An Investigation on Managing Risks in Minimum Guarantees Embedded in Variable Life Insurances

This report explores how to manage risks in minimum guarantees on variable life insurances. Minimum guarantees, issued by insurance companies, are kinds of put options that promise policyholders to pay minimum amounts of benefits even if their account value are lower than guaranteed benefits written on the contracts. The minimum guarantees have been taking a critical role in insurance companies' successes in the markets. When issuing the guarantees, however, insurance companies immediately confront a tough task that is how to manage various risks derived from the guarantees. For example, several variable annuity riders in Japan have withdrawn from the Japanese variable annuity market since the financial crisis in 2008 hits the world economy. This event has highlighted why managing risks from the minimum guarantees is so important.

Unlike the Japanese VA markets, minimum guarantees on variable life insurances are not an imminent danger to Korean insurance companies because variable life insurance markets still seem to be at an early stage in Korea. However, it is very important to build up a system to manage risks from the guarantees as early as possible in order to avoid all the troubles that foreign insurance companies are going through now. In an attempt to help Korean insurance companies manage the risks properly, we selectively cover important issues about managing risks from the guarantees.

This report starts with concepts of minimum guarantees and covers what kinds of tools foreign insurance companies are using to manage
the risks. In detail, we introduce various ways to manage the risks from the guarantees such as setting aside sufficient capital, reinsurance, and static and dynamic hedge. Then, we discuss how to measure risk exposures from the minimum guarantees. We examine various methods to calculate reserves and required capitals, and conduct simulation studies to investigate how levels of reserves and required capitals vary when economic scenarios change. Finally, we show how the delta hedge works and deal with ongoing issues such as how to manage basis risks. Next, we suggest an alternative way of changing product design to improve managing risks derived from the minimum guarantees. In the end, we discuss conclusion and what else issues can be covered further in the future.