

Dynamic factor models with macro, frailty, and industry effects for U.S. default counts: the credit crisis of 2008*

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Abstract

We develop a high-dimensional and partly nonlinear non-Gaussian dynamic factor model for the decomposition of systematic default risk conditions into a set of latent components that correspond with macroeconomic/financial, default-specific (frailty), and industry-specific effects. Discrete default counts together with macroeconomic and financial variables are modeled simultaneously in this framework. In our empirical study based on defaults of U.S. firms, we find that approximately 35 percent of default rate variation is due to systematic and industry factors. Approximately one third of systematic variation is captured by macroeconomic/financial factors. The remainder is captured by frailty (about 40 percent) and industry (about 25 percent) effects. The default-specific effects are particularly relevant before and during times of financial turbulence. For example, we detect a build-up of systematic risk over the period preceding the 2008 credit crisis.

Keywords: financial crisis; default risk; credit portfolio models; frailty-correlated defaults; state space methods.

JEL classification: C33, G21.