Methods of sale of government securities via auction

Rapid development of the government securities markets in the developed countries and the emerging countries contributed to more intensive considerations and discussions with regard to the selection of the best government securities suction method.

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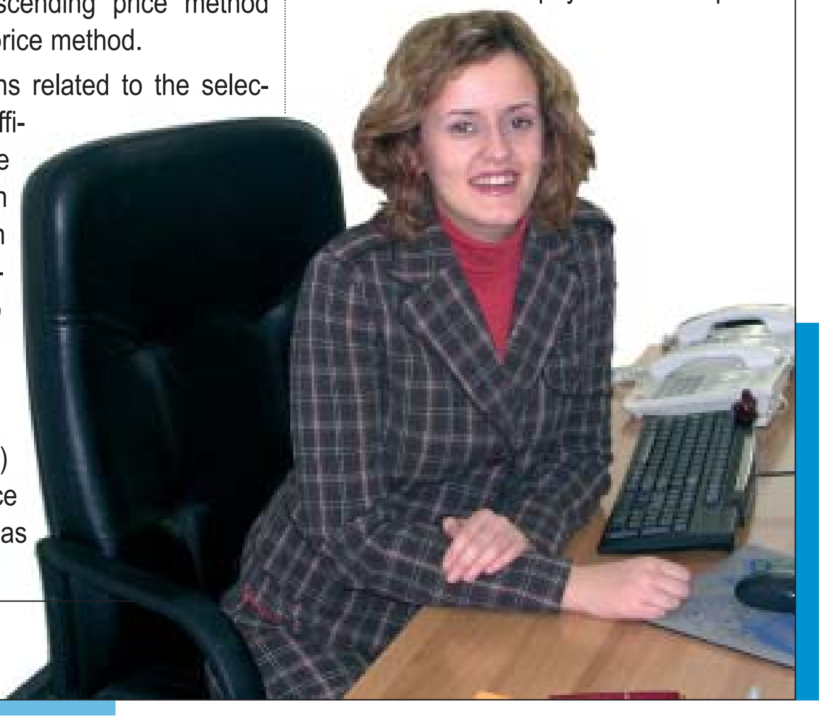
1. Introduction

The selection of the method of sale of government securities means determining the number of participants in the auctions of government securities, opportunity to expand the investor base, the costs for financing budget deficit, transparency of sale, etc.

The auction theory determines four basic methods of auction, those being the following: multiple price method, uniform price method, ascending price method and descending price method.

Most discussions related to the selection of the most efficient method, the method of auction are focused on the selection between the first two methods - the uniform price method (known as Dutch auction) and multiple price method (known as American auction, or discriminatory auction), while the other two are used most often for the sale of goods.

In both most frequently used methods, after the auction is completed, the bids are ranked in the same manner, from the top bid down. Winners in the auction are those bidders that submitted the highest bid in the auction. The sole difference is that in the multiple price method, the successful bidders pay the price they offered in the auction, while in the uniform price method all winners pay the same price



The viewes expressed in this article are those of the author and do not necessary represent those of the Ministry of Finance which is equal to the lowest successful price reached at the auction. However, although the difference looks insignificant, it has very important consequences on the potential investors with regard to their behaviour on the next auctions.

2. Theoretic arguments for the advantages of certain auction methods

Rapid development of the government securities markets in the developed countries and the emerging countries contributed to more intensive considerations and discussions with regard to the selection of the best government securities suction method.

The arguments in favour of the multiple price method emphasize the meaning of this method from the aspect of collecting consumer surplus by the issuer, i.e. the country. In given demand curve for government securities, the government takes the price that any participant in the auction is willing to pay. Under the uniform price method, the participants pay the lowest successful price, so the government takes this price regardless of the price the participant was willing to pay. Hence the question: why would some governments use this auction method, i.e. why would they waiver the consumer surplus and probably lose money?

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The answer to this question could be found in the main flaw of the multiple price method - it penalizes the successful bidders that paid higher price than the lowest successful price reached at the auction and that would probably lose certain amount when selling them on the secondary market where the trading begins at the average auction price. This risk, known as the "winner's curse" leads the auction participants to lower their bids for buying government securities and to set the price higher, thus affecting the revenues of the government. The "winner's curse" is greater in the underdeveloped and shallow markets with significant price volatility of government securities that could discourage potential investors to participate in the auctions and to reduce the competition on the primary market. Therefore, multiple price method is more suitable for the countries where the secondary market is more active, i.e. there is greater certainty of price-setting on the next auctions.

Relative advantages of both methods are usually assessed according to the following criteria:

1. Effective profit maximization - Theoretic views in relation to this criterion have still not reached consensus with regard to the superiority of one over the other method. According Bartolini and Cottarelli (1997) the uniform price method is better than the multiple price method from the aspect of profit maximization. They base their conclusion on the less susceptibility of this method to the "winner's curse", which leads to more aggressive participation in the auctions. Still, the assumption for certain superiority of the uniform price method is set only theoretically, with a restrictive hypothesis that there is no risk-aversion, no collusion, that only one good is for sale and that the bidders are homogenous (IMF, 1995).

2. Effect on the monetary policy and the financial sector - From the aspect of this criterion, theoretically, the multiple price method has advantages, meaning an incentive to secondary trading, lower volatility of average return of the auction (especially important so as to determine other interest rates) etc.

3. Enhancing competition and attracting more bidders in the auctions - According to Milton Friedman, the uniform price method reduces costs for collection of information and stimulates potential investors to participate in auctions. But the uniform price method is often criticized since it creates a possibility for speculations by greater participants which, knowing that they would pay the lowest price, place very high bids so as to crowd out other participants. On the other hand, multiple price method could foster competition, since each bidder knows he would pay the price he offered, and not the minimum price achieved at the auction. (WB - IMF, 2001).

To the end of overcoming part of the flaws of both auctions, theoreticians propose hybrid systems of auction. Spain is an example of hybrid system, where bids are ranked by descending order until the offered amount is exhausted, and afterwards, the successful bids within the spread between the minimum and the average weighted price are allocated under the multiple price method. Other successful bids within the spread are allocated under the uniform price method.

Current theoretic discussions prove that there is no superiod method. Both method have advantages and disadvantages and the selection of either depends on the market specificities, the demand structure etc.

3. Practical experiences from other countries

There are various experiences in the countries applying various types of auctions. The most frequently used example is the experience of the USA. After an active campaigh by the Nobel laureates Miller and Friedman, in September 1992, the US Treasury experimentally replaced the multiple price method with uniform price method for auctions of 2 and 5-year treasury notes. Although studies have shown that the shift to uniform price method creates an opportunity ti reduce financing costs, still, they do not suggest clear response for greater efficiency of either of the methods. Despite this, the US Treasury in 1998 decided to continue applying the uniform price method for all auctions of bills and notes, as well as for the US Treasury Inflation Protected Securities - TIPS (Binmore и Swierzbinski, 1999).

No precise limit could be drawn in the developing countries since these countries would be divided in two groups according to the auction method. For example, Indonesia and Saudi Arabia do not use auctions at all, while Corea, to the end of reducing the risk of the "winner's curse" has recently shifted towards the uniform price method. India has started applying the uniform price method, on an experimental basis, only for the auctions of government bills with 91-day maturity period. In Mexico, only coupon bonds are soled under the uniform price method (Mohanty, 2002).

Most of the countries in transition use the multiple price method, for example the Czech Republic, Poland, Hungary, Bulgaria, Slovenia and Croatia, use the uniform price method for auctioning treasury bills (source: Ministry of Finance).

Still the multiple price method is more frequently used in practise. In the sample of 42 countries, even 90% apply the multiple price method (Bartolini и Cottarelli, 1997).

4. Analysis of the government securities auction method in the Republic of Macedonia

Auctions in the Republic of Macedonia could be made under several auction methods defined in the Rulebook on the manner and the procedure for issuance and payment of government securities (Official Gazette of the Republic of Macedonia no. 1/05). The multiple price method is most frequently used in practise.

In the first stages of the development of the government securities market, the Ministry of Finance uses the multiple price method for auctions of government securities. In accordance with the 2003 Strategy for development of government securities market, the basic arguments for the selection of this method is maximizing the government revenues and the popularity of this method in this period, having in mind that the National Bank of the Republic of Macedonia has already used this method in the auctions of central bank bills.

The analysis of the results from the most recent auctions in 2005 show that the government does not face lower demand from the offered amount, due to the greater interest of the banks and clients to invest in treasury bills. But the results show new challenges for the government, especially for the fiscal policymakers.

Table 1: Spreads in the last four acutions for 3- and 6-month treasury bills as of 31.12.2005

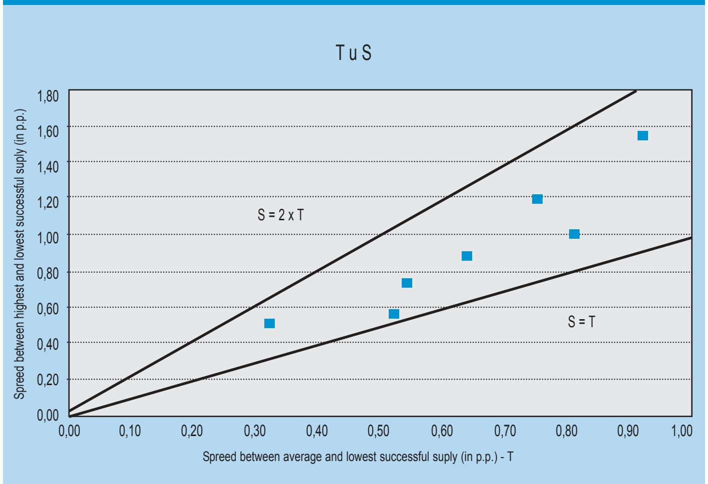
	3 month treasury bills				6 month treasury bills			
	TB 21-91	TB 22-91	TB 23-91	TB 24-91	TB 09-182	TB 10-189	TB 11-182	TB 12-182
Spread between the weighted and lowest successful price	0,05	0,06	0,06	0,11	0,13	0,43	0,02	0,09
Spread between the weighted and lowest successful interest rate	0,32	0,54	0,64	0,75	0,29	0,92	0,53	0,81
Spread between highest and lowest price	0,12	0,18	0,22	0,29	0,31	0,73	0,26	0,46
Spread between highest and lowest successful interest rate	0,51	0,74	0,89	1,19	0,69	1,54	0,56	1,00

Source: Ministry of Finance - Public Debt Management Department

The table shows that the spread between the weighted and the highest interst rate in the last four auctions of 3- and 6-month treasury bills in 2005 is still large. As an illustration, it is 50 or more base points. Good results in the auction are considered where this spread is 1 to 2 base points, and not 50 or higher (Mike Williams 2006). But such situation is typical for a country where the market is still developing.

Also the spread between the highest and the lowest interest rate is still big and variable. Although there is a positive relation between the two spreads of interest rates, still, the equation S=2*T is not fulfilled, i.e. the spread between the average and the highest interest rate T should be half of the value of the spread between the highest and the lowest successful interest rate - S (chart 1).

This points to the insufficient predictability of the level of interest rates in the government securities auctions by bidders. In the case of large spread between the highest and the lowest price, it would be logical if the majority of the bids are around the cut-off price.



Assuming that the uniform price method is applied in analyzed auctions of 3- and 6-month treasury bills instead of the multiple price method, the Ministry of Finance would have a return lower by around Denar 2 million. But this analysis of the auctions of government securities was made very simply, by awarding the cut-off price to all successful bidders, i.e. the highest interest rate reached in the auction concerned. The assumption that the conduct of the market participants under a different method of auction of government securities would be the same, i.e. that they would bid the same prices as under the multiple price method is unrealistic.

5. Recommendations for the fiscal policymakers

The detailed analysis of the performances of the method of auction of government securities that would result in clear recommendations for the fiscal policymakers from the aspect of sale of government securities is impeded due to the absence of developed secondary market, as in the case of the Republic of Macedonia. But, on the other hand, the two-year experience is a period long enough so as to make assessment of the effects of the government policy and to consider new improvements.

In this stage of the development of the market, when the Ministry of Finance makes commitments to accelerate the development of the primary and secondary market, any change of the method of auction of government securities would be premature. The decision for change of the method should be following after the decision on the possible introduction of primary dealers and/or market-makers.

Although theoretic arguments suggest that the multiple price method is more justified in conditions of greater predictability in the auction price setting and an existence of an active secondary market, still, taking into account the so-far results and future commitments of the Ministry of Finance to the development of a secondary market of government securities, the conclusion is that the application of the multiple price method in the Republic of Macedonia becomes even more justified.

Namely, the problem of insufficient predictability in price setting in the auctions in the Republic of Macedonia is largely due to the absence of active secondary market. The pending introduction of government securities for monetary purposes is expected to overcome this problem by reducing segmentation of the short-term debt-instruments market (central bank bills and treasury bills) and by increasing the liquidity on the secondary market. Also, liquidity will be enhanced by creating legal regulation that would enable trading in long-term securities on the over the counter market and the repo market.

One possible option to improve the performance in the auctions would be to apply the uniform price method for selling government bonds, taking into account the uncertainty from the aspect of the yield, specific for this type of securities.

Regardless of the method to be applied, performance could be improved by improving the information to the bidders regarding auction results. For example, after the completion of the auctions of government securities, data should be announced regarding the amount awarded under the highest price (lowest interest rate) as a percentage of the total offered amount, or the distribution of amounts by successful bids within certain price intervals.

Competition could be enhanced by awarding non-competitive bids. Non-competitive bids are bids for buying government securities auctioning only with the amount, while the price is equal to the average price reached at the auction. These bids contribute to greater participation of investors in the auctions and could be awarded to institutions, but also to the general public. They are also an incentive for the primary dealers in some cases.

This risk, known as the "winner's curse" leads the auction participants to lower their bids for buying government securities and to set the price higher, thus affecting the revenues of the government

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