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**The retrospective premium reserve.** (English) Zbl 0721.62105  
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Summary: For an ordinary single- or multiple-decrement life insurance policy, there is essentially only one retrospective premium reserve and its definition is given in standard textbooks on life contingencies. By contrast, for a multi-state policy, each state has its own retrospective (as well as its own prospective) reserve, there is considerable freedom of choice in its definition, and there is a corresponding variation in its properties.

This paper introduces a whole new class of sets of retrospective reserves. The new reserves automatically satisfy Thiele's differential equation and also have other desirable properties. Each member of the class is defined by the selection of initial prospective premium reserves for states other than the conventional initial state. We note two obvious alternative choices of these parameters and show that one of them makes the corresponding set of retrospective reserves coincide with our previous suggestion in certain cases but not in general. As an application, we point out the implications for surplus accumulation.

**MSC:**

**62P05** Applications of statistics to actuarial sciences and financial mathematics Cited in 4 Documents

**Keywords:**

Markov chain; first- and second-order valuation basis; surplus accumulation; retrospective reserves; Thiele's differential equation; initial prospective premium reserves

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**References:**

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