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Reverse eAuctions and NHS procurement

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1. Introduction

There has for some years now been considerable interest in the use of reverse eAuctions in the procurement of goods and services by both private and public sector organisations, and a significant body of international experience has been developed in the practical application of such auctions. Over the last year or two this interest has been particularly intense in the UK public sector, as can be illustrated by the results of performing a Google search on the world-wide web¹ (on 9 September 2005) using “Reverse eAuctions” as the search filed. Eliminating results showing other search sites or duplicate references, the top twenty sites can be categorised in terms of their focus of attention as follows:

UK public sector	14	(70%)
Private sector (worldwide)	3	(15%)
US public sector	2	(10%)
Service provision ²	1	(5%)

Since search results can be sensitive to wording, the alternative input “Reverse e-auctions” was also tried, and, in this second case, the results were:

UK public sector	9	(45%)
Private sector (worldwide)	6	(30%)
Academic articles	3	(15%)
US public sector	2	(10%)

These numbers do not, of course, reflect the pattern of practical usage of reverse eAuctions. Private sector applications, most particularly in the USA, likely dominate in terms of actual experience of this type of procurement method, at least judging by the extensive literature on the subject, which stretches back over a period of several years. For example, the Department of Construction Management at Louisiana State University publishes a bibliography concerned with “Online Reverse Auction Bidding” which extends to nearly 300 items. Moreover, Purchasing magazine’s annual Benchmark Survey on E-sourcing Strategy has indicated that the proportion of respondents using reverse eAuctions had reached 15% as early as 2002 (and although the proportion of total spend accounted for by this activity would likely have been very modest – typically a company will only use eAuctions for a fraction of its purchasing activity – this indicates that the number of instances in which eAuctions were used in making a purchasing decision will have been, in aggregate, very large).

¹ That is, the search was not restricted to UK sites, although there will be a UK bias in the way that Google lists sites. By way of getting a feel for this bias, the search field “Public procurement” was also used, yielding a much wider range of international sites, including (in order of appearance), the EU, Korea, Ireland, Poland, Slovakia, the World Bank, the US, Estonia and Sweden, as well as the UK.

² By service provision is meant the supply of eAuction software, consultancy related to the use of eAuctions, or other services provided in connection with the running of the auction.

Rather the web search is indicative of current interest in and enthusiasm for eAuctions in the UK public sector (also signalled by some of that sector's claims of very large cost savings achieved, which will be assessed later in the paper). The dominant position of the UK public sector in the above numbers is, in itself, an interesting "social fact" in search of an explanation. Does it suggest, for example, a situation in which the UK is leading the world in innovative public sector procurement, copied and adapted from a previous history of success with the approach in the private sector? Or might it indicate a current UK public sector propensity toward what Professor Paul Klemperer³ has, in specific reference to procurement based upon 'bidding' or auction arrangements, called the "Regulator's Fallacy" (a view that that a bid-takers' power to set the rules and procedures in an auction can resolve, or very substantially mitigate, underlying problems of competition in a market)?

Our aim in this paper is to explore these and related questions, first on the basis of what is known from existing economic and management analysis of auction processes. This raises an immediate issue: reverse eAuctions make up only one set of a variety of sets of 'tools' that collectively may be labelled e-Procurement, and 'e-tools' themselves only comprise one part, or one potential part, of overall procurement activity. Unbundling these various elements of procurement strategies – discussed in section 2 – is therefore of crucial importance in evaluating the effectiveness of the contribution of the specific, 'auction' element to procurement processes (so as to better attribute the economic effects of particular strategies to their component parts, at least where that can be feasibly done).

Our primary focus is on the assessment of the very particular contribution to procurement strategies of what has come, misleadingly in our view, to be classified as the "reverse eAuction" element of the process. We start, in section 3, by reviewing some of the cumulative knowledge that is available on the effects of auctions on economic and business outcomes, which is contained in the now extensive academic literature in this area. As is the case in many areas of micro-economics, the general, analytical research on auctions and auction design points to conclusions that (a) the performance of any set of auction arrangements is likely to depend upon the specific details of the procedures used (the auction formats and rules) and upon specific features of the particular context⁴, and (b) outcomes can be very sensitive to variations in procedures and context (i.e. apparently small variations in the detail of procurement formats and rules, and in the detail of the relevant context, can have substantial effects on performance). Nevertheless, a number of common messages and themes can be identified from past work on the issues.

The later sections of the paper are concerned principally with the use of reverse eAuctions in the UK National Health Service (NHS). Section 4 first summarises the procurement framework developed by the NHS Purchasing and Supply Agency (PASA), and then assesses some of its characteristics in the light of the messages and

³ Paul Klemperer, *Bidding Markets*, Competition Commission, 2005.

⁴ This is a conclusion that unites economists and judges. In his 2004 Beesley lecture, Sir Christopher Bellamy, the President of the Competition Appeals Tribunal, put it as follows: "*Context is everything. Circumstances alter cases.*"

themes identified in section 3. At this point of the analysis we find that there appears to be a common misunderstanding – not undermined either by the publicity given to recent policy developments (see the web search results cited above) or by published literature on the recent public procurement experience in the UK – that the NHS PASA framework has come to place particular emphasis upon auction processes in which rival companies compete for supply contracts via *online reverse auction bidding* (ORAB), with the lowest price bidder winning the contract. That, however, is simply not the case. ORAB is an *optional*, final stage in the PASA framework and does not simply involve a process where the lowest price bidder wins the contract. Thus, when ORAB is implemented by PASA, its implications are more nuanced than might be inferred from use of the term “reverse eAuction”.

Section 5 examines a range of examples of the use of ORAB in UK public procurement, based on information contained in existing, published documents. This provides a basis for assessing the role of such bidding in different contexts – for example in the procurement of products and services with simpler or with more complex characteristics – and also for discussing the issues and difficulties to be confronted when seeking to attribute outcomes to particular aspects of the procurement process.

We found, however, that the published material presented arguments and results at a high level of generality. In particular, it abstracts from much of the contextual detail that is required for detailed and robust evaluation of outcomes. Section 6 therefore supplements the published information with evidence and views drawn from a series of interviews with people who have been involved, on both sides of the ‘market’, in procurement exercises characterised by (actual or potential) use of ORAB. The relevant exercises span a number of types of health equipment, and include procurement by private sector health providers as well as by the NHS.

Finally, section 7 summarises our main findings and conclusions. At the broadest level, these are that many of the claims that have been made about the actual or potential contribution of “reverse eAuctions” – a term that appears to be frequently, and misleadingly, taken to be coterminous with ORAB – to improving public procurement processes are either plainly untrue or simply not credible. As is often the case, the factual reality of changes in the relevant processes is both more complex and more interesting than the presentational simplification.

2. Unbundling the different aspects of the procurement process

In assessing the use of reverse eAuctions in procurement, it is important to be clear about the precise nature of what it is that is being examined, not least so as to be able to attribute, *ex post*, any changes in performance to the appropriate changes in procurement strategies. Particularly when a number of changes to procurement procedures are being introduced together, *ex post* evaluation of the consequences of those changes will necessarily be hindered if the appropriate distinctions have not been made.

Procurement encompasses a variety of activities, from (critically important) general and specific initial tasks such as spend analysis – assessing what is being bought from whom, identifying potential areas of savings, etc. – and specification of what it is that is to be procured, through to end-stage tasks such as monitoring supplier performance and compliance with contractual terms (meeting quality standards, timely delivery, etc.)

The arrival of the internet and associated IT has offered opportunities to increase efficiency across a range of these procurement activities, and has led to the development of a number of ‘tools’ which, collectively, may be referred to as e-Procurement tools. By way of example, Purchasing magazine’s surveys of e-Procurement collect survey data under the following “e-sourcing” headings:

- Use of supplier directories/databases
- Demand aggregation with other companies
- e-RFQs (requests for quotes)
- Electronic data interchange
- eAuctions
- Reverse eAuctions
- e-collaboration with suppliers
- Use of supplier hosted web storefronts.

The surveys indicate that (currently) the most frequently used of these tools are supplier directories/databases and supplier hosted storefronts, and the relatively modest role played by reverse eAuctions is corroborated by cross-industry benchmarks on e-sourcing⁵. In 2004, the percentage of purchasing spend that relied on e-Procurement tools in some way or other ranged from a low of 1.53% (industrial manufacturing) to 52.34% (hardware, which was well ahead of the second-placed sector, aerospace/defence, at 36.39%). The equivalent figure for reverse eAuctions ranged from 0.92% (engineering – and, interestingly, the next lowest was aerospace and defence, at 0.97%) and 7.68% (electronics).⁶

The diversity of options opened up by electronic communication can be illustrated by references to best-practice procurement strategies in the private sector. One much studied example is Volkswagen, which manages virtually all of its annual 60 billion euro spend via the internet. The process is based on online *negotiations*, supported by a private B2B supplier platform that provides the framework for online inquiries, catalogues, capacity management, negotiations, etc., and which is used by over 5,500 suppliers worldwide. Similarly, Raytheon relies on part number agreements in which price is *pre-negotiated* but online tools are used to enable suppliers to enter quantities

⁵ See *Trends in Procurement and SRM*, a presentation by L.M. Orlov, Forrester Research, citing CAPS Research Data.

⁶ The pattern of variation in these numbers – including the fact that aerospace/defence relies very heavily on e-Procurement but hardly at all on reverse eAuctions – is itself a very interesting source of information. It corroborates a general theme of this Report, to the effect that the performances of alternative procurement strategies can be expected to depend heavily upon the specific economic context in which they are applied, and that one of the characteristics of effective procurement more generally is to find the approach that is best adapted to the particularities of each context: one size does not fit all.

and lead times, amongst which offers the buyer can choose. In cases where the price has not been negotiated, pre-qualified suppliers receive RFQs electronically (i.e. eRFQs).

In neither of these cases, therefore, has the company involved chosen to rely heavily on ORAB (“reverse eAuctions”), yet each is manifestly a purchasing strategy based on e-Procurement. (In the Raytheon case, it is claimed that there is no direct, human involvement in 99% of the information transmissions). Indeed, among the various e-Procurement tools, it is arguable that the “e” contribution is the lowest in relation to the use of ORAB, since the fundamental benefits of the internet – arising from lower information/communication costs – add comparatively little to auction processes themselves.

Consider, for example, a stylised picture of a reverse eAuction, in which the buyer is receiving bids online, in real time, for a specified requirement, and the winner of the contract will be the lowest of the bidders within some time period defined by the auction rules. This differs little from a traditional auction-house procedure in which a lot is sold to the maker of the highest of a series of ascending price bids, subject to the auction-house rules (e.g. on reserve prices, auctioneer’s discretion as to closing out the process, etc.) The major difference is that the bidders do not have to be in the same room, so the “e” aspects of the process economise on transport costs; but even here the difference is less stark than it may appear, since, in a conventional auction, an agent in telephone contact with the bidder can potentially be used (i.e. earlier generations of electronic communication have already made a contribution to the reduction of transport costs).

Moreover, another form of auction design – based on sealed bids⁷ – does not involve the immediate interactions involved in ascending and descending price auctions. In this case, the obvious alternative to an electronic message communicating the term of the bid is the postal service, and the transport cost differences between the two communication channels are likely to be relatively trivial.

A priori, it seems likely that the biggest contributions of e-Procurement in cases where eAuctions might be used comes not from the ‘auction aspects’ of the process, but rather from the use of e-sourcing tools in tasks such as identifying potential suppliers, communicating buyer requirements to potential suppliers, and in any other pre-auction communication with suppliers; and also in better specifying purchase requirements so as to be able to carry out these tasks in more standardised ways. It is in areas such as these that the information/communication cost efficiencies of the internet, including in relation to the speed with which messages can be exchanged, appear to offer the greatest benefits. Further, such a view is consistent with the evidence available from surveys such as that of Purchasing magazine – which show the much higher take up of the relevant e-sourcing tools than of auctions – and from best practice in the private sector (see the e-Procurement strategies of companies such as Volkswagen and Raytheon).

⁷ Some of the confusion caused by common usage of the term “eAuction” to refer only to ORAB procedures is that sealed-bid procurement formats are not regarded as auctions. Such a restriction in the terminology is liable to mislead, for reasons that we hope will be made clear in section 3 below.

Quite apart from the general desirability of being clear about what is being affected by what, there may also be dangers in failing to make proper distinctions between “e” aspects of procurement and “auction” aspects of procurement, and in attributing a closer-than-warranted linkage between the two. First, “e” implementations of auctions may improve traditional auction performance to varying extents according to the particular auction design (e.g. it may add more to ascending/descending bid approaches than to sealed bid processes). Care needs to be taken, therefore, to ensure that enthusiasm for “e” does not skew choice of auction design, for example by leading to a preference for ORAB, when a sealed bid approach would, in the relevant circumstances, have been more effective (but much less “e”). Second, enthusiasm for “e” may distract attention from the very many substantive issues and problems that surround auction processes more generally, and which are crucial to their performance. That is, as well as biasing auction design itself (leading to undue preference for ORAB over sealed bids), there is a risk of adopting auction arrangements in circumstances where better purchasing alternatives are available. Adding an “e” does not necessarily change the underlying trade-offs when assessing whether or not to rely on auction arrangements, and it is best that this be recognised at the outset.

Before considering what we already know about the issues, problems and trade-offs surrounding auction processes, there is one cautionary tale that we would add, based upon our own personal experiences of the energy sector. Prior to the end of March 2001, wholesale electricity in England and Wales was purchased, half hour by half hour, via a continuous reverse eAuction with its own complex set of rules for determining acceptance of bids and pricing (the electricity pooling arrangements). In March 2001, those arrangements were abandoned by the UK government in favour of arrangements based upon bilateral transactions between buyers and sellers (i.e. in favour of a normal, two-sided market), with the intention of, among other things, securing reductions in wholesale prices.

We do not suggest that this was anything other than a particular policy choice in a particular context. However, the economy is made up of a myriad of particular contexts. The significance of the example lies in its reminders that (a) each context merits its own assessment and (b) the detailed analysis required cannot be short-circuited by easy equivalences – e.g. adoption of “reverse eAuctions” (ORAB) = cost savings – without risk of serious and costly errors.

3. What do we know about auctions?

3.1 Auctions in economic analysis

There is now a large body of economics literature covering both the theoretical and empirical aspects of different auction processes, some of which is highly technical in nature. The relevant analysis has both informed and been informed by increased use of auction mechanisms in public policy, including very high profile examples such as spectrum auctions in telecoms and power pooling arrangements in the energy sector. More recently there has been considerable interest in the development of internet

auction sites such as eBay, which have proved a fruitful source of evidence on bidding behaviour, including the impact of variations in auction formats and rules on such behaviour. General familiarity with auctions has also been substantially increased by digital TV shopping channels that are devoted to the sale of goods by various types of bidding processes.

No attempt will be made here to try to summarise all the research that may be relevant to questions concerning the use of eAuctions in the health sector. Instead, we will pick out some of the ‘headline’ points that we believe may be most relevant to the issues at hand. These are discussed briefly under a sequence of sub-headings.

Traditional tender processes are one type of auction arrangements

Traditional sealed-bid tender processes are a form of auction, since there is a thing to be bought or sold (or a contract to be let) and would-be purchasers/suppliers are invited to submit bids, one of which will be declared the winner. In the simplest case, for example, sealed bids may be invited for a work of art, and the piece may be sold to the highest bidder.

This does not appear always to be recognised in debates about the use of eAuctions in areas such as NHS procurement. An eAuction is frequently supposed to be an arrangement that involves the sequential posting of bids, in circumstances in which other previous bids are known (i.e. ORAB), whilst the sealed-bid process, if information is exchanged electronically, might be referred to as an eTender. In economic terms, however, ORAB is only one particular type of eAuction, sealed-bid arrangements being another.

Sealed-bid and ascending/descending price processes are not the only types of auction arrangement. For example, another variant is the Dutch auction, in which the price is gradually reduced – by the auctioneer, not by sequential bidding – and the first person to offer to buy at the last quoted price is the winner. Further diversity is introduced when more than one thing is being sold or bought. Thus, the auction rules might specify that every successful bidder for one or more of a set of items must pay the amount that they have bid (“pay as bid”) or that the amount to be paid by each and every winning bidder is the lowest winning price or, alternatively, the next-to-lowest winning price (“cleared price”).⁸

⁸ Digital TV viewers can see these variations at work on an hour-by-hour basis. A particularly popular format is an offer to sell a fixed number of items, say 50 for the purposes of argument, where the price starts high and viewers are asked to phone if they wish to purchase an item. The price on the screen falls over time, and continues to do so until 50 bids have been received. *Each bidder then pays the price showing on the screen at the time the fiftieth ‘decision to buy’ arrives (i.e. a cleared-price arrangement).* An alternative process, in which prices are bid up, invites viewers to quote the amount they are willing to pay. In this case the bidding process is subject to a time limit, and the screen shows the time left to bid (similar to eBay). Once fifty bids have come in, the fiftieth highest bid (i.e. the lowest of the candidate winning bids at that particular moment in time) is shown on the screen, indicating the number that has to be beaten by subsequent callers, if they want to purchase the item. When the auction is closed out by the clock, each and every winning bidder pays the lowest of the successful bids (i.e. this is again a cleared-price arrangement).

It may be thought that the use of terminology in a way that fails to recognise eTenders as a type of reverse eAuctions is a relatively unimportant linguistic point, but it can matter greatly if it is associated with a view that these two sets of arrangements will *necessarily* lead to very different types of outcomes (e.g. that eAuctions, in the ORAB sense, can generally be expected to induce bids from NHS suppliers which are significantly lower than the bids that can be expected to be obtained from a traditional tender process). We note that this latter view appears to be prevalent in much current debate about reverse eAuctions. The discussion below will indicate why it is mistaken.

The revenue equivalence theorem

The revenue equivalence theorem (RET) states that the expected revenue of the seller or, in the case of a reverse (purchasing) auction, the expected expenditure of the buyer is, under quite general conditions, independent of the auction mechanism adopted. In this context, and for simplicity, an auction mechanism can be taken to be a process with the characteristic that the highest bidder (or, for reverse auctions, the lowest bidder) wins. A sealed-bid tender arrangement is therefore, for these purposes, most definitely an auction. If the RET conditions are satisfied, a descending price auction, whether organised electronically or not, will lead to the same expenditure level as a sealed-bid tender.

At a minimum, this should give pause for reflection on the question of whether, in general, ORAB can reasonably be expected to lead to large expenditure reductions relative to more traditional, sealed-bid tender/auction processes. If it seems intuitive that one form of auction should lead to higher/lower prices than the other, the RET serves as a reminder that intuitions in social sciences can very frequently be misleading, and that they are often poor substitutes for careful analysis of the relevant situation or decision problem.

In practice, the conditions for the RET to hold are frequently not satisfied, and different auction designs can be expected to lead to different revenues for sellers and different expenditures for buyers. In such circumstances, some fairly immediate questions that spring to mind are:

- How large are the divergences from revenue equivalence? In particular, are they appreciable?
- Which auction design produces the highest revenues or lowest expenditures?

In relation to the second question, there is no general result establishing that one type of auction (e.g. ascending/descending price) design will dominate. If, for example, the comparison is between sealed-bid tenders and descending price bidding in a reverse auction, non-satisfaction of the relevant conditions for the RET could imply that the sealed bid approach yields lower prices/expenditures. In that case, its replacement with a descending price auction will lead to outcomes with higher prices for the buyer.

Competition problems with ORAB

A simple example illustrates the latter possibility. Suppose that, in bidding for a particular contract, it is known that (a) price is paramount to the buyer and (b) one of the competitors has lower costs than its rivals. A potential problem with descending price auctions is that higher-cost competitors may be reluctant to enter the contest at all, particularly if it involves non-trivial ‘transactions costs’. Each may reason that, whatever price it bids, the lower cost competitor will *always* (profitably) undercut that price. In a reverse eAuction, for example, the lowest-cost supplier can see the other prices on the screen, and hence will know how low it has to bid to get into pole position. And, of course, if competitors choose not to participate, the low-cost firm can win the contract with a bid well in excess of its own costs.

Compare this with a sealed-bid auction process. The lowest-cost firm now faces some uncertainty as to how low to bid (the *information conditions* are different). Ideally, it would want to bid slightly below the nearest competitor, but it does not, in this case, know what the ‘price to beat’ actually is. It may have some notion of the costs of other firms, but it is unlikely to know them exactly. Hence, there is an element of guesswork in its bidding strategy. If it bids low, close to its own costs (the lowest of the participants), it can expect to win with a high probability; but then it will make relatively little profit on the contract. If it bids a little higher, it will, if successful, make more profit, but then faces the prospect of a reduced probability of winning.

Now consider the decision problem of the higher-cost firms. The sealed bid tender offers them some prospect of success since, in the search for higher profits on the contract, the lowest-cost firm may choose to bid at a price high enough to be profitably beaten. They will, therefore, be more likely to enter the auction, and, with more competitors, the lowest-cost firm will be more constrained in its bidding strategy than it would with a descending price auction format. The sealed-bid tender/auction can therefore be expected to yield the lower prices.

There is a very fundamental point here, which will be familiar to good procurement managers. The design of the final, price-determination process (which may or may not be an auction) will affect participation in the procurement process as a whole. Auction designs that discourage participation are likely to lead to less competitive outcomes.

Going further, given that companies will have different efficiencies, there is a danger that processes designed so that the most efficient firm always wins can have a chilling effect on competition. The most efficient firm may win the contract, but the price may be very high; and substantially higher than under arrangements that sometimes lead to less efficient suppliers winning the contract.

This may seem paradoxical at first sight, but is really rather obvious in terms of practical experience. Buyers frequently give some business to higher cost suppliers, even at the expense of higher expenditure in the short to medium term, to “keep them in the market.” And home attendances at Premiership games would soon start to fall significantly if supporters of lower quality teams thought that they had no chance at all of occasionally winning against the likes of Chelsea, Arsenal and Manchester

United. In competitive markets, the presence of less efficient firms can be critical in constraining the pricing of the more efficient, who might otherwise monopolise the market.

The winner's curse

The above discussion implies that winner-takes-all mechanisms may not be good for competition, and hence may not be good for buyers in the longer term. On the other hand, in the hypothesised circumstances, they are clearly good for the winner (the lowest-cost firm). This may not, however, be true in all circumstances.

Consider a situation in which the value of a contract (or, in the case of a selling auction, the commodity being offered) is similar for all contestants, but in which there is some uncertainty as to what that value actually is. For example, all the bidding firms in a reverse auction may have similar costs, but it is not known what the quantity to be purchased, and hence the 'value' of the contract, will eventually turn out to be: the contract may simply specify that the eventual order size will be between X and Y thousand units of the commodity to be supplied.

In order to value the tender, potential bidders will need to form (probabilistic) expectations of the relevant quantity, and, given uncertainty, it is likely that different suppliers will form different expectations (each may have small pieces of relevant information that differ from the information of others). If, then, the value of the contract for any given volume is similar for all firms, the contract will appear most valuable to the bidder who has the most optimistic expectations concerning the eventual volume purchased. Other things equal, the most optimistic supplier will bid the lowest price and will win the contract.

It would, however, be strange indeed if the most optimistic set of expectations always turned out to be the closest to the actual outcome, about which there is uncertainty *ex ante*, and which will only be revealed *ex post*. It is much more likely that, say, the average of the expectations will be a better predictor of the eventual outcome, since the average will take account of all the small pieces of relevant information possessed by the individual suppliers. But winning the contract is then bad news for the victor – the 'winners curse' – because it likely reveals that the winner has been too optimistic, and has bid too low a price.

The winners curse is empirically well validated. There are numerous examples, across sectors, across countries and over time, of where companies have won tenders and, as a result, have subsequently found themselves in severe financial difficulties, precisely because they have been too optimistic in their expectations/forecasts.

The curse can potentially be exploited by buyers to achieve lower prices, or by sellers to achieve higher prices, and this can sometimes be a good strategy for them in circumstances where there is no repeated interaction between buyers and sellers (e.g. where there is a one-off project and bidders are unfamiliar with the auction/tender arrangements and their economic properties). Where repeated buyer/seller interactions occur, however, it is an opportunistic strategy that cannot be maintained. Bidders will learn about the winner's curse, and 'aim off' in their bidding strategies

(they may also be aware of the curse from the outset, if they have previously studied other auctions or auction theory!).

To illustrate, if a supplier has a mean expectation of 5,000 units for the (uncertain) contract volume, the company may choose to bid as if the mean expectation was 4,000, so as to reduce the probability that it will win simply by virtue of having unrealistically high expectations. At the lower volume the contract will have a lower value, and therefore the supplier will bid less aggressively. The result may be that the final selling price, determined by the winning bid, may be relatively high.

The possibility of fear of the winner's curse leading to cautious bidding, and hence to relatively high prices for buyers, may be a reason, in the relevant circumstances, for favouring an ascending/descending price format. Since bids are posted, and visible to all participants, they will reveal information about the valuations of rivals, enabling subsequent bids to be made on the basis of more information.

Suppose, for example, that a bidder forms an expected value of a commodity for sale of £5,000, but is initially reluctant to bid more than £4,000 for fear of suffering the winner's curse. An observation that others are bidding in excess of £4,000 could then be interpreted as indicating that the initial strategy was too conservative. Possessed of this extra information, the bidder will tend to be willing to bid more than £4,000, and may rejoin the contest by posting a price higher than any of the current bids. Since all bidders are in a similar position, all strategies will tend to become more aggressive, leading to a higher final price. The effect arises because the visibility of the price offers increases the information available to bidders. Again, therefore, we can see the sensitivity of outcomes to the relevant *information conditions*.

Collusion/coordination

Information exchange is, however, a two-edged sword. The ability of bidders, in effect, to exchange information through price offers can potentially be used as a communication device to induce collusive outcomes. Precisely because ascending/descending price auctions facilitate information exchange, they can be more vulnerable to collusive outcomes than sealed-bid processes.

The potential methods of using price offers to communicate with rivals are legion, and not infrequently highly creative. By way of one simple example, consider a reverse auction in which the lowest offer price has been declining slowly and incrementally over the initial period allowed for bidding to take place; and suppose that a new bid comes in that is substantially below the previous lowest price. How might others interpret this development?

One obvious inference is that the bid has been made by someone who wants to win the contract badly, and is seeking to signal that fact to others. How then, should the others react? If the 'dramatic' bidder places a high value on the contract, perhaps because its costs are particularly low, it could be folly to win the contract in competition with such a rival (the winner's curse). The best strategy may, therefore, be to exit the contest, by not placing any more price offers. And, if this is the general

conclusion, the auction could close out, even though the prevailing price is higher than the ‘best possible’ offers of a number of the contestants.

The ease of communication among firms participating in an auction process will depend in part on the detail of the relevant auction format and rules. In general, the more formal and mechanistic are the rules, the easier the communication will be. One reason for this is that formalism tends to reduce what otherwise might be ‘noise’ or uncertainty in interpreting the conduct of others, making it easier to detect and recognise the meanings of actions intended to communicate collusive information. Another is that the formal rules can sometimes provide a vocabulary or syntax or language for communication.

Klemperer⁹ gives examples, including a multi-license US spectrum auction in 1996 to 1997, in which US West was competing vigorously with McLeod for lot number 378— a license in Rochester, Minnesota. Although most bids in the auction had been in exact thousands of dollars, US West bid \$313,378 and \$62,378 for two licenses in Iowa in which it had earlier shown no interest, overbidding McLeod, who had seemed to be the uncontested high-bidder for these licenses. McLeod appears to have got the point that it was being punished for competing in Rochester, and dropped out of that market.

Sealed bid auctions, although tending to have advantages in hindering collusion, are not invulnerable to the problem. Bidders can, as in any market, potentially communicate with one another before the auction, particularly if numbers are small and have been restricted by some or other set of pre-qualification criteria – albeit that such conduct could place them at risk of prosecution under competition law, which nowadays includes the threat of criminal prosecution and prison for the executives involved. More interestingly, multiple repetitions of similar sealed-bid auctions, in which the same competitors face one another on a number of different occasions, can lead to information exchanges along the lines of those that might occur, over a much shorter time period, in ascending or descending price auctions.

In the case of repeated sealed-bid auctions, however, there exist some relatively straightforward measures that can be adopted to hinder collusive outcomes. These include: not publicly revealing the prices of unsuccessful bidders (to limit the information flows¹⁰), and lengthening the time period between similar tenders (increasing the probability that market conditions will have changed, so that the second and third tenders are less exact repeats of the first).

Carry-over effects

One of the potential problems in all auction processes that involve later repetitions of similar exercises – as many NHS procurement processes typically do – is that success at one particular point in time may materially increase the probability of success at a

⁹ *Op cit.*

¹⁰ Although it can be noted that requirements for ‘transparency’, particularly in the public procurement arena, may limit this and similar options. This is a general issue: undue emphasis on transparency might establish conditions favourable to information exchange and co-ordination, so transparency is not always necessarily a Good Thing.

later time, making the later procurement exercise less competitive. The underlying characteristic of procurement most likely to give rise to this type of problem is a 'winner takes all' approach.

The carry-over effects may arise in more than one way. For example, the successful tenderer at one stage in time might, as a result of winning, subsequently gain greater information about the actual value of the contract; or there may be learning-by-doing effects that provide later competitive advantage; or there may be sunk costs to be incurred by the winning bidder of the first auction, but which do not need to be incurred again, at least to the same extent, if the same company wins again later.

Bearing in mind the winner's curse issues, if a winning bidder obtains any of these advantages at a particular point in time, it will be that much more dangerous to bid against, and beat, that bidder in subsequent tenders. For reasons given above, the problem is likely to be greater for ascending/descending price auctions than for sealed-bid tenders/auctions.

Another way of putting this is to say that winning the first in a series of reverse auctions for a contract has strategic value over and above any value intrinsic to the contract in the first period. If this is recognised by bidders at the outset, competition in the first auction/tender will tend to be more intense because, in effect, competitors are seeking to acquire a prospect of market power or monopoly rents in later periods (there is "competition for monopoly"). On the other hand, competition in later periods will be muted.

On normal arguments in this area of economics, the general expectation is that the later dis-benefits to the buyer of reduced competition will be greater than the benefits of more intense competition at the first stage. This is because the loss of consumer benefits from lack of competition usually exceeds the gain in profits to suppliers. Since it is only the latter that suppliers compete for at the first round, not all of the later buyer losses will be compensated for by more intense competition and lower tender prices in the first round.

Where carry over effects are likely to be a factor, it is also immediately obvious why there can be a major problem in assessing the effects of reforms in buying or selling arrangements on the basis of outcomes in the early periods of any new system.¹¹ Thus, for example, very low auction prices (relative to costs) might reflect more intense competition, but that increase in intensity may itself be driven by prospects of less intense competition in the future. Ironically, poorly designed auction arrangements that have the effect, over time, of reducing the attraction of participation to non-incumbents, can be expected to be associated with particularly keen bidding in the first round.

¹¹ The message here is reinforced by the winner's curse, which may be of greater significance in the early stages of introducing auctions, when bidders are less experienced.

Quality of product or service and contractual incompleteness

In simple auctions, in which commodities are bought and sold, there will be issues concerning the quality of the product (e.g. the authenticity of a painting, the condition of a second-hand car) which give rise to uncertainties about its value. *Ex post*, there may be readjustments of prior assessments (e.g. the car is a lemon). The quality of the commodity itself, however, is given.

For contracts to supply over a period of time, the quality of supply will typically be determined *after* the price has been settled¹². In such cases, the effects of purchasing arrangements on quality incentives can become a serious issue.

One of the concerns about descending price, reverse auctions is that, at least at the end stage, all the attention is focused on price. Consider, for example, a company that is contemplating the submission of a lower price offer. In some circumstances it might conclude that a lower offer would be profitable *if and only if* its planned quality of service was reduced a little. If the offer is posted, the implicit (planned) degradation in quality will likely be hidden from the buyer. Alternatively, the lower price offer might be posted in good faith, in the belief that performance standards could be met, but, *ex post*, the supplier may find it necessary to reduce quality in order to maintain financial viability.

In principle, quality and performance standards can be specified precisely *ex ante* and rigorously enforced *ex post*; and auction design can be changed so as to reflect quality differences when different suppliers, with slightly different products/standards, are competing for the same contracts. In practice, this is much more easily said than done, since precision in specification and ease of monitoring tend only to be economically sensible when dealing with very simple commodities or services.

The general problem is one of contractual incompleteness. For more complex goods and services, efficient contracts tend not to specify all obligations and responsibilities precisely in advance. To illustrate why this is the case, consider a situation involving the supply of a product whose quality is being steadily upgraded as a result of technological innovation. If, say, a three year contract is let, it would be folly to specify quality on the basis of today's technology: a significantly higher quality alternative, at only a modestly increased cost, might be available in a year's time. An efficient contract will seek to provide for the prospect of product improvement, but clearly it will not, in general, be able to anticipate the developments to come with any great precision.

One of the striking things about this issue as it has arisen in the context of reverse eAuctions is the similarity with debates about franchising options during the 1970s and 1980s in the context of privatisation and liberalisation in network industries. The relevant economics (for non-simple goods/services) was clearly set down in that context, and we can do no better here than cite a section of Vickers and Yarrow¹³ that

¹² That is, whilst attempts will often be made to define quality standards ahead of the auction process, the resulting quality provided in future periods cannot be defined completely *ex ante*.

¹³ John Vickers and George Yarrow, *Privatization: An Economic Analysis*, MIT Press 1988.

addresses the relevant points, subject to references to regulation being replaced by references to direct procurement:

*“A complete contract requires a franchise bidder to specify the terms on which he will supply the product or service at each future date during the life of the contract, and for every future contingency that might arise. A complete contract sensitive to future events would be impossibly expensive to write, negotiate, and enforce if uncertainty is present. But a complete contract does not have to take a complex form. For instance, a contract might simply say that the price charged will be such-and-such in all circumstances – i.e. whatever happens to demand, production costs, inflation, and so on. But an unconditional contract of this form faces two severe problems. First, the firm might be unable to fulfil the contract under some circumstances. The threat of inability or refusal to supply would probably lead to flexibility *ex post*, even though the original contract had been specified unconditionally. Therefore, unconditional contracts, especially if they are longer term, are likely to be infeasible. Moreover, unconditional contracts are undesirable. Considerations of efficiency require that price and quality adapt in response to changes in demand and technology.*

Thus we are left with incomplete contracts, which do not make explicit what is to happen in every possible circumstance. With incomplete contracts there is a need for administration and monitoring of the (partly implicit) contract as time unfolds; a continuing contractual relationship exists, and this inevitably involves continuing costs. The alternative is for the franchisor to be left at the mercy of the franchisee.

The duration of the franchise contract must also be considered. The difficulties of contract specification and administration alluded to in the previous paragraph perhaps suggest that short-term contracts have advantages, because fewer future contingencies then need to be catered for. But the organization of frequent contests for the franchise also involves major costs. ...

The conclusion to be drawn is that, in industries where there are significant uncertainties about technology and demand, competition for monopoly by franchising does not have many of the advantages over regulation that it superficially appears to possess. Indeed, franchising involves an implicit regulatory contract for all but the simplest products and services. As Goldberg (1976, p. 462) writes: “Many of the problems associated with regulation lie in what is being regulated, not in the act of regulation itself””.

Experience from internet auctions

The recent large scale development of internet auctions on sites such as eBay has greatly increased opportunities for studying the behavioural implications of different types of buying and selling arrangements. The various sites operate with a range of different formats and rules, facilitating the analysis of changes in auction design.

The rapid development of these markets has been attributed to a number of factors, including:

- Online auctions provide a less costly way for buyers and sellers on locally

“thin” markets such as specialized collectibles to meet and conduct transactions.

- Online auctions have substituted for more traditional market intermediaries by virtue of lower transactions costs.
- Online auctions are fun.

The first of these factors is not, so far as we can see, particularly relevant to NHS procurement, where there have been long-established buyer-seller interactions and relationships. Arguably, there might be some substitution for intermediaries (the second factor), for example by enabling the NHS to deal more directly with overseas suppliers rather than relying on specialised importers and distributors of, say, medical equipment. However, any such effects are more likely to be attributable to the general capacity of the internet and IT technology to reduce communications costs than to anything specifically to do with auction processes themselves.

If the word “fashion” is substituted for, or added to, the word “fun”, it is quite possible that the third factor has had a material impact on the adoption of certain types of auction formats in the public sector, particularly those involving on-screen bidding. If so, there is a further potential pitfall here. It is one thing for buyers to choose to spend their own money on activities that are fashionable and fun, it is quite another thing when the money being spent is that of a third party (e.g. taxpayers). Given the general agency problem associated with government expenditure, another word for fashion and fun might be “waste”.

In relation to experience gleaned from the operation of internet auctions, one of the phenomena that has attracted most attention is that of last minute bidding or “sniping”, which has been observed frequently to occur on sites such as eBay. A number of different explanations for sniping have been put forward, including: it is a means of softening price competition; it is a way of avoiding the revelation of private information to other bidders; and that it is an effective strategy to use in the presence of “naïve” competing bidders. There has also been discussion of the relationship between use of the strategy and the form of ‘close-out’ rules used in the relevant auction format. For example, is there a hard time deadline for putting in bids, or is the duration of the auction automatically extended when a late bid is entered?

There are no very settled, consensus views on these matters, but, as Bajari and Hortacsu¹⁴ point out:

“The multiplicity of explanations provided in the literature regarding the causes of a seemingly innocuous phenomenon like last-minute bidding is a great example of how the analysis of online auctions enables us to appreciate the richness and complexity of strategic interaction in markets.”

¹⁴ Patrick Bajari and Ali Hortacsu, *Economic Insights from Internet Auctions: A Survey*, NBER Working Paper, November 2003.

3.2 Reverse eAuctions in the Management Studies Literature

There has been a growing body of work in management studies over recent years which is concerned with the use of online reverse auction bidding, which, in this literature, is generally referred to simply as a reverse eAuction.¹⁵ Three sets of issues that are considered in this work are of particular relevance in the current context:

- What conditions are likely to be more/less conducive to the use of reverse eAuctions?
- Reverse eAuctions and buyer-seller relationships; and,
- Identified savings from reverse eAuctions

These are discussed in turn below.

What conditions are likely to be more/less conducive to the use of reverse eAuctions?

The question of what conditions can be expected to be more and less conducive to the use of reverse eAuctions is considered in a wide range of papers. Factors that have been identified as being favourable to the successful use of reserve eAuctions include the following:

- Product features that can be clearly specified before the auction event;
- There is a sufficient number of ‘qualified’ potential suppliers who are willing to participate in the auction event;
- The costs of switching suppliers is ‘low’;
- There is a strong likelihood that the current price is higher than the market/competitive price.

Of these, the first two points can be expected to be the more significant for current purposes. The need to be able to specify clearly what it is that is to be bought is an obvious requirement of all successful procurement activity. However, key issues that arise when moving to the use of auction processes concern the *timing* and the *comprehensiveness* of product specification likely to be necessary for the process to be effective.

With respect to timing, as indicated in the first bullet point above there is a need for clear specification of product requirements *ahead* of the auction. The use of an auction process can thus be understood as effectively separating the product specification and the price discovery parts of the procurement process. This can be compared with negotiation processes, where the assessment of product specification and price factors is frequently somewhat intertwined. The relevant point here is that

¹⁵ The management literature has been much less concerned about issues of auction design than has the economics literature, including the respective performance of sealed bid and descending price auctions, and therefore tends to be less precise in its terminology. In our view, this has tended to lead to lack of clarity in defining counterfactuals for evaluation purposes, a point that will be touched upon later in the section.

negotiation processes provide opportunities for information gathering relating to detailed product requirements throughout the entire life of the process.

As will be discussed later, the information gathering properties of auction processes in terms of product characteristics can differ depending on the specific approach adopted. Thus, sealed bid processes can - at least potentially - provide for a greater degree of information gathering with respect to product specification details *during the auction process* than can descending price reverse auctions - at least in situations where the sealed bid process is perceived to allow more flexibility in the account taken of non-price factors.

The extent to which product requirements can economically be specified in a comprehensive manner can be expected to be a critical factor when considering the desirability of introducing auction processes (and different forms of auction processes). Thus, frequent references are made in the literature to commodity-type products being more suitable for auction processes than more complex products. By contrast, where a product is highly complex, has customised features, or requires regular changes in design, eAuctions are considered less likely to be a desirable approach.

A particular factor of relevance here (consistent with the comments above on the economics literature) is that a heightened focus on price can potentially give rise to incentives for suppliers to generate savings by undermining other aspects of the supply offering that are not fully and precisely specified, or that give rise to monitoring and compliance enforcement difficulties. Thus, for example, Ghawi & Schneider (2004)¹⁶ have argued that:

“Not all companies are enthusiastic about reverse auctions. Some purchasing executives argue that reverse auctions cause suppliers to compete on price alone, which can lead suppliers to cut corners on quality or miss scheduled delivery dates.”

Whilst this potential for negative side-effects is clearly highlighted in the literature, it is notable that there appears to have been a limited amount of detailed assessment of the relevance of these issues in practice. Indeed Beall et al (2003)¹⁷ found that none of the buyers in their study could identify a case where supplier service had diminished after a reverse eAuction, although, since they do not cite the number of buyers included in the sample, the weight that can be given to this finding is uncertain.

The number of potential suppliers is clearly a key factor when considering the use of auction processes, with the number of potential suppliers relative to the number of available ‘lots’ being the most significant issue. As was highlighted in earlier discussion of the economics literature, the number of available suppliers can have a

¹⁶Ghawi, D. & Schneider (2004) *New Approaches to Online Procurement*. Proceedings of the Academy of Information and Management Sciences, Volume 8, Number 2.

¹⁷ Beall, S., Carter, C., Carter, P.L., Germer, T., Hendrick, T., Jap, S., Kaufmann, L. Maciejewski, D., Monczka, R. & Petersen, K. (2003) *The Role of Reverse Auctions in Strategic Sourcing*. CAPS Research.

significant bearing on the likelihood of collusion, and can have a major impact on the desirability of alternative auction designs.

In relation to the third bullet point, where switching costs are a significant factor, this can be expected to have a direct impact on the preferred contract length to be offered – whilst frequent changes in supplier may generate inefficiencies, this need not necessarily preclude the creation of benefits from an auction for longer term rights¹⁸.

Although the expectation of significant price reduction can be expected to be an important consideration when assessing alternative procurement approaches, it may not necessarily be a critical factor in the decision of whether or not to use an auction process. A relevant point here concerns the likely costs and effectiveness of the procurement process that would be used in the absence of adopting an auction process. For example, Beall et al (2003)¹⁹ refer to one company that had used reverse eAuctions and judged this to be a very efficient method of getting to a final best price from a group of suppliers relative to its previous negotiation processes. Since the auctions were found to have resulted in outcomes that were as good as its best negotiations, and better than most of its negotiations, the company considered that the approach delivered best or near best results in an efficient manner, even where there were not large observed price reductions²⁰.

It is useful to note the more general point of relevance here, that a proper evaluation of the introduction of on-line reverse auction bidding requires a detailed and comprehensive comparison of the impact of the new initiative as compared with the appropriate *counterfactual*. This is a weakness in much of the literature, since (a) reverse auction outcomes tend to be compared with ‘what went before’, and ‘what went before’ is not carefully analysed, and (b) obvious alternatives to ORAB, such as sealed-bid tenders/auctions, tend not to be rigorously assessed. Given this, robust attribution of effects is precluded, even in principle.

As will be discussed later in the report, a central point of relevance in a health sector context is that the eAuction initiatives introduced by PASA have involved a change in the *form* of auction being used for procurement purposes (from competitive sealed bid to sealed bid followed by descending price reverse auction) – that is, the appropriate counterfactual is, in the PASA case, a different form of auction (at least using economics terminology), not a ‘no auction’ situation.

This is an important point, since it is known that, in public procurement more generally, substantial cost reductions have been obtained from the introduction of competitive tendering and contracting out. These benefits, which have been extensively studied in earlier economic and management literatures on privatisation,

¹⁸ It can be noted that where there are significant switching costs, this can be expected to have an impact on the relative evaluation of incumbent and new entrant bids.

¹⁹ Beall, S., Carter, C., Carter, P.L., Germer, T., Hendrick, T., Jap, S., Kaufmann, L. Maciejewski, D., Monczka, R. & Petersen, K. (2003) The Role of Reverse Auctions in Strategic Sourcing. CAPS Research.

²⁰ Consistent with the comments on product specification issues above, however, we would note that, to the extent that negotiation activity forms part of the product specification process, then a narrowly defined comparison of the costs of achieving a given price level may generate misleading results.

were obtained without recourse to the type of on-screen reverse auction bidding that has become the focus of so much recent attention.

Reverse eAuctions and buyer-seller relationships

Another particular issue that has been highlighted in the management literature on the use of reverse eAuctions concerns the potential impact that their introduction can have on buyer-seller relationships. Buyer-seller relationships are frequently considered in terms of a spectrum ranging from situations where the procurement negotiation process is focused on specific transactions, and viewed by buyer and seller in terms of a win-lose framework, to situations where collaborative procurement arrangements are fostered with a focus on identifying mutual benefit, and procurement activities and processes are negotiated in an environment of trust based on knowledge sharing and the development of implicit understandings. Collaborative processes of this latter kind may involve a range of products and services, and relationships that last for many years. Most purchasing relationships can be interpreted as falling somewhere between these two extremes.

The extent and significance of any continuing relationship between buyer and suppliers can be an important factor in determining whether or not the use of reverse eAuctions is likely to be desirable. Thus, Jap (2003)²¹, on the basis of a study of six reverse auctions conducted by an automotive parts manufacturer, argued that:

“The results clearly demonstrate that open bid, online reverse auctions can raise supplier suspicions of buyer opportunism. Buyers should therefore be selective in their use of these auctions, perhaps limiting them to purchases involving less important supplier relationships, such as the purchase of indirect materials” (p28).

Jap further found indications that open bid reverse auctions were likely to increase suspicions of opportunism more than sealed bid reverse auctions, as a result of price competition being greater and more explicit in open-bid auctions. In particular, it was argued that:

“The fast-paced, dynamic bidding along with the need to respond quickly to competitors’ bids yields tense negotiation and pressure on suppliers to cut prices vigorously. ...the open-bid format can force additional price concessions from the supplier, becoming a form of opportunistic rent seeking on the part of the buyer” (p8-9).

It is notable that Jap focuses on the impact of *perceptions* of buyer opportunism rather than on whether or not those perceptions are well founded. In this context, Emiliani and Stec (2005)²², in a study of the use of reverse eAuctions for wood pallet supplies, found that some pallet suppliers alleged that due diligence – including verification of bidder capabilities to actually deliver pallets to the required specifications - was

²¹ Jap, S.D. (2003) An Exploratory Study of the Introduction of Online Reverse Auctions. *Journal of Marketing*.

²² Emiliani, M.L. & Stec, D.J. (2005) Wood pallet suppliers’ reaction to online reverse auctions. *Supply Chain Management* 10/4, p278-288.

purposefully not performed by the buyer or market maker in order to increase the number of bidders and to drive down prices. It was also argued that brokers were allowed to bid who had no production source identified at the time of the auction, and who then walked away from the contracts after the auction if they were unable to secure an economic source of supply. That is, there was opportunism also on the sellers' side of the process: 'traders' could take a short position and then liquidate that position, at little or no cost, if it turned out to be unprofitable for them.

Jap (2003) has argued that when the supplier suspects the buyer of acting opportunistically, they will usually hold back from the relationship in some way or other, avoiding vulnerability to further opportunism. Thus, for example, it is argued that:

"In order to maintain the lower pricing scheme, they [the supplier] may be forced to reduce quality, value-added services, or overall responsiveness to the buyer, all features that might also be withdrawn to retaliate against the buyer." (p25-6)

We note again, however, that there is doubt about the empirical significance of such conduct (see Beall et al (2003)).

Whilst the literature is not sufficiently developed to provide a comprehensive view of the likely relationship between the introduction of reverse eAuctions and buyer-supplier relationships, it does suggest that this is an important area to consider when assessing particular cases. Furthermore, it suggests that there is likely to be some benefit in seeking to manage perceptions, so as to avoid poorly founded attitudes giving rise to negative behavioural responses. As will be discussed later, the transparency of the process, and the manner in which complaints/issues are mediated and addressed, can potentially be important factors in this respect.

Identified savings from reverse eAuctions

Much has been written on the levels of cost savings identified as having resulted from the use of reverse eAuctions. It is perhaps inevitable that a considerable amount of comment on this issue in the management literature has been relatively critical and/or cautionary, acting as something of a corrective against 'hype' about the potential for huge cost savings. Whilst most authors caution against some of the more extreme claims of savings that have been made, there continues to be a range of views both on the record of achieved savings, and on the potential for future savings from extending the use of the reverse eAuction (ORAB) approach.

Thus, for example, Beall et al (2003) comment that reverse eAuctions have been shown to produce cost savings across a wide number of goods, services, industries, countries, and economic regions. In terms of the level of price reductions generated, they note that:

"In general, reported reductions range from 10 to 20 percent below historical prices" (p8).

Critics of claimed savings have typically presented two types of argument:

- Identified gains are inappropriately being attributed to the use of the auction process (and, by implication, there is under-attribution of effects to other causal factors); and,
- Actual realised cost savings from the use of reverse eAuctions are frequently substantially lower than initial assessments suggest.

With respect to the first point, it has been argued²³ that reverse eAuctions may not necessarily be the source of identified price reductions, given that other factors such as the introduction of competition from new suppliers, the aggregation of purchase volumes, and reductions in product differentiation can be relevant. We note that this line of argument is highly congruent with the economics literature discussed above.

A key point here, which is of considerable relevance in a UK health sector context, is that the introduction of reverse eAuctions may be accompanied by other initiatives (including, for example, the development of more generic product specifications) aimed at generating efficiencies. If such factors are ignored in the assessment process, the result can be that identified improvements in purchasing performance may be inappropriately attributed to the introduction of a particular auction design.

Since, as discussed above, particular auction approaches can potentially give rise to material negative side-effects, this can be an important issue. For example, it might be the case that benefits could have been achieved – through improvements in other aspects of the procurement process – without the introduction of on-line reverse auction bidding, and thus without creating any associated negative side-effects of the latter. The following comment from the chief procurement officer at IBM – cited by Carbone (2003)²⁴ – is representative of this type of view:

“We have seen that if we have knowledgeable skilled buyers, we can negotiate as good a price through more conventional means as we could through a reverse auction and avoid running the risk of damaging a relationship”. (p49)

As noted above, a second – and more direct – form of criticism associated with identified cost savings, is that they simply don’t reflect the level of savings that are realised in practice. Emiliani and Stec (2002)²⁵ have particularly emphasised this point, and draw the distinction between ‘gross’ and ‘net’ savings. Gross savings are calculated as the historic price less the lowest bid price, and it is this measure that is typically referred to (as estimated/identified savings) when reverse eAuction results are presented. However, in practice, actual savings will almost certainly be lower than this level, and thus they refer to net savings as gross savings less ‘losses’.

²³ For example, Smart, A. & Harrison, A. (2003) Online reverse auctions and their role in buyer-seller relationships, *Journal of Purchasing and Supply Management*.

²⁴ Carbone J. (2003) Debate rages over use of e-auctions for components. *Purchasing*, 132(19), December 11, p48-49.

²⁵ Emiliani, M.L & Stec, D.J. (2002) Realising savings from online reverse auctions. *Supply Chain Management* 7/1, p12-23.

Emiliani and Stec go on to highlight that there are a range of potential sources of losses. Identified ‘direct’ sources of losses include the following:

- The buyer may not actually select the lowest bid;
- The buyer may not purchase all of the items that are taken into account in the gross savings figure;
- There may be changes in the price as a result of post-auction negotiation.

As will be discussed in Section 5, the first two of these factors are highly relevant in the context of PASA auctions.

In addition to the above, a number of sources of indirect losses are highlighted, including factors such as: costs associated with the ‘qualification’ process for potential new suppliers; increased costs of monitoring new supplier performance; and the potential for an increased level of quality and/or delivery problems.

Emiliani and Stec argue that:

“When the benefits of online reverse auctions are understood at only a superficial level, it clearly appears to be an effective way to reduce unit costs. However, for many companies the promise of lower unit costs is just an illusion because expenses in other budget categories (i.e. indirect losses) may actually increase” (p15)

Emiliani and Stec (2005)²⁶ refer to net savings having been found to be an average of at least fifty percent less than identified gross savings when measured across a broad market basket of product and service commodity categories.

The above points raise significant questions about the gains that are frequently claimed to have been achieved, and to be available, from the introduction of reverse eAuctions. This is not to say, of course, that significant gains in procurement costs are not possible through developments in purchasing processes. The important point is that more detailed, closer attention should be paid to the both the identification and attribution of savings when claims are being made, and when new initiatives are being assessed.

It is useful, in this context, to note Tonkin’s²⁷ (2003) more general comments on public sector e-procurement initiatives:

“The phenomenon of e-procurement in the public sector is steeped in story, myth and legend, much of it arising from the smoke and mirrors of the dot.com era. It is sometimes difficult to separate where the sales pitch for the latest solutions ends and where the reality begins.

²⁶ Emiliani, M.L & Stec, D.J. (2005) Wood pallet suppliers’ reaction to online reverse auctions. *Supply Chain Management* 10/4, p278-288.

²⁷ Tonkin, C. (2003) e-Procurement in the Public Sector: Story, Myth and Legend. A paper presented to the Policy Institute, Trinity College Dublin.

There is little evidence that adequate baseline information to assess the impact of e-procurement initiatives is collected. There is evidence that the benefits are overstated and that measurement of benefits is confused with making a case to meet political or commercial needs.” (p2)

4. NHS PASA’s approach to reverse eAuction processes

The impression given by much of the published material on reverse eAuctions in the NHS is that it is simply decided that, for some purchasing requirements, an ORAB format will be used and that the process then proceeds in a fairly standard way: potential suppliers are asked to bid in relation to a specific purchasing requirement and the lowest price bidder wins the contract. Interviews with suppliers who had taken part in reverse eAuctions and with PASA officials revealed, however, that this is not how the purchasing arrangements work. Given that, as discussed earlier, outcomes can be heavily influenced by auction design, it is therefore important to understand the *actual* arrangements, so as to avoid unproductive analysis and debate about hypothetical ‘procurement models’ that have little bearing on current practice.

Typical arrangements

When the actual procurement arrangements are examined they appear to have a number of interesting features, including the following:

- The contracts to be let are typically framework contracts. That is they are not contracts for, say, the supply of a given volume of a particular product or service, although the tendering process will normally specify the products/services to be covered and give indicative volumes that the NHS might wish to purchase over the contract period.
- A framework agreement leads to a listing in an electronic catalogue²⁸, showing the offered (and accepted) price of a winning bidder.
- Actual purchase decisions are made by individual units within the NHS. These units may, and very frequently do (because of convenience, lower transactions costs, etc.), buy from the catalogue, but they are also able to make their purchases in other ways. That is, purchasing from the catalogue is not mandatory.
- The procurement process typically starts with a traditional invitation to tender (i.e. a sealed-bid type of arrangement), which is subject to standard OJEC requirements.²⁹

²⁸ Some PASA framework contracts will result in a listing in PASA’s own electronic catalogue: NHS-eCat. Others will result in a listing in the NHS Logistics catalogue.

²⁹ The OJEC requirements are subject to change over time, but they allow, for example, for a selection process that, after inviting expressions of interest, can weed out some potential suppliers (e.g. because

- The decision criterion is usually the “most economically advantageous offer” (MEAT). The weights given to different aspects of a tender in determining “economic advantage” vary from case to case. In some cases, the emphasis might be placed heavily on price; in other cases, matters such as product quality, speed of response to orders, service support, reliability of supply, etc. may carry more weight. The balance is dependent on the nature and characteristics of the product and its uses, and OJEC rules will shortly dictate that the relative weights to be used are specified explicitly in the invitation to tender, e.g. 30% weight to price, 40% weight to product quality, etc.
- Having received (sealed-bid) tenders, PASA may decide to enter into framework agreements with ‘winning’ bidders. Critically, there is not necessarily just one winning bidder, and, at least according to the evidence we have been able to gather, the award of multiple framework contracts is the norm. That is, the procurement process is not a ‘winner takes all’ contest.
- PASA reserves the option to move, at its own discretion, to a second stage of competition, in which the prices offered by a number of potentially acceptable suppliers are entered as first offers in a reverse eAuction. That is, over a designated time period, suppliers are invited to revise price offers downward, with all competitors having sight of the best bid price that has been offered for a given item (an ORAB process).
- PASA reserves the right to exercise its option to move to a second stage ORAB process on only some part of a product range for which it has invited tenders (whilst potentially accepting tendered offers for other parts of a range of products for which tenders have been sought).
- At the close of any ORAB stage, PASA will enter into framework agreements with winning bidders. As is the case when the ORAB option is not exercised (i.e. decisions are made on the basis of the initial tenders), the decision criterion with respect to which winning bidders are selected is MEAT and it is normal for more than one framework agreement to be signed. Thus, again, the ORAB format is not ‘winner takes all’, and it is not necessary to bid the lowest price to be successful.

Implications and preliminary assessment

By simply setting out the features of the NHS procurement process, it should be clear that a number of the potential pitfalls of auction processes identified in section 3 are significantly reduced in importance by the PASA arrangements.

they are assessed as being unlikely to fulfil the buyer’s requirements) before final invitations to tender are issued. Purchasers are also required to specify the criteria by which they will evaluate tenders.

Perhaps the most important of these is the danger that descending price reverse auctions may discourage less efficient firms from competing. The fact that more than one framework contract will typically be let serves to mitigate the effect directly. If two, three, or even more bids are accepted, there is greater encouragement for companies to participate.

It is also highly relevant that the first stage of the process is a sealed-bid tender, and that, in the great majority of cases, the first bidding stage is also the last, i.e. there is no ORAB stage. As explained earlier, sealed-bid processes tend to be better at encouraging participation, since they tend to offer greater prospects of undercutting more efficient competitors.

Further, the first, sealed-bid stage serves to hinder the ability of highly efficient bidders to price up. In a descending price auction, such bidders can start with high prices, safe in the knowledge that they can undercut competitors at a later stage.³⁰ If less efficient competitors are discouraged from joining the fray, bid prices may remain high. Given, however, that, much more likely than not, PASA will end the process at the tender stage, the first price offer will need to be competitive.

Similarly, the fact that the process is not a ‘winner takes all’ arrangement, based simply on the lowest price offered, means that concerns about adverse effects on quality are, at least to some extent, mitigated. A company that believes that it is offering a higher quality product or service is under less pressure to respond to low bids from rivals. It may make a decision to ‘stick’ at a particular price, on the basis of beliefs that (a) its superior performance will, when the MEAT criteria are applied, be sufficient to make it a winner, even though it is not offering the lowest price, and (b) once listed in NHS-eCat or the NHS Logistics Catalogue, its superior performance will also be sufficient to persuade end purchasing units to prefer it to others who may be listed with lower prices.

Indeed, it can be noted that the price determination process is not very different from that which takes place in a more traditional ‘bilateral’ market. In deciding what price to set, a supplier will typically seek a position on price that reflects the quality of the relevant product relative to the product/service qualities of competitors. In online bidding, the supplier can, depending on the details of the auction design, see the prices of rivals or simply the ‘best’ (i.e. lowest) price, and decide where to position its own bids. Of course, the identity of the bidders lying behind the on-screen prices will not be known, but it will typically be possible to make (probabilistic) inferences based on general market knowledge. And, at least in some circumstances, the on-screen bidding will give provide suppliers with *more* information than they would otherwise have: in bilateral negotiations, for example, companies may not know what prices are being offered by rivals.

The interviews we have conducted raise a number of issues in relation to the operation of the PASA process, although many of these issues are generic to competitive, public procurement arrangements, rather than specific to the PASA procedures. We will evaluate this interview material in section 6 below. One point, however, merits

³⁰ Although see earlier comments on sniping strategies in section 3.

consideration here, because it relates much more closely to auction design issues. It concerns the sequential nature of the procurement process: first there is a sealed-bid tender, followed by an optional ORAB stage³¹. A natural question to ask is: what effects might this sequential procedure be expected to have on bidding strategies and procurement outcomes?

In formal terms, suppliers who are invited to tender are asked for their “best price” at the (first) sealed-bid stage; but if “best prices” were, in fact, bid, there would be no point in the second stage. Suppose, for example, that it is confidently expected that there *will* be a second stage in the process. Competitors will tend, rationally, to bid above their “best” price, knowing that the initial price will, in effect, be treated only as their opening price for the second stage. The extent to which they can “aim off” will be constrained by the fear that, if the price is too high at the sealed-bid stage, they may not be invited to join the second stage bidding. However, particularly given that PASA has every interest in not unduly restricting numbers participating in the on-line bidding process (to do so would be to risk uncompetitive outcomes), the level of price required to secure participation will typically be seen to be above the “best price”.

It is possible to say a little more than this. If conditions are such that the RET holds, at least to a good degree of approximation, the final price at the end of the ORAB stage will be approximately the same as the price that would have been bid at the sealed-bid stage in the event that there was no expectation of a second round of price bidding. Yet a naïve reading of the process outcomes might easily attribute “benefits” to the ORAB stage of the process (the “reverse eAuction”, as that term has come to be commonly used). Final prices will be below the “best prices” indicated by the sealed bids, and the percentage difference may be cited as the “benefit”. Yet, in reality, there will have been no gain: all that the price reduction actually measures is the extent of the “aiming off” at the first stage. Indeed, in such circumstances, the second stage of the process will have negative value added, in consequence of the extra costs (e.g. software, time, consultancy advice, etc.) of running the on-line exercise.

In practice, suppliers cannot be confident that the process will go to a second stage: the on-line process is at the buyer’s discretion, and only a minority of cases (fewer than 10% of NHS Logistics Catalogue cases) go this far. This complicates the pricing decision of the supplier, in that the initial bid must take account of the facts that (a) in most cases the initial offer will be the final chance that the supplier has to set price, but that (b) in a minority of cases there will be a second stage. Incentives to aim-off are clearly muted in such conditions, and it is likely that the difference between the sealed bid prices and the final prices (when the second stage is implemented) will be lower. It is also the case that, when evaluating any contribution made by the second, ORAB stage, account should be taken of the fact that the *possibility* of a second stage in those cases where a second stage was not actually used *may* have influenced sealed bid prices upwards.

³¹ PASA informed us that the sequential nature of the procurement process (sealed bid followed by optional ORAB) is a mandatory requirement under EU Regulations, if an ORAB process is to be used in this procurement context.

It is beyond the scope of this paper to attempt any analysis of optimal bidding strategies in the PASA process, but it is clear that important factors to be analysed are the criteria to be used by the PASA when deciding whether or not to exercise the option of running an on-line bidding stage. We have been told that these include:

- The precision/clarity with which the NHS requirement(s) can be specified.
- The likely degree of competition for the framework contracts.
- The value of the business involved.
- Whether or not there are any obvious short-term market disturbances or distortions.

These appear to be broadly sensible criteria, but they are clearly ‘high-level’ tests that allow the relevant officials a reasonably broad discretion. There are arguments for and against such discretion. On the one hand, and as noted earlier, formalistic, rule-bound processes tend to provide greater opportunities for collusion/co-ordination by suppliers. On the other hand, discretion may be used foolishly, and uncertainty and non-transparency might, among other things, discourage participation.

In our view, much here will depend upon the degree of confidence in the operation of the arrangements as a whole. If suppliers are confident in the professionalism and integrity of those running the process, it will be more feasible to achieve the benefits of discretion without creating rigid processes that are easily ‘gamed’.

5. Published results from cases to date in the UK health sector

The principal source of publicly available data on eAuctions in the UK health sector is a June 2004 report published by NHS PASA that provides details of pilot eAuctions that PASA undertook in 2003/04³². Health sector eAuction results are also referred to in the March 2005 PASA document ‘eResults’³³, and in some of the literature produced by the Office of Government Commerce (OGC)³⁴. The OGC literature includes references to eAuction results in range of other sectors.

Thirteen pilot online eAuctions were undertaken by PASA in 2003/04 covering a number of very different product types. More specifically, one auction was for IT hardware, 6 were for food (frozen vegetables (2 parts); canned grapefruit; canned pineapple; rice; frozen potato); and six were for medical products. The published results for of these eAuctions are summarised in Table 1 below.

³² NHS PASA (June 2004) NHS PASA eAuctions Pilot Report - *eAuctions: enabling the NHS to deliver better value from its supply base*

³³ NHS Purchasing and Supply Agency (March 2005) eResults

³⁴ For example: Office of Government Commerce (Spring 2005) A guide to eProcurement for the public sector.

Table: 1: Summary of PASA pilot eAuction results

	Budget/ current baseline £m	Lowest tender prices £m	Lowest eAuction prices £m	Overall saving vs baseline £m %		eAuction saving vs tender price £m %	
IT Hardware	39.805	28.929	27.272	12.533	31%	1.656	6%
Food							
Frozen Vegetables II	0.235	0.224	0.223	0.012	5%	0.002	1%
Canned Grapefruit	0.143	0.127	0.109	0.035	24%	0.018	14%
Canned Pineapple	0.192	0.186	0.180	0.012	6%	0.007	4%
Rice	0.372	0.401	0.397	-0.025	-7%	0.004	1%
Frozen Potato	0.120	0.093	0.092	0.027	23%	0.001	1%
Frozen Vegetables III	0.097	0.099	0.098	-0.001	-1%	0.001	1%
Medical Products							
Wound Dressings	2.879	1.367	1.243	1.636	57%	0.125	9%
Vascular Therapy	6.635	5.647	5.319	1.317	20%	0.329	6%
Eye Pads	0.312	0.222	0.061	0.251	81%	0.162	73%
Small diagnostic equipment	0.814	0.656	0.532	0.281	35%	0.123	19%
Suction Tubing	1.240	1.115	1.094	0.147	12%	0.021	2%
Haemodialysis Consumables	1.583	1.272	1.270	0.313	20%	0.002	0%
Total – All Auctions	54.426	40.337	37.888	16.539	30%	2.450	6%

General Remarks on the presentation of eAuction benefits

Before considering detailed issues arising from these figures, it is useful to consider some more general matters related to the interpretation and presentation of the results. The March 2005 ‘eResults’ document is particularly striking in this respect. The document is clearly intended to promote the spread of a range of eProcurement approaches throughout the NHS, with the preface referring to the approaches presented in the document as ‘trail blazers’ with readers asked to “invest in similar systems to deliver savings for your organisation” (p1).

eAuctions are presented first in the document, and the two page feature begins with the heading:

“e = £270m off the bottom line”

The second page on eAuctions includes a large picture of stacks of coins, together with the following comment:

“When the level of savings NHS PASA achieved – over £16m with 13 contracts – are on offer, e-Auctions have got to be a top priority.” (p3).

A first point to note about the numbers is that the level of savings presented in the later comment – over £16m – greatly exceeds the savings identified in the earlier, June 2004 PASA document as it relates to eAuctions. As can be seen in Table 1, whilst the overall saving when the eAuction prices were compared to ‘baseline’ prices was found to be over £16m (£16.539 in the table), only about £2.5 million of this was identified as stemming from the ORAB stage of the process itself. The vast majority (85%) of the identified savings of over £16m, were attributed to the normal tender process that had been undertaken prior to the use of online eAuctions (the ORAB stage). The suggestion – presented in the *eResults* document - that £16m of savings resulted from the use of online eAuctions (ORAB) is therefore based on a flawed interpretation of the PASA results (even if one were to simply take those results at face value).

The opening heading for the eAuction section - “e = £270m off the bottom line” – is also highly problematic. The figure appears to have been calculated as follows: the average ORAB saving when compared to the tender price levels was found to be 6% (as can be seen in Table 1 above); the £270m figure is generated by assuming that eAuctions could deliver this level of saving on 30% of the NHS’s £15bn of non-pay revenue spend³⁵.

To put this in some kind of context, it is worth noting again that the total ORAB savings identified by PASA were £2.45m, and – as can be seen in Table 1 – about £1.7m of this was related to one product: IT hardware. The identified percentage eAuction savings varied significantly across the other products, with the lowest at 0%, and the highest at 73%. The 73% saving level achieved for ‘Eye pads’ – which was well above the next highest saving level identified (19%) – raises obvious questions concerning what gave rise to such a substantial level of savings in that particular case. Whilst this issue is not discussed in the published material, it is not credible to expect this level of saving to be sustained or repeated.

This point is recognised at least in places in the June 2004 PASA report on the Pilot eAuctions, which includes the following comment:

“The maximum saving achieved through eAuction, at 73% was a very significant gain for the NHS. However, it did represent an exceptional result among the pilots. It is more reasonable to expect eAuction to deliver 6% savings first time round, and potentially much lower savings when the same products are auctioned for a second time.” (p12)

³⁵ Details from p12 of: NHS PASA (June 2004) NHS PASA eAuctions Pilot Report - *eAuctions: enabling the NHS to deliver better value from its supply base*

The final part of the comment – that savings could be potentially much lower when the same products are auctioned for a second time – indicates at least some sensible tempering of expectations. However, in line with the discussion of lessons from the economics literature above, the likely level of savings may be reduced by familiarity with the eAuction arrangements more generally, with experience of eAuctions related to one type of product impacting on supplier conduct in other product areas.

What is perhaps most striking about the £270m figure, is that it suggests that it would be desirable to vastly extend the use of online eAuctions beyond the scope of the pilots, to include one third of all NHS procurement. This intention to substantially extend the scope of online eAuctions is clearly highlighted in places in the May 2004 PASA document, where, for example, it is stated that:

“It is also becoming clear that different rules fit different circumstances, and the NHS has only scratched the surface in terms of the potential. This should enable a wider scope of procurements to include eAuction than previously thought possible” (p12); and that,

“NHS trusts must be encouraged to adopt this new approach in procurement” (p4)

It is to be expected that the pilot online eAuctions sought to focus on more straightforward product types, where online eAuctions were thought most likely to generate positive results. Leaving aside the difficulties that may have arisen in relation to these initial exercises, it is clearly not a straightforward matter to assume that the same approach could be applied successfully across a very substantially broader range of supplies. As has been emphasised throughout this report, the detailed context related to a given product/service will have substantial impact on the likely desirability of different procurement approaches. It is in no sense clear that the assumption underlying the £270m figure – that substantial gains could be achieved by one third of NHS procurement being sourced by eAuction – is based on any kind of detailed assessment of the specific conditions related to the substantial range of products/services concerned.

It is also far from clear that – in practice – PASA consider a substantial extension of the usage of online eAuctions as either likely or desirable. Rather, online eAuctions would appear – quite sensibly – to be being considered as one procurement option that can offer benefits in a limited range circumstances. It is notable, for example, that contrary to what might have been expected given the presentation of the £270m figure, the use of the ORAB by PASA following the pilot has been relatively modest, with in the order of 20-25 eAuctions having been (or due to be) conducted in 2004/05 and 2005/06.

It would appear, therefore, that there is something of a disjunction between what might be referred to as the ‘promotional’ material on the benefits of online eAuctions, and the approach being taken to the assessment and use of the ORAB stage in practice by PASA.

A propensity to present unrealistic expectations about the likely scope and extent of the desirability of eAuctions is also evident in OGC documents. Thus, for example,

the Spring 2005 OGC guide to eProcurement for the public sector³⁶ - referred to as a 'blue frog' guide - includes the following comments:

"Of the 40 recorded eAuctions to November 2004, for a diverse range of goods and services, recorded savings were averaging an impressive 22%" (p22); and,

*"One eAuction saved 65% on £3.5m spend in one council. You can't **not** do it!" (p40, emphasis in original).*

Given the extent of these claims, it is somewhat ironic that the OGC's first 'blue frog' guide to eProcurement for the public sector had the subtitle: "eProcurement: Cutting through the Hype"³⁷.

Whilst we have not examined the detailed data that underpin these specific claims, we consider that it is simply not credible to suggest that savings of this level are likely to be achievable more generally. We would note that this view was not contradicted in the interviews that we conducted in the course of preparing this Report.

Detailed comments on the PASA pilot eAuctions data

The above comments are founded on an assumption that the PASA data presented in Table 1 can be taken as given, made so as to better focus attention on more general issues of presentation. However, there are a number of reasons to expect that the data in Table 1 overstate the extent of gains achieved in the pilots, potentially to quite a significant extent.

An immediate difficulty concerns the baseline figures that are used, which are referred to as: 'Budget or Current'³⁸. As a general point, it is obviously the case that the overall identified gains are higher if the baseline figure is higher, and thus from a presentational point of view there would have been little incentive to begin a 'tight' baseline.

Another issue of importance stems from the fact that the pilot eAuctions explicitly sought to identify commodity-type products. It is to be expected that the supply of such products may be subject to increasingly tough competition, in particular from lower cost imports. This is a general feature with manufactured products that have commodity-type characteristics, and can be expected to generate downward pressure on supplier price levels irrespective of the procurement method used. It may be the case that the use of eAuction or eTender processes give rise to downward price pressure being exerted more rapidly than might otherwise be the case, in which case the benefits will have been achieved at an earlier date than otherwise. However, the attribution of the downward price pressure is a difficult matter to assess, and some care is needed when interpreting gains against previous year or budget figures.

³⁶ OGC (Spring 2005) A guide to eProcurement for the public sector

³⁷ Office of Government Commerce (2002) Guide to eProcurement for the public sector, eProcurement: Cutting through the Hype (blue frog)

³⁸ These baseline figures are based on price and volume data from existing framework agreements, or from an assessment of recent NHS spend data for the relevant product type.

The most important point, however, is as follows. The gains from the ORAB stage of the process shown in Table 1 have been identified as gains over and above the tender savings. However, as pointed out in section 4, the existence of the ORAB stage can be expected to have influenced bidding behaviour at the tender stage. Hence, in technical economic terms, the tender prices cannot be assumed to be *exogenous* or invariant to the introduction of the ORAB process.

This expectation was confirmed by interview material (see section 6) indicating that tender bid prices may be set so as to include a margin to allow for subsequent price cuts to be made should an ORAB stage follow. To the extent that this conduct occurs, then, it would clearly have the effect of raising the tender prices relative to what might have been expected if the option of an online eAuction was not included in the process, and thus it would tend to artificially inflate the identified eAuction savings.

We can go further than this in saying that *there is, in fact, nothing in the PASA results that indicates that the addition of an online reverse eAuction stage to the procurement process achieved any price reductions whatsoever*. Given the relatively modest difference between the tender and final prices for all cases other than the outlier (eye pads), the results are, *prima facie*, broadly consistent with the adoption of “aiming off” strategies at the tender stage, and hence with the Revenue Equivalence Theorem.

A final – and potentially major – source of difficulty with the eAuction savings figures is that they refer to a forecast of savings rather than actual realised savings. This is a highly material factor given the nature of the contracts being let. In particular, as was highlighted earlier, the eAuctions typically result in the award of a framework contract to a number of suppliers whose bid prices are then listed in the NHS-eCat or NHS Logistics Catalogue. The May 2004 PASA document calculates the eAuction savings on the basis of ‘eAuction prices (lowest)’, which it says refers to the ‘sum of the lowest auction bid prices for each lot’.

Given the way in which the contracts are awarded, it is not entirely clear how, in practice, this ‘eAuction prices (lowest)’ figure is actually calculated. However, the way in which the term is described clearly suggests that the lowest bid prices are used for the savings assessment. In any case, the key issue is that realised savings will, in practice, depend on the volumes supplied by each of the listed companies given their listed prices. These volumes will be determined by those making orders from NHS-eCat or the NHS Logistics Catalogue, and may not be closely correlated with the (explicitly or implicitly) assumed volumes used by PASA to generate the forecast level of savings (for example, higher priced products may be selected where there are considered to be relevant quality differences).

A further issue that was highlighted to us in the interviews was that some of the lowest price suppliers from the online eAuction process have experienced delivery problems, such that significantly higher levels of higher priced products were purchased, at least in some periods. The net effect of this kind of delivery problem on NHS purchase costs will clearly depend on the extent to which the incremental costs

of sourcing alternative supplies are potentially recoverable³⁹, and are in practice subsequently recovered, from the non-performing party.

The general issue here is that there would appear to be the potential for significant variations between the gains identified as stemming from online eAuctions as presented in the PASA documents (and summarised in Table 1 above), and a thorough *ex post* assessment of realised gains. Given the manner in which identified gains are used in other, ‘promotional’ ways, these issues are non-trivial.

6. Experiences with eAuctions in the health sector

The discussion in the previous section focused on published material available on the use of reverse eAuctions in the health sector, drawn from the PASA pilot eAuctions held in 2003/04. Consistent with the emphasis placed in that published material, we have centred attention on the direct assessment of cost savings claimed to stem from the use of reverse eAuctions.

In order to get a better understanding of some of the other specific contextual factors of relevance to the assessment of eAuction approaches, we have undertaken a series of interviews with people who have been involved, on both sides of the ‘market’, in procurement exercises that have included, actually or potentially, a descending price bidding stage. In particular, we interviewed representatives from PASA and from six healthcare product suppliers who had experience in relation to eAuction processes involving the following products:

- First aid dressings;
- Patient identity bracelets;
- Alcoholic hand disinfectant wipes;
- Small diagnostic equipment;
- Sharps disposal;
- Surgical dressings;
- Anaesthetic and resuscitation consumables;
- Suction tubing;
- Pacemakers⁴⁰.

In addition to having participated in NHS reverse eAuctions, it was discovered that some of the suppliers interviewed had also taken part in reverse eAuctions conducted by private healthcare providers. Since public/private comparisons are a standard source of performance information in economic studies, we took the opportunity to broaden our questioning to encompass this additional, relevant experience.

³⁹ PASA indicated that the terms and conditions of framework agreements include provisions related to delivery failures.

⁴⁰ This refers to a tender for pacemakers which included the option to go to eAuction. In the event, however, this option was not exercised.

6.1 Initial observations concerning supplier experiences

Before turning to more detailed issues, it is useful initially to make a few general observations with respect to the responses obtained by suppliers. A first point to note is that, *whilst it was clearly the case that there was a significant level of negative comment in relation to the use of reverse eAuctions for NHS procurement, the majority of suppliers interviewed were not at all averse to some use being made of ORAB procedures in relation to healthcare products.*

From one perspective, this may appear surprising. If, for example, the claims made for cost savings cited in the previous section were true, it is to be expected that suppliers would tend to be very hostile to the relevant processes. On the other hand, and as we have shown, the cited claims are based on flawed assessments, and are simply not credible on the basis of what is known about the economic properties of auction processes. Indeed, for reasons explained in section 3, the introduction of an ORAB approach can, in many contexts and compared with simple sealed-bid arrangements, lead to outcomes that are more favourable to sellers and less favourable to buyers. The nuanced responses obtained in the interviews are, therefore, consistent with the broader stream of evidence on the performance of reverse eAuctions.

Rather than encountering blanket criticism of the procurement processes adopted by PASA, we found that the key concerns and criticisms of suppliers typically related to a set of more detailed issues. These included:

- The manner in which procurement requirements had been *specified*;
- The manner in which competing bids had been *assessed*; and,
- The range of types of product for which an ORAB stage in the process might be considered appropriate.

These issues are considered in turn below.

It is notable that one area where we did not encounter generalised concerns or criticisms – i.e. concerns going beyond the specific points to be discussed below – was the degree of professionalism with which the procurement process was managed by central PASA staff. For example, our notes from one of the interviews recorded the following (based on comments by a supplier that had taken part in PASA and private healthcare group run eAuctions):

“Considered that the private healthcare group auctions were a ‘bit of a joke’, and that NHS PASA were highly professional by comparison.”

Given the existence of a general presumption that private sector management is more effective than public sector management, the comment might reasonably be interpreted as high praise.

This is not to say that all was considered to be well in the public management garden. Although it was not a matter that we explored in any depth, the responses indicated

potential problems when ORAB procedures were adopted on a more *ad hoc* basis by NHS buyers located away from the central procurement function. As indicated in section 5, on the basis of the claimed benefits there has been strong encouragement for more widespread adoption of reverse eAuctions throughout the public sector. Particularly given the spurious nature of the claimed benefits, the dangers of pressurising inexperienced buyers to adopt procurement techniques that may be based on little more than based on novelty and fashion are obvious.

6.2 Product Specification Issues

As indicated, a major area of complaint for a number of suppliers was the manner in which products were specified in the procurement process. Thus, for example, one interviewee stated that:

“eAuctions are run by people with no clinical idea. They pull together products into commodity type equivalence, but this does not reflect what final users want. We really don’t know where they get their clinical input from.”

Scepticism concerning the manner and extent of clinical input in the product specification process was expressed by a number of suppliers. This, of course, raises one the most fundamental problems faced by procurement professionals in the NHS. The very nature of the organisation makes it exceptionally difficult to aggregate preferences. Similar problems arise in any large organisation, but private companies will typically have a much larger range of market signals to work with when, for example, assessing trade-offs between product qualities and prices. Whilst the later, tender stage of the procurement process itself is capable of generating greater information, particularly in relation to prices, a good deal of work must be done before the tender stage in determining what precisely it is that the NHS is seeking to procure.

In exploring these issues further, we found that, at least in some of the cases considered, the introduction of reverse eAuctions had been accompanied by what appeared to be relatively significant changes in the specification of product requirements. Thus, for example, we were told that prior to the ORAB exercise for suction tubing, there had been 46 variations of tube, and that the number of specified variations for the process had been reduced to 15.

Other interviewees also referred to the reverse eAuction process as having involved the introduction of a narrower set of defined product types than had existed previously. A specific problem raised here was that PASA reverse eAuctions had involved sets of what a supplier considered to be materially different products being treated, for the purposes of the process, as a single category. More generally, it was argued in some cases that insufficient attention was being given to what, at least from the supplier viewpoint, were considered to be material variations in quality among the products being offered.

A number of suppliers took the view that relevant quality variations were clearly recognised by final users in hospitals, and that the problems with the product specification process in the procurement exercise stemmed from the fact that the

relevant clinical preferences were not being properly reflected. Put at its simplest, there was a view that buyers were ‘out of touch’ with clinicians, and that relevant information was being ignored.

We have no very sound basis on which to evaluate this view. It is almost inevitably the case that information is lost in any ‘aggregation’ process, and that centralised purchasing procedures will lead to greater standardisation in the products bought. However, the real issue is whether this is taken too far. There are grounds for believing that, in the context of NHS organisation, highly decentralised purchasing, driven largely by clinical factors, might lead to excessive product proliferation, because buyers might fail to give sufficient weight to cost factors. The task is to get the standardisation vs cost balance about right.

In this context, it is also relevant to note again a feature of the PASA process that serves to mitigate the problem. Successful bidders get their products listed in NHS-eCat or the NHS Logistics Catalogue, but it is not mandatory for NHS purchasers to obtain their supplies via these electronic catalogues. If, therefore, there is a strong clinical preference for a particular product that is not listed, it is still open to the buyer to purchase directly from the seller.

Given the cost and convenience advantages of using NHS-eCat and the Logistics Catalogue, the significance of this ‘outside option’ should not be exaggerated. Nevertheless, it is a factor that would be relevant to any detailed assessment of the problem under discussion.

Although we are not in a position to make an assessment of PASA performance in relation to product specification, we offer a number of observations on this major problem area:

- Product specification is a matter of the highest importance in procurement exercises. In another public policy context, we have had exchanges with a very major (UK) commercial organisation about its use of eProcurement. According to that organisation, about 90% of the benefits it obtained from the exercise could be attributed to being forced to think about precisely what it was that it wanted to buy (i.e. to improved product specification).
- This suggests that the major gains to be had in NHS procurement may lie in the upstream stages of the process (e.g. ‘spend analysis’) rather than at the downstream end. If this is correct, over-emphasis on ORAB techniques may be damaging, for at least two reasons: (a) diversion of resources to lower pay-off activity, and (b), since the feasibility of ORAB will frequently be limited by product characteristics (e.g. to simpler, more ‘commoditised’ products), it may distract attention from specification benefits that might be achievable across a wider range of product types.
- The suction tubing example provides a specific illustration of the relevant trade-offs. It appears that, in this case, PASA took the view that there was an inefficiently high level of variation in type of tubes used, and that savings could be made by defining a reduced set of tube types. Whether or not this

view is correct could only be assessed by a detailed evaluation that brings together the relevant clinical and cost information.

- It is to be expected that product standardisation might give rise to tensions between PASA and clinical buyers (as well as to the tensions with suppliers that were highlighted in the interviews). One relevant factor here is that final users may value the ability to use their selected product type, which they may have used for a number of years and with which they may be highly familiar. Another important factor is that final users can be expected to have a detailed understanding and experience of products that they use, and thus of the importance of at least some particular product characteristics.
- Suppliers have registered significant concerns/complaints about the product specification process, and have pointed directly to clinical input as a problem area. This has been expressed in terms of a relative lack of *transparency* with respect to the processes by which clinical input into the product specification stage is managed. Thus, as indicated in the interview citation given above, a number of suppliers took the view that: “*We really don’t know where they [PASA] get their clinical input from*”. Thus, a lack of transparency appears to have been associated with a significant lack confidence in the product specification processes undertaken by PASA ahead of reverse eAuctions.
- Lying behind transparency points, however, is a more fundamental issue concerning information. Clinicians can be assumed to have relatively good information about product characteristics and performance. So too will suppliers, particularly where new, innovative products are being introduced (when they will often have the best information of all the groups). Somehow or other, this information has to be put together with relevant cost information, preferences established, and procurement decisions made. Given the dispersal of information (different groups know different things), the implication is that an efficient process will require ‘constructive engagement’ among all parties (clinicians, buyers, suppliers). In this, the lessons from the management literature on the importance of buyer/seller *relationships* are highly relevant, although the NHS faces additional complexity on account of the clinical dimension and its problematic interactions with commercial trade-offs.

Given this last point, a key issue that arises concerns the processes by which differences in information/view can be *mediated*. In particular, mediation processes can be extremely important for perceived levels of legitimacy. The point here is not that differences will necessarily be easily resolved (although that may sometimes be the case), but rather that there exists a process by which involved parties can have confidence that their concerns will be reasonably assessed, responded to, and where relevant addressed.

The interviews highlighted supplier concerns with respect to the manner in which their problems with reverse eAuction exercises had been handled. For example, one supplier said that there had been lack of adequate or timely feedback to a significant

concern that they had raised. Another expressed a lack of confidence in the process by which potentially beneficial developments in product characteristics and types will be assessed in future procurement processes. It was argued that this can act to undermine incentives to invest in product development activity. These are matters that, seem to us, to point toward the value of ‘constructive engagement’.

Whilst product specification issues are extremely important with respect to health sector procurement (as they are with procurement more generally), they have not been the central focus of this study, which has been on the ORAB stage of the PASA procurement and the claims that have been made for it. The point to make at this stage is that improvements in the product specification process are, at most, only tangentially related to the ORAB procedure.

Reform at the later stages of the procurement process can, of course, serve as a stimulus to improvements in product specification. However, for this purpose, a sealed-bid competitive tender (itself a form of reverse eAuction, at least in less misleading, more standard economic terminology) can be expected to serve at least equally well as, and arguably better than, an ORAB procedure in providing such a stimulus. One danger with ORAB is that, since it requires more precise specification prior to quality/price trade-offs being resolved, it serves to restrict the amount of relevant information that can be gained at the final stage of the bidding process, when ‘best prices’ are revealed.⁴¹ If this problem eventuates, use of ORAB can produce disbenefits for the product specification process which, given the economic importance of product specification, could dominate all other effects.

6.3 The Assessment of Competing Bids

The significance of price

A recurring comment in interviews with suppliers was that the PASA eAuction processes focussed too much on price at the expense of other relevant factors. The use of descending bid reverse eAuctions has clearly been considered by suppliers to have been associated with a significantly heightened focus on price in the bid assessment process, although views on causality were much less formed (did the introduction of eAuctions simply reflect an increased emphasis of the NHS on price, or did it inadvertently lead to greater focus on price than was intended by policy?).

As was noted in section 4, our understanding is that PASA select ‘successful’ bids from the eAuction process on the basis of the most economically advantageous tenders/offers. That is, price is not the only factor to be considered – other non-price factors will be taken into account, although the weightings may vary from case to case⁴². Furthermore, there are typically a number of successful bidders in each eAuction – the lowest bidder is not the sole winner.

⁴¹ For reasons given in section 4, a tender followed by ORAB can be expected to lead to ‘withholding’ of ‘best prices’ at the tender stage. Absent ORAB this bias is removed, and ‘best prices’ will be revealed *prior to* resolution of the relevant trade-offs, using MEAT criteria.

⁴² As noted earlier, changes in the OJEC procurement rules will mean that purchasers will soon have to specify, explicitly, the weightings to be given to the different criteria by which they will evaluate tenders. Whether the specified, nominal weightings will turn out to correspond at all closely to the

Part of the issue here may again relate to transparency. Even if PASA are, in most cases, not giving an excessive weight to price factors, the publicity given to claimed price reductions in the published documents could reasonably be interpreted as indicating a preoccupation with price. Compared with price effects, the possible benefits of competitive tendering on quality of products and services receive scant attention in this material.

Revisions to the OJEC procedures will mean that, in the future, the weightings given to price and other factors will have to be specified in advance, and this may serve to provide better information to bidders as to how offers are being evaluated. Tender assessment is not, however, a precise science and, even if it is stated that, say, 50% of the weight will be given to non-price factors, there may be doubts that this reflects the actual reality. Unless other factors are scaled numerically, the meaning of giving a 50% weighting to non-price factors will be ambiguous; and a requirement to give numeric values to each and every relevant factor could very greatly increase the administrative burden on PASA, and hence increase transactions costs.

Notwithstanding the uncertainties and ambiguities, we think it reasonable to infer that the much heralded eAuction processes that have been introduced into the NHS have signalled a heightened focus by buyers on price (as compared with the previous procurement arrangements that had been used for many of the relevant products). First, there is the emphasis on price reductions in the published documents. Second, an important aspect of the initial part of the process leading to ORAB has typically been some refinement in the definition of product requirements, which – as was indicated above – has tended to mean the definition of a substantially more limited set of product categories in a number of cases. Whilst non-price factors may still be of relevance when considering bids within a given category, there do appear to have been clear efforts to define products in a standardised or commoditised manner such that relatively direct price comparisons could then be made. By implication, the weight given to, say, quality of product factors must be low, since some quality variation options are simply eliminated *before* ‘best prices’ are revealed. Third, the terminology – reverse eAuctions – conjures up images of comparator cases (e.g. eBay auctions) where, since the product for sale or purchase is given, *price* is the only criterion used in evaluating bids.

If this inference is correct, it demonstrates again not only the difficulties in assessing the impact of any one particular aspect of the procurement process, such as ORAB, but also the inadequacies of the assessments ORAB to date. A change in objectives, such as an increased relative weighting on price, might reasonably be expected to lead to lower purchase prices *whatever the precise forms taken by later stages of the procurement process*. To attribute any such observed affect on prices, without further ado, to a contemporaneous change in procurement procedures is clearly an error of analysis: the counterfactual is incorrectly specified.

implicit weightings implied by actual decisions is a policy research question for the future. (see further below).

As is the case in relation to product specification, and for similar reasons, we are not in a position to assess whether PASA, in its MEAT assessments, gives appropriate weights to the various price and non-price factors that may be relevant in each individual case (and the appropriate weights will, of course, vary depending upon the nature and type of the product). Suppliers in their responses believed that the weightings were not always appropriate and that there was a bias towards over-emphasis on price and lack of emphasis on product/service quality issues. The following types of problems were cited:

- Lack of sufficient consultation with clinicians/health professionals in response to a company argument that the relevant products varied in quality (and hence health implications) and that more than one category of product should be specified.
- In a case that involved a product with a significant service element, feedback in a debrief that “*the outcome was simply price based.*”
- Following elimination of a product from consideration on quality grounds, and given that product quality had not been questioned elsewhere in the EU, the supplier asked for clarification, and only received what was considered an unsatisfactory response nearly a year later.
- Inadequate monitoring of the supply chain, whereby framework contracts were secured by low price offers but companies were subsequently unable to supply (ascribed by one respondent to lack of adequate resources at PASA).
- Prices that had resulted from eAuctions lead to a situation where commercial viability of production required significant reductions in materials costs which in turn required the use of lower quality materials⁴³.

Any procurement process will, however, be imperfect, and what we cannot assess on the material available is whether or not such problems are occurring with a frequency that might be judged to be significantly above normal.

What we did find to be the case, however, was a significant gap between the way in which PASA professionals saw the procurement process, and in particular the ORAB stage of it, and the way in which it tended to be viewed both by suppliers and by those responsible for publicising the outcomes of reverse eAuctions. This suggests a gap between reality and perception that may, by and of itself, have adverse consequences.

Suppose, for example, that PASA are, subject to the difficulties of identifying clinical preferences discussed above, operating on the basis of MEAT criteria that afford substantial weight to non-price factors. If suppliers perceive that a much higher weight is being given to price, this perception will tend to alter their bidding behaviour. Faced with their own quality/cost trade-offs, suppliers will tend to downgrade quality (whether of product or service) in order to be able to offer lower prices. PASA will then, in effect, be fishing in a lower quality pool, with the possible

⁴³ This issue was discussed in Section 3 (p11).

result that products/services with the most favoured combination of quality and price will simply not be offered. Lack of investment in product-quality improvements would be just one potential manifestation of this general problem.

Quite apart from any issues concerning the appropriate weighting of price and non-price criteria for different types of product, there is, therefore, potential benefit to be had in developing better understanding of how procurement decisions are actually made. *Whatever* the chosen balance between price and quality, failure to communicate that balance, in a credible way, to market participants, is likely to lead to biases in bidding behaviours that will, ultimately, be to the detriment of the buyer. And one of the concerns about the claims made for ORAB, which have been assessed in section 5 above, is that they appear to be misleading in relation to the way in which PASA actually makes decisions. Thus, whilst the claims might simply be dismissed as having a status approximately equivalent to the proposition that “the moon is made of green cheese”, in this case, on the basis of the perceptions revealed by the interviews, it appears quite possible that they could have consequences for commercial behaviour that are adverse to the interests of both suppliers and buyers.

Assessing non-price factors

As stated, increased emphasis on price as a purchasing criterion is not in itself necessarily problematic. It may, for example, be the case that a purchaser takes the view that the current level of product quality is unnecessarily high, and thus that, for example, material cost savings could be achieved without prejudicing clinical requirements. The key issue is not, therefore, whether increased pressure on prices results in a lower level of quality *per se*. It is rather, whether increased pressure on prices results in *unwanted* (by the purchaser) reductions in quality.

In operational terms, two key factors that need to be considered are the initial determination of quality requirements, and the means by which the delivery of this required level of quality can be economically managed. In terms of this latter point, key considerations include the cost and likely effectiveness of quality control procedures, and the cost of variations in quality level.

There are clearly a wide range of product/service differences that can be understood as related to ‘quality’ when assessing alternative bids, including such matters as the likely flexibility and reliability of delivery options. Some of these may be designated as *ex ante* differences, as, for example, when there are given differences in the characteristics of the products being offered. Other differences occur *ex post*, in which case the price outcome may subsequently affect the quality of product/service supplied. In both cases, there will often be informational asymmetries between buyer and seller with respect to relevant quality variables, but this asymmetry tends to become more intense in relation to *ex post* quality determination. As explained in Section 3, the problem of maintaining quality *ex post* tends to give rise to (what in economics literature are described as) ‘incomplete’ contracts, in which not all requirements are specified at the outset.

Standard commercial responses to the informational limitations that give rise to incomplete contracting include the use of signalling and screening devices in order to

seek to classify parties in relevant ways. Thus, even very simple eAuction formats and rules, such as those to be found on eBay, tend to feature *reputational* mechanisms (in the eBay case contracting parties are scored by feedback mechanisms). Another signalling/screening device, relevant in the current context, would be accredited management systems covering particular parts of the supply chain. The main point here is simply to emphasise that – for good economic reasons – non-price factors that can signal reliability levels with respect to future quality factors are frequently used in procurement processes.

Interviews with suppliers indicated concerns that PASA did not give sufficient weight to these non-price indicators of product/service quality. As already noted, one supplier considered that PASA didn't have adequate resources to properly assess the supply chains that underpin product offers, and stated that there appeared to be no weighting given to service history. Another interviewee cited a case in which three companies had each been awarded a framework contract in one of the reverse eAuction processes, without apparent recognition that all three sourced their products from the same factory in China.

Once more, it is difficult for us to do other than report these statements. As a general matter, however, it can be noted that “reputation” can sometimes be over-weighted, as well as under-weighted, in evaluation criteria. The most obvious point is that excessive attention to reputation can serve as a barrier to entry, since new entrants to a market, who might be able to match or beat established firms in terms of satisfying customer requirements, can normally be expected to have less of a reputation. Trying out a new supplier will, therefore, always tend to introduce more risk into outcomes, but such risk may be considered justified if there appears to be a reasonable prospect of a more favourable (to the buyer) outcome. Hence, whether or not there has been a tendency to under-weight reputational factors is a question that can only be addressed via highly detailed evaluation exercise, and, even in principle, it is not possible to settle the matter by reference to specific instances of ‘failure’ (i.e. cases where adverse consequences of risk eventuated).

Less ambiguously, we note that there does appear to be a potentially unhelpful lack of transparency with respect to the approach that is being adopted in NHS procurement to quality issues, particularly of the *ex post* variety. A more clearly set out approach to quality control and supply chain assessment issues, including in terms of how the relevant information is to be taken into account in the bid assessment process, would seem desirable. PASA could be asked, for example, to set out the approaches that to be adopted on these issues, and, even better, consult on the ‘draft principles’ to be adopted before finalising them. Further, such a development would be desirable irrespective of any views as to the most appropriate form of tendering/auction arrangements.

We note that, in line with a recommendation of the Healthcare Industries Task Force, the NHS PASA Centre for Evidence-based Purchasing was created on 1st September 2005. The Centre is intended to underpin purchasing decisions by providing objective evidence to support the uptake of useful, safe, innovative products and related procedures in health and social care, and in doing so to forge closer links between product evaluation and purchasing. This, together with other stakeholder consultation

group, may provide for opportunities to improve the levels of transparency and credibility of product specification and quality assessment processes.

Improving quality control and assessment would, of course, require extra resources, and more than one of the interviewees expressed the view that PASA was under-resourced. Here we confront a classic problem: in order to improve public sector effectiveness, there are at least some areas of activity in which extra expenditure is required, but this goes against the grain of broad, “cost cutting agendas”. We speculate that this may be part of the spell exerted by ‘magic bullet’ reforms, such as the introduction of ORAB. Unfortunately, there are no ‘magic bullets’, and the dull reality is that the development of more effective procurement processes will take time, skill and resources. Given the particular problems of NHS procurement, including those arising from the difficulties of integrating clinical and commercial factors, it will be a hard task. Ultimately, however, the pursuit of realistic possibilities is to be preferred to the pursuit of illusions.

6.4 The desirable extent of ORAB across different product types

The majority of suppliers interviewed were not averse to recourse to ORAB in relation to some NHS requirements for healthcare products, though they considered that the scope for the advantageous use of such procedures was relatively limited.

The reasons for this view derive largely from problems already discussed in relation to product specification and the relevance of non-price factors in the assessment of competing bids. Thus, it was typically argued that, where quality was an important consideration and products were differentiated in terms of quality, the use of ORAB would, almost inevitably, be problematic. Other issues that were emphasised included the importance of buyer-seller relationships when there was a significant service component to product provision, and/or where product development was a key feature and involved significant interaction with product users.

There does not appear to be any major difference in views between PASA and suppliers on these points. As discussed in section 4, ORAB procedures are currently being implemented in only a small minority (less than 10%) of cases in which framework contracts are awarded for products sold via the NHS Logistics Catalogue – which itself accounts for less than 20% of NHS non-pay spend – and there is no obvious upward trend in their adoption. The ‘prospective’ expenditures indicated by the reports dealing with PASA pilot auctions, discussed in section 5 above, also indicate a relatively modest level of activity.

In addition to making the general point, however, suppliers appear to have little confidence with respect to the processes by which a particular product type is selected as suitable for ORAB, or by which the product requirements are then defined and competing bids assessed. In particular, all of the suppliers that were interviewed indicated that PASA were overly focussed on short term cost savings, and that – given this – other factors were being given a relatively low priority.

As indicated in Section 5, these concerns are clearly not assuaged – and may indeed have been encouraged – by published documents claiming very substantial potential

gains from a widespread extension of the eAuction approach – note, in particular, that the £270m potential saving referred to in PASA’s *eResults* document was based on reverse eAuctions being used for one third of all NHS procurement – a very substantially higher fraction than now. Whilst the claims of potential gains are manifestly detached from reality, that fact in itself is not likely to be conducive to the development of supplier confidence in the procurement process, or to good supplier/buyer relationships more generally.

6.5 ORAB in the UK private health segment

Three of the suppliers had experience of reverse eAuctions conducted by private healthcare groups, covering four procurement exercises. The experiences of these are potentially of interest in providing some comparative evidence. Below, we simply report comments on these exercises from interviewees, and then make one or two observations on the relevance of these experiences for NHS procurement.

Case 1

A smaller exercise than those conducted by PASA, in which there was more dialogue between the buyer and potential suppliers ahead of the reverse eAuction stage than in the PASA process. ORAB was more just a final stage of a process than the main focus of attention.

Case 2

Details were provided on a Friday for bidding the following Wednesday. More than three months later the outcome had not been announced.

Case 3

There was a pre-tender meeting where it was clear that the person in charge of the reverse eAuction had no idea what the relevant products were or what they were to be used for.

Case 4

The contract was very small in value (circa £10k). Not aware of any similar exercise being conducted since.

The general view given was that reverse eAuctions have been used to only an extremely limited extent by UK private healthcare groups. We infer that the instances referred to reflect a ‘toe in the water’ or experimental approach, to which no very significant resources had been devoted, and note that this might account for the more general comment – to the effect that the exercises have been “*a bit of a joke*” – of one of the interviewees.

If this is correct then, although PASA use of ORAB has itself been fairly limited, and far less than might be inferred from public sector documents urging its adoption, it is nevertheless well in excess of the level of similar activity in the private sector. And

this observation gives further ground for scepticism of the likely contribution of ORAB to better public procurement. If the benefits were so large and so obvious as its public sector advocates claim, why is it the case that ORAB is not adopted much more widely for similar purchases made by private healthcare groups?

7. Conclusions

It will be clear from the foregoing discussions and assessments that there is considerable confusion about the use of reverse eAuctions in public procurement. The confusion is not restricted to matters such as the potential pluses and minuses of this type of procurement arrangement: it extends as far the meaning of the term “reverse eAuction” itself.

As explained, a sealed-bid tender process, of the form familiar in very many competitive public procurement exercises, is itself just as much a reverse auction as a descending price bidding process. If the tender process is itself based on exchange of information/documents electronically, then it too is a ‘reverse eAuction’. Public procurement officials may, therefore, legitimately claim that they have been running reverse auctions, and subsequently reverse eAuctions, on an extensive scale, for many years now.

The point concerns more than mere labelling. “Reverse eAuctions”, in the sense of on-line, descending price bidding arrangements, have been promoted as something new, exciting and different, offering the potential for large cost savings for buyers. Recognition that the term is being used to denote one type of auction arrangement is a first step in understanding that such claims are, at least if made generally, simply not credible.

Analysis of, and experience from, auction processes indicates that there is no reason to expect that, relative to sealed-bid tenders, descending price bidding arrangements will lead to generally lower prices. Indeed, there are a range of circumstances in which, quite apart from any considerations of relative administrative costs (online bidding tends to add to these costs), they can be expected to be inferior to sealed-bid arrangements, even if the buyer is interested only in price. Of particular note are the problems that arise when one or more bidders has/have known competitive advantage: weaker competitors are discouraged from participation, and, as a result, stronger competitors are able to win business at prices higher than might otherwise be the case.

Such problems may not always be immediately apparent at the outset of introducing “reverse eAuctions”, since sellers new to the process may fall victim to the winner’s curse, or more sophisticated sellers might be willing to bid low initially precisely because they can foresee the future returns from market power that will result. Nevertheless, the cumulative weight of analysis and evidence gives every reason for being sceptical of ‘magic bullet’ solutions and for proceeding with caution in auction design.

In any event, the processes established by PASA for the procurement of medical equipment for the UK NHS are very different from, and a good deal more complex,

than the kind of reverse eAuction now familiar to many on internet sites such as eBay. The contracts let by PASA are framework agreements, not purchase contracts: actual purchasing decisions are made by relevant units within the NHS. If a popular analogy is to be used, PASA is closer to offering supermarket ‘shelf space’ for a range of products, in that the effect of a framework agreement is to secure a listing in NHS-eCat or the NHS Logistics Catalogue.

Further, the bidding arrangements are sequential: first there is a sealed-bid tender process, followed by an optional on-screen bidding process. On figures that we have been given, over 90% of cases do not go to the second stage, and there seems to be no current trend for this percentage to decline substantially. That is, on-screen bidding is used only in a small minority of cases.

In relation to the various claims for large cost savings achieved as a result of the introduction of “reverse eAuctions” (i.e. on-screen bidding processes), we find that these too are not credible. It was striking that, during the course of our research, we did not find anyone else who believed the claims either. Many of the projected benefit numbers are at variance with what is known about the effects of auction design in other contexts. The methods used to arrive at the numbers were often vague and ambiguous, and where they were clearer they were manifestly flawed. We do not think that they would long survive rigorous scrutiny, whether in the form of a suitably detailed Regulatory Impact Assessment – with baselines and options properly specified and explored – or of an external audit by a body such as the NAO.

None of this is to imply that there have not been significant advances in procurement effectiveness, and that there have not been areas where purchase prices have fallen substantially. We do not, for example, doubt the value of eProcurement in general: modern communications and IT offers a range of opportunities for buyers, in terms of speed and the ability to process large quantities of data. It enables buyers more easily to search out and communicate with new potential suppliers, and to increase levels of participation in competitive tenders. In general terms, economic transactions costs are reduced.

What is inappropriate is to attribute trend improvements in procurement to the adoption of on-screen price bidding. Similarly, developing competition from East Asia is putting downward pressure on manufacturing prices generally, including the manufacture of medical equipment, but it would be wrong for buyers to attribute the resulting price reductions to their own skill in introducing internet auctions, and equally wrong for disgruntled sellers, under pressure from the new competitors, to do the same.

At one level, it might be argued that the current apparent fashion for “reverse eAuctions” is of little consequence. If public relations departments wish to claim a fine new set of clothes, those with eyes to see can simply get on with their business, undistracted. PASA can get on with its business of incrementally seeking to achieve improvements in value for money, in a highly complex context where even getting decent sight of clinical valuations of product/service quality in a budget constrained environment is a formidable challenge. Suppliers can get on with the business of developing new and better products, and at getting costs down.

One danger, however, is that those who are less well informed may well be misled by the grandiose claims that have been made. Individual buyers in the NHS, located away from the main centre of procurement expertise may be tempted by “novelty and fashion” to spend rather more of taxpayers’ money than they rightly should. Sellers may be discouraged from product development and innovation by false beliefs that price is all that matters to NHS buyers. Longer term buyer/seller relationships, which are universally agreed to be of great importance for complex products and services, may be damaged if confidence is lost. In short, ‘spin’ can be costly.