Measuring the Unmeasurable
An application of uncertainty quantification to financial portfolios

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Abstract

We extract from the yield curve a new measure of fundamental economic uncertainty, based on *McDiarmid's distance* and related methods for *optimal uncertainty quantification* (OUQ). OUQ seeks analytical bounds on a system's behavior, even where the underlying data-generating process and system response function are incompletely specified. We use OUQ to stress test a simple fixed-income portfolio, certifying its safety—i.e., that potential losses will be "small" in an appropriate sense. The results give explicit tradeoffs between: scenario count, maximum loss, test horizon, and confidence level. Unfortunately, uncertainty peaks in late 2008, weakening certification assurances just when they are needed most.

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