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Implied Life Credits: A Financial Index for Life Annuities

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Abstract

In this paper the authors employ the concept of self-annuitization to develop a financial index for tracking the time series behavior of life annuity payouts. Aside from increasing awareness of the benefits of voluntary annuitization, there are a number of practical uses for such an index such as benchmarking relative competitiveness and analyzing the optimal age at which to annuitize.

From a technical point of view, the proposed index goes beyond a trivial cross-sectional average of life annuity payouts offered by different insurance companies. Rather, the index is defined equal to the internal rate of return (IRR) that an individual would have to earn on their portfolio if they chose to self-annuitize, instead of purchasing a life annuity. We define the IRR - which is based on the current term structure of annuity payouts - as the implied life credits at a given age and for a given deferral period. The implied life credit value solves a non-linear equation that we proceed to approximate quadratically and for which we obtain a relatively simple and intuitive expression.

We then suggest age 65 - with a ten year period certain- compared against the same annuity at age 75, as the standard benchmark for the index. As an illustration of the concept, we calibrate the index to a comprehensive time-series of weekly (Canadian) life annuity quotes for the years 2000 to 2003. During this period, the implied life credits varied from 5.53% to 6.81% for males and 5.11% to 6.40% for females, and is shown to be highly correlated with the yield on a 10-year Government of Canada bond.

Keywords: Pensions, Financial Index, Insurance, Self-Annuitization, Investments**JEL Classification:** D11, D91, H55, G11,G12, G22, G23[Suggested Citation](#) >[Show Contact Information](#) > [Download This Paper \(Delivery.cfm/SSRN_ID478941_code1080.pdf?abstractid=478941&mirid=1\)](https://papers.ssrn.com/sol3/Delivery.cfm/SSRN_ID478941_code1080.pdf?abstractid=478941&mirid=1)[Open PDF in Browser \(Delivery.cfm/SSRN_ID478941_code1080.pdf?abstractid=478941&mirid=1&type=2\)](https://papers.ssrn.com/sol3/Delivery.cfm/SSRN_ID478941_code1080.pdf?abstractid=478941&mirid=1&type=2)

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