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State Dependent Correlations and Economic Capital

Under Basel, banks must use the so-called risk-weight function to determine economic capital. The function is based on a simple and intuitive model developed by Vasicek (2002) - a model that makes several unrealistic assumptions but appears to retain its popularity due to its intuitive appeal. One of these assumptions is that correlations are independent of the state of the economy, which is in stark contrast to empirical evidence for most asset classes. In this talk we generalize the Vasicek model to allow for correlations that tend to rise during adverse economic scenarios. The model allows the user to control the degree of state dependence, by which we mean the likelihood that correlations are high when the economy is bad. Economic capital is (unsurprisingly) highly sensitive to the degree of state dependence, and empirical evidence (using Federal Reserve data on delinquency rates) indicates that in practice the degree of state dependence is remarkably high.