

Information, Inflation, and Interest

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ABSTRACT

We propose a class of discrete-time stochastic models for the pricing of inflation-linked assets. The paper begins with an axiomatic scheme for asset pricing and interest rate theory in a discrete-time setting. The first axiom introduces a risk-free asset, and the second axiom determines the intertemporal pricing relations that hold for dividend-paying assets. The nominal and real pricing kernels, in terms of which the price index can be expressed, are then modelled by introducing a Sidrauski-type utility function depending on (a) the aggregate rate of consumption, and (b) the aggregate rate of real liquidity benefit conferred by the money supply. Consumption and money supply policies are chosen such that the expected joint utility obtained over a specified time horizon is maximised subject to a budget constraint that takes into account the value of the liquidity benefit associated with the money supply. For any choice of the bivariate utility function, the resulting model determines a relation between the rate of consumption, the price level, and the money supply. The model also produces explicit expressions for the real and nominal pricing kernels, and hence establishes a basis for the valuation of inflation-linked securities.