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This paper examines the risk and return of fixed index annuity (FIA) with an enhanced model framework which takes into account correlations among market variables and a changing participation rate fluctuating with the market moves.

The FIA business model is discussed to explain the participation rate model.

Sensitivity analysis of FIA returns is performed for key model assumptions.

The risk and return profile of the mix (30/70, 40/60, 50/50, 100/0) of the S&P 500 Index and the 1-year Treasury bills is compared with that of the FIAs.

This study focuses on 2 hypothetical contracts: (10-year) annual reset Point-to-Point (PTP) and Monthly-Averaging (MA) contracts with participation rate but no cap or yield spread.

PTPs outperformed MAs. They together outperformed the mixes of stock/treasury with comparable risk. Simulated stock index shows higher returns than FIAs most of the time, but FIAs has much less volatilities and much lower tail risk.