“Network Spillovers and Systemic Risk: A Spatial Autoregressive Approach”

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ABSTRACT

This paper proposes an alternative explanation for the non-linear relationship between the theoretical probability of default and observed sovereign CDS spreads: "the credit spread puzzle". Government CDS spreads in the euro area feature a time-varying pattern of comovement that constitutes a serious challenge for econometric modeling and forecasting. Standard specifications, which model spreads as a persistent mean-reverting process determined by fiscal fundamentals and market's appetite for risk, are unable to capture this pattern. This paper argues that a systemic factor based on network interlinkages between countries, has become increasingly important. The network risk factor is captured via a Spatial Autoregressive Model (SAR), which models the interdependence between spreads by making each sovereign's CDS spread a function of the CDS spreads of its "economic neighbors". The SAR model consistently outperforms the standard model in out-of-sample prediction tests and improves forecasting accuracy by 15 % to 20%. The paper also investigates how exogenous financial shocks propagate in the network of sovereigns and finds that 40 % to 50% of the total effect is due to indirect (network) effects. Finally, the paper rationalizes the use of the new systemic factor by developing a simple network model with financial cross-holdings and multiple equilibria.