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Title of talk:
Interest in the Long Term

Abstract:
Recently there has been a good deal of interest in the related topics of (a) the behaviour of investments over the long term, and (b) the behaviour of interest rates over the long term. In both cases we refer to the behaviour, over the course of time, of an investment made in the present (time 0) and paying off at some time T, where T is in some sense large. Thus for pension-related investments the time-scale might be 30-50 years, whereas for large-scale social projects the time-scale might extend much further in the future, say as much as 100-200 years. In both of these cases the issue of how best to determine the present value of a cash flow that takes place many years from now is of great importance. In this talk I shall survey some of the recent work that has been carried out by various authors on the dynamics of long-dated discount bonds, and I shall indicate a few new lines of development as well. For concreteness we look in detail at some simple explicit models (Vasicek model, rational log-normal model), and examine their asymptotic behavior. Some of the results will be familiar, others less so and perhaps surprising. In particular, it turns out to be quite instructive to examine the unit-initialized long-bond process defined at each time t > 0 by the limit, as T grows large, of the ratio of the time-t price of a T-maturity discount bond and the time-0 price of the same bond. The behaviour of the dynamics of this asset is in various ways central to a number of studies, and in some respects can be regarded as fundamental, as will be demonstrated in the examples considered. (Work carried out in collaboration with D. Brody and D. Meier, Brunel University London.)