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Release of New Model for Mortgage Rates

For the valuation of mortgage-backed securities, investors have at their disposal sophisticated term structure models and prepayment models. The term structure model, calibrated to market interest rates and volatilities, gives a distribution of hypothetical paths of future benchmark interest rates. These benchmark rates are used to project future mortgage rates along the paths. These mortgage rates are then used by the prepayment model to project the prepayments and cash flows along the hypothetical paths. When the cash flows are in turn discounted by the corresponding short rates plus some spread, the resulting present values for the paths have a mean that represents the model price. The option-adjusted spread (OAS), defined as that spread for which the model price is the same as the market level, provides a uniform measure with which to compare securities having cash flows with diverse option characteristics.

Because the projected mortgage rate is the crucial factor affecting projected prepayment rates, its accuracy is of utmost importance in the pricing of mortgage-backed securities. The translation of benchmark rates to mortgage rates is, however, usually done in an ad hoc fashion. The common method is simply to select one benchmark interest rate and assume that the mortgage rate will always maintain today's spread over this selected benchmark, despite significant differences in projected yield curve levels, shapes, and volatilities. The usual choice of this benchmark rate is the ten-year rate, specifically the ten-year Treasury rate. Although this surrogate mortgage rate has served well in the past, there is room for improvement.

The principal problem with the common method is that the current-coupon mortgage rate, as determined from the secondary market, is actually sensitive to the entire yield curve, not just the ten-year rate. For example, when the yield curve flattens between the short end and the ten-year point, TBA prices drop on account of the higher discounting rates. Accordingly, we expect the mortgage rate then to widen relative to the ten-year. It is important to incorporate such a dependency of projected mortgage rates on projected yield curves into our term structure model.

We have implemented a method, based on the arbitrage-free principle, in which mortgage rates are obtained at a constant OAS to projected yield curves, regardless of their level, shape, or volatility. As of Monday, February 12, the new model will be available on the Yield Book™.[12] For a detailed description of the method see our memo "Mortgage Option-Adjusted Term Structure Model," Salomon Smith Barney, January 18, 2001.

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[12] The old model also will be available on the Yield Book™ for an initial period for comparison.