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General Accounting Office
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Accounting and Information
Management Division

B-258225

August 25, 1994

The Honorable Edward J. Markey
Chairman, Subcommittee on
Telecommunications and Finance
Committee on Energy and Commerce
House of Representatives

Dear Mr. Chairman:

In your January 26, 1994, letter, you asked us to obtain information on (1) what the Department of the Treasury is doing to reduce the average 1-hour period between the close of auctions and announcement of results and (2) whether Treasury could expect to receive higher prices for its securities by reducing this time. In addition, you asked us to obtain auction participants' views on the effect that reducing auction processing time would have on their hedging¹ strategies and on the secondary market for Treasury securities.

In summary, Treasury has reduced auction processing time from 1 hour to 45 minutes since our last report on the auction process in April 1993.² However, in making further time reductions, Treasury is proceeding with caution to guarantee that its goal of ensuring accurate results is not jeopardized. We found no evidence that proves or disproves whether Treasury could expect to receive higher prices for its securities through a faster auction.

To determine what Treasury is doing to reduce processing time, we documented the current auction process by observing

¹ Hedging refers to minimizing the risk of loss on a financial instrument, such as a Treasury security, due to a downward movement in price. It is done by taking a position in a financial instrument, such as an option or a futures contract, whose price moves in the opposite direction of the Treasury security.

² Treasury Automation: Automated Auction System May Not Achieve Benefits or Operate Properly (GAO/IMTEC-93-28, April 27, 1993).

an auction, reviewing agency documentation, and interviewing auction personnel. We also reviewed plans for future enhancements of the Treasury Automated Auction Processing System (TAAPS) and interviewed responsible auction officials to discuss their plans to further reduce auction time.

To assess progress in reducing time, we analyzed the auction times for 73 auctions held between April 29, 1993--TAAPS' implementation date--and December 31, 1993, and compared them with how long it took prior to the advent of TAAPS. To determine whether Treasury could expect to receive more for its securities by reducing the delay and what effect this would have on hedging and the secondary market, we obtained the views of 10 economists from government, industry, and academia, including a former vice chairman of the Board of Governors of the Federal Reserve System. We also discussed these issues with senior officials from 17 organizations that participate in Treasury's auctions, including primary dealers and their customers such as banks, mutual funds, and pension plans. We conducted our review from October 1993 through August 1994, in accordance with generally accepted government auditing standards.

BACKGROUND

Treasury auctions (sells) debt securities--bills, notes, and bonds--to cover government shortfalls between expenditures and receipts and to refinance maturing debt. During 1993, Treasury raised about \$1.9 trillion through more than 150 regularly scheduled auctions. Given Treasury's large borrowing needs, a small increase in the price Treasury receives for its securities would significantly increase auction proceeds. For example, based on the amount raised in 1993, a price increase of 0.01 percent would increase auction proceeds by \$190 million.

In August 1991, under pressure of investigation by federal law enforcement authorities, Salomon Brothers--a large Treasury securities dealer--admitted to deliberately and repeatedly violating Treasury's auction rules during the previous 2 years. This disclosure threatened the public's confidence in this crucial market, the government's primary means of financing the \$4.7 trillion national debt. In the wake of Salomon's admissions, Treasury implemented TAAPS in April 1993 to improve detection of rule violations. However, we reported at that time that neither TAAPS nor any

other automated auction system has the capability to detect and identify collusion or fraud.³

Treasury also implemented TAAPS to make auctions faster and more efficient than the then existing paper-based, manual auction process by reducing the time between auction close and announcement of results. Consistent with economic theory, Treasury believed that reducing auction processing time should reduce the risk of price changes during this period and thus encourage auction participants to bid higher prices for Treasury's securities. Specifically, the delay between auction close and announcement of results subjects auction participants--some of whom make bids totaling billions of dollars--to the risk of unanticipated price movements during this time. Consequently, auction participants may lower their bids to reflect this risk. Conversely, should this delay be decreased, auction participants would be subject to less risk and theoretically may be willing to increase the price they bid for Treasury's securities. For these reasons, Treasury believed that automating the process to shorten processing time might encourage auction participants to bid higher prices for its securities.

TAAPS generally allows large auction participants--referred to as primary dealers--to electronically submit bids seconds before the auctions close. These dealers submit their bids to Federal Reserve Banks, which act as Treasury's fiscal agents for the auctions. Federal Reserve Bank staff, in turn, use the system to process bids. This includes (1) identifying and resolving incomplete or incorrect bids--commonly referred to as "questionable bids," (2) reviewing bids for compliance with auction rules, and (3) transmitting bid summaries to Treasury. Treasury then uses these summaries to calculate and announce auction results. We reported in April 1993 that prior to the implementation of TAAPS, Treasury took about 1 hour to process bids and announce auction results using the manual, paper-based process.⁴

STATUS OF TREASURY'S EFFORTS TO
REDUCE AUCTION TIME

Since the implementation of TAAPS, Treasury has reduced the time it takes to process bids and announce auction results.

³ GAO/IMTEC-93-28, April 27, 1993.

⁴ GAO/IMTEC-93-28, April 27, 1993.

Specifically, we reviewed the time taken to process 73 auctions between April 29, 1993, and December 31, 1993, and found that the average processing time was 45 minutes--a decrease of 15 minutes or 25 percent. These auctions ranged from 27 minutes to 63 minutes with Treasury bond auctions taking the least amount of time (38 minutes average) and note offerings taking the most (46 minutes). The 45 minute average included 24 minutes for the Federal Reserve Banks to perform auction duties while Treasury took about 21 minutes to calculate and release the results to the public.

We analyzed the auction process to determine why it was taking Treasury and the Federal Reserve personnel 45 minutes to process an auction. We also discussed with Treasury officials what they were doing to further reduce auction processing time. To reduce the 21 minutes needed to perform its processing steps, Treasury is currently developing enhancements to TAAPS to enable it to perform these steps electronically but cannot predict the exact amount of time that could be saved.

We found that the majority of the 24 minutes used by the Federal Reserve to process auctions was consumed with three tasks: enforcing Treasury's auction rules, resolving questionable bids, and correcting technical problems and human errors that delay processing. Treasury is beginning to test a procedure to expedite detection of rule violations but has no plans to reduce the time associated with resolving questionable bids and correcting technical and human errors.

Enforcing Auction Rules

According to Federal Reserve officials, enforcing Treasury's auction rules takes a large portion of the auction processing time. For example, Treasury prohibits any single entity or related entities (for example, subsidiaries) from obtaining over 35 percent of the securities auctioned in any particular sale so that a bidder cannot restrict the supply of securities, artificially drive up prices, and make extraordinary profits. Currently, in checking for violations of this rule, Federal Reserve staff manually scan bids on the system and rely on their knowledge of the relationships among auction participants to determine whether a bidder submitted bids, for example, under different names or through different dealers.

This can be a very complex and time-consuming task given the large number of participants bidding in the auctions. For example, in August 1993, one firm unexpectedly submitted 20

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bids through multiple primary dealers in more than one Federal Reserve District and also submitted bids directly in the auction, using at least five different bidder names. Treasury delayed the auction to ascertain the relationships of these entities to ensure that the 35-percent rule was not being violated.

Federal Reserve officials told us that assigning bidder identification numbers to auction participants and using TAAPS to automatically match related entities would help reduce this time burden by allowing auction personnel to identify potential rule violations almost instantaneously. During our work, Treasury began to experiment with this concept to help enhance its ability to enforce the 35-percent rule. Specifically, it assigned a bidder identification number to the just-mentioned firm that has numerous affiliates and plans to start using it during the next quarter. Treasury plans to analyze the results of the test to determine whether to expand the system to other auction participants.

Resolving Questionable Bids

Treasury officials told us that resolving questionable bids submitted by primary dealers also adds to processing time. Federal Reserve officials estimated that since TAAPS was implemented, they receive about one or two questionable bids per auction. These officials attributed the problem to the fact that primary dealers can override TAAPS' edits.

TAAPS currently edits primary dealers' bids prior to the submission and acceptance of bids. For example, TAAPS notifies dealers when they have entered a bid with a zero yield. However, Treasury allows primary dealers to override the edits so that these dealers can very quickly submit bids at the last second prior to auction close. Consequently, primary dealers may send bids to Treasury that are incomplete or have errors. These questionable bids must be resolved by Federal Reserve or Treasury staff before they can process auctions and announce results. For instance, the Federal Reserve would have to call the primary dealer to clarify that the bidder intended to submit a bid with a yield of zero.

Treasury and Federal Reserve officials indicated that reducing or eliminating questionable bids would help save processing time; however, they have decided not to eliminate the capability to override edits because primary dealers

(1) want to quickly submit bids seconds before auction close and (2) rely on Treasury to catch egregious errors just as it did under the manual paper process prior to TAAPS.

Correcting Technical and Human Errors

Treasury and the Federal Reserve also experience technical and human errors that delay auction processing. Specifically, for the auctions held between April and December 1993, Treasury and the Federal Reserve reported that they had experienced 38 problems during 23 auctions. The majority of the problems (24) were due to human error. For example, a dealer in transmitting bids for two auctions held on the same day, transposed the bids and submitted each in the wrong auction. On another occasion, Federal Reserve auction personnel inadvertently rejected a bid but later determined it to be valid. Examples of technical problems reported by Treasury and the Federal Reserve are (1) on one occasion, the computer terminals used by Federal Reserve staff to process auctions became inoperable due to a hardware malfunction and (2) on three occasions, dealers' terminals were not able to maintain their connections with the Federal Reserve Bank's computer system because of communications failures.

Our analysis of the 23 auctions showed that they averaged 5 minutes longer than the 45 minute average. Treasury and Federal Reserve officials told us that since they observe no pattern to the problems, Treasury will continue to resolve them case-by-case and thus has no plans to investigate these problems further.

HOW MUCH MORE TREASURY WOULD RECEIVE, IF ANY, IS UNCLEAR

We found that it is not clear how much more Treasury could expect to receive for its securities by further reducing the time between auction close and announcement of results. Although economic theory indicates that reducing auction processing time should reduce risk and thus encourage auction participants to bid higher prices for Treasury's securities, theory does not indicate the magnitude of the effect on prices. In addition, we found that there are no published economic studies that quantified this relationship. Further, Treasury market experts we spoke with had varying opinions on the effect of time on risk and prices. For example, some economists and auction participants told us that they believed intuitively that reducing time would increase the price Treasury receives,

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while others cautioned that reductions in risk and any resulting increases in proceeds could be negligible.

Auction participants told us that a reduction in auction processing time would likely have negligible effects on hedging or the secondary market because auction participants noted that they do not always hedge. They said that when they do hedge, the costs associated with hedging are relatively small.

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We discussed the contents of this letter with senior Treasury officials who agreed with the information presented. We are sending copies of this letter to the Secretary of the Treasury, the Chairman of the Board of Governors of the Federal Reserve System, and to other congressional committees. Copies will also be made available to others upon request. If you have any questions about this letter, please contact me at (202) 512-6418.

Sincerely yours,

Linda D Koontz

for Hazel E. Edwards
Director, Information Resources Management/
General Government Issues

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