

Aggregate and firm-level measures of systemic risk from a structural model of default

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Abstract

The breadth and dynamics of the recent financial crisis have led to efforts to develop forward-looking tools to monitor systemic risk. In this paper we propose a new measure which is an extension of the *absorption ratio* (*AR*) introduced in Kritzman et al. (2010). Using principal component analysis (as in the original *AR* methodology) in conjunction with a structural model of default we develop a measure of systemic risk that may be calculated using only publicly available data. We call our new measure the *credit absorption ratio* (*CAR*). We find that increases in the *CAR* preceded periods of financial distress during the recent crisis. The *CAR* may be interpreted economically: it highlights states of the financial system during which the credit fundamentals of institutions and markets exhibit heightened coupling and higher potential for cascading distress. We also demonstrate that a byproduct of *CAR* analysis provides a measure of the degree to which specific financial institutions are exposed to systemic risk factors at any point in time. We find that a number of the institutions that exhibited high potential exposure under our measure during the lead-up to the recent crisis subsequently experienced higher levels of distress or required external assistance.

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