SURVIVE A DOWNSWING PHASE OF THE UNDERWRITING CYCLE

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Abstract. Profits in property and liability insurance tend to rise and fall in fairly regular patterns lasting between five and seven years from peak to peak; this phenomenon is termed the underwriting cycle. For a particular insurer, the cycles may be caused by difference between the price prevailing in the market and price of the risk in the insurer's portfolio. In this paper a multiperiod Lundberg-type control model of insurer's response to the cycle generated by the competition is developed.

1. Introduction

It is largely recognized (see e.g., [**25**]) that the long-term variations called "business cycles", are typically common for the most insurers and have several potential causes. There exists convincing evidence that the cycles are a fundamentally characteristic feature in most non-life business likely in all countries of competitive insurance market.

Understanding the driving forces of the underwriting cycles is a paramount theoretical problem, a key for understanding the nature of this phenomenon and a leverage for rational management. It attracts constant attention of many parties, including managers and experts in economical and actuarial studies.

There exist at least two major interpretations of the cyclic behavior in insurance. One ascribes the cycles to the fluctuations due to random surroundings, to volatile interest rates, or to random up- and down-swings of the risk exposure in the portfolio. Typically, such fluctuations can not be foreseen and their dynamics is known deficiently since its origin used to be exogenous with respect to the insurance industry. It causes inevitable errors in the rate making, and irregularly cyclic underwriting process ensues.

The other assigns the cycles to the strategies of aggressive insurers seeking for greater market shares, and by the consequent industry response. At the first stage, the response consists in concerted reduction of the rates, sometimes below the real costs of insurance. This makes some companies ruined, and agrees with the observation that insurance cycles are correlated with clustered insolvencies. For instance (see [**14**] with reference on Best's Insolvency Study [**4**]), US industry-wide combined ratios peaked at 109% in 1975 and 117% in 1984. The insurance failure rate, or the ratio of insolvencies to total companies, peaked at 1.0% in 1975 and 1.4% in 1985. Insolvencies appear a driving force behind the competition originated cycles since after elimination of the exceedingly aggressive and unwise agents, or just weaker carriers, the prices increase uniformly over the industry and the upswing phase of the cycle follows.

Key words and phrases. Underwriting cycles, Years of soft and hard market, Multiperiod insurance process, Solvency, Adaptive control strategies.