Modeling the Dynamics of Correlations among Implied Volatilities

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Implied volatility (IV) reflects both expected empirical volatility and also risk premia. Stochastic variation in either creates unhedged risk in a delta hedged options position. We develop EGARCH / DCC models for the dynamics of volatilities and correlations among daily IVs from options on 28 large cap stocks. The data strong support a general correlation structure and also a 1-factor model with the VIX index as the common factor. Using IVs from stocks that are either highly correlated with the target stock's IV or in the same industry together with the VIX can significantly improve hedging of individual IV changes.

JEL Classifications: G13, G12, C32

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