Bio: J.D. Opdyke, Principal, Bates White LLC

J.D. Opdyke is a Principal at Bates White LLC where he provides expert testimony and applied statistical and econometric analysis in large economic litigations. J.D. has over 20 years of experience as a quantitative consultant, most of this in the banking and credit sectors where his clients include multiple Fortune and Global 50 banks and financial credit organizations. He has completed nine statistical operational risk modeling projects for these clients and has two publications forthcoming treating the difficult statistical challenges of obtaining more robust, more precise, and less biased OpRisk capital estimates. His other publications span statistical finance, number theory, computational statistics, and applied econometrics. J.D. earned his undergraduate degree, with honors, from Yale University, his Master's degree from Harvard University where he was a Kennedy Fellow and a Social Policy Research Fellow, and completed post-graduate statistics work as an ASP Fellow in the graduate mathematics department at MIT.

==========

Better Capital Planning via Exact Sensitivity Analysis Using the Influence Function

J.D. Opdyke
Principal, Bates White LLC
JD.Opdyke@BatesWhite.com

Presented at the ABA Operational Risk Modeling Forum
July 18-20, 2012 • Park Hyatt • Washington, DC

ABSTRACT:

With a rich history in the robust statistics literature, the Influence Function (IF) is an extremely useful applied methodology that provides a theoretical basis for operational-risk-related capital planning and business decision making via exact sensitivity analysis. Because it is based on definitive, analytic derivations, the IF avoids the need to perform often resource-intensive, arguably subjective, and sometimes inaccurate simulations where results that are sometimes counter-intuitive can neither be confirmed as correct, nor invalidated. This presentation demonstrates how the IF utilizes i) any given estimator of the severity model (easily the main driver of estimated capital); ii) the values of its parameter estimates; and iii) an assumed forward looking frequency to define Exact Sensitivity Curves for Regulatory and Economic Capital. These Capital Sensitivity Curves have no (additional) estimation error – they are exact, non-stochastic, deterministic formulae of the effects of changes in loss amounts on capital requirements. As such, they are essential, first, for capital planning: they are, by definition, exact sensitivity analyses on the capital impacts of hypothetical changes to the underlying loss data. Scenarios of interest to bank management may be prospective, such as assessing the potential capital impact of hypothetical "tail" events of differing magnitudes, or retrospective, allowing for exact attribution analysis to provide insight into the reasons why capital changed the way it did from one quarter to another. Secondly, statistically, the IF's Sensitivity Curves can guide severity estimator choice and development to potentially increase both the robustness and efficiency of the capital distribution, while mitigating material bias via previously unidentified but important statistical effects, like Jensen's inequality. Taken together, the IF and its associated Capital Sensitivity Curves not only can suggest major potential enhancements to the severity model, but also better inform decision-making and capital planning based on a more precisely and accurately defined risk profile.

Keywords: Robust Statistics, Severity, Capital Estimation, Influence Function, Sensitivity Analysis, OBRE, MLE, Basel II