Pricing inflation-indexed life annuities using stochastic model for inflation

Dorina Lazar

Babes Bolyai-University, Faculty of Economic Science
Teodor Mihali No. 58-60, 3400 Cluj-Napoca, Romania
E-mail: dorina_2@email.ro

We are interested in pricing the inflation-indexed life annuities in an economy with higher level of inflation.

An autoregressive-moving average model is fitted for the force of inflation, based on yearly consumer price index in Spain during 1962-2002 period. This model is used to simulate the future paths for level of pensions. In the traditional approach of pricing, the expected value computed from the empirical distribution obtained for the present value of indexed pension shows a very high costs and high volatility.

Next we examined the price of inflation-indexed pension supposing that the life insurance companies guarantee some levels for the real rate of interest (e.g., 1 percent). In this approach the future paths for the level of pension, and also for the nominal rate of interest used as a discount rate (being estimated by the sum of real rate of interest and the rate of inflation) are simulated. The empirical distribution obtained for the present value of indexed pension using these assumptions shows some interested results. The assumption of deductible rate of inflation is also considered.

1. Bresson G., Pirotte A. (1995), *Econometrie des series temporalles*, PUF
2. Formica, A., Kingston, G. (1991), Inflation insurance for australian annuitants, *Australian Journal of Management*, Vol. 16 (2).
2. Metz M., Ort M. (1993), Stochastic models for the swiss consumers price index and the cost of the adjustment of pensions to inflation for a pension fund, *International AFIR Colloquium*, Rome.
3. Wilkie, A.D. (1995), More on a stochastic asset model for actuarial use, *British Actuarial Journal*, Vol. 1, pp. 777-946.