

# **An Analysis on the Risk in Variable Annuities**

Sun-Yong CHOI<sup>1</sup>

1) *Department of Financial Mathematics, Gachon University, Gyeonggi 13120, Korea*

Corresponding Author : Sun-Yong CHOI, sunyongchoi@gachon.ac.kr

## **ABSTRACT**

In this paper, we investigate the effect of various models for estimating risk in variable annuities. Various form of guarantees riders in variable annuities are attractive to policyholders but, the issuers need to manage the risk derived from the guarantees. We focus on the analysis of one of the guarantees, Guaranteed Minimum Accumulation Benefit(GMAB) using various volatility methods. Furthermore, we show that the effect of the term structure for the variable annuities. Especially, we focus on the Smith-Wilson method, one of extrapolation methods.