

# THE BOND BUYER

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## Ratcheting the Goose That Lays Golden Eggs

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By [Dan Seymour](#)

Dr. Andrew Kalotay, a man not easily baffled, is baffled by the municipal bond industry.

The Hungarian-born bond valuation expert is baffled by what he sees as inefficiencies and mispricings in the tax-exempt market.

He is baffled by issuers' insistence on refinancing their debt at what he believes are the wrong times.

Most of all, he is baffled why local governments pay underwriters and advisers to help refinance debt when he claims he discovered a cheaper and easier alternative.

About 15 years ago, Kalotay, a chess master with a Ph.D. in mathematics, invented a structure called the ratchet bond.

The ratchet bond is a rebellion against the tradition in public finance in which an issuer sells bonds callable after 10 years, invariably refinancing at a lower interest rate.

Kalotay found two problems with this method. One, issuers pay fees every time they refinance. This is big business in munis.

Almost 17.9% of the \$119.66 billion in municipal debt sold in the first four months of the year were refunding bonds. An additional 15.4% had some component of refunding bonds.

The other is the question of when to refinance. Kalotay believes municipalities are bad at timing refinancing, often calling their bonds when the option is still worth more than the realized savings. Kalotay's solution is the ratchet bond.

A ratchet bond's coupon is tied to a benchmark rate. The coupon resets once a year only if the reference rate goes down. If the rate goes up, the coupon stays in place.

If the rate declines, the issuer has effectively refinanced for free.

This eliminates the guesswork in timing refinancings and spares the need to sell new bonds whenever rates decline.

So far the Tennessee Valley Authority is the only issuer to utilize this structure, to Kalotay's knowledge.

The TVA in 1998 sold \$575 million in 30-year puttable taxable ratchet bonds. The rate, originally at 6.75%, resets annually in June to the 30-year Treasury rate plus 94 basis points, but only if that reference rate is lower than the current coupon toward the end of April.

The rate reset in 2003 to 5.95%, in 2005 to 5.49%, and last year to 5.46%. This year it will reset to 4.73%.

In 1999, the TVA sold \$525 million of 30-year puttable taxable-ratchet bonds. The rate, tethered to the 30-year Treasury plus 84 basis points, reset from 6.5% to 5.62% in 2004 and to 5.17% last year. This year



it will reset to 4.5%.

A decade later, the structure has gained no momentum.

Kalotay suspects underwriters and financial advisers tell their clients not to test the structure because if successful it would eliminate a lucrative business in the industry.

Several financial advisers contacted by The Bond Buyer said they had never heard of ratchet bonds.

Kalotay claims bankers have told him investors would have too much trouble valuing ratchet bonds, an idea he dismisses as absurd.

Valuing a ratchet bond is not all that different from valuing a callable bond, he said. It involves handicapping the present value of future cash flows based on possible interest rate evolutions.

In "Floating Rate Securities," published in 2000, Franklin Fabozzi and Steven V. Mann offer a hypothetical example of a four-year ratchet bond yielding 24 basis points above a two-year benchmark rate.

This example assumes 10% interest rate volatility – meaning 10% standard deviation in swings in the interest rate – and a flat yield curve, with rates at every maturity at 3.5%.

Valuation of this bond requires a model mapping out multitudinous hypothetical interest-rate evolutions based on this yield curve and volatility.

The model would have to send interest rates on a random walk from 3.5%, assuming 10% volatility.

The model then ratchets the rate downward when applicable, calculates the yield to maturity on the ratchet bond for each imaginary interest rate path, and averages the results.

This arrives at a fair value of \$100.45 per \$100 face value. In order to price at par, the spread over the reference rate would have to be 11.7 basis points.

Changes in the yield curve and interest rate volatility would also affect the value because it would lead to either more or fewer imaginary ratchets.

One possible source of inertia for this product is that investors allow municipalities to embed call options at little cost, meaning issuers are not scouring for cheaper alternatives.

Kalotay claims municipalities are costing themselves a lot more than they realize.

Investors would demand higher yield premiums for callable munis if only issuers knew how to use the options properly, he argues.

Instead, investors are willing to grant cheap calls because they know issuers usually exercise calls too early, he said.

Municipalities frequently exercise their options at the first hint of savings, Kalotay said.

When they do this, he said they sacrifice the value of the call option, which often exceeds the savings realized through refinancing.

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