
An Open Letter[†] to the Commercial Secretary to the Treasury: Trouble Coming, Easily Avoided

The Danger

The UK needs to borrow a lot of money in financial markets. The precise numbers will depend on matters to be announced in the forthcoming special budget, but, at best, the borrowing requirement will be huge. That doesn't have to be terrible: for many years Greece was able to borrow from the markets, partly because market participants believed that other market participants would lend at the prevailing cost. Then, for reasons that don't matter here, market participants stopped believing this, and within a few months default went from being unthinkable to being widely thought inevitable.

That change of belief does not have to happen in the UK. Indeed, the primary purpose of the new government's keenness on budget reduction is to reduce that probability. But accidents can also be generated within markets, and such accidents can self-fulfillingly cause accidents in the real economy. There is such an accident primed and waiting to happen in the gilt market: a failed gilt auction (such as that on 25th March 2009) could cause or contribute to a ratings downgrade. Fixing the auction rules would, at worst, cost nothing, and might have negative cost—that is, the fix might be profitable even in non-stressed situations.

Three years ago very few people were worried about sub-prime CDOs. Today very few people worry about whether the gilt auction mechanism contains a danger that is both hidden and serious. That is not a good reason to ignore the problem. Please, give this proposal some attention, and demand answers. If the Debt Management Office has a coherent explanation why this proposal is flawed, have the DMO publish that explanation. And if the DMO doesn't, have the DMO implement it—urgently. Please do not allow, on your watch, debt management to contribute to a downgrade.

The current rules

Auctions of conventional gilts are currently conducted as follows. Announced in advance are the details of the gilt to be sold, and the amount to be sold—say, £3bn. Just before the auction deadline the gilt-edged market makers (the GEMMs) submit their bids. The DMO's computer sorts these bids by price. The cut-off is then found, such that quantity of bids at or above the cut-off is \geq £3bn. All bids above the cut-off are filled in full; some fraction of each bid exactly at the cut-off is filled; all bids below the cut-off are rejected. Announced on the wire services are the cut-off price, the proportion of bids at the cut-off that are accepted, the highest and average prices of the accepted bids, along with the quantity of bids received.

GEMMS are also allowed to make non-competitive bids, which are filled at the average price of the accepted bids; and there are special arrangements for private investors buying up to £½mn.

Before explaining what is wrong, it should be acknowledged that this isn't terrible. Most of the time, it works tolerably well. And, excepting the GEMMs' non-competitive bids, it still resembles the system introduced by the Bank of England in April 1991.

[†] This letter is also available at www.jdawiseman.com/papers/finmkt/20100524.html

The Problem

Consider the position of a ‘lonely’ bidder, that is, a bidder at an auction that has received too few bids. Being one of few bidders, all of that bidder’s bids will be filled. And after the auction the world is then told that there were too few bids, and the price falls. Thus the lonely bidder is punished.

On 25th March 2009 there was an uncovered auction of 4¼% 2049, at which too few bids were submitted. And indeed, on the announcement of the result, at which bids averaging £95.24 were filled, the price promptly dropped to £93, before recovering to about £94. In that March 2009 auction, those foolish enough to bid promptly lost a total of about £20mn (valuing the 2049 gilt at £94). So if one believes that others won’t bid, or if one even believes that others might believe this, the optimal strategy is to bid low or not at all. This is not an incentive that the Treasury should be creating.

And even if a possible bidder doesn’t believe this, traders know that they might be mistaken—sometimes auctions don’t go well, receiving only just enough bids, or at surprisingly low prices. When I sat on a gilt dealing desk, I estimated that this risk lowered GEMMs’ bids by an average of 0.1% to 0.25% of the sale price, depending on the distribution of maturities for sale. When the government is to sell over a hundred billion pounds of gilts per year, that small percentage is a worthwhile quantity of money.

The Solution

The solution is to change the rules by which auction are conducted, such that:

- It is guaranteed that the whole auction will be sold, at a price that cannot be worse than slightly below the market price;
- That these new rules entail as little risk as possible for the market makers, such that they are still willing to participate.

The reduction in the market makers’ risk would have the happy side effect of increasing the average sale price.

These rules would work as follows. Don’t sell a single lump of £3 billion of gilts. For the market to absorb so much comfortably, each market participant needs more information about how much other market participants would be willing to pay. So instead such auctions should be split into smaller pieces. A £3bn auction should be split into forty ‘auctionettes’, uniform-price, of £75 million each. These auctionettes, conducted electronically, would be held one minute apart. The 39-minute duration of the auction would be short enough to have the undivided attention of investors, but each auctionette would still be small enough to be absorbed easily.

Such a fast pace of sale means that the seller’s process must be entirely automated. But the Treasury would wish to be protected against an auctionette having a freakishly low clearing price. So each auctionette must be subject to a minimum price, derived by a formula calculable by computer. This minimum price would be the clearing price of the previous auctionette, minus some small quantity fixed for the auction (equivalent to 0.01% of yield, which for a 40-year gilt is about 20p). The first auctionette would need a special rule to determine its minimum price: five minutes before the auction the DMO would ask six GEMMs for their estimate of the current bid, and would use the third highest of these, the minimum price being 0.02% of yield above this.

And the whole of every auctionette will be sold. If there are n wholesale GEMMs, then each GEMM that bids for less than one n^{th} of the auctionette would be deemed to bid for the

shortfall at the minimum price of that auctionette. So if each auctionette is £75mn, and there are fifteen GEMMs, then a GEMM not otherwise bidding at an auctionette would be deemed to bid for £5mn at that auctionette's minimum price. This is an irrelevantly small risk for a GEMM, which might occasionally buy trivial quantities of extra gilts at a slightly cheap price. But this irrelevantly small risk for the GEMMs eliminates the DMO's risk that the gilt might be incompletely sold, and hence eliminates the possibility that rating agencies might observe the UK failing to fund itself.

From time to time there would indeed be a small number of auctionettes receiving too few or even no bids. This would be entirely ordinary, and not a cause for market instability, just a small fall in price and a resumption of bidding. Other than gilt traders, nobody would care.

So consider the position of a GEMM that knows that nobody else will bid. If that GEMM bids for £5mn (one fifteenth of £75mn), at a sensible price, it will be filled at the clearing price for the auctionette, being the minimum price. And if the GEMM doesn't bid, then that GEMM will be filled in the same quantity at the same price. Thus bidding a sensible price for a small part of the auction becomes riskless. (This is part of the reason that each auctionette is uniform price.) Further, because £75mn is a fairly small quantity of gilts, market makers could comfortably bid for the whole of each auctionette. Those who do bid for the whole auctionette would protect themselves against buying at an auctionette that is subsequently seen to have gone badly. These are incentives the Treasury should be creating.

Recall that the danger with the current auction mechanism lies partly with the information published after the auction. By publishing information about the number and distribution of bids, the DMO makes possible a high-priced auction that is deemed to have gone badly (in the sense of a low volume of bids). This danger is eliminated by keeping to a minimum the information published. The only information released after each auctionette would be the clearing price, and, derived from this, the minimum price of the following auctionette. Note that a bid-price auctionette would require the publication of the average accepted price—this is the other reason that each auctionette is uniform price. Redundantly, if auctionettes after the first are not of uniform size, there could be a reminder of the size of the next auctionette.

But what about bids at the cutoff? Under the current system some percentage of each bid exactly at the cutoff is filled. This percentage could contain some information about the distribution of bids, and it is possible that the market will interpret some distributions as being better and some as being worse. So this percentage should not be published. But some bidders may well have bid for multiple units at the lowest accepted price, and so by observing the proportion of their own bids that were filled, will have an estimate of this percentage. This is avoided by a slightly different handling of bids at the cutoff. A bid at the cutoff is chosen at random. If possible, the whole bid is filled and the process repeated. If not, the bid is partly filled and the process ends. Thus at most one bid will be partly filled, and the proportion of this bid that is filled contains no information.

Why Hasn't This Already Been Done?

Why hasn't this already been done? At a presentation[‡] given at the UK DMO on Friday 6th February 2009 the author described this auction mechanism. The chief executive of the DMO then agreed that the current system punished lonely bidders; that this is dangerous; and that auctionettes would remove this danger. It was not agreed that auctionettes are the best possible solution, but there was verbal consensus that the proposed change would be an improvement.

[‡] Available at www.jdawiseman.com/papers/finmkts/20090206_dmo.html

The DMO's reply to the consultation, *Supplementary Methods for Distributing Gilts: Response to Consultation*, published by the DMO on 18th March 2009, commented:

22. One respondent advocated issuing gilts by splitting each auction into a series of multiple 'auctionettes', each of which would be held one minute apart. The advantages of the proposal, it was suggested, would be to improve the price discovery process and reduce the execution risks faced by both GEMMs and the DMO.

There was no explanation of the change of heart; no excuse for the inaction. The author's guess is that the minister was focussing on the immediate crisis and the next election, and so not disposed to allow something new. Hopefully the new government will be more willing to look ahead to coming trouble.

Next steps: what HMT should do

A suggested plan for the new Commercial Secretary to the Treasury:

- Show the DMO this letter. Ask whether the proposed auctionettes mechanism would be safer.
- Ask whether the proposed auction mechanism would, on average, generate a higher sale price.
- If either of these is conceded, instruct the DMO to effect the safer auction mechanism, with maximum speed consistent with thoroughness.
- If these are not conceded, ask for an explanation, and instruct that it be sent to me.
- Read my response and reach a final judgement.

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