

**Axioms for the Valuation of Payment Streams:
A Topological Vector Space Approach**

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ABSTRACT

This paper is based on the axiomatic treatment of valuing payment streams as instituted by R. Norberg. Consider a stream of payments in the general sense, as represented by a measure on the real line. In familiar cases, we value such a stream by integrating suitable discount or accumulation functions with respect to the measure. Norberg's goal was to find appropriate axioms to justify such a procedure. By viewing the problem in the context of topological vector spaces, we clarify the issues involved, and thereby extend and generalize some of the conclusions. A subsidiary theme is to provide further evidence of the fact that actuarial problems can lead to interesting results in pure mathematics.

