

Efficient importance sampling for conditional tail expectation

Inchi Hu¹ (胡膺期), Meihui Guo² (郭美惠)
and Shih-Feng Huang^{3*} (黃士峰)

¹ Department of Information Systems, Business Statistics and Operations Management,
Hong Kong University of Science and Technology, Hong Kong

² Department of Applied Mathematics, National Sun Yat-sen University, Taiwan

³ Department of Applied Mathematics, National University of Kaohsiung, Taiwan

Abstract

In this article, we study the importance sampling technique for efficient estimation of a few risk measures including Value-at-Risk (VaR) and expected shortfall (ES). Even though ES is arguably more useful for several reasons, VaR is more popular and well-known. We show that importance sampling estimates derived from truncated exponential distributions yield the best result in a variety of situations.

Keywords: importance sampling, risk management, variance reduction technique