

RISK MEASURES FOR CATASTROPHE

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Sketch

ISLAND

A

B

C

D

E

F

INSURER

WTW

Reinsurance



Insurance Premium = Coherent Risk Measure?

Suppose X_1, X_2, \dots, X_{10} are the losses of each islands we expect

$$\rho(X_1 + X_2 + \dots + X_{10}) \leq \rho(X_1) + \rho(X_2) + \dots + \rho(X_{10})$$

$\rho(X)$ is the premium of insurance

Risk Allocation

According to [Balog, D. et al \(2017\)](#), risk should be allocated using a risk capital allocation method. The seven methods used in practice are: Activity based, Beta, Incremental, Cost gap, Marginal Risk Contribution, Shapley, and Nucleolus.

Arising Questions

- How much should each island pay for insurance?
- Is Kreps a risk measure?
- Which other property do we expect Kreps to have? Monotonicity? Convexity?
- What does the literature says?
- Reinsurance: How should the insurer set the reinsurance level? Will all the islands agree with the reinsurance level? How will the payment rule affect it?