

“Estimating Asset Correlations from Stock Prices or Default Rates – Which Method is Superior?”

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Summary of the Paper

- Investigates possible reasons for why estimates of correlation coefficients based on equity prices are higher than estimates coming from default rates.
- Rely on a simulation study with a DGP based on the Merton (JF, 1974) model.
- Results indicate that estimates based on equity data are more efficient than those coming from default rates.
- Moreover, whenever default rates are used they underestimate asset correlations.

Discussion

- There is a clear relevance in explaining the reasons for differences on the estimation of correlation coefficients via equity or default data.
- This can be done in two ways, by either testing directly with empirical data or by designing experiments with simulations.
- Considering empirical data, the small time series revealing scarce default events turns estimation into a difficult process.
- This difficulty vanishes in simulation studies but with a high cost!
- Whenever one designs a simulation experiment, the main question of interest becomes **how general your conclusions will be rather than the conclusions themselves**, because conclusions are conditioned at the proposed DGP.
- In this sense, I believe that authors should make a stronger case for their proposed DGP.

DGP Model

1. The first important suggestion is related to the choice of Merton's model.
 - It is known to generate very low credit spreads for short-term bonds and therefore alternative models have been proposed like:
 - The incomplete accounting information by Duffie and Lando (Econometrica 2001)
 - All the intensity-based models (see for instance Duffie and Singleton (RFS, 1999)).
 - Jumps in the asset values within a structural model (Zhou (WP, 1997))
 - So it could be interesting to add to their study at least one alternative model more compatible with empirical stylized facts of the credit market.

Robustness tests: Model Misspecification

- Analyzing the effects of model misspecification will bring important insights.
- As it should be the case that reality does not behave like Merton's proposal, here come two potentially interesting tests:
 - Stochastic volatility (SV) is a fundamental assumption in continuous-time empirical asset pricing models. If considered it would certainly affect asset correlation, and more importantly, affect the estimation of this correlation if the DGP had SV but the econometrician assumed a Merton-type model to estimate correlation.
 - Similarly, evidence in De Servigny and Renault (2002) that interest rate volatility does not affect asset correlations should not prevent authors from including a test with stochastic interest rates. Again they could maintain the hypothesis of a Merton-type model to assess the influence of simplifying their estimation process when the true interest rate is stochastic, therefore not increasing computational costs.

Robustness tests: Stochastic Correlations

1. When equity correlations become stochastically driven by a Vasicek process, a key assumption is that such correlation structure has a smaller impact on the estimator based on default rates than on the estimator based on equities.
 - What is the intuition for that?
2. It is empirically observed that correlations can vary drastically along time so why under the Vasicek model they fix κ and σ_{ρ} to make ρ vary only 10% around its average value?

Conclusions

- The paper adopts a simulation study to show that when default rates are used to estimate asset correlations they generate downward biased estimates.
- The authors replicate results obtained with empirical data in other studies, being able to relate the bias to a number of important variables of the problem (probabilities of default, average level of correlations, ...)
- These results open room for a detailed analysis of means to improve econometric identification of asset correlations.
- Thank you for receiving my comments!