation involves the bundling of needs, and as a result the specification of requirements put out to tender may exceed the capabilities of smaller firms which could provide some, but not all of the goods or services tendered for. The exclusion of firms with insufficient overall capacity, not able to offer the full range of services, or with limited geographic coverage will inevitably limit participation.⁷⁴

⁷³ 'Gershon's blueprint seeks revolution in efficiency', Financial Times, 16.02.2004.

⁷⁴ It is worth noting that contract aggregation does not create absolute barriers to participation, as the option to sub-contract those parts of the requirement that a firm cannot itself satisfy. However, given that this option is costly, a firm that needs to subcontract may be disadvantaged relative to bidders who can satisfy all requirements in-house.

- 5.21 An indirect effect on participation may flow from the fact that contract aggregation reduces the number of successful bidders and thus the probability of winning. This may discourage firms from incurring the cost of submitting a bid. Breaking requirements into smaller lots and awarding a larger number of contracts in a particular tender can provide greater incentives for firms to bid.⁷⁵
- 5.22 We have discussed the main short-term effects on competition of restricting participation in section 4.4 – 4.6; they apply equally in the case where contract aggregation affects participation. However, to the extent that contract aggregation may be expected to exclude mainly bidders who are rather different from those remaining in the contest, the competition impact of limiting participation through aggregation may be relatively modest (as discussed in section 4.7 – 4.8).
- 5.23 In addition to affecting participation, contract aggregation may change the nature of competition between bidders in the short run compared with a situation in which the public sector splits its requirements into a series of smaller contracts which are then awarded more frequently and/or to different bidders (multi-sourcing).
- 5.24 Contract aggregation may increase the incentives of suppliers to become better informed about the value of the contract as the ratio of search costs to contract value decreases. This might reduce winner's curse problems and lead to more aggressive bidding. On the other hand, contract aggregation may also increase the uncertainty faced by suppliers (in particular where crucial elements of the project remain unspecified at the tender stage), thus having the opposite effect.

⁷⁵ See Seshadri et al (1991) or Perry and Sakovics (2003).

5.25 Perhaps more importantly, contract aggregation may affect the likelihood of collusion between bidders in competitive tenders, as discussed in section 4.9 – 4.10. Competition for a single, large contract may be more intense than competition for a series of smaller contracts as collusion incentives are weakened.⁷⁶

- For example, multi-market contact (i.e. the interaction of a small group of firms in multiple markets) tends to increase the likelihood of collusion amongst bidders as it provides the opportunity to punish a firm bidding below the collusive price in one market by underbidding in another.⁷⁷ This option is removed through contract aggregation where multiples purchases from the same group of suppliers are consolidated into a single contract.
- Similarly, letting long-term contracts reduces the risk of collusion as it transforms a repeated game, where the collusive outcome can be sustained relatively easily, into more of a one-shot game, in particular where not winning the contract is a serious threat to a supplier's survival. However, in this case, letting a single contract is very likely to have a detrimental impact on the long-term market structure, which might well offset the benefit from more intense competition in the short run.

⁷⁶ A different reason why competition may be more intense as a result of single-sourcing is provided by Inderst and Shaffer (2004). The driver in their model is that (a) the buyer's needs are differentiated and (b) suppliers can use this to soften competition in the case where the buyer lets separate contracts. At any given price, the buyer would prefer to obtain supplies from multiple suppliers, but by deciding to standardise its requirements and single-source the buyer can put significant competitive pressure on its suppliers. The resultant drop in prices outweighs the utility loss from not being able optimally to satisfy the buyer's differentiated requirements.

⁷⁷ Gupta (2001), using data from the highway construction industry in the US, provides empirical evidence that multi-market contact, i.e. repeated contact amongst the same firms, increases the risk of collusion, in particular where there are few firms overall.

- Geographically separated tenders (e.g. regional procurement) may facilitate collusion by providing a natural division of markets.⁷⁸
- 5.26 The European Commission, in a series of decisions, has accepted that the risk of collusion amongst suppliers is reduced if buyers let relatively large contracts and the time periods between tenders is relatively long.⁷⁹
- 5.27 Although contract aggregation may often intensify 'competition for the market', i.e. competition between bidders for a large contract as a result of which other buyers are excluded from a significant proportion of demand, this comes at the price of reducing or eliminating competition 'in the market', i.e. competition between contractors after the contract award. This is particularly relevant where the public sector aggregates demand to let out contracts over long periods of time, which makes competition 'for the market' infrequent.
- 5.28 Assigning a bundle of contracts to just one supplier may reduce the ability to undertake on-going benchmarking to monitor the quality and cost of the services being supplied, and to ensure compliance with the contract. By contrast, if requirements are split into multiple contracts, awarded to different suppliers, this may provide an opportunity for the buyer to maintain competition in the market by moving (incremental)

⁷⁸ For example, in its decision in Case IV/E-1/35.860-B (seamless steel tubes), the European Commission found that suppliers of steel tubes divided up markets along national boundaries, so that despite international tenders national markets were served by domestic suppliers. Obviously, such market sharing along national boundaries would be much more difficult if tenders were aggregated over a number of countries.

⁷⁹ For example, in its decision in *Pirelli/BICC* (Case COMP/M.1882) of 19 July 2000, the Commission noted that in 'the HV/EHV power cable market tenders take place infrequently while the value of each individual contracts (sic) usually is very significant. Contracts are typically awarded to a single successful bidder (so-called "winner-take-all" principle). Strong incentives therefore exist for all competitors to bid aggressively for each contract.' Similarly, in *AGFA-GEVAERT/STERLING* (Case No IV/M.1432), the Commission argued that 'tenders are renewed on average every two to three years and are significant in value. The relatively low frequency of re-tendering, as well as the consequences of suppliers losing a contract and/or failing to win a tender, further reduce the risk of collusion among the players on the market.'

business between suppliers at the margin. Offering to purchase additional services from contractors who perform well can provide further competitive incentives.⁸⁰ In addition, being able to fall back on another contractor also insures the buyer against underperformance and reduces the risk of being exposed to ex-post opportunism by suppliers (e.g. attempts to re-negotiate). This becomes more important as the contract duration increases.⁸¹ The decision by the NHS to award regional contracts under its NPfIT provides a good example of this (see Box 5.2). Even if it is not possible to shift demand from one contractor to another, awarding separate contracts contracts are awarded.

⁸⁰ Note, however, that the prospect of buying additional services from a bidder having been selected through a competitive tender may have an impact on the incentives faced at the tender stage. Laffont and Tirole (1998) have argued that, under certain assumptions, in the case where the buyer can make a take-it-or-leave-it offer to buy a supplementary good from a successful bidder perfect information revelation in the first stage is impossible. If the winning bid provides information about the supplier's cost, and from this the cost of supplying the supplementary good can be inferred, the buyer's offer for the supplementary good will leave the supplier with zero profit, which in turn makes a first-stage bid that reveals the supplier's cost non-optimal. Waehrer (1999) extends this result to the case of sequential bargaining over the price of the supplementary good. However, he argues that this so-called ratchet-effect depends on a number of restrictive assumptions, and that relaxing these assumptions may well change results. However, the possibility that the bidding strategy at the first stage will be affected by the extent to which the winning bid affects prices for supplementary goods and services supplied at negotiated terms, needs to be taken into account when considering the impact of subsequent negotiations.

⁸¹ Multi-sourcing appears to be a common strategy of bus operators, as pointed out by the Commission in its decision in Mercedes-Benz/Kässbohrer (Case No IV/M.477). There the Commission argued that the desire of German bus operators to multi-source would be sufficiently strong to bring about a significant reduction in the market share of the merged entity compared with the combined market share of the two firms pre-merger. However, the magnitude of this 'shrinkage effect' remained well below expectations, as the Commission had to acknowledge in Volvo/Scania (Case No COMP/M.1672).

Box 5.2: Maintaining in-contract competition - the example of regional contracts under the NPfIT

The case study on procurement of IT services shows the potential benefits attributed to maintaining in-contract competition.

The NHS National Programme for IT in the NHS (NPfIT) divided its requirements relating to the development and implementation of an integrated patient care records system in England up into several contracts. The common national features of this system, the 'spine', were gathered together in one national contract. Any other requirements relating to the care records systems (such as local implementation and interoperability with existing IT systems) were bundled with similar requirements (e.g. electronic appointment booking system) and divided up into five contracts, each covering a geographic region. The NHS was committed to select at least three different suppliers, and eventually four different suppliers were chosen for the regional contracts (Accenture won two contracts). According to the NHS, the benefits from having multiple suppliers are the ability better to monitor individual supplier performance (through benchmarking suppliers against each other), the ability to penalise or reward good performance by sourcing additional services, and the insurance against default or underperformance of any particular supplier by having others that could step in and take over. In addition, competition at the re-procurement stage would be more intense with more suppliers having incumbency advantages.

5.29 Looking at the long-term effects on competition as discussed in section 4.11 – 4.42, contract aggregation may have an impact on the viability of firms, affect entry and exit decisions and incumbency advantages, influence the structure of supply, and change the investment and innovation incentives of suppliers.

5.30 The very fact that incentives to compete are stronger in the case of single, large contracts coming up infrequently suggests that losing a tender is likely to have significant adverse long-term consequences for a firm. Single-sourcing may in the extreme case threaten the viability of

unsuccessful bidders who might not be able to attract sufficient demand until the contract comes up for renewal. Similarly, where contract aggregation leads to long-term contracts covering a significant proportion of demand, it can have the effect of foreclosing entry for a number of years. As Aghion and Bolton (1987) have shown, it may well be in the interest of buyers to enter into contracts that reduce the likelihood of entry, provided that they receive a sufficient share of the profits obtained by the seller from the reduced threat of entry. It is therefore entirely possible that long-term contracts are awarded even if they lead to market foreclosure.

- 5.31 At the same time, contract aggregation can help attract new entry. A significant purchase commitment may help in overcoming entry barriers. Where there are fixed and sunk costs of entry, contract aggregation can remove the risk that a new entrant would otherwise face of attracting sufficient demand to recover the costs of entry. By being able to commit a significant level of demand, the public sector may become pivotal to the decision of a new entrant to commence production.
- 5.32 Contract aggregation may strengthen incumbency advantages compared with a multi-sourcing strategy. Splitting up similar requirements across multiple contracts not only ensures competition in the market, but more firms with past experience and therefore more intense competition, at the re-procurement stage. In particular where learning-by-doing effects are strong, letting a single contract may effectively eliminate the prospect of an effectively competitive tender at the re-procurement stage, unless the buyer is prepared to help other firms to make up some

of the disadvantages, as in the case of the Inland Revenue's ASPIRE programme (see paragraph 4.4 above).⁸²

- 5.33 Vertical contract aggregation, i.e. bundling of requirements across the value chain, can have an impact on industry structure in the long run. If the public sector accounts for a significant proportion of demand, and it chooses to procure services bundled together, it may contribute towards vertical integration amongst suppliers (see Box 4.7).
- 5.34 More generally, contract aggregation can have a significant impact on the incentives to invest and innovate. A single long-term contract implies a strong commitment to a particular supplier and to undertaking everything that is necessary to make the relationship work. This may provide incentives for the supplier to invest in specific assets.⁸³ A single long-term contract creates a bilateral hostage situation: the buyer is as dependent on the supplier as the supplier is on the buyer, which may limit the risk of ex-post opportunism by the buyer (as well as the seller) compared with a situation in which the buyer has alternative sources of

⁸² Maintaining a level playing field may, of course, be a problem even in the case where the buyer has decided to multi-source. Sheang (2000) points out that multi-sourcing is only sustainable over the long term if learning specificity (i.e. the effect of learning-by-doing) is equal across suppliers. Otherwise, the cost of multi-sourcing would increase as cost differences between suppliers increase, and the productive inefficiency of awarding contracts to higher cost bidders increases. Sheang suggests that equalisation of learning specificity may be achieved through an equal split of contracts (even though this maximises productive inefficiency and weakens competition for the primary contract, as argued above).

⁸³ Che and Sakovics (2004), for example, argue that if the probability of breakdown of negotiations is sufficiently low, larger potential losses from failing to agree make possible more severe dynamic threats, thus sustaining higher investment. From this, they conclude that contracts that expose parties to the risk of hold-up may be better than contracts that reduce this risk. Hold-up problems occur where one party to a transaction makes a sunk investment that is specific to the transaction. There is a risk that the other party will try to renegotiate terms subsequent to the investment being made, knowing that there is no alternative use for the investment. Anticipation of problems such as this will reduce the incentives to invest in the first place, and for this reason it is normally considered that contracts should try to minimise the risk of hold-up

supply. In this regard, multi-sourcing which gives the buyer the option to fall back on other suppliers if a particular contractor does not perform increases the exposure of any one supplier to ex-post opportunism by the buyer, and may thus discourage investment.

5.35 As a result of these effects, contract aggregation, by reducing the number of contracts awarded (and increasing the volume of each one), is likely to amplify:

- any impact that public procurement might have on long-term market structure through forcing exit or incentivising entry
- the impact of winning a tender on incumbency advantages of successful bidders
- any effects on other buyers where supplying the public sector confers an advantage on the firm.

5.36 In addition to these competition effects, contract aggregation has a number of obvious benefits from the perspective of the procuring agency:

- Contract aggregation is likely to reduce procurements costs. Conducting fewer tenders reduces the amount of time and effort required to invite bids and evaluate tenders. This cost reduction is likely to outweigh the increased effort that may have to be spent on conducting, and preparing bids for a larger tender. Thus, contract aggregation is very likely to reduce direct procurement costs.
- The costs of dealing with suppliers and managing contractual relationships (in particular where the buyer's requirements are difficult to specify, and where ongoing discussions about specification of requirements and monitoring of performance are

involved) are likely to fall if there are fewer suppliers. On the other hand, having more suppliers provides an opportunity to compare and contrast their performance (yardstick competition), and may thereby reduce monitoring costs.⁸⁴

- Contract aggregation may enable the buyer to take advantage of economies of scale (horizontal contract aggregation) or economies of scope (vertical contract aggregation) on the supply side. The better terms and conditions that can be obtained for larger contracts may often not only reflect the improved bargaining position that results from aggregation,⁸⁵ but may simply result from the fact that a supplier is able to offer lower prices in exchange for a larger purchase commitment⁸⁶, or for a specification that reflects the upstream cost structure.

⁸⁴ Another factor that might influence the decision between aggregated procurement and de-centralised purchasing is related to information available to various agencies. If local authorities are better informed, for example about their prospective suppliers, this advantage may be lost when procurement is centralised. Vagstad (2000) argues that this does not provide an argument for decentralised procurement where local agencies would have a bias in favour of local firms, and where incentives of local agencies and the central agency are well aligned so that the information available to local agencies can be verified by the central agency. Rather, in this case central procurement would be optimal.

⁸⁵ Engel *et al.* examine the question under what conditions competition for the market (i.e. letting a single contract and inviting potential bidders to compete for this) is better than competition in the market (i.e. having multiple suppliers providing the good or service under imperfectly competitive conditions). They find that, in the case where requirements are easy to specify and quality can be verified at no cost and where hold-up is no issue, competition for the market is better whenever the suppliers' surplus function is concave (regardless of the way in which oligopolists compete). This result is related to the finding of Chipy and Snyder (1996) that a concave surplus function of the supplier gives rise to buyer power in bilateral negotiations (see Box 3.1 in Annex A).

⁸⁶ Note that one would not expect to obtain such benefits if contract aggregation took place through framework agreements which do not (at least implicitly) include a purchase commitment but only give the public sector buyer the right to call off supplies at pre-agreed terms and conditions (or better terms as mutually agreed at the point of the call-off).

- Compared with a situation in which contracts are awarded to multiple bidders, contract aggregation allows the buyer to source all its requirements from the most efficient firm, obtaining better conditions through this route.⁸⁷

5.37 In the same way as public sector buyers should take account of the participation effect of contract aggregation, the optimal design of the procurement process, including the decision on the appropriate bundling of requirements, should balance the costs and benefits of contract aggregation. Given that there is a potentially considerable upside to letting fewer, larger contracts less frequently, it should not be surprising that this procurement strategy appears very attractive overall, even if it leads to the exclusion of smaller firms.

5.38 However, it is again important to examine whether there might be excessive contract aggregation as a result of distorted incentives facing those making decisions about the design of procurement processes:

⁸⁷ Seshadri *et al.* (1991), using a model in which the number of participating bidders is determined endogenously, argue that the decision to multi-source will increase participation, but will also result in higher prices. In a similar vein, Perry and Sakovics (2003) show that awarding split contracts would lead to the buyer paying a higher price than in the case of a single contract if the number of bidders were fixed. However, if letting multiple contracts can attract entry, awarding split contracts can reduce the price paid by the buyer. Perry and Sakovics show that the benefit from inducing entry (or preventing exit) are larger the smaller the number of bidders. However, as Perry and Sakovics argue, it would never be equal to split requirements evenly, as such a split generates the largest inefficiency in production (by giving the largest possible demand to a supplier who is, by comparison, inefficient) and the weakest incentives to compete for the primary contract. The optimal split involves the minimum size of the secondary contract to draw into the market one additional bidder (or prevent the exit of the marginal firm).

Ashenfelter *et al.* (1997) claim that multiple contractor laws, which prevent the use of general contractors, increase procurement costs and reduce efficiency. Examining public construction data for New York City, and comparing projects with identical blind cost estimates, they claim that multiple constructor laws are responsible for an increase in public procurement costs by 8 per cent, and construction delays of more than one year.

- Contract aggregation may be mainly driven by attempts to reduce procurement costs, without full consideration of competition effects. The cost-saving incentive may be particularly strong in this case as savings would also be made on on-going contract management costs.
- Trade-offs between the long-term loss of competitiveness and short-term gains from more intense competition may be biased in favour of the latter. Moreover, even if contract aggregation leads to benefits for the public sector as a strong buyer, other smaller buyers would only experience the long-term loss of competitiveness without any corresponding short-term gain.
- Similar considerations apply to the decision about potential entry assistance that the public sector might provide through contract aggregation. In making this choice, the large buyer does not take account of the benefits of entry for other smaller buyers. Moreover, the large buyer may benefit from being able to create the credible threat of helping an entrant into the market in order to make incumbents compete more aggressively, but this increased competition does not benefit other smaller buyers, who would need to see real entry in order to experience an improvement in competitive conditions.
- Owing to concerns about supply security, the public sector may have a strong incentive to aggregate contracts over time, i.e. award long-term contracts, which may discourage entry and thus reduce competition. This incentive amplifies the incentives of buyers discussed by Aghion and Bolton (1987) to agree to long-term contracts in exchange for a share of the rents from excluding

entrants, and may therefore exacerbate concerns about foreclosure.⁸⁸

Market-testing of economies of scale and scope

5.39 Whether contract aggregation is the right choice obviously depends on the extent to which the benefits could be obtained in another way without having to incur the potential cost of reducing competition. One possible approach is to use tailored auction formats, for example:

- simultaneous multi-round auctions (SMRAs)⁸⁹, which have been widely used in the allocation of radio-spectrum⁹⁰ and the divestment of electricity generating capacity⁹¹

⁸⁸ For example, in its decision on State aid granted by Spain in favour of the maritime transport sector of 19 July 2000 (OJ L 57), the European Commission considered that the award of long-term contracts for a large set of routes had the effect of restricting or distorting competition.

⁸⁹ In a SMRA, a number of items is sold simultaneously over multiple rounds. The auction closes when no new bids are forthcoming and each item is sold to the highest bidder. Thus over the course of the auction the prices of different items will vary and bidders can switch between them on the basis of their relative price.

⁹⁰ The SMRA format for spectrum auctions was pioneered in the United States in the 1990s and has subsequently been adopted in a variety of forms for spectrum auctions in countries around the world, including, for example, the UK 3G, BFWA (both 2000) and PFWA (2003) auctions.

⁹¹ For example, Electricité de France (since 2001) and Electrabel of Belgium (since 2003) are using an ascending clock format (which is a type of SMRA) to auction power generation capacity.

- combinatorial auctions⁹², which have, for example, been used in the allocation of radio spectrum⁹³ and London bus routes⁹⁴.

5.40 Auctions can be used to facilitate the participation of smaller and specialist bidders, and allow market-testing of the strength of scale and scope economies. Although not without their problems (for example, SMRAs may expose firms to aggregation risks that would not exist in the case of bidding for a single aggregated contract, and combinatorial auctions may be complex to run), such methods can, if carefully designed, increase participation and intensify competition. However, as is clear from theory, experimental evidence and practical examples, the detailed rules are very important and complexity for bidders can be significant.⁹⁵

5.41 Procuring bodies may be reluctant to explore alternatives (such as auctions) to letting single, large contracts through a simple competitive tender, even if these would be less restrictive in terms of participation. This is a cause for concern. Risk aversion and the tendency to stick with

⁹² Combinatorial auctions are used for selling multiple items where bidders have synergies between them. Unlike a standard auction, bidders can submit multiple bids, one for each possible combination of items and vary the amounts they bid to reflect any synergies. The highest bidders are determined by calculating the combination of bids across bidders and items that generates the highest revenue. Combinatorial bidding can be implemented in a single-round sealed bid or multiple round context.

⁹³ For example, a combinatorial auction format was used for the 2002 Nigeria FWA auction (see Koboldt et al. [2003] for a description) and is proposed for the US 700MHz spectrum auction.

⁹⁴ Cantillon and Pesendorfer (2003) analyse the process for the allocation of London bus routes, and a description can be found there.

⁹⁵ Cambini and Filippini (2003) review the way in which regional bus transport concessions will be allocated in Italy, and conclude that the definition of service areas along judiciary boundaries is likely to be non-optimal, as it does not take account of economies of scale and density.

the tried and tested may, in this case, result in an undue restriction of competition.

- 5.42 Offering firms the flexibility to bid for parts of the requirement specified in a tender is one possible way to enable the public sector to obtain benefits from aggregation without necessarily jeopardising the ability of smaller firms to participate. However, as shown in Table 3.1, procuring bodies do not appear to make use of the option of allowing bidders to submit bid for parts of the total requirements. Global tenders account for almost two-thirds of all the tenders put out during 2003 by UK public authorities.

Table 3.1: UK Procurement (no of contracts) by type of bid, 2003

Type of contract	No of contracts	Percentage
Global tender (supplier must bid for whole contract)	3,452	66
Partial tender (smaller bidders may bid for part of the contract, but not necessarily the whole contract)	691	13
Global or partial tender (bidders may bid for either the whole or parts of the contract)	477	9
Not defined	644	12
Total	5,264	100

Source: Tenders Electronic Daily, the online database of the Supplement to the Official Journal of the European Union

Sub-contracting as a means to maintain a diverse supplier base

- 5.43 An alternative to offering a larger number of contracts in order to maintain a number of viable suppliers is to encourage sub-contracting. For example, the BRTF/SBC (2003) report suggests that the use of

subcontractors might provide benefits for the public sector as a buyer, and one of its recommendations is to 'ask prime contractors during the procurement process to demonstrate their track record in achieving value for money through effective use of their supply chain – including use of small and medium-sized enterprises. This should also be examined as part of the on-going contract management... In order to make subcontracting opportunities more transparent to small and medium-sized enterprises, Government Departments should list details of prime contractors and contracts on their web sites.'

- 5.44 However, subcontracting may have a detrimental effect on competition in that it could be used to sustain collusion in bidding to become the primary contractor (see Alexander, 1997), and even remove the incentives to participate in a competitive tender in the first place. Contract aggregation with the option of subcontracting may further reduce participation by providing incentives for bidders to form consortia, and may even impact on the organisation of the supply market.⁹⁶ Even though there may not be a clear causal relationship, it is worth noting that the tendency towards letting integrated waste

⁹⁶ On the other hand, a potentially beneficial effect of subcontracting is that it removes the strategic interaction between bidders in the presence of increasing marginal costs (see Gale et al., 2000). Having won a contract, a bidder with increasing marginal costs would face higher costs in future tenders. Thus, allowing a competitor to win more contracts increases the likely price that can be achieved by firms 'holding out'. If subcontracting is possible, the realisation of ex-post efficiency gains removes the scope for large differences in marginal costs, and therefore bidding tends to be more aggressive.

Bös and Kolmar (2000) argue that negotiations between the firm that has won a tender and a losing bidder, taking place between award and contract can improve efficiency because it may increase the probability that the most efficient firm will eventually be selected. This requires a temporal separation between award (i.e. announcement of the winning bidder) and the conclusion of a contract, not necessarily with the winning bidder. This is similar to subcontracting. Note, however, that, in this case, the efficiency gains that would accrue to the public sector if it had managed to select the most efficient firm in the tender process will be appropriated by the firms. Note that this possibility may create incentives for collusion amongst bidders.

management contracts and the consolidation in the waste services market have gone hand in hand (see Box 4.7 above).

- 5.45 The provision of information on contractors and contract details may not only facilitate subcontracting (with all its associated costs and benefits), but also facilitate collusion amongst prime contractors. Therefore, the impact of information provision on the likelihood of collusion should be taken into account.

Round-robin on re-procurement

- 5.46 Another alternative to multi-sourcing is to award a contract to a different supplier on re-tendering. The European Commission, in its decision in Volvo/Scania⁹⁷ linked the high volatility of market shares in the market for city buses in Greece to the fact that purchases were made exclusively through tenders from the public transport operators in Athens and Thessaloniki, which appears to suggest that these bodies have made an effort to switch suppliers on re-tendering.

- 5.47 Such a deliberate rotation of suppliers may be difficult to achieve, however, under the EU procurement rules. Of course, neither subcontracting nor switching suppliers on re-tendering provides the benefits of being able to benchmark the performance of contractors, or of the disciplining force of competition after the award of the contract that would arise from multi-sourcing.

Summary

- 5.48 The effect of contract aggregation on competition, and the costs and benefits associated with bundling requirements into a single (or a few

⁹⁷ Case No COMP/M.1672.

large) contract(s) are very complex. In addition to limiting participation, contract aggregation can sharpen competition for the market by reducing the risk of collusion, even though this may come at the cost of removing in-contract competition which would be possible through a strategy of multi-sourcing. Given the size of individual contracts, the long-term effects are potentially considerable, and can be both positive (providing incentives to enter the market or invest) and negative (threatening the viability of unsuccessful firms or amplifying incumbency advantages). Last but not least, there are the obvious effects on the administrative costs of procurement, augmented by the impact of contract aggregation on the ongoing costs of contract management.

- 5.49 Owing to the complexity of potential effects, balancing the costs and benefits of contract aggregation is difficult. Nevertheless, a public sector buyer pursuing value for money should in principle find the right trade off between excluding participants, eliminating in-contract competition and potentially reducing long-term competitiveness on the one hand, and more intense competition in the short term, benefits from economies of scale in supply, and reduced costs on the other. There may, however, be reasons for which decisions about contract aggregation may be distorted, potentially leading to too much contract aggregation as a result of not placing enough emphasis on the long-term effects. Particular concerns arise in the case where alternative options for obtaining the benefits from contract aggregation – chiefly through the use of novel and more sophisticated auction formats in the running of public tenders - remain unexplored. Measures to mitigate the negative consequences of contract aggregation, such as encouraging sub-contracting or round-robin at the re-procurement stage, are not necessarily effective, and may have their own problems.

Potential for self-supply

- 5.50 Over the past decades, there has been a move towards a greater role for the private sector. Public services have increasingly been market-tested, and procurement has shifted from providing (often fairly commoditised)

inputs into the operation of the public sector towards providing public services on its behalf.

5.51 Given that many of the services covered by procurement have historically been supplied by the public sector (for example, waste collection and disposal services, and correctional services, as covered by our case studies), it is not surprising that, in many cases, self-supply is a viable alternative to procurement, and that, for some services, public and private provision co-exist. This raises the question how self-supply affects competition amongst suppliers, not least because it has been argued in some instances that the public sector has discriminated against private sector suppliers offering the same or similar services. For example, in 2003, the OFT ruled on a complaint from *BetterCare*, a private provider of care homes, which alleged that it was receiving artificially low prices from the North & West Belfast Health & Social Services Trust, in particular by comparison with the prevailing terms and conditions in the statutory care homes managed by the Trust.⁹⁸

5.52 The self-supply option can have the following effects on competition:

- It provides an effective fall-back position for the public sector to purchasing from external suppliers. As such, it can impose a powerful constraint on suppliers and force them to behave

⁹⁸ See Decision of the Office of Fair Trading under the Competition Act 1998 (CA98/09/2003) of 18 December 2003 in *BetterCare Group Ltd/North & West Belfast Health & Social Services Trust* (Case no CE/1836-02). The OFT rejected the claim of an abuse of dominance because the rates paid to *BetterCare* were not set by the Trust but by the Eastern Health and Social Services Board and the Department of Health, Social Services and Public Safety, which were not undertakings for the purposes of the Competition Act. The budget for statutory homes was set by the Department of Health, Social Services and Public Safety rather than the Trust.

competitively (see Box 5.3)⁹⁹ and may as such improve short-term competition. The threat of a buyer to integrate backwards (e.g. self-supply) is one of the factors that contribute to the creation of buyer power.

- It may result in inefficient self-supply which, in the first instance, appears to harm the public sector by resulting in higher costs than would be incurred if services were purchased from the private sector. Competition effects from inefficient self-supply would arise in the case where, as a result of too much in-house provision, there is a more limited market for such services, which might have a detrimental impact on other buyers who might face less competition and have access to a smaller range of suppliers.

Box 5.3: Self-supply and collusion

As described in our case study on the procurement of prison services, the self-supply option (through an in-house bid for contracts to manage prisons, and calculation of a so-called 'public sector comparator' in the case of tenders for PFI contracts) can provide a significant constraint on collusion by bidders. The Competition Commission, in its investigation of the acquisition of The Wackenhut Corporation by Group 4 Falck, has considered these effects in the context of the ability and willingness of the public sector to exercise countervailing buyer power.

⁹⁹ As Thomas (2001) shows, the strategic choice of a reserve price can dramatically reduce the range of discount factors over which collusion is sustainable. The option to self-supply can be interpreted as an equivalent to setting a reserve price, providing perhaps an even more credible alternative to purchasing from a third party than not purchasing at all if the reserve price is not met. This would suggest that the self-supply option, if properly used, provides a valuable tool to the public sector for incentivising suppliers.

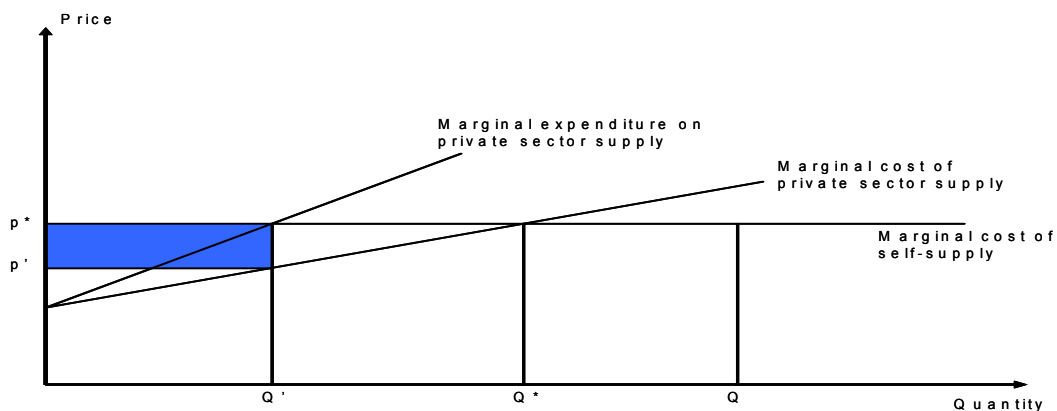
Our case study on the procurement of waste collection services describes a setting that, at first sight, appears vulnerable to collusion. The same small group of firms will tend to meet each other repeatedly when bidding for local authority contracts, which come up for renewal every four to seven years. This could give them scope to develop explicit or implicit policies to lessen competition. However, again the self-supply option may be a powerful constraint on collusive behaviour.

- 5.53 The issue of inefficient self-supply appears to be relatively clear cut where there is a market price for the services under consideration, and where therefore market testing of self-provision is relatively straightforward (although it may still be difficult to establish with sufficient precision the cost of in-house provision). One might ask, for example, why the North & West Belfast Health & Social Services Trust did not attempt to procure more care home services from external suppliers, if the fees set for such services were lower than the cost of self-provision.
- 5.54 Market-testing of in-house provision becomes more difficult where currently no market exists (as was the case in the provision of correctional services prior to the first decision to procure such services from the private sector), or where the presence of large public sector demand would significantly affect the terms and conditions on which the goods and services in question can be purchased.
- 5.55 This creates the potential danger that inefficient self-supply continues, which may not only have a detrimental effect on the public sector, but also harm private sector buyers. This would be the case where the decision to self-supply severely limits the scale of the market providing services to smaller private sector buyers, and (in the presence of scale economies and barriers to entry and expansion) tends to result in higher prices. There may also be foregone opportunities in terms of promoting innovation and technological developments, which could have potentially significant spill-over benefits if available to a wider set of market participants.

5.56 Inefficient self-supply may also be linked to the strategic reduction of demand in order to obtain lower prices. Where the required output of public services is determined politically, the public sector will very likely be constrained from reducing demand in order to push prices below the competitive level. However, if self-supply can be used to maintain the required output level, there may be scope for achieving budget savings at the expense of suppliers, albeit only in the case where private suppliers act as price-takers (i.e. the private supply market is effectively competitive) and private suppliers face increasing marginal cost (see Box 5.4).

Box 5.4: Strategic reduction of demand and inefficient self-supply

Consider a service that could either be self-supplied or procured from the private sector. Assume that self-supply has a constant marginal cost, and that the marginal cost of private sector suppliers is increasing. Assume further that the total quantity of the service that has to be provided to the public is fixed by the political process at a given level Q , as illustrated in the diagram. Efficiency would require that the public sector procures Q^* from the private sector, and self-supplies $(Q-Q^*)$. The total cost of providing the service to the public would be $Q \times p^*$. Of this, $Q^* \times p^*$ are spent on obtaining supplies from the private sector, and the remainder is the budget for self-supply.



If private sector supply is perfectly competitive, and firms act as price-takers (i.e. take the price they are offered as given, and simply decide how much they wish to supply), the public sector might be able to reduce the total amount it spends on provision of the service by strategically reducing demand in order to

reduce the price paid to the private sector. Taking account of the impact of changes in the amount purchased from the private sector on the price that has to be paid, the largest reduction in the overall budget is achieved when procurement from the private sector is reduced to Q' (where marginal expenditure on private sector supplies equals the marginal cost of in-house provision). The total amount spent on provision of Q is then given by payments of $Q' \times p'$ to the private sector, and a cost of self-supply of $(Q - Q') \times p^*$. The reduction in total budget is indicated by the shaded rectangle.

A quantity of $(Q^* - Q')$ is self-supplied inefficiently as for this quantity the resource cost of private supply would be below the resource cost associated with self-supply.

However, this does not have an impact on competition as the private sector is assumed to remain competitive. The above considerations would obviously change if, as a result of inefficient self-supply, private sector firms went out of business and competitiveness of the private sector would decrease. This would have the effect of increasing the amount that would have to be paid to the private sector above p' , off-setting any savings that might be achieved through strategic demand reduction.

It is also worth pointing out that the result depends crucially on an increasing marginal cost of private provision, as only in this case would reducing demand have an impact of reducing prices.

5.57 Inefficient self-supply in this case would not, however, have an impact on competition in the sense that the supply sector would have to remain competitive for the benefits from strategic demand reduction to persist. If suppliers were driven out of the market as a result of inefficient self-supply, reducing demand in order to push down prices would be self-defeating as suppliers would cease to behave like price-takers and would start trying to mark up prices. Thus, competition effects would only arise if the public sector disregards these long-term effects on competitiveness and market structure.

Summary

5.58 In summary, participation restrictions are likely to be of concern where:

- the products and services required by the public sector are relatively standardised, and where it should therefore be possible to use purchase formats that reduce both the participation costs for bidders and the evaluation costs for the public sector. For example, in cases where on-line auctions are feasible, but not being used by the public sector, there is little justification for design choices that limit participation
- there is little uncertainty over the value of the contract, and therefore there is little risk of winner's curse. In this case, the potential justification that limited participation increases the intensity of competition falls away
- they result in a small number of bidders, while, at the same time, firms which are of a similar strength are being excluded from participating in a tender, and/or
- participation in (and winning of) public tenders provides considerable advantages to firms in supplying other, smaller buyers.

5.59 Participation restrictions that apply to framework contracts may be of particular concern. This is because restricting the number of suppliers under a call-off arrangement covers a larger number of procurement settings and may therefore have a larger impact on competition.

5.60 Conversely, features that are likely to restrict participation should not necessarily raise concerns (even if they discriminate against smaller firms). Participation restrictions may be justifiable where the goods and services being procured are highly complex, where a significant number of bidders remains for a tender or where the excluded firms are likely to be much less efficient than bidders in the delivery of public sector requirements. Where there is considerable uncertainty over the value of the contract, allowing a larger number of smaller firms to participate

could even be counterproductive (in addition to unduly raising procurement costs). However, discrimination against SMEs may be an issue if such firms can be expected to be as efficient in delivering the services as larger rivals. This might be the case where the focus of requirements is on innovation, and where smaller firms are as likely as larger ones to be capable of developing new products and services.

5.61 The following conclusions can be drawn on contract aggregation:

- Contract aggregation should not be of concern unless it significantly limits participation to a few large firms, in situations where a much larger number of bidders would otherwise have been able to participate in (and win) tenders without significant increases in procurement costs.
- Excluding smaller firms through contract aggregation is unlikely to have an impact on the intensity of competition where there are economies of scale or scope in the provision of goods and services.
- Where alternative procurement mechanisms would allow smaller bidders to compete with larger bidders, putting the extent of scale and scope to a market test, contract aggregation should be regarded with particular concern.
- Facilitating subcontracting in order to mitigate the effects of contract aggregation might be regarded with suspicion as it may encourage collusive behaviour, and suggests that economies of scale, which are a potential justification for contract aggregation, are not particularly strong: if the main contractor cannot supply all the required services under the contract, or if the use of subcontractors does not significantly increase costs, this suggests that there are no genuine economies of scale or scope in the provision of the goods or services contracted. Removing one of the reasons for contract aggregation, in turn, makes concerns about the potential negative consequences of aggregation more relevant.

5.62 Regarding self-supply, the conclusion is that in most cases inefficient self-supply would in the first instance harm the public sector buyer (through higher costs), even though it may in some special circumstances reduce the overall budget required to provide a given level of services. Inefficient self-supply may raise concerns where it results in reduced competition in the supply to other buyers, i.e. where withholding public sector demand means that other buyers face a more limited market, sustaining fewer firms and therefore being more

concentrated. Against this, one has to consider that self-supply can be a very effective constraint on potential collusion amongst bidders for public contracts, as it provides a credible fall-back option for the public sector if bids were inflated.

6 SCREENING METHODOLOGY FOR PROCUREMENT-RELATED COMPETITION PROBLEMS

- 6.1 The previous two chapters have shown that there are various mechanisms by which public procurement procedures could affect competition, and that the competition impact of a particular procurement practice can be positive or negative, depending on the specific circumstances under which procurement takes place. Procurement-related competition concerns not only arise in the case where public procurement restricts competition, but may be said to exist also where the public sector through its procurement would be capable of promoting competition, but fails to do so.
- 6.2 As we have shown, competition effects from procurement are complex. There are unlikely to be hard and fast rules that would allow one to draw a clear distinction between procurement practices that are good and those that are bad for competition without a detailed analysis of the circumstances in which any particular public procurement takes place. Only a detailed analysis of procurement practices in a particular market can establish whether public procurement in a particular instance causes competition concerns.
- 6.3 However, even though only a detailed assessment of specific procurement practices can reveal whether they give rise to competition concerns, it should be possible to identify market conditions that make competition effects from public procurement more or less likely. In markets where public procurement is unlikely to be capable of affecting competition it might not be necessary to undertake a detailed analysis of procurement practices at all. Amongst those markets where procurement-related competition problems could exist, it might be possible to prioritise according to the likelihood and severity of competition concerns.
- 6.4 In order to focus any detailed analysis on markets where public procurement might be most likely to affect competition (and where such effects might be expected to be most severe), the OFT required us to

develop indicators that would allow it to identify markets for further investigation. To demonstrate the practicability of such a screening approach, we were also asked to identify a number of markets in which more detailed analysis in the form of market studies would be justified.

- 6.5 One obvious constraint in the development of a screening approach is that the indicators used must be based on information that is readily available **without first having to undertake detailed market analysis**. In other words, indicators used in the identification of markets for further investigation need to be based on information already collected for purposes other than to investigate the competition effects of public procurement. This creates an immediate problem because such information is not normally collected on the basis of economic markets but rather on the basis of industry classifications (such as the standard industrial classification (SIC)). In almost all cases, industry boundaries are different from market boundaries (with industry sectors normally including multiple economic markets).
- 6.6 Readily available information about industry sectors can only provide an imperfect picture of competitive conditions in economic markets. This problem affects any attempt to use statistical information collected for other purposes in the screening of markets in which public procurement is likely to raise competition concerns. There is no easy remedy, and in using data for industrial sectors we obviously need to be aware of the implications of the potential mismatch between industry sectors and markets for our analysis.
- 6.7 In this chapter, we consider how various simple statistical indicators can be used to identify industrial sectors within which public procurement may have a material effect on competition. We first discuss different types of procurement-related competition problems which would justify further investigation. We then outline our general approach to screening industrial sectors for the likelihood of procurement-related competition problems, and identify indicators that could be used to do this. We compare this approach with screening methodologies developed for identifying general competition problems, rather than competition concerns specifically related to public procurement.

Competition concerns related to procurement

6.8 Our objective is to identify conditions that suggest competition concerns specifically related to public procurement, i.e. cases where procurement practices contribute to, or cause a restriction of competition, or where they fail to moderate the market power of suppliers. It is worth pointing out that this is different from, albeit related to, identifying conditions that suggest general competition concerns, such as abuse of a dominant position, restrictive agreements or collusion. It might be, for example, that a particular industry is concentrated as a result of underlying cost conditions, or as a result of entry barriers unrelated to procurement practices. We are not concerned with such cases except insofar as procurement practices might be able to mitigate suppliers' market power but fail to do so.

6.9 The analysis presented in Chapter 4 has identified a number of potential competition effects (both good and bad) of procurement. These can be mapped into different types of competition concerns related to procurement practices. More specifically, we distinguish three categories of procurement-related competition concerns:

- Category I: procurement is organised inefficiently and fails to mitigate supplier market power through the exercise of countervailing bargaining power. For example, contracting authorities may fail to consolidate their demand and choose the most appropriate way of bundling their requirements.
- Category II: procurement itself causes, or reinforces, restrictions of competition, e.g. through participation restrictions, high participation costs, long-term contracts or excessive contract aggregation which does not stimulate competition for the market.
- Category III: procurement focuses too much on short-run price competition, which leads to diminished non-price competition and a potential lessening of competition in the long run. This could be due

to decisions made about contract aggregation without due regard to the long-term benefits of multi-sourcing, leading to vigorous competition in a particular tender, but little or no competition at the re-procurement stage.

6.10 Before discussing each of these concerns in more detail, it is instructive to consider how these different concerns are related to the extent to which the public sector achieves value for money in its procurement, not least because public procurement should in principle avoid any restriction of competition that reduces value for money.

- Concerns in Category I are very likely to result in failure to achieve value for money. By improving its procurement process, the public sector could reduce profits earned by suppliers, which would be reflected in lower prices, better quality or other improvements.
- Concerns in Category II may result in a reduction in value for money compared with what could be achieved if procurement choices obtained the optimum balance of costs and benefits. This would be the case where procurement choices are distorted, e.g. too much emphasis is placed on reducing the administrative cost of running the procurement process. However, concerns in this category may not necessarily be associated with failure to achieve value for money. If supplying the public sector has a significant strategic importance for suppliers, then the public sector may be able to secure better terms and conditions at the expense of private sector buyers.¹⁰⁰ In this case the public sector would obtain particularly good terms.

¹⁰⁰ See Chapter 4

- Concerns in Category III are likely to result in very good value for money when measured in the short term, and when measured mainly with reference to prices paid. However this may come at the expense of cost reductions or quality improvements in the long term, and may even result in worsening terms and conditions offered by suppliers over time. These effects may not be immediately apparent, and may be difficult to quantify.

Failure to mitigate supplier market power (Category I)

- 6.11 Assuming that the public sector would in most cases exercise its buyer power in order to obtain value for money (even though some of the choices may be distorted), significant failure to mitigate supplier market power through the exercise of countervailing buyer power is perhaps most likely in the case where public sector demand is fragmented and there is no attempt to consolidate demand and co-ordinate procurement activities. Although the procurement process is not itself creating any additional restriction of competition, there may be competition concerns because of a missed opportunity to control supplier market power through procurement.
- 6.12 Fragmented demand and un-coordinated procurement may, for example, make it easier for suppliers to sustain tacit collusion and to avoid vigorous head-to-head competition for large public sector contracts. In the long run, there may be missed opportunities for preventing increasing concentration, or for helping new suppliers into the market place. Even though other buyers might not benefit from increased competition in the short run, they are affected by the long-term effects of failure to exercise countervailing buyer power where this leads to a lessening of competition over time relative to what could be achieved through the conscious exercise of countervailing buyer power.
- 6.13 Clearly, the public sector should have every incentive to avoid such a situation. There have indeed been various initiatives by government aimed at identifying the potential benefits from consolidating demand

and co-ordinating purchasing arrangements. Ex-post review processes such as investigations by the NAO, the Kelly review (OGC, 2003) and the Gershon efficiency review are aimed at identifying opportunities for obtaining better value for money, thus helping to avoid situations in which category I competition concerns arise.

6.14 The main features of this situation are that:

- the public sectors accounts for a significant proportion of demand within a sector, but
- this demand is fragmented across individual purchasing agencies, acting in an un-coordinated way, and
- supply conditions are not effectively competitive.

6.15 These are clearly necessary but not sufficient conditions; to determine whether procurement is efficiently organised would require a detailed examination of current practices compared with alternative ways of organising public procurement.

Restrictions of competition due to procurement practices (Category II)

6.16 There are a variety of reasons why competition amongst suppliers might be restricted as a result of public procurement practices. For example, there may be excessive restrictions on participation in public procurement as a result of unnecessary qualification conditions. Costs of participation in tender processes may be excessively high, for example because it is necessary for participants to gather information or undertake technical studies in order to prepare a bid. Contract aggregation may make it infeasible for smaller suppliers to participate. Long-term contracts offered by the public sector may restrict entry.

6.17 Such restrictions of competition may also have long-term effects if they affect incentives to invest and innovate, or if market conditions are such that changes in competitiveness are not easily reversed. For example, if there are barriers to entry or expansion that are unrelated to procurement, firms would be able to sustain market power acquired as a result of public procurement practices that restrict or distort competition even if these practices were changed. Strong learning-by-doing effects may have similar effects. Innovation may be stifled by lack of competition from potential entrants, again leading to long-run effects.

6.18 Although it might appear that such restrictions of competition are against the interests of public sector buyers and should not normally occur if the public sector is pursuing value for money in its procurement decisions, there are possible reasons why such situations might come about:

- First, certain procurement practices might in some cases restrict competition, but enhance it in others. For example, participation restrictions may be rational in tender processes where there would otherwise be strong effects of winner's curse.¹⁰¹ Where the quality of the goods or services being procured is difficult to specify contractually, it might be desirable to impose overly strong prequalification conditions even if this led to the exclusion of some potential suppliers. Contract aggregation may be necessary to exercise countervailing buyer power in the face of seller power. However, there is a danger that these instruments are applied in situations where they are inappropriate, thereby limiting rather than enhancing competition. It is often difficult to determine optimal procurement practices (not least because experimenting with alternative arrangements might be impossible) and it is inevitable that errors are made in some cases.

¹⁰¹ See our discussion in section 4.1 above.

- Second, a strong public sector buyer may not necessarily be much affected by restrictions of competition to the extent that it can exercise countervailing buyer power, although other smaller buyer could be. For example, a powerful buyer might be able to play off a few suppliers quite effectively and may therefore not be particularly concerned if its own behaviour limits the number of firms in the market. Smaller buyers would however suffer from the associated restriction in competition.
- Third, in the extreme case where some of the profits made by suppliers enjoying market power in the supply of smaller buyers are competed away in public tenders, there may even be a benefit from restricting competition.

6.19 For public procurement potentially to cause or to reinforce restrictions of competition it is necessary that:

- public sector demand accounts for a sufficiently large proportion of total supply within a sector
- public sector demand is consolidated and procurement is co-ordinated (so that public sector buyer power is being exercised); and
- supply is uncompetitive or is increasingly becoming so.

6.20 Taking account of the limitation of available data, it would not seem to be feasible to identify conditions that make knock-on effects on other buyers more or less likely, or to assess the relative prevalence of short-run and long-run effects.

Excessive short-run competition at the expense of long-run competition (Category III)

- 6.21 As discussed in the previous chapters, procurement processes may place undue emphasis on short-run price competition at the expense of non-price competition, or at the expense of maintaining competitiveness in the long term. For example, innovation incentives may be reduced if innovators cannot expect to be able to earn a reasonable return as a result of fierce price competition in public tenders. Innovation that improves existing products or services, reduces their cost or introduces new products or services is an important aspect of competition in many markets and can generate considerable benefits for customers. Entry through innovation and displacement of existing providers may be an important element of the competitive process, and procurement practices that aim only at extracting the best possible terms from existing suppliers could significantly stifle such competition in the same way as procurement processes that discriminate in favour of incumbents, as described under Category II. Similarly, an overly strong focus on price in each and every procurement setting may in the long run reduce the number of firms that remain viable in the market place, thus contributing to a lessening of competition. Obviously, other buyers would also be affected by these developments.
- 6.22 Again, designing procurement processes in a way that enhances short-run price competition at the expense of long-run competition or non-price competition should not be in the overall interest of the public sector, and well-structured procurement processes should not operate in this manner. For example, it might not necessarily be optimal to select the cheapest bidder in a sequence of competitive tenders if this leads to increasing concentration and reduced choice of supplier in the long-run; managed competition to keep additional suppliers in the market may in some cases be desirable.
- 6.23 However, even though the public sector should have good incentives to take a long-term view and balance various forms of competition, in practice there may be an over-emphasis on short-run outcomes and

immediate value for money; the long-run impact on market structure and innovation may not be immediately visible and may receive too little weight in decision making. The potential impact on other buyers may not be taken into account at all.

6.24 For public procurement to cause too much short-term price competition at the expense of long-term and non-price competition, it is necessary that:

- the public sector consumes a sufficiently large share of sector output
- public procurement is co-ordinated so that buyer power is exercised.

6.25 Supply does not need to be uncompetitive at present, but there would need to be indicators suggesting that it is becoming less competitive over time (e.g. strongly increasing concentration).

Possible indicators of competition concerns

6.26 Having identified in very broad terms the conditions that would need to hold for public procurement to be likely to raise competition concerns, the task is to identify a number of indicators that would allow one to decide for each sector whether or not these conditions are met. In addition to those indicators capturing conditions that are necessary for competition concerns to exist, it would be desirable to identify indicators that support an assessment of the likely type and, ideally, severity of competition concerns.

6.27 Because statistical data is collected using sectoral classifications (e.g. based on SIC), any viable screening approach has to look at industrial sectors rather than economic markets. The difference between sectors and economic markets needs to be reflected in the identification of conditions that would need to hold for competition problems related to public procurement being likely to exist.

- 6.28 One important consequence of using sectoral rather than market data is that a sector not being identified as a potential target for further analysis does not imply that all activity within this sector is receiving a clean bill of health. This is because in many cases a sector will contain many economic markets (and occasionally economic markets will cut across sectors). Therefore, if an economic market is a small part of the sector within which it lies, sectoral analysis may fail to identify competition problems within that market because data is averaged across or aggregated with other economic markets.
- 6.29 However, if an economic market has significant competition problems but this is not indicated by the relevant sectoral data, the market in question hopefully constitutes only a small proportion of the sector and so, by virtue of its small size, may not be a priority for further investigation. Nevertheless, there is clearly no guarantee that a screening approach based on sectoral data would identify competition problems in economic markets that are a small part of the sector within which they lie, but are nevertheless of significant importance to the economy at large.
- 6.30 At the same time, sectoral analysis cannot *by itself* provide a reliable guide to either the presence or absence of competition problems. Just because a sector is identified by our analysis, this does not mean that there is necessarily a procurement-related competition problem within that sector. The competition effect of procurement practices depends on the nature of the good or service being purchased and the nature of the supply conditions; there are few general theoretical conclusions about whether a particular procurement practice will restrict or enhance competition. Detailed consideration of the specifics of the case at hand is required to establish whether public procurement causes competition concerns; sectoral analysis merely tells us where to start looking first.

Public sector demand

- 6.31 A common requirement across all three categories of competition concerns discussed above is that public sector demand accounts for a

large proportion of total demand within a sector, creating the potential for public sector buyer power. As discussed in chapter 3, strategic importance of the public sector as a customer may be another source of buyer power, but in most cases such strategic importance is linked to the public sector being a large buyer as well; it therefore seems reasonable for the purpose of a screening exercise to ignore strategic importance without corresponding size as a significant source of buyer power. Thus, a relatively large proportion of public sector demand within a sector is a necessary condition for all three categories of competition problems.

6.32 When government demand is a very large proportion of output within a market, there are some additional considerations:

- Failure to exercise countervailing buyer power is most likely to exist where public sector demand, albeit significant overall, is fragmented across various buying institutions and procurement is un-coordinated. Otherwise, failure to exercise countervailing buyer power would require a distinctly sub-optimal organisation of procurement processes, which would likely be identified by the scrutiny of public procurement through organisations such as the NAO or the Audit Commission.
- If there is a problem from restrictions of competition, but there is little demand from private sector buyers, there are unlikely to be any significant adverse knock-on effects. In particular, if the public sector purchases the large majority of output in a market, it cannot expect to extract rents from other buyers through restrictions of supplier competition. Such restrictions must necessarily harm rather than benefit the public sector.

6.33 These considerations suggest that the case where procurement practices might in fact raise most competition concerns is where the public consumes a large part of total supply, but there is also significant private demand. It is in this case that there may be significant knock-on effects on private buyers which might not necessarily be taken into account by the public sector, where the potential benefits from restricting

competition would be largest, and where scrutiny of public procurement processes may not be as effective as in the case of markets where the government is the only customer.

Concentration

6.34 A necessary condition across all three categories of competition problems is that supply is uncompetitive, or is becoming less so over time. Unfortunately, there are no clear and simple measures of competition amongst firms, but concentration is generally considered to be a helpful proxy: there is a (rebuttable) presumption that competition is less intense in more highly concentrated markets. Moreover, even if competition in concentrated markets can be intense, market power is not normally compatible with low and falling levels of concentration. Therefore concentration measures should provide a valuable indicator for discarding sectors in which competition problems are unlikely to exist:

- Concerns about failure to exercise countervailing buyer power are only relevant in cases where suppliers have market power, which is unlikely to be the case where concentration is low. Where concentration is falling over time, this may indicate entry by new players or expansion by existing players, suggesting that market power is less likely to be a problem. Stable or increasing concentration, by contrast, is likely to be a necessary condition for supplier market power.
- If there were significant restrictions of competition due to procurement practices, we would expect to see stable or increasing concentration. If there were dynamic effects on competition as a result of these restrictions (e.g. firms leaving the market, or the gap between market leaders and others increasing as a result of strong incumbency advantages), concentration would increase over time.
- If procurement processes focused too much on short-run price competition at the expense of other forms of competition, long-run competition or innovation, we would not necessarily expect to see

very high levels of concentration, but a clear upward trend over time.

- 6.35 In principle, concentration measures could also be helpful in distinguishing between concerns in Category I on the one hand, and concerns in Categories II and III on the other. This is because the level and trend of concentration would be driven by factors unrelated to procurement in the first category, but procurement would be a contributing factor in the second and third categories. If it were possible to establish levels of concentration that one would expect to see based on industry characteristics (e.g. the extent of scale and scope economies, or non-procurement related barriers to entry), a comparison between those benchmarks and actual levels and trends in concentration would provide information about whether procurement itself is causing competition concerns, or whether one should only be concerned about the failure to exercise countervailing buyer power.
- 6.36 However, although such a test is theoretically attractive, it is difficult to identify sufficient data to forecast 'normal' levels of concentration reasonably well to allow identification of excessive concentration. As we will show in the next chapter, screening on the basis of relatively simple criteria such as stable or increasing concentration, rapidly narrows the range of sectors for further investigation. We have therefore not attempted to implement an excessive concentration test in our empirical analysis, although we recognise that such a test might be a useful tool in more detailed investigations.

Churn

- 6.37 Churn (i.e. the proportion of firms entering or exiting a sector over a given time period) is another useful metric of competition amongst suppliers. Where churn is high (and not driven mainly by firms leaving the market, i.e. associated with rapidly increasing levels of concentration), it is reasonable to assume that there are few barriers to entry or exit and that markets within the sector are reasonably contestable. Where churn is low, this does not necessarily imply that

competition is ineffective, as there might be vigorous competition amongst a stable set of suppliers. Nevertheless, low churn is a necessary condition for competition to be ineffective. Competition problems in Categories I and II should be associated with low churn. Concerns in Category III might be associated with higher levels of churn, owing to firms leaving the market, and this would be associated with strong increases in concentration.

International openness

- 6.38 Where markets are open to imports (because there are alternative international suppliers, the good or service in question is tradeable, and transport costs are sufficiently low relative to value), relevant markets are likely to be international. In this case, measures of public consumption as a proportion of the output of a sector calculated on a national basis would overstate the importance of the public sector as a buyer. However, one exception to this rule is where relevant markets are national in scope because of specific national regulations, yet rely to a significant extent on imports. Markets for medical products (such as, for example, continence care products examined in one of our case studies), are a case in point.
- 6.39 A further effect of international openness is that supplier market power may be less likely to exist in international markets, even though there are clearly world-wide markets that are highly concentrated and not necessarily very competitive.

Market growth and volatility

- 6.40 Market growth is a simple indicator that might be associated with the presence of entry opportunities. However, it is also the case that market growth may increase the incentives for collusion, other factors held equal. This is because in a growing market 'today's profits are small compared with tomorrow's', and thus small short-run gains from deviating from the collusive outcome would result in large profit losses

as a result of break-down of collusion (see Rey, 2002). Therefore, there are no theoretically unambiguous conclusions that can be drawn about the interpretation of market growth.

- 6.41 Market growth may be due to either growth of public sector demand or private sector demand (including both domestic private demand and exports). Where market growth is due to growth of residual demand (comprising private sector demand and exports), this is likely to moderate the dependency of suppliers on the public sector and reduce the potential for public procurement to affect competition, especially in the long run. Therefore, growth of residual demand may provide some indication of the severity and persistence of concerns that might be associated with public procurement. Where the public sector accounts for a large proportion of demand, but its share is declining over time, competition problems associated with procurement may be relatively transitory.
- 6.42 Volatile market size is likely to be associated with exit and entry, and might thus be indicative of absence of entry barriers. Volatility of demand has been shown theoretically to be likely to reduce collusion (see Rey, 2002). When market demand is volatile, it is difficult for colluding firms to determine whether the demand and price shocks they face are due to rivals deviating from collusive outcomes or due to general shifts in demand. Therefore, volatile markets may be associated with more competitive outcomes.
- 6.43 However, in the presence of buyer power, and therefore in the context of screening markets for potential competition concerns related to public procurement, a difficulty arises because market volatility may be caused by large public sector contracts. For example, the European Commission in Volvo/Scania¹⁰² pointed out that demand for intercity buses in Greece

¹⁰² Case No COMP/M.1672.

was almost exclusively through tenders from the public transport operators in Athens and Thessaloniki, which explained the significant volatility of market shares of various suppliers. In this case, there could also be significant volatility in market size (e.g. if tenders in the two cities were awarded at roughly the same time). Therefore one cannot rule out that demand volatility simply reflects the effect of the public sector buying through large contracts.

- 6.44 In summary, the volatility of market size (and in particular its relationship with the volatility of public sector demand) may be an indirect measure of buyer power, and may therefore help establish whether the public sector exercises buyer power (i.e. whether a category I problem might exist). However, we do not use market volatility as an indicator in our empirical analysis, largely because robust measures of volatility place considerable demands on data availability.

Entry barriers

- 6.45 Long-run effects on competition depend on the extent to which entry barriers limit the role played by potential competition. Similarly, the relative importance of public procurement in terms of restricting or distorting competition may be larger the lower are other entry barriers. In the extreme case of insurmountable entry barriers, the incremental effect of public procurement on competition is likely to be very small.
- 6.46 There are a range of potential indicators of entry barriers. These attempt to measure the extent to which an entrant to a market would face costs that an incumbent does not have to incur. Three common indicators of the extent of entry barriers (other than entry barriers related to procurement) are:
- the investment/output ratio, attempting to measure the importance of sunk costs

- the advertising/sales ratio, in addition to measuring sunk costs associated with advertising, indicates the importance of reputation built through advertising
- the R&D/turnover ratio, in addition to measuring sunk costs associated with R&D, captures the role of knowledge or intellectual property in a market.

6.47 These indicators are imperfect measures; it might be the case that any of these measures is high, yet entry barriers are low. For example, not all investment is sunk, and therefore there would be few entry barriers even if investment were large relative to output provided that it can be transferred to alternative uses. Similarly, advertising may be an ongoing expense (for example, to disseminate information about price) rather than needed to establish an enduring reputation. In this case, there would be little difference in the advertising expenditure that an entrant and an incumbent would have to undertake, and entry barriers would be low even if advertising expenditure is high relative to sales. However, despite these problems, these indicators are commonly used proxies for the presence of entry barriers in empirical studies.¹⁰³

6.48 The role of entry barriers varies across the three categories of competition problems we consider. Problems in Category II are associated with markets that are uncompetitive even if entry barriers are relatively low, and where therefore restrictions of competition are more likely to be caused by public procurement. By contrast, problems in Categories I and III are more likely to be associated with the presence of entry barriers unrelated to procurement:

¹⁰³ For an overview see Sutton (1991).

- Failure to exercise countervailing buyer power matters only where the threat of potential competition is insufficient to constrain supplier market power, i.e. where entry barriers are high.
- Long-term effects require that there are entry barriers. Otherwise, any negative competition effect would be easily reversed. Suppose that tough short-run competition leads to some competitors becoming unviable and leaving the market. If there were not entry barriers, these or other firms would be able to get back into the market immediately once procurement practices are modified. However, if there are significant entry barriers it may be difficult to encourage suppliers who have left the market to re-enter.

6.49 Table 6.1 provides an overview of indicators and how they relate to the different types of competition concerns identified above.

Relationship with indicators of market power

6.50 Our screening analysis uses many of the indicators that are more generally used in assessing market competitiveness and the presence of market power. However, we are not relying on some other indicators that are often used, such as profitability or indicators capturing productivity and cost conditions at the level of individual firms. Also, we are not relying as strongly on indicators reflecting entry barriers than might be the case in more general competition analyses. These differences are explained by the fact that we are focusing on a subset of competition concerns, namely those related to the (actual or potential) exercise of buyer power by the public sector.

Table 6.1: Indicators of competition concerns

	Category I	Category II	Category III
Public demand as a share of supply	Must be sufficiently large for material effect. Public sector demand likely to be fragmented, and procurement likely to be un-coordinated (otherwise failure to exercise buyer power would require grossly inefficient procurement, which is unlikely)	Must be sufficiently large for material effect, and procurement must be coordinated	
Concentration	High and not decreasing levels of concentration	Moderate to high and increasing levels of concentration	Moderate and increasing levels of concentration
Churn	Low		Low to Medium (if combined with rapidly increasing concentration)
Import penetration	Low		
Market growth	At best a weak indicator; if residual demand grows strongly, competition problems may be transitory		
Entry barriers	Significant entry barriers	Entry barriers unrelated to procurement may be relatively low. If very high entry barriers unrelated to procurement, incremental effect of procurement likely to be small; some entry barriers necessary for long-run effects	Entry barriers necessary for long-run effects

6.51 The clearest example of where our analysis deviates from a general screening exercise for market power is in the use of profitability measures. Measures such as rate of return relative to the cost of capital, price-cost margins and other profitability metrics are commonly used in competition investigations. They are central to identifying sectors in which suppliers may exert market power.

6.52 However, it is not necessarily the case that competition concerns related to public procurement are associated with excessive profitability. Although failure to exercise countervailing buyer power is likely to lead to excess profitability, competition concerns related to restrictions of competition through public procurement, or to excessive short-run price competition would not necessarily result in excessive profits:

- In the case of competition concerns in Category II, excessive profits may be earned in the supply to other buyers, which by definition accounts for only a small proportion of total profits. Some of these may even be competed away through vigorous competition for public contracts.
- In the case of competition concerns in Category III, profitability is almost by definition low, even though it may increase in the long term to the extent that market competitiveness is reduced and public sector buyer power becomes increasingly ineffective at providing a counterbalance.

6.53 Thus, there is no clear association between excess profitability and competition concerns related to public procurement.

6.54 In addition to various measures of profitability and returns on assets, other indicators derived from firm-level data that are commonly used when looking for market power include:

- productivity measures (e.g. total factor productivity) and their spread across firms in a sector

- measures of economies of scale, such as the cost disadvantage ratio.
- 6.55 Both dispersion and growth of productivity can be useful measures of competitive pressure. Competition should lead to pressure on relatively unproductive firms to improve. Empirical links between competition and productivity growth have also been repeatedly demonstrated (see Blundell, Griffith and van Reenen, 1995; Nickell, 1996). However, it is complex to calculate reasonable measures of productivity that take account of all factors of production. Given that this is at best a rather indirect indicator of competition (as productivity may increase for many other reasons), for the purposes of our analysis it appears to be more appropriate to focus on more direct indicators, such as concentration, import penetration and churn.
- 6.56 Economies of scale are not a necessary feature of any of the competition concerns we have identified, though (like profitability) they may be associated with concerns about the failure to exercise countervailing buyer power, and (unlikely profitability) concerns about the possible long-run effects of intense short-term price competition (Category III). However, in all of these cases, direct observation of concentration and trends in concentration are likely to be more useful than trying to estimate scale economies using indirect techniques such as the cost disadvantage ratio.
- 6.57 Given the significant increase in complexity (arising, for example, from the fact that large companies often have subsidiaries, and that it is not always clear how data are reported across parents and subsidiaries) for little benefit, we have not calculated measures from firm-level data.

Summary

- 6.58 Competition problems related to public procurement, which might justify a detailed investigation of procurement practices within a specific market context, can be grouped into three broad categories:

- **Category I:** Failure by the public sector to exercise countervailing buyer power against suppliers with market power;
- **Category II:** Restrictions on competition arising from procurement practices such as participation restrictions, high participation costs, excessive contract aggregation or long-term contracts. Such restrictions may affect mainly other buyers, and may have long-term effects.
- **Category III:** Excessive focus on short-run price competition at the expense non-price, long-run competition.

6.59 Useful indicators for identifying conditions under which such problems are likely to occur include:

- the share of supply purchased by the public sector, and whether this is centralised
- the level and trend in concentration
- the extent of churn
- openness to imports
- market growth, especially growth due to private demand
- various indicators of entry barriers.

6.60 The share of supply purchased by the public sector needs to be sufficiently large for any of these problems to occur. In addition, supply must be actually or potentially uncompetitive. High and increasing concentration, low levels of churn and low import penetration all suggest some lack of competition. Market growth may encourage entry, and, in particular, where it is driven by strong growth in private sector demand may make competition concerns transitory. The role of entry barriers is more complex, and varies across the three categories of problems. Assessing entry barriers not related to procurement can help in identifying the likely type of competition concern, and can guide further investigation.

7 SCREENING RESULTS

7.1 In this chapter, we apply the methodology outlined in chapter 6, using sectoral data for the United Kingdom. Our starting point is to identify sectors in which the share of total demand accounted for by public procurement is significant. Unfortunately, detailed data on public procurement does not exist; we therefore rely on the UK input-output tables in order to establish the share of domestic supply consumed by the public sector. Combining this measure with a number of competition metrics as discussed above, we develop a classification scheme and identify a number of sectors where further investigation of public procurement and its effects on competition might be justified.

Data on public procurement

7.2 Given that public procurement accounts for a considerable proportion of total public expenditure as well as of overall demand in the economy, it is surprising that little data is available on the value of goods and services purchased by the public sector, let alone a systematic detailed sectoral breakdown. For this reason, we have used general macroeconomic data on purchases by the public sector (the ONS input-output tables) in order to compile a systematic dataset on government consumption.

OGC procurement data

7.3 The Kelly report (OGC, 2003) notes that, even though the OGC had obtained extensive information about spending by Government departments on the main procurement categories, there was 'surprisingly little information about the total procurement spend of the public sector as a whole.' The Kelly report identified four major areas in which public sector procurement was considered to account for a major

proportion of total demand, namely IT¹⁰⁴, Highways, Construction and Professional Services (OGC, 2003, p. 11).

7.4 In order to inform the choice of market(s) for the validation phase of the Kelly Action Plan, the OGC has collected more detailed information on procurement, focusing on major markets as identified by analysing the spending pattern of a sample of public sector bodies. The OGC's tasks have been complicated by the fact that, at present, there is no standard method by which expenditure on goods and services is categorised, and that different public sector organisations use different reporting structures to reflect their underlying needs. The focus of this analysis has been on identifying those areas accounting for the bulk of public sector expenditure, which is not necessarily the same as areas where public sector expenditure accounts for a significant proportion of overall demand within a market.

7.5 The OGC also collects data on contracts awarded by public authorities in the UK under the rules of the EU Directives in order to allow reporting on public procurement to the European Commission as required by the Directives. The data set covers the following:

- purchasing authority
- product classification
- number of contracts and contract value
- supplier nationality
- procurement process (open, restricted or negotiated procedure).

¹⁰⁴ According to the Kelly report (OGC, 2003), public sector expenditure on IT accounts for more than half of overall spend in the UK. As we discuss in our case study on the procurement of IT services, we believe that this is a significant overestimate.

- 7.6 The main limitation of this data set for the purposes of our analysis is that it only captures procurement covered by the Directives¹⁰⁵, and that it excludes expenditure on so-called 'Category B' services¹⁰⁶, which are not fully subject to the Directives. The data may also be incomplete owing to failure of individual public authorities to comply with the reporting obligation on contract awards; there is some suggestion that compliance is far from perfect.¹⁰⁷
- 7.7 We have been provided by the OGC with data for 2001, which includes detailed data covering public procurement worth £16.6 billion (less than 16 per cent of total procurement¹⁰⁸), and very high-level summary figures covering another £7.3 billion of procurement by central government where the contract values were below the threshold. Table 7.1 summarises the procurement expenditure captured in this data set.

¹⁰⁵ This means procurement expenditure by local and central government bodies above the relevant thresholds (see Table 7.5), and expenditure below the thresholds by central government departments and other public bodies designated as 'Schedule I' bodies in the EU Directives.

¹⁰⁶ These include, for example, Legal, Security, Education, Health and Social services.

¹⁰⁷ The EU Directives specify that public authorities must publish notices for the various stages of tenders (e.g. invitation to tender and contract award notices) in the Supplement (or 'S-Series') of The Official Journal of the European Union (OJ S). This journal is published every working day. An electronic version of the OJ S is the Tenders Electronic Database (TED). The TED has an archive function and is therefore also a source of information on public tenders. TED only reports half as many contract award notices as there are notices of invitations to tender. Unless half of invitations to tender failed to result in a contract being awarded, this would imply widespread non-compliance with the obligation to publish contract notices. Given the limitations of the data held in TED, information collected at the EU level does not appear to be useful for the tasks at hand.

¹⁰⁸ Total procurement in the financial year 2001-02 was £106 billion, see http://www.hm-treasury.gov.uk/economic_data_and_tools/national_statistics/spending_by_economic_category/natstat_spenecon_sum.cfm

Table 7.1: Coverage of OGC procurement data, 2001 (value, £bn)

	Contracts above threshold (detailed data)	Contracts below threshold (summary data)
Public supplies (goods)	6.1	3.7
Public services	6.9	2.2
Public works (construction)	3.6	1.4
Total	16.6	7.3

Source: OGC

7.8 The OGC data in each of the major categories are classified according to a different system:

- data on public services are recorded following a EU procurement-specific classification system
- data on public works are classified according to NACE (1970)
- data on public supplies are classified according to the NIPRO classification system.

7.9 The level of aggregation of these classification systems is similar to the two-digit level of the SIC scheme. Unfortunately, even if NACE (1970) and NIPRO are mutually compatible, they do not uniquely map to corresponding two-digit level SIC codes. This makes it difficult to map data to a common classification system, even if the data set covered a larger proportion of procurement expenditure.¹⁰⁹

¹⁰⁹ This will change with the new directive, which will introduce a classification scheme based on the Common Procurement Vocabulary (CPV).

The UK input-output tables

- 7.10 Input-output tables compiled by the ONS record the flows of goods and services between sectors of the economy, including consumption by the public sector. They are compiled for the purposes of estimating GDP and reconciling the national accounts. Given the complexity of such a task, they are only available with some delay. The latest set of input-output tables available was issued in 2003 and contains data up to 2001.
- 7.11 The sector classification used by the input-output tables is relatively coarse, with 123 sectors separately identified. There is a complex relationship between these 123 sectors and SIC codes. Some input-output sectors map into individual SIC codes at the four-digit level, whilst others aggregate a number of SIC codes; in the majority of cases these sectors correspond to three-digit level SIC codes. There is a standard scheme for mapping the sector classifications used for the input-output tables into SIC codes that we have used throughout.¹¹⁰
- 7.12 The input-output tables do not show total government expenditure in a given sector. However, they do show government final consumption¹¹¹ and gross capital formation¹¹² using a common sector classification:
- Government final consumption is defined by the ONS as 'the final consumption expenditure by central government and local government including direct payment for goods and services and payment for the services of government employees. The figures exclude expenditure on grants, subsidies, interest payments and

¹¹⁰ See Annex A, Classification of Input-Output industry/product groups by Standard Industrial Classification (1992) and NACE Rev.1 from UK Input-Output Analyses, ONS, 2003.

¹¹¹ See Detailed I-O Tables, Table 5 (General government final consumption by type of service in 2001) in UK Input-Output Analyses, ONS, 2003. See corresponding publications for previous years.

¹¹² See Detailed I-O Tables, Table 6 (Gross fixed capital formation in 2001) in UK Input-Output Analyses, ONS, 2003. See corresponding publications for previous years.

other transfers; expenditure on non-military fixed capital assets and inventories; loans and loan repayments. Expenditure on military weapons and equipment used to deliver them are included in this section and are not part of capital formation.'

- Where the public sector purchases capital goods, this would be recorded as capital formation rather than consumption. Gross capital formation excludes depreciation and is defined as follows: 'Gross capital formation consists of gross fixed capital formation plus changes in inventories and acquisitions less disposals of valuables. Net capital formation is estimated by deducting consumption of fixed capital from gross capital formation.'

7.13 The definition of government final consumption accords well with public procurement, including self-supply¹¹³, with the exception of the treatment of capital purchases. Unfortunately, adding gross capital formation to final consumption does not fully remedy this problem. Gross capital formation measures capital purchases (leading to capital formation or increased inventories), but subtracts from this disposals of assets. Therefore, if the public sector procured capital goods in a sector, but sold similar assets, only the difference would be captured as gross capital formation. This would lead to an underestimate of procurement if there is significant disposal of assets by the public sector. Nevertheless, we have added together government final consumption and gross capital formation to give a rough estimate of total purchases by the public sector.

7.14 Estimating the scale and structure of public procurement on the basis of final consumption and gross capital formation reported in the input-output tables is far from ideal. The sector classification is relatively granular as it is not always as fine as three-digit SIC codes. The treatment of capital purchases may lead to underestimation of

¹¹³ Note that government final consumption includes payments for services of government employees provided in that particular sector.

procurement in some cases. The data is also somewhat out of date. Nevertheless, it provides the only feasible approach for arriving at a sectoral breakdown of government expenditure which can then be linked to other sectoral data.

- 7.15 The input-output tables also provide information on the split of government final consumption (but not gross capital formation) between central and local government. Albeit an imperfect indicator, this can provide a useful proxy of the extent to which public procurement is likely to be fragmented, based on the presumption that a higher share of local government demand is likely to be associated with more fragmented demand and thus a stronger likelihood of un-coordinated procurement.

Data used in the screening approach

- 7.16 Following the approach described in the previous chapter, our aim is to identify sectors in which
- the public sector purchases a significant proportion of total output, and in which
 - various competition metrics suggest that supply is uncompetitive, or is becoming so over time.
- 7.17 We calculate the share of total supply (defined as the sum of domestic production and imports) consumed by the public sector using the input-output data describe above. In order to smooth out the effect of potentially large one-off purchases (in particular capital purchases), we use averages over the five-year period 1997 to 2001.
- 7.18 In order to establish where supply might be uncompetitive, or becoming so, we use the following indicators:

- We use the proportion of domestic turnover accounted for by the five largest firms (C5) as a simple measure of concentration, and look at both the level and the average annual change.¹¹⁴
- Import penetration (imports as a proportion of total domestic supply, i.e. imports as a proportion of domestic production plus imports) is used as a proxy for international openness.
- We calculate churn for each sector by adding the number of entrants in a given year to the number of firms leaving the market in the previous year, and then dividing this sum by the total number of firms in the previous year.

7.19 In order to identify the likely types of competition problem, and to highlight sectors where competition concerns may only be transitory, we look at the following indicators:

- The input-output tables provide information about the growth in residual demand (i.e. the difference between total demand and public sector demand, combining private demand and exports), which would indicate sectors in which the role of public procurement is diminishing.
- We also use the information on the split of government final consumption between central and local government from the input-output tables. More specifically, we use the proportion of total government final consumption by local government as a simple metric of fragmentation of public sector demand. The implicit assumption in using this metric is that central government purchasing is co-ordinated to a greater extent than local government purchasing. Whilst this is a reasonable assumption, in

¹¹⁴ Alternatively, one could use the proportion of domestic turnover accounted for by the three largest firms in the sector (C3). However, C5 is more discriminatory in identifying industries with a small number of players.

some cases it might not be valid; for example, local government may use purchasing consortia and central government may purchase similar goods and services through multiple purchasing channels.

- We combine three indicators of entry barriers (namely the investment to turnover ratio, the advertising expenditure to sales ratio, and the R&D expenditure to sales ratio) into a single rank measure of entry barriers.¹¹⁵

7.20 Table 7.2 lists the data used in our screening analysis, along with the underlying sources, and classification scheme. This shows that different data were available at different levels of aggregation. Given the granularity of information on the share of public procurement, we have undertaken our screening of sectors using three-digit SIC codes, as this is somewhat finer than the classification of 123 sectors used in the input-output tables). Where this required aggregation of data, the table also provides information on the aggregation method used. We have generally used conservative aggregation methods. For example, concentration data are available at four-digit SIC code level. We have aggregated these data to the three-digit SIC code level by taking the maximum concentration from the four-digit SIC codes included within each three-digit SIC code. Thus, we make the conservative assumption that concentration at the three-digit SIC level might be as high as in the most concentrated four-digit sector contained within the three-digit classification.

¹¹⁵ We calculated an average score by normalising each one of these three measures so that it has unit variance across all sectors. By normalising and combining the measures, we ensure that each measure makes an equal contribution to our overall score. This is a superior method than working only with ranks, as we preserve cardinal information about each of our measures. Where information for a sector is missing, we use the average value of that measure across all sectors; this means that there is no positive or negative contribution to our overall entry barriers score where data is missing.

Table 7.2: Description of data used for screening analysis

Indicator	Definition	Source	Classification scheme	Aggregation method
Share of supply purchased by the public sector	Government final consumption plus gross capital formation as a proportion of production plus imports. Average for 1997-2001	ONS Input-Output Analyses	123 sector classification used by ONS	Maximum (where at four-digit SIC level)
Proportion of turnover accounted for by the five largest firms (C5)	Total turnover of the largest 5 firms in a sector as a proportion of total turnover. Average for 1998-2002	Small Business Service Statistics Team, DTI	four-digit SIC	Maximum
Annual increase in C5	Average annual increase in C5 from 1998 to 2002	As C5	As C5	Maximum

Indicator	Definition	Source	Classification scheme	Aggregation method
Churn	Number of entrants in current year plus number of firms exiting in previous year as a proportion. Average for 1998 – 2002	Small Business Service Statistics Team, DTI	four-digit SIC	Minimum
Import penetration	Imports as a portion of turnover plus imports. Average for 1997-2003	Import data from ONS time series database from http://www.statistics.gov.uk/statbase/TSDSeries1.asp Turnover data from Annual business inquiry (http://www.statistics.gov.uk/abi/)	three-digit SIC	Not applicable
Fragmentation	Proportion of government final consumption accounted for by local government. Average for 1997-2001	ONS Input-Output Analyses	123 sector classification used by ONS	Minimum (where at four-digit SIC level)

Indicator	Definition	Source	Classification scheme	Aggregation method
Annual growth of residual purchases (private demand plus exports)	Annual percentage increase in UK demand i not accounted for by the public sector. Annual percent increase in: Total industry output plus imports multiplied by one minus demand share of the public sector. Average for 1997-2001	ONS Input-Output Analyses	123 sector classification used by ONS	Minimum (where at four-digit SIC level)
Industry investment over industry turnover	Annual capital expenditure as a proportion of industry turnover. Average for 1999-2002	Annual business inquiry http://www.statistics.gov.uk/abi/	three-digit SIC	Not applicable

Indicator	Definition	Source	Classification scheme	Aggregation method
Advertisement expenditure over industry sales	Advertising expenditure as a proportion of sales in 2001	Advertising Statistics Yearbook 2003, The Advertising Association, World Advertising Research Centre Ltd	Proprietary. Our mapping scheme to three-digit SIC is provided in Annex B	Maximum
R&D expenditure over sales (average in sector for the OECD) ¹¹⁶	Average research and development expenditure as a proportion of production, averaged across all OECD countries using production in the country as a weight. Average 1997-2002	OECD STAN Industrial Structural Analysis http://fiordiliji.sourceoecd.org/vl=967213/cl=79/nw=1/rpsv/statistic/s23_about.htm?jnlissn=16081307	Proprietary classification system with corresponding mapping to three-digit SIC code provided by OECD	Maximum

¹¹⁶ R&D expenditure tends to be localised within particular countries. For this reason, we do not expect the R&D expenditure within a single country to be a good measure for multinational firms. For example Astra-Zeneca concentrates its R&D activities in the UK and Sweden. However, likely barriers to entry caused by R&D should be a characteristic of each sector, and not the country considered. For this reason, an average of R&D intensity across a number of countries is likely to provide a better measure for these barriers to entry.

7.21 Given that we have combined data from multiple sources, it is not surprising that not all data covers the same time periods (as shown in the table). Although this would be a major problem if one wanted to combine the various indicators through sophisticated statistical analysis, the differences in time periods covered are of less concern in an approach that aims at establishing simple screening criteria.

Sector classification

Identifying candidate sectors on the basis of a significant proportion of public demand

7.22 Table 7.3 provides summary statistics for our measure of government expenditure as a proportion of total domestic supply. The average value across sectors is 5 per cent, and only 25 per cent of sectors show government expenditure in excess of 6 per cent, which suggests that in some sectors government expenditure must account for a very large share of total domestic supply.

Table 7.3: Summary statistics on share of government expenditure

Mean	5.00 %
Standard deviation	7.90 %
Lower quartile	1.10 %
Median	2.40 %
Upper quartile	6.00 %

7.23 Table 7.4 lists those sectors where public sector purchases account for more than 10 per cent of domestic supply. Given that we are interested in identifying sectors in which the public sector accounts for a sufficiently large proportion of demand to suggest the existence of buyer power, this threshold is relatively low (not least when compared with market shares that would be used in order to establish whether a firm is presumed to enjoy market power, and which would normally be

in excess of 40 per cent).¹¹⁷ Using a low threshold is justifiable, however, because of the difference between sectors and economic markets, where a sector may contain a multitude of economic markets, and a high share of overall demand in one of these would not necessarily be reflected in a similarly high share of overall demand in the sector. For example, a sector such as office machinery and computers may contain a number of distinct economic markets identified on the basis of demand and supply substitution (e.g. binding and laminating machines, photocopiers, desktop computers, servers, printers etc.), only in some of which the government may be a significant purchaser. A 14 per cent share of demand in this sector could constitute a large share of an economic market contained within this sector. In any case, in half of the 12 sectors identified, public sector demand is in excess of 20 per cent.

Table 7.4: Sectors for which share of supply purchased by the public sector is greater than 10 per cent

Input-output tables sector code – Description	Share of supply purchased by public sector
67 - Weapons and ammunition	64.6 %
117 - Health and veterinary services	34.6 %
78 - Shipbuilding and repair	26.9 %
43 – Pharmaceuticals	24.3 %
118 - Social work activities	23.1 %
76 - Medical and precision instruments	21.8 %
80 - Aircraft and spacecraft	17.0 %
119 - Sewage and sanitary services	16.9 %
88 – Construction	16.3 %
52 - Cement, lime and plaster	15.1 %
69 - Office machinery and computers	13.8 %
108 - Research and development	12.7 %

¹¹⁷ Lower thresholds are being used, for example, in the context of regulatory impact assessments. The OFT's Guidelines for Competition Assessment suggest that regulatory impact assessments would not need to consider competition effects where policies affect suppliers with less than 10 per cent market share (OFT, 2002).

- 7.24 Ranking the sectors according to the proportion of supply purchased by the public sector, we see that six of the top seven sectors are related to defence and health, as might be reasonably expected. Other important sectors for public purchasing in the top ten are social work, sewage and sanitary services, and construction (both in terms of the explicit construction sector and related products such as cement, lime and plaster). The remaining sectors where public purchases are significant include a number of professional and business services, office-related products, computers and IT.
- 7.25 As we are conducting our analysis at the level of three-digit SIC codes, the 12 sectors in the input-output tables need to be mapped into corresponding sectors classified by three-digit SIC codes. The mapping for those sectors is shown in Table 7.5.

Table 7.5: Mapping of input-output tables' sectors to three-digit SIC code

Input-output tables sector code – Description	SIC code – Description of categories included in this group
67 - Weapons and ammunition	29.6 - Manufacture of weapons and ammunition
117 - Health and veterinary services	85.1 - Human health activities 85.2 - Veterinary activities
78 - Shipbuilding and repair	35.1 - Building and repairing of ships and boats
43 – Pharmaceuticals	24.4 - Manufacture of pharmaceuticals, medicinal chemicals and botanical products
118 - Social work activities	85.3 - Social work activities
76 - Medical and precision instruments	33.1 - Manufacture of medical and surgical equipment and orthopaedic appliances 33.2 - Manufacture of instruments and appliances for measuring, navigating and other purposes except industrial process control equipment 33.3 - Manufacture of electronic industrial process control equipment

Input-output tables sector	
code – Description	SIC code – Description of categories included in this group
	33.4 - Manufacture of optical instruments and photographic equipment
	33.5 - Manufacture of watches and clocks
80 - Aircraft and spacecraft	35.3 - Manufacture of aircraft and spacecraft
119 - Sewage and sanitary services	90.0 - Sewage and refuse disposal, sanitation and similar activities
88 – Construction	45.1 - Site preparation
	45.2 - Building of complete constructions or parts thereof; civil engineering
	45.3 - Building installation
	45.4 - Building completion
	45.5 - Renting of construction or demolition equipment with operator
52 - Cement, lime and plaster	26.5 - Manufacture of cement, lime and plaster
69 - Office machinery and computers	30.0 - Manufacture of office machinery and computers
108 - Research and development	73.1 - Research and experimental development on natural sciences and engineering
	73.2 - Research and experimental development on social sciences and humanities

Notes: Only shown for sectors in which the share of supply purchased by the public sector is greater than 10 per cent. See Annexe A of the UK Input-Output Analyses for full details.

Sector classification

7.26 Table 7.6 shows the summary statistics for the indicators covering the level and change of concentration, import penetration and churn across all sectors. These indicate considerable variation across sectors, and for this reason we adopt a classification scheme based on combinations of criteria.

Table 7.6: Summary statistics for key competitiveness indicators

	Mean	Standard deviation	Lower quartile	Median	Upper quartile
C5	57.00 %	26.70 %	36.40 %	58.00 %	78.80 %
Average annual growth in C5	2.50 %	8.10 %	0.30 %	1.90 %	4.50 %
Import penetration	31.72 %	20.14 %	16.40 %	28.08 %	42.60 %
Churn	18.20 %	9.60 %	12.50 %	16.40 %	21.30 %

7.27 More specifically, we compare the values of these indicators in a particular sector with those across all sectors:

7.28 A **strong indication** of competition problems exists where:

- concentration is very high (C5 is in the upper quartile) and not falling (change in C5 > -1 per cent)
- the sector is not at all open to imports (import penetration is in the lower quartile)
- churn is not very high (churn is not in the upper quartile).

7.29 A **reasonable indication** of competition problems exists where:

- concentration is above average (C5 > mean) and not falling (change in C5 > -1 per cent)
- the sector is not open to imports (import penetration < mean)
- churn is not very high (churn is not in the upper quartile).

- 7.30 A **moderate indication** of competition problems exists where:
- concentration is significant, (C5 is not in the lower quartile)
 - the sector is not very open internationally (import penetration not in the upper quartile).
- 7.31 Where none of these conditions hold, there is no evidence that would suggest competition problems in that particular sector.
- 7.32 Combining the indication of competition problems with our indicators of public sector buyer power, we distinguish five categories of sectors as summarised in Table 7.7:

Table 7.7: Sector classification scheme

Public sector expenditure	Indication of competition concerns	Group
More than 10 per cent of domestic supply	Strong	A
	Reasonable	B
	Moderate	C
	None	D
Less than 10 per cent of domestic supply	Not applicable	E

- 7.33 Clearly, sectors in which the public sector is not in a position to impact on competition, or where there is no indication of actual or potential competition concerns, should not be primary targets for further investigation (although our approach cannot rule out that in some of the economic markets within these sectors public procurement does affect competition, and that these effects could give rise to concerns). By contrast, sectors where public procurement accounts for a large proportion of domestic supply, and there are some indications of competition problems might warrant further attention. Thus, sectors in groups A, B and C are primary targets for detailed studies.

7.34 Further analysis of the sectors identified in the screening approach takes account of the additional indicators reported in Table 7.9. It is therefore helpful to consider their summary statistics (see Table 7.8).

Table 7.8: Summary statistics for further indicators

	Mean	Standard deviation	Lower quartile	Median	Upper quartile
Proportion of public sector expenditure accounted for by local government consumption	48.60 %	34.80 %	10.20 %	55.00 %	82.40 %
Growth in residual demand (private sector demand plus exports)	4.00 %	5.50 %	0.60 %	4.40 %	7.30 %
Investment/turnover	5.70 %	6.30 %	2.50 %	3.70 %	5.80 %
Advertising expenditure/sales	2.80 %	4.30 %	0.50 %	1.30 %	3.80 %
R&D expenditure/sales	0.60 %	1.30 %	0.10 %	0.20 %	0.40 %

7.35 In combining indicators of entry barriers into a single rank measure, we have used the average value across all sectors in the case that a particular metric was unavailable. Average values across all three metrics imply a rank of 61, and therefore any lower rank number suggests entry barriers above average, and higher rank numbers indicate below-average entry barriers.

Results

7.36 Table 7.9 below summarises the results of our screening analysis for those sectors in which government expenditure is significant. Overall, the industry sectors in which government expenditure accounts for more than 10 per cent of domestic supply identified on the basis of the input-output tables map into 22 sectors at the three-digit SIC code level. Of

these, a total of 13 sectors fall into categories A to C, and would therefore qualify for further investigation. However, more detailed analysis suggests that some of these sectors might not be strong contenders for further investigation, as discussed below.¹¹⁸

¹¹⁸ We have also used a more conservative cut-off criterion of public expenditure accounting for more than 5 per cent of domestic supply. In this case, an additional 34 sectors would be identified as candidates. However, in only five of these 34 sectors would there be a strong indication of competition problems, and one of these can be discarded as being eclectic and a product of having to map the sector classification used in the input-output tables into three-digit SIC codes. Another four sectors would have reasonable indicators of competition concerns.

Table 7.9: Screening results

Group	SIC	Sector Description	Public sector expenditure as proportion of domestic supply	C5	Annual change in C5	Churn	Import penetration	Local government consumption as a proportion of expenditure	Average growth of residual demand (private sector demand plus exports)	Investment/turnover	Advertising expenditure/sales	R&D expenditure/sales	Barriers to entry rank
A	900	Sewage and refuse disposal, sanitation and similar activities	22.5 %	80.5 %	4.8 %	20.7 %		67.5 %	1.6 %				61
B	296	Manufacture of weapons and ammunition	70.8 %	77.9 %	0.5 %	9.3 %	16.4 %	0.0 %	-27.9 %	3.4 %		1.2 %	55
	851	Human health activities	38.6 %	62.5 %	4.1 %	20.6 %		0.1 %	7.4 %	5.6 %			76
	351	Building and repairing of ships and boats	24.2 %	61.2 %	3.0 %	14.8 %	21.6 %	0.0 %	-0.1 %	2.9 %		0.5 %	146
	244	Manufacture of pharmaceuticals, medicinal chemicals and botanical products	21.2 %	76.9 %	4.1 %	17.3 %	31.2 %	1.6 %	8.0 %	6.8 %	14.4 %	1.2 %	9
C	333	Manufacture of electronic industrial process control equipment	20.9 %	43.3 %	6.6 %	10.6 %		3.1 %	5.5 %	1.1 %		4.7 %	18
	265	Manufacture of cement, lime and plaster	15.0 %	97.9 %	2.3 %	21.7 %	7.5 %	97.7 %	2.8 %	13.9 %		0.2 %	29
	353	Manufacture of aircraft and spacecraft	14.8 %	75.9 %	-0.9 %	14.5 %	35.6 %	0.0 %	10.3 %	3.4 %		8.2 %	2
	451	Site preparation	14.5 %	60.7 %	-0.8 %	20.9 %		20.9 %	7.0 %	4.3 %		0.0 %	161
	452	Building of complete constructions or parts thereof; civil engineering	14.5 %	47.8 %	2.7 %	19.4 %		20.9 %	7.0 %	1.8 %		0.0 %	205
	300	Manufacture of office machinery and computers	12.3 %	73.3 %	-0.3 %	25.4 %		25.4 %	1.7 %	1.4 %	4.6 %	1.9 %	33

Group	SIC	Sector Description	Public sector expenditure as proportion of domestic supply	C5	Annual change in C5	Churn	Import penetration	Local government consumption as a proportion of expenditure	Average growth of residual demand (private sector demand plus exports)	Investment/turnover	Advertising expenditure/sales	R&D expenditure/sales	Barriers to entry rank
	731	Research and experimental development on natural sciences and engineering	11.9 %	39.8 %	0.5 %	13.4 %		0.3 %	3.2 %				61
	732	Research and experimental development on social sciences and humanities	11.9 %	37.8 %	-1.4 %	16.7 %		0.3 %	3.2 %				61
D	852	Veterinary activities	38.6 %	5.4 %	-0.4 %	8.6 %		0.1 %	7.4 %	4.3 %	0.5 %		170
	853	Social work activities	30.3 %	13.0 %	3.2 %	8.0 %		96.0 %	4.9 %	10.5 %			32
	331	Manufacture of medical and surgical equipment and orthopaedic appliances	20.9 %	22.2 %	2.2 %	12.4 %	38.5 %	3.1 %	5.5 %	3.0 %		4.7 %	12
	332	Manufacture of instruments and appliances for measuring, navigating and other purposes except industrial process control equipment	20.9 %	33.6 %	2.6 %	15.5 %	32.7 %	3.1 %	5.5 %	3.1 %			11
	334	Manufacture of optical instruments and photographic equipment	20.9 %	64.7 %	5.6 %	12.1 %	49.6 %	3.1 %	5.5 %	8.4 %			6
	335	Manufacture of watches and clocks	20.9 %	47.2 %	4.4 %	13.7 %	81.8 %	3.1 %	5.5 %	2.0 %			16
	453	Building installation	14.5 %	20.7 %	4.0 %	18.3 %		20.9 %	7.0 %	1.9 %			217
	454	Building completion	14.5 %	14.1 %	3.0 %	21.8 %		20.9 %	7.0 %	2.0 %			197
	455	Renting of construction or demolition equipment with operator	14.5 %	15.5 %	0.0 %	10.7 %		20.9 %	7.0 %	12.7 %			35

7.37 **Group A** contains only one sector, namely sewage and refuse disposal, sanitation and similar activities, with a share of government expenditure somewhat above 20 per cent, a very high and increasing level of concentration, and very low import penetration. A large proportion of public sector demand is due to final consumption of local government (67.5 per cent, compared with an average of 48.6 per cent and a median of 55 per cent). This would suggest that public sector demand in this sector could be fragmented, and that the primary concern might therefore be the failure of the public sector to exercise countervailing buyer power (Category I).

7.38 As discussed in our case study on the procurement of waste management services, there are potentially significant incumbency advantages and entry barriers in the provision, and the risk of collusion is potentially high (albeit reduced by the fact that individual contract specifications differ and the buyer often has a credible self-supply option). There is also a trend towards increasing consolidation in the supply market. Concerns might therefore be related mainly to the risk of collusion and failure to prevent a lessening of competition over time.

7.39 **Group B** contains four sectors, namely:

- Manufacture of weapons and ammunition, with a public expenditure share of slightly above 70 per cent, a high and relative stable level of concentration, largely centralised procurement and above-average, but not very high entry barriers. Given that entry barriers are not especially high, one might suspect that the limited competitiveness suggested by the high concentration level might be largely caused by public procurement – i.e. that the competition concern in this sector is one in Category II.
- Human health activities, with a public sector demand share of around somewhat below 40 per cent, a moderate but quickly increasing level of concentration, considerable growth in residual demand and below-average entry barriers. The fact that entry barriers are not particularly high, but that concentration is increasing from a moderate base might indicate that public

procurement contributes to (or at least does not prevent) a lessening of competition over time – i.e. concerns are related to Category I or Category III. Given that residual demand is considerable, there could be potentially significant knock-on effects, but the relatively rapid increase in residual demand may suggest that concerns are transitory.

- Building and repairing of ships and boats, with a public expenditure share slightly below 25 per cent, above average growth in concentration from a moderate level, and a low indication of entry barriers. Concerns in this sector might be mainly related to the public sector contributing towards a lessening of competition in the long term (Category III).
- Manufacture of pharmaceuticals, medicinal chemicals and botanical products, with a share of government expenditure somewhat above 20 per cent, high and strongly increasing concentration, and significant entry barriers unrelated to procurement. A possible concern in this sector might be the failure of the public sector to exercise countervailing buyer power in terms of both making suppliers compete effectively in the short term, and arresting the trend towards increasing concentration or assisting firms in overcoming entry barriers. The very low fragmentation indicator may not provide much guidance in this case, given that it only measures the split between central and local government, but not other forms of fragmentation. Moreover, current regulation in the pharmaceutical sector may provide significant constraints on the ability of the public sector to exercise buyer power. Even though residual demand is relatively high and growing strongly, the role of regulatory constraints may imply that the public sector's importance as a buyer is much stronger, and will remain so, than suggested by its share of total demand. Pull-through effects as described in chapter 4 above and in our case study on the procurement of continence care products, together with the important role of regulation in the pharmaceutical sector, imply that the role of the public sector in terms of promoting competition is crucial.

7.40 **Group C** contains the following sectors (estimated government share of output in parentheses):

- Manufacture of electronic industrial process control equipment (20.9 per cent)
- Manufacture of cement, lime and plaster (15.0 per cent)
- Manufacture of aircraft and spacecraft (14.8 per cent)
- Site preparation (14.5 per cent)
- Building of complete constructions or parts thereof; civil engineering (14.5 per cent)
- Manufacture of office machinery and computers (12.3 per cent)
- Research and experimental development on natural sciences and engineering (11.9 per cent)
- Research and experimental development on social sciences and humanities (11.9 per cent).

7.41 The last two of these (research in natural and social sciences respectively) might have relatively low priority in terms of conducting further detailed investigation. Concentration is towards the lower end of the band very close to the lower quartile (with a value of C5 of 39.8 per cent and 37.8 per cent respectively) and not increasing much (in natural sciences and engineering) or even declining (in social sciences and humanities). These sectors are only marginally above the threshold for inclusion in group C. The sectors can also be expected to comprise a large number of specialised markets, which would imply that competition effects are likely to be limited. For this reason, these two sectors may have a relatively low priority for further investigation.

7.42 In the case of the manufacture of aircraft and spacecraft there is strong growth in residual demand (10.3 per cent p. a. on average), which might suggest a rapidly reducing role of public sector demand. However, it is reasonable to assume that a relatively clear distinction exists

between markets for civil and military aircraft (even though some designs are used for both military and civilian purposes). Obviously, residual demand is of little relevance in the case of military aircraft, in particular where they are not based on civilian design). Non-procurement related entry barriers in this sector are, very high, and therefore one might be mainly concerned about the extent to which the public sector exercises countervailing buyer power (Category I) With procurement very centralised, however, there should be little reason to suspect problems in this area. Therefore, this sector, too, may be given relatively low priority for further investigation.

7.43 The remaining sectors in this group can be split into two sub-groups:

- Sectors in which concerns are likely to be primarily related to failure of the public sector to exercise countervailing buyer power, namely the construction-related sectors, and the procurement of office machinery and computers. In particular with regard to the manufacture of cement, lime and plaster, public sector demand is very likely to be fragmented. Concentration is high and has been increasing, and entry barriers are significant. Similar fragmentation may exist with regard to the other two construction-related sectors (where entry barriers are rather low) and the procurement of office machinery, with above-average entry barriers. Even though our fragmentation index in all three cases the fragmentation index is low, it is worth bearing in mind that this index only captures the proportion of public sector demand made up of final demand by local government. This may understate the degree of fragmentation to the extent that expenditure would be included in local government capital formation. For this reason, concerns may be related mainly to the failure to exercise countervailing buyer power (Category I).
- In the manufacture of electronic industrial process and control equipment, concentration is only moderately high (C5 = 43.3 per cent), but increasing strongly (average growth of C5 = 6.6 per cent p. a.). Even though entry barriers in this sector are significant, this could suggest that public procurement might contribute to a lessening of competition, perhaps through limiting its purchases to

buying from a few firms which, as a result, may gain market share over time. This may be an instance where limiting participation results in relatively favourable terms and conditions for the public sector at the expense of long-term competitiveness (Category II/III).

Summary of recommendations

7.44 Table 7.1010 summarises those sectors in which further detailed investigation by the OFT might be justified.

Table 7.10: Sectors for further investigation

Group	Sector	Potential concern
A	Sewage and refuse disposal, sanitation and similar activities	Failure to exercise countervailing buyer power (Category I)
B	Manufacture of weapons and ammunition	Restriction of competition, in the short run (Category II)
	Human health activities	Failure to prevent, or contribution towards, reduction in competition (Category I/III)
	Building and repairing of ships and boats	Lessening of competition in long term (Category III)
	Manufacture of pharmaceuticals, medicinal chemicals and botanical products	Failure to exercise countervailing buyer power to help overcome entry barriers and arrest increasing concentration (Category I)
C	Manufacture of electronic industrial process control equipment	Reduction of striction of competition, in the short run or the long run (Category II/III)
	Manufacture of cement, lime and plaster	Failure to exercise countervailing buyer power (Category I)
	Site preparation	
	Building of compete constructions or parts thereof, civil engineering	
	Manufacture of office machinery and computers	

ANNEXES

A THE ECONOMIC ANALYSIS OF BUYER POWER – AN OVERVIEW

A.1 A purchaser who is capable of affecting market outcomes, and thus competition, possesses buyer power. Buyer power encompasses:

- the ability to affect the market price for an input by strategically withholding demand (as shown in the traditional analysis of monopsony), as well as
- the ability of strong buyers to obtain more favourable conditions from their suppliers than other buyers, for example as a result of their better position in negotiations with suppliers.

For the avoidance of doubt, volume discounts offered by suppliers simply in response to lower unit costs faced in serving larger buyers without any pressure from the buyer (as would result in a competitive market where prices reflect underlying costs) would not constitute buyer power.

A.2 In the definition of the OECD (1981, p10), buyer power describes a 'situation which exists when a firm or a group of firms, either because it has a dominant position as a purchaser of a product or service or because it has strategic or leverage advantages as a result of its size or other characteristics, is able to obtain from a supplier more favourable terms than those available to other buyers.' The European Commission's Competition Directorate, in

its glossary of terms used in EU competition policy, defines buyer power as the '[a]bility of one or more buyers, based on their economic importance on the market in question, to obtain favourable purchasing terms from their suppliers.'¹¹⁹

A.3 As is widely accepted, the effects of buyer power depend strongly on the level of competition amongst suppliers.¹²⁰ The glossary definition of buyer power provided by the European Commission, for example, states that '[buyer power is an important aspect in competition analysis, since powerful buyers may discipline the pricing policy of powerful sellers, thus creating a "balance of powers" on the market concerned. However, buyer power does not necessarily have positive effects. When a strong buyer faces weak sellers, for example, the outcome can be worse than when the buyer is not powerful. The effects of a buyer's strength also depend on whether the buyer, in turn, has seller power on a downstream market.'¹²¹

A.4 It is therefore helpful to distinguish between buyer power facing an effectively competitive supply market, and buyer power that

¹¹⁹ European Commission, 'Glossary of terms used in competition related matters', available at http://europa.eu.int/comm/competition/general_info/glossary_en.html. Copyright, European Communities, 2003. This glossary was prepared by the services of the European Commission's Directorate-General for Competition and serves as an orientation for non-specialists in competition matters. It has no legal value whatsoever and does not bind the Commission in any way.

¹²⁰ See, for example, Dobson et al. (1998).

¹²¹ The last point raised in this definition, i.e. the level of competition amongst buyers as sellers in a downstream market, is related to the question whether any cost savings achieved from exercising countervailing buyer power are passed through to end users rather than pocketed as profits by the strong buyer. This is not simply a question of the relative weight given to consumer and producer surplus: provided that end-user demand is not completely inelastic, any pass-through will lead to higher quantities being consumed, which will unambiguously increase welfare relative to a situation in which cost savings are taken as profits.

would be exercised against sellers who themselves possess market power.

Exercise of buyer power with a perfectly competitive supply

- A.5 Concerns about buyer power facing a competitive supply market are linked to the allocative inefficiency that results from the strategic reduction of demand. In the same way as a monopolist, by restricting output in order to maintain a price above the competitive level excludes consumers whose valuation of the good exceeds the marginal cost of provision, the restriction of demand in order to achieve an input price below the competitive level excludes suppliers whose cost of providing the input is below its marginal value (see Box A.1).¹²²

Box A.1: Allocative efficiency loss from strategic demand reduction by a monopsonist

Consider the case of a firm producing an output using a single input, and assume that the output market is perfectly competitive, but that the firm is the sole buyer in the input market (i.e. a monopsonist). This might be, for example, the case where a firm is the only employer in a geographically narrow labour market, but where the geographic scope of the output market is national or even international.

¹²² For a presentation of the standard monopsony model see, for example, Dobson *et al.* (1998), paragraph 4.1 f. It is worth noting that in the case where the monopsonist were able to achieve perfect price discrimination the efficiency loss associated with monopsony would disappear, although concerns about the exercise of buyer power may be even stronger than in the case where the monopsonist buys through the market, paying the same price for every unit bought.

Assume that the firm requires one unit of input per unit of output, and that the only cost it incurs is for the input. Assume that input supply is captured by a supply function $w = w(q)$, $w' > 0$, where w is the input price. The marginal value of a unit of output is given by the competitive market price p .

If the firm were to take the input price as given (as would be the case if it were competing with other firms for the input), it would extend its output whenever $w(q) < p$. This would drive up input prices to the point where $w(q) = p$, and the firm makes no profit. The marginal cost of expanding is equal to its marginal value.

However, unlike a firm competing with other firms for the input, the monopsonist realises that it can affect the input price by reducing demand. More specifically, the monopsonist chooses its input demand (and thereby its output level) such that it maximises its profit, given by $q^*(p-w(q))$. The solution q^* to this profit maximisation problem must satisfy the first-order condition $p = w(q^*) + q^*w'$. As $w' > 0$, this implies that $w(q^*) < p$, i.e. the monopsonist reduces demand below the efficient level.

Even though this reduction of demand, and thus the output produced by the monopsonist, does not affect the price and the total quantity available to end users (with the difference being made up by other suppliers), there is an efficiency loss due to the fact that inputs that would be provided at a price below their social value remain unutilised. Obviously, if the firm were to produce with a technology in which multiple inputs are used in variable proportions, there could also be productive inefficiency as the firm would not choose the most efficient combination of factors. Further inefficiency and welfare losses arise in the case where the powerful buyer has downstream market power, and therefore the assumption that the downstream market price and the total quantity remain unaffected does no longer hold.

- A.6 Although the exercise of buyer power in relation to a perfectly competitive upstream market leads to inefficiencies, it does not necessarily impact on competition in the sense of affecting the sellers' behaviour. They continue to be price takers, i.e. when faced with a market price for their goods or services, they simply decide how much they wish to produce and sell. The market price, in this case is not, of course, the result of competitive interaction between buyers and sellers, but rather set by the monopsonist in order to maximise its profit.
- A.7 Such strategic demand reduction may have a long-term effect on upstream market structure by affecting 'the competitive viability of sellers and discourage new firms from entering the market...' and may have 'long-run effects where producers are reluctant to undertake investments because of expected opportunistic behaviour by powerful buyers exploiting supplier investment commitments'¹²³ Of course, the long-term effect on competition of strategically withholding demand in order to obtain lower prices should form part of the monopsonist's profit maximising purchasing strategy, i.e. the monopsonist would trade off lower prices today against the potential emergence of market power upstream. Similarly, the monopsonist might wish to employ commitment devices such as binding long-term contracts in order to provide appropriate investment incentives and avoid hold-up problems¹²⁴.

¹²³ Dobson *et al.* (1998), paragraph 7.4)

¹²⁴ Hold-up problems occur where one party to a transaction makes a sunk investment that is specific to the transaction. There is a risk that the other party might try to renegotiate terms subsequent to the investment being made, knowing that there is no alternative use for the investment. Anticipation of problems such as this will reduce the incentives to invest in the first place.

Buyer power facing an imperfectly competitive upstream market

- A.8 The exercise of buyer power in a discriminatory fashion, i.e. in order to obtain better deals than other, smaller buyers, presupposes that the upstream market is not one in which suppliers simply act as price takers, responding to a given market price. The exercise of buyer power in this manner presupposes some deviation from the textbook model of perfect competition upstream, for example suppliers and buyers bargaining over contract terms. An examination of the various explanations why larger buyers tend to get better deals – which may be intuitively plausible, to on closer inspection far from obvious – confirm this (see Box A.1).
- A.9 While the exercise of buyer power in relation to a perfectly competitive supply market can result in allocative inefficiency and thus welfare losses, the welfare effects of buyer power in the case where the supply market is uncompetitive are ambiguous.
- A.10 A powerful buyer can provide a significant constraint on seller market power, and can maintain and promote competition, compared with a case where buyers are fragmented and powerless.
- In the short term, countervailing buyer power can be used to make suppliers who would otherwise possess market power compete more vigorously. For example, by choosing an appropriate design for the procurement process, a strong buyer can reduce the threat of collusion and make suppliers compete more aggressively. Where competition is severely restricted, negotiations may provide a way of extracting the best terms from suppliers.

- In the long term, a strong buyer may 'manage competition' amongst its suppliers and affect market structure, investment and innovation. The purchase decisions made by a strong buyer may impact on the viability of firms, reinforce their market position, or influence investment incentives. A strong buyer can affect entry and exit decisions, and a strong buyer should take account of these effects. It can be decisive in determining the success of particular technologies, and thus affect the development of new products and services. The mere existence of buyer power may affect investment incentives amongst suppliers, e.g. in order to improve their ex-ante bargaining position relative to the strong buyer, or to avoid being exposed to a hold-up situation. Taking account of these effects, a strong buyer can have a significant impact on market developments.

A.11 In contrast, a strong buyer might have incentives to use its power further to distort competition amongst suppliers (strategic buyer power) where it can capture some of the rent that would otherwise accrue to suppliers. The intuition behind this is as follows. A strong buyer is in a better position when dealing with powerful sellers than other, weaker buyers. This asymmetry may:

- enable the strong buyer power to extract rents from weaker buyers, e.g. by creating or strengthening the market power of sellers and then extracting this through preferential terms of supply by exploiting its strong position (see Box A.2 for a stylised example), or
- increase the strong buyer's profits as a result of restricted or distorted competition in the downstream market.

Box A.2: Using buyer power to extract rents: a stylised example

Consider the case of two firms supplying a large number of small buyers as well as a single buyer operating in a different sector. Competition between the firms in the supply of the small buyers can be classified as a Cournot-oligopoly, whereas the large buyer, by virtue of its buyer power, can ensure that the two firms compete on price (i.e. as captured in a Bertrand model). Supplying the strong buyer allows a firm to reduce its costs.

Assume that the aggregate demand of the smaller buyers is given by the following inverse demand function: $p = 100 - q_1 - q_2$, where q_1 denotes the quantity provided by the first firm and q_2 the quantity supplied by the second firm. Assume that the constant marginal cost of the firm supplying the strong buyer is equal to 5, whereas a firm not supplying the strong buyer has a marginal cost of 10. The strong buyer has a fixed demand of 50 units.

Let us first look at the situation in which the strong buyer buys from both firms. It would pay a price of 5 for each of its fifty units, giving a total cost of 250. Each firm would supply 25 units. Using the Cournot model, the quantity supplied to smaller buyers is given by $(100-5)/3 = 31.7$, and the resulting price would be 36.7.

By contrast, if the large buyer were to buy exclusively from one firm, it would pay a price of 10 (the higher of the two marginal costs), doubling the cost of its purchase. The firm supplying the strong buyer, having a cost advantage in the supply of small buyers, would sell 33.3 units to smaller buyers, and the other firm would sell only 28.3 units. The corresponding price would be 38.3, and the total supply to the small buyers is lower than previously.

At first glance, it would appear that the strong buyer has little incentive to buy exclusively from one firm, given that this doubles the cost of its purchase. However, this conclusion changes if one considers that the strong buyer may be able to extract money from the winning firm, given that this firm would obtain a cost advantage in the supply of the smaller buyers. Assume that the strong buyer can extract the full difference in the profit made in the supply of the smaller buyers. The winning firm's profit is given by $33.3 * (38.3 - 5) = 1,108.9$, whereas the other firm earns only $28.3 * (28.3 - 10) = 800.9$. The difference of 308 by far exceeds the increased purchase cost of the strong buyer as a result of the asymmetry between firms it helped to create.

Note that the strong buyer in both cases obtains significantly better conditions than the small buyers. However, in the first case the exercise of buyer power creates benefits for the large buyer without distorting competition for the small buyers, whereas in the case where the strong buyer uses its ability to confer advantages on its supplier in a way that makes the smaller buyers worse off.

A.12 Such distortions of competition can arise from a number of mechanisms. Supplying the large buyer may provide cost advantages to the supplier, or increase the supplier's reputation relative to other suppliers. The strong buyer may impose certain conditions on its suppliers (e.g. limit supply to other buyers,

thereby denying them access to particular products or driving up the price they pay to other suppliers).¹²⁵

A.13 An important question in assessing whether the exercise of buyer power is beneficial or (potentially) harmful is whether other smaller buyers obtain a better or a worse deal from their suppliers as a result of the strong buyer exercising power. This needs to be established with regard to the terms and conditions that would be available to the smaller buyers in the case where the strong buyer did not exercise buyer power in that fashion. The strong buyer gets a better deal than smaller buyers by definition, and comparing the terms and conditions available to the strong and the small buyers does not help in identifying whether there is a potential problem.¹²⁶ A relatively simple indicator of the welfare effects of the exercise of buyer power is whether this leads to an increase or decrease in output overall. Where smaller buyers get a better deal as a result of the exercise of countervailing bargaining power by a large buyer, this is likely to be welfare improving; however, where small buyers are made worse off, the welfare effects are much more ambiguous, as there could be gains from a large buyer

¹²⁵ Dobson et al. (1998) and Dobson Consulting (1999) provide a list of strategies that a powerful buyer may use in order to distort competition in the downstream market, drawing on practices that are prevalent in the retail sector. A somewhat different link between the exercise of buyer power and the welfare of smaller buyers is discussed by Mathewson and Winter (1995), who show that other buyers can suffer as a result of groups of buyers trying to limit the range of products they buy in a monopolistically competitive market where there would be too many firms offering too many product varieties at too high a price in the non-cooperative competitive equilibrium. The buyer group can make a credible take-it-or-leave-it offer to a subset of suppliers to buy exclusively from them in exchange for a lower price, which will benefit insiders but harm outsiders.

¹²⁶ The exception to this rule is where the strong buyer negotiates with the seller before the seller commits to producing a good or service in the presence of significant fixed costs, and where obtaining an agreement with the strong buyer is crucial in the seller's decision whether or not to produce the good or service, i.e. where the strong buyer is pivotal (see Raskovich, 2003, and the explanation in Box A.1)

exercising countervailing bargaining power (and increasing its output), but losses from small buyers facing higher costs (and decreasing their output).

Buyer power and innovation and investment incentives

- A.14 Given that strong buyers are in a position to influence the terms and conditions they obtain from their suppliers, it should not be surprising that they also affect the suppliers' incentives to invest and innovate.
- A.15 Even without any attempt from a strong buyer to affect investment and innovation, the presence of buyer power changes suppliers' incentives. In particular, a supplier may not wish to undertake any investment that would weaken its position relative to a strong buyer (for example, making it subject to possible hold-up by the buyer), and may wish to make investments that reduce the extent to which larger buyers can exploit their strong position.
- A.16 In the presence of significant dependence on a particular buyer, a seller may not wish to invest in assets that are specific to supplying this buyer (such as, for example, machinery that would allow production of the product required by the buyer at very little cost, but could not be modified to satisfy other needs or otherwise be used). The reason for this is that such an investment would make the supplier vulnerable to hold-up, i.e. attempts by the buyer to extract all the gains from the investment after it has been made, which is easier the fewer alternative sources of demand for the seller exist.¹²⁷ The threat of a strong buyer behaving in such an opportunistic fashion could discourage investment that would reduce production costs (and thus improve

¹²⁷ For a general discussion of hold-up see Williamson (1979).

productive efficiency) in favour of investments that maintain the seller's flexibility.

- A.17 Where a strong buyer has large demand relative to the total demand of other potential buyers, such hold-up problems might arise by virtue of the scale of the strong buyers demand. For example, the supplier might need to make investments to expand the scale of its operations to meet the strong buyer's demands, but then there would be few alternative uses for this capacity if the buyer withdrew its demand.
- A.18 Unless the buyer can credibly commit not to exploit its improved bargaining position after the seller has made the investment, there is little protection against such ex-post opportunism.¹²⁸ With competitive buyers, this problem does not arise, because the investment in a particular production technology would be industry-specific, but not relationship-specific. If a particular buyer withdraws its demand and goes elsewhere, the seller has alternative uses for its investment and can serve other buyers. The seller faces a number of alternative sources of demand, and no buyer would be in a position to exploit the fact that a seller has invested in a particular technology specific to the provision of a particular set of goods and services. There would be no problems with distortions of investment decisions in terms of suppliers avoiding sunk investments, for example by maintaining flexibility in their scale of production even if this were more costly.
- A.19 These considerations suggest that buyer power is necessarily bad for investment and leads to higher supply costs than necessary because of hold-up problems. However, as with many issues

¹²⁸ As Hart and Moore (1988) have demonstrated, in a world where contracts are necessarily incomplete (i.e. cannot specify every conceivable contingency), the commitment problem cannot be solved simply through a contract.

concerning buyer power, the impact is potentially ambiguous. Sellers may be able to reduce the extent to which they are exposed to buyer power by choosing a particular production technology. For example, where buyer power grows from the fact that a larger buyer enjoys a better bargaining position, suppliers may try to reduce the strength of this effect by changing their technology (and thereby the shape of their surplus function). Box A.3 provides a stylised example (based on Inderst and Wey, 2003) showing how this can benefit all buyers and result in welfare gains.

Box A.3: Technological improvement triggered by buyer power – a stylised example

Suppose that a seller faces a choice of two technologies:

Technology A has a quadratic cost function of the form $C_A(q) = 0.1 q^2$.

Technology B has a constant marginal cost of 0.1, i.e. $C_B(q) = 0.1 q$.

Suppose that a seller is currently using technology A, and is selling to three independent buyers each of whom demands one unit and values this unit at 1.

Prices are negotiated through bilateral negotiations, splitting the surplus (which is given by the difference between the buyer's willingness to pay and the seller's marginal cost of supply). As each of the buyers is 'marginal' to the seller, the price obtained is given by $(1 + C_A(3) - C_A(2))/2 = 0.75$. The seller's profit is 1.35 ($3 \cdot 0.75 - C_A(3)$). It is easy to show that using technology B produces the same overall profit, albeit at a lower overall cost. The cost savings are thus fully passed on to buyers, with a price of 0.55.

Now assume that two of the buyers merge, and jointly purchase two units. This would not affect the price they pay if the seller used technology B – and thus the seller's profit would be unaffected.

However, as the seller uses Technology A, it is now in a worse bargaining position. In particular, the price paid by the merged buyer for the two units would be given as $(2 + C_A(3) - C_A(1))/2 = 1.4$, which corresponds to a unit price of 0.7. The seller's profit falls to 1.25.

This provides an incentive to the seller to switch to Technology B (provided the cost of doing so is not greater than the fall in profit). All buyers benefit, and the overall cost of production falls by two thirds. This is a clear welfare improvement compared with the situation in which the seller sticks with its existing technology.

A.20 In addition to these effects, which the strong buyer may take into account (e.g. by committing to certain terms and conditions that guarantee the seller a sufficient return on investments that might otherwise be subject to ex-post opportunism) the buyer may also be able to impose specific requirements on the seller in terms of investment programmes or R&D spend. The ability of strong buyers to affect innovation incentives is particularly important in cases where sellers might under-invest, as may be the case in concentrated markets. There, a strong buyer might incentivise otherwise reluctant suppliers to increase their R&D spend.

A.21 Indeed, empirical evidence supports the conclusion that increasing buyer power reduces innovation if the upstream market is unconcentrated, but increases innovation when the upstream

market is concentrated.¹²⁹ Peters (1997) lists a number of factors whose interaction might explain this result:

- a concentrated downstream market makes it easier for suppliers to form expectations about future changes in demand and requirements, allowing them to focus their innovative efforts on the requirements of a few buyers
- large order sizes from a concentrated downstream market would allow the innovator to exploit economies of scale, thus increasing investment incentives
- a more concentrated upstream market may be characterised by slower diffusion and reduced pressure to innovate as supplier concentration increases
- a more concentrated downstream market may allow more efficient licensing agreements to be negotiated, which would tend to increase innovation, but if buyers have the upper hand in negotiations the inventor will appropriate a smaller share, which would have the opposite effect.

A.22 Also, the strong buyer, through making purchase commitments, can ensure that successful R&D will be rewarded even in cases where the inventor might otherwise not be able to appropriate a sufficient proportion of the gains created through a successful innovation (e.g. because a patent would be difficult or too costly to obtain, and competitive advantages would be eroded because

¹²⁹ See, for example, Farber (1981), Peters (1997) or Weiss and Wittkopp (2003).

of quick imitation in diffusion). A weak buyer may not be able to make such a commitment.¹³⁰

A.23 Overall, therefore, the presence and exercise of buyer power will have an impact on the incentives of suppliers to invest and innovate. The direction of this impact is not clear a priori, and depends on the extent of competitive pressure on suppliers to innovate. Where this is lacking, a strong buyer can exercise a corrective influence.

¹³⁰ Although such a commitment would obviously distort competition, this distortion is similar to the one created by an intellectual property right giving the inventor a period in which others are effectively prevented from competing (unless they licence the inventor's technology, for example, replacing lost sales revenues with royalties).

B ADVERTISING CATEGORY TO SIC CODE MAPPING

B.1 This annexe shows the mapping used to combine the data from the Advertising Statistics Yearbook 2003 to three-digit SIC. No mapping is provided by the Advertising Association. Therefore, DotEcon devised the mapping in Table B.1. Where a SIC code has more than one advertising category mapped to it, the maximum advertising to sales ratio from all of the advertising categories was mapped to the three-digit SIC data.

Table B.1 : Mapping of advertising categories to three-digit SIC

Advertising statistics yearbook product category	Three-digit SIC codes
Beer (total)	15.9
Lager	15.9
Ales, Stout	15.9
Carbonated soft drinks (total)	15.9
Colas/other carbonates	15.9
Mixers, inc tonic	15.9
Spirits (total)	15.9
Liqueurs/specialities	15.9
Whiskey	15.9
Vodka (inc flavoured)	15.9
Rum	15.9
Cognac/Brandy	15.9
Gin	15.9
Alcopops	15.9
Coffee (total)	15.8
Instant	15.8
Ground and bean	15.8
Wine	15.9
Fruit juice/fruit drinks	15.3
Bottled water	15.9

Advertising statistics yearbook product category	Three-digit SIC codes
Tea	15.8
Squash	15.9
Cider and Perry	15.9
Champagne	15.9
Sherry (Xerex)	15.9
Vermouth/Aperitifs	15.9
Port	15.9
Accessories	18.0 and 52.4
Footwear	19.3 and 52.4
	17.7 and 18.0 and 19.3
Womenswear (outerwear)	and 52.4
Sportswear	18.0 and 19.3 and 52.4
	17.7 and 18.0 and 19.3
Meanswear (outerwear)	and 52.4
Jeans	18.2 and 52.4
Underwear (adult)	18.2 and 52.4
	17.7 and 18.0 and 19.3
Children's wear	and 52.4
Home computers	30.0 and 52.4 and 52.6
	36.5 and 72.2 and 52.4
Computer/video games software	and 52.6
Hi-fi/stereo equipment (total)	32.3 and 52.4 and 52.6
Audio systems	32.3 and 52.4 and 52.6
Separates (total)	32.3 and 52.4 and 52.6
CD players	32.3 and 52.4 and 52.6
Amplifiers	32.3 and 52.4 and 52.6
Record players/turntables	32.3 and 52.4 and 52.6
Tuners	32.3 and 52.4 and 52.6
Televisions (colour)	32.3 and 52.4 and 52.6
Washing machines	29.7 and 52.4 and 52.6
Vacuum cleaners	29.7 and 52.4 and 52.6

Advertising statistics yearbook product category	Three-digit SIC codes
Shavers, electric	29.7 and 52.4 and 52.6
DVD players	32.3 and 52.4 and 52.6
Video recorders	32.3 and 52.4 and 52.6
Refrigeration and freezers	29.7 and 52.4 and 52.6
Cookers, gas	29.7 and 52.4 and 52.6
Dishwashers	29.7 and 52.4 and 52.6
Irons	29.7 and 52.4 and 52.6
Food mixers and processors	29.7 and 52.4 and 52.6
Personal stereos	32.3 and 52.4 and 52.6
Cookers, electric	29.7 and 52.4 and 52.6
Microwave ovens	29.7 and 52.4 and 52.6
Kettles, electric	29.7 and 52.4 and 52.6
Radios	32.3 and 52.4 and 52.6
Sewing machines	29.7 and 52.4 and 52.6
Gas	40.2
Other fuels	10.0 and 11.0
Electricity	40.1
Confectionary (total)	15.8
Chocolate confectionary (total)	15.8
Bars, blocks, tablets etc	15.8
Chocolates and similar (total)	15.8
Other chocolate confectionery (total)	15.8
Sugar confectionary	15.8
Cereals and breakfast products	15.8
Potato crisps, other potato products	15.3
Ready meals	15.8
Sauces, bottled	15.8
Ice cream	15.5
Margarine	15.4
Yoghurts	15.5
Sauces, cooking	15.8 and 18.8
Bread	15.8

Advertising statistics yearbook product category	Three-digit SIC codes
Vegetables (total)	15.3
Frozen (vegetables)	15.3
Canned (vegetables)	15.3
Fresh (vegetables)	15.3
Cheese	15.5
Rice and pasta	15.6 and 15.8
Soup (total)	15.8
Dry and fresh (soup)	15.8
Wet shelf stable soup	15.8
Meat and poultry (total)	15.1
Meat	15.1
Poultry	15.1
Milk and milk products	15.5
Biscuits (total)	15.8
Crackers/Crispbread	15.8
Butter	15.5
Desserts (total)	15.8
Condiments	15.8
Meat and veg extracts, inc stock cubes	15.8
Fish (total)	15.2
Fish (Fresh and frozen, excl shellfish)	15.2
Canned and bottled fish	15.2
Cooking oils	15.4
Fruit (total)	15.3
Fresh (fruit)	15.3
Canned/bottled (fruit)	15.3
Frozen (fruit)	15.3
Baby food	15.8
Meat pies and sausages	15.8
Jam and preserves	15.8
Cakes, frozen	15.8

Advertising statistics yearbook product category	Three-digit SIC codes
Sweeteners, artificial	15.8
Cream	15.5
Sugar	18.8
Flour	15.6
Lotteries	92.7
Football pools	92.7
Total gambling	92.7
Gardening chemicals (total)	24.1 and 24.2
Fertilisers, lawn	24.1
Weed killers	24.2
Garden tools	28.6 and 29.7
Lawnmowers	29.7
Trimmers, electric	29.7
Garden furniture	36.1
Greenhouses	51.4
Sheds	51.4
Hoses and accessories	51.4
Furniture, total (excl self assembly)	20.3 and 36.1 and 52.4
Kitchen furniture	20.3 and 36.1 and 52.4
Living room/dining room	20.3 and 36.1 and 36.1 and 52.4
Bedroom furniture	20.3 and 36.1 and 36.1 and 52.4
Upholstery/seating	20.3 and 36.1 and 52.4
Carpets and floor coverings	17.5 and 52.4
Domestic lighting	31.5 and 52.4
Blinds	52.4
Home security	28.6 and 52.4 and 74.6
Insulation	45.3
Curtains	17.4 and 52.4
Pet food (total)	15.7
Cat food	15.7

Advertising statistics yearbook product category	Three-digit SIC codes
Dog food	15.7
Tissues, toilet	21.2
Bleaches and lavatory cleaners	24.5
Dishwashing liquid	24.5
Detergents	24.5
Batteries, dry cell	31.4
Paints	24.3
Wood care, varnishes, dyes	24.3
Wall coverings	21.2
Kitchen towels, paper	21.2
Pet healthcare	85.2
Furniture polish	24.5
Newspapers	22.1
Magazines	22.1
Books	22.1
Audio records and tapes (total)	22.1
Recorded music/speech	22.1
Audio tapes/cassettes, blank	22.1
Toys, games and hobbies (total)	36.5
Video tapes/DVDs, pre-recorded (total)	22.3
VHS	22.3
DVD	22.3
Photography (total)	33.4 and 52.4
Cameras	33.4 and 52.4
Processing	52.4
Films	52.4
Lenses/accessories	33.4 and 52.4
Cinema	92.1
Musical instruments	36.3
Sport equipment (total)	36.4
Golf equipment	36.4

Advertising statistics yearbook product category	Three-digit SIC codes
Video cassettes, blank	52.4
Motor cars, purchase	34.1
Petrol, diesel and motor engine lubricants (total)	50.5
Motor engine lubricants	50.5
Petrol and diesel	50.5
In-car entertainment	32.3
Motorcycles, scooters, new	35.4
Replacement parts (total)	34.3
Exhausts	34.3
Brakes and clutch	34.3
Shock absorbers	34.3
Engine parts	34.3
Batteries	34.3
Steering/suspension	34.3
Starters/alternators/spark plugs	34.3
Cough/cold/sore throat (total)	24.4
Cold/flu decongestants	24.4
Cough liquids	24.4
Vitamins and minerals (total)	24.4
Pain relief (total)	24.4
Gastro-intestinal	24.4
Indigestion remedies	24.4
Laxatives	24.4
Smoking cessation	24.4
First aid	24.4
Feminine care	24.4
Sleeping aids	24.4
Condoms	25.2
Eye care treatment	33.4
Contact lens solutions	24.4
Postal services	64.1
Insurance/assurance payments	66

Advertising statistics yearbook product category	Three-digit SIC codes
Accident insurance	66
Content insurance	66
Private medical payments	66
Stockbrokers fees	67.1
Undertakers fees	93
Tobacco (total)	16
Tobacco	16
Cigarettes	16
Cigars and cigarillos	16
Toilets and cosmetics	24.5 and 21.2
Shampoos	24.5
Skincare, facial	24.5
Fragrances (total)	24.5
Female	24.5
Male	24.5
Dental products (total)	24.5
Toothpaste	24.5
Denture fixatives	24.5
Mouthwashes	24.5
Denture cleaners	24.5
Hair care products (total)	24.5
Colourants	24.5
Other setting agents	24.5
Hairsprays	24.5
Home perms	24.5
Make up (total)	24.5
Face make up	24.5
Lip make up	24.5
Eye make up	24.5
Nail polish	24.5
Deodorants and body sprays	24.5

Advertising statistics yearbook product category	Three-digit SIC codes
Sanitary protection	24.5
Soap	24.5
Razors and shaving products (total)	24.5
Razors and blades, disposable	24.5
Shaving foam/soap	24.5
Suncare preparations	24.5
Tissues, facial	21.2
Depilatories	24.5
Bath and shower additives (total)	24.5
Air travel	62.1 and 62.2
Sea travel	61.1
Rail travel	60.1
Buses	60.21 and 60.23
Taxis	60.2
British people's holidays, including cost of travel in Britain	55.1 and 55.2 and 60 and 61 and 62 and 63.3

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