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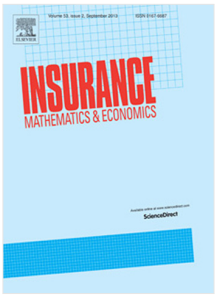

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Weighted risk capital allocations in the presence of systematic risk

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Abstract. Determining aggregate risk capital is a fundamental problem of modern Enterprise Risk Management, and the determination process has been fairly well studied. The allocation problem, on the other hand, is generally much more involved even when a specific risk measure inducing the allocation rule is assumed, let alone the case when a class of risk measures is considered. In this paper we put forward arguments showing that the problems of determining and allocating the aggregate risk capital can often be viewed as being of similar complexity. In particular, we show that this is the case for the entire class of weighted risk capital allocations, as well as for risk portfolios that are exposed to systematic and specific risk factors. We provide detailed analyses of the Weighted Insurance Pricing Model (WIPM) under multiplicative and additive systematic-risk frameworks. Also, a Gini-type WIPM, which is related to the WIPM in a similar way as the dual (i.e., rank dependent) utility theory is related to the classical utility theory, is proposed.

Key words and phrases: weighted risk measure, weighted risk capital allocation, weighted insurance pricing model, Gini measure of variability, systematic risk.

JEL codes: C02, G32.

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