

The impact of systemic risk on the diversification benefits of a risk portfolio

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Abstract

Risk diversification is the basis of insurance and investment. It is thus crucial to study the effects that could limit it. One of them is the existence of systemic risk that affects all the policies at the same time. We introduce here a probabilistic approach to examine the consequences of its presence on the risk loading of the premium of a portfolio of insurance policies. This approach could be easily generalized for investment risk. We see that, even with a small probability of occurrence, systemic risk can reduce dramatically the diversification benefits. It is clearly revealed via a non-diversifiable term that appears in the analytical expression of the variance of our models. We propose two ways of introducing it and discuss their advantages and limitations. By using both VaR and TVaR to compute the loading, we see that only the latter captures the full effect of systemic risk when its probability to occur is low.

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