Vasicek, Oldrich

An equilibrium characterization of the term structure. (English) Zbl 1372.91113

J. Financ. Econ. 5, No. 2, 177-188 (1977).

Summary: The paper derives a general form of the term structure of interest rates. The following assumptions are made: (A.1) The instantaneous (spot) interest rate follows a diffusion process; (A.2) the price of a discount bond depends only on the spot rate over its term; and (A.3) the market is efficient. Under these assumptions, it is shown by means of an arbitrage argument that the expected rate of return on any bond in excess of the spot rate is proportional to its standard deviation. This property is then used to derive a partial differential equation for bond prices. The solution to that equation is given in the form of a stochastic integral representation. An interpretation of the bond pricing formula is provided. The model is illustrated on a specific case.

MSC:

91G30 Interest rates, asset pricing, etc. (stochastic models)

Full Text: DOI