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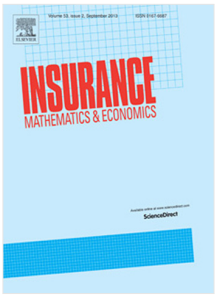

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ACCEPTED MANUSCRIPT

Which eligible assets are compatible with comonotonic capital requirements?

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Abstract

Within the context of capital adequacy, we study comonotonicity of risk measures in terms of the primitives of the theory: acceptance sets and eligible, or reference, assets. We show that comonotonicity cannot be characterized by the properties of the acceptance set alone and heavily depends on the choice of the eligible asset. In fact, in many important cases, comonotonicity is only compatible with risk-free eligible assets. The incompatibility with risky eligible assets is systematic whenever the acceptability criterion is based on Value-at-Risk or any convex distortion risk measure such as Expected Shortfall. These findings qualify and arguably call for a critical appraisal of the meaning and the role of comonotonicity within a capital adequacy context.

Keywords: comonotonicity, risk measures, acceptance sets, eligible assets

1 Introduction

The theory of acceptance sets and risk measures occupies an important place in current debates about solvency regimes in both the insurance and the banking world. A variety of theoretical properties of risk measures have been studied since the seminal publication by Artzner et al. (1999), among which the property of comonotonicity has received considerable attention. Comonotonic risk measures were first studied by Kusuoka (2001) and Delbaen (2002) in the mathematical finance literature and by Dhaene et al. (2002) in the actuarial literature. We refer to Föllmer

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