

# The Estimation of Local Volatility of Discount Bond with the Method of Dupire

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(Preliminry Version. Do not cite. Comments are welcome.)

**Abstract.** In order to price the derivatives written on a government bond, we have to consider the observable volatility structure, such as volatility smile, of the government bonds. This paper proposes a method based on Dupire (1993) to estimate the local volatility of discount bonds when the prices of coupon bond options are observed in the market. Numerical examples show that our method can construct the volatility structure consistent with the market data.

**Keywords:** Volatility estimation, the method of Dupire, volatility smile.

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