SYNOPSIS

Blockchains, smart contracts and possible insurance applications
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Key words: block chain, smart contract, lottery, prediction market, insurance

Purpose of your paper: The goal of the paper is to inform the general insurance actuarial community about the recent advances in blockchain based smart contracts and their applications, including distributed lotteries and betting markets, as well as to describe a range of possible insurance applications.

Synopsis: The initial success of Bitcoin has encouraged a great deal of further research into blockchain technology and its applications to "smart contracts" beyond basic payments. In this paper we provide a survey of principles behind these developments together with specific examples. Some noteworthy applications include distributed lotteries and prediction markets.

We further propose a range of use cases for smart contracts in insurance, from insurance linked securities to agents binding policies, mutual pools and quote aggregation. A particularly pertinent topic in this context is around mechanisms for verification of both claims and insurable interest, where applicable. We investigate both consensus and oracle based schemes.

It is hoped that this paper will help the actuarial profession to keep abreast with (more speculative amongst) current developments in financial technology.