J.D. Opdyke, Head of Operational Risk Modeling, G.E. Capital

J.D. Opdyke is Head of Operational Risk Modeling at GE Capital. J.D. has built and lead GECC's operational risk capital estimation and modeling teams whose responsibilities span the design, testing, and implementation of GECC's AMA-consistent capital estimation frameworks, and all aspects of its CCAR (stress testing) modeling and quantification. J.D. has over 20 years of experience as a quantitative consultant, most of this in the banking and credit sectors where his clients have included multiple Fortune and Global 50 banks and financial credit organizations. Most recently J.D. successfully led over a dozen statistical operational risk modeling projects for these clients, and has multiple award-winning, peer reviewed publications treating the difficult statistical challenges of obtaining more accurate, precise, and robust operational risk capital estimates. J.D. has been invited to present his work at RiskMinds Americas, ABA OpRisk Forum, ORX Analytics Forum, OpRisk North America, Risk Week-Yale, GARP, Quant Summit USA, and the Marcus Evans OpRisk Series where he also was Conference Chairperson. J.D. earned his undergraduate degree, with honors, from Yale University, his Master's from Harvard University where he was a Kennedy Fellow and a Social Policy Research Fellow, and he completed post-graduate statistics work as an ASP Fellow in MIT's mathematics department.

Operational Risk Publications

- Opdyke, J.D., "Fast, Accurate, Straightforward Extreme Quantiles of Compound Loss Distributions," ***Journal of Operational Risk***, Forthcoming, 2017.
- Opdyke, J.D., "Estimating Operational Risk Capital with Greater Accuracy, Precision, and Robustness," ***Journal of Operational Risk***, pp.3-79, 9(4), December, 2014.
- Opdyke, J.D. and Cavallo, A, "Operational Risk Capital Estimation and Planning: Exact Sensitivity Analysis and Business Decision Making Using the Influence Function," Chapter 1 in **Operational Risk: New Frontiers Explored**, Davis. E., ed., Risk Books, London, 2012.
- Opdyke, J.D. and Cavallo, A, "Estimating Operational Risk Capital: the Challenges of Truncation, the Hazards of MLE, and the Promise of Robust Statistics," ***Journal of Operational Risk***, pp.3-90, 7(3), 2012.

Selected Other Related Publications
(Market Risk, Number Theory/Combinatorics, Quality Control, Big Data/Computational Statistics)

- Opdyke, J.D., "Comparing Sharpe Ratios: So Where are the p-values?," ***Journal of Asset Mgmt***, Vol. 8, No. 5, Dec., 2007.
- Opdyke, J.D., "A Unified Approach to Algorithms Generating Unrestricted and Restricted Integer Compositions and Integer Partitions," ***Journal of Mathematical Modelling and Algorithms***, Vol. 9, No. 1, 53-97, March, 2010.
- Opdyke, J.D., "A Powerful and Robust Nonparametric Statistic for Joint Mean-Variance Quality Control," ***InterStat***, 09/09.
- Opdyke, J.D., "Bootstraps, Permutation Tests, and Sampling Orders of Magnitude Faster Using SAS®," ***Computational Statistics: WIREs Interdisciplinary Reviews***, Vol. 5, Issue 5, 391-405, 2013.

Operational Risk Awards

- WINNER, 2015 ORR Innovation Awards, Voted "Paper of the Year" by Operational Risk & Regulation staff in consultation with Industry Experts: Opdyke, J.D. "Estimating Operational Risk Capital with Greater Accuracy, Precision, and Robustness," ***Journal of Operational Risk***, pp.3-79, 9(4), 2015.
- WINNER, 2012 ORR Innovation Awards, Voted "Paper of the Year" by Operational Risk & Regulation staff in consultation with Industry Experts: Opdyke, J.D. and Cavallo, A, "Estimating Operational Risk Capital: the Challenges of Truncation, the Hazards of MLE, and the Promise of Robust Statistics," ***Journal of Operational Risk***, pp.3-90, 7(3), 2012.

Invited Operational Risk Research Presentations / Conference Chairs

- Opdyke, J.D., Invited Presenter, "If not AMA, or SMA, then What? MIAMA: A Robust, Risk Sensitive, Internally Consistent OpRisk Capital Estimation and Stress Testing Framework," **RiskMinds America, 2016**, Chicago, IL, Sept. 20-23, 2016.
- Opdyke, J.D., Invited Presenter-Chairman of Quant Studies in OpRisk Stream, "Operational Risk Regulatory Capital Estimation," **OpRisk North America-2016**, NYC, NY, March 15-16, 2016.
- Opdyke, J.D., Invited Presenter, "Operational Risk Modeling," **Global Association of Risk Professionals (GARP)-17th Annual Risk Management Convention**, NYC, NY, March 1-2, 2016.
- Opdyke, J.D., Conference Chairperson and Invited Presenter, "Estimating Operational Risk Capital with Greater Accuracy, Precision, and Robustness," **Marcus Evans – Operational Risk Management**, NYC, NY, September 16-17, 2015.
- Opdyke, J.D., Invited Presenter, "Estimating Operational Risk Capital with Greater Accuracy, Precision, and Robustness," **Operational Risk eXchange (ORX) Analytics Forum**, Milan, Italy, May 21-22, 2015.
- Opdyke, J.D., Invited Presenter and Moderator, "Extreme Losses, EVT, and Related Models: OpRisk Regulatory Capital Under the AMA," **OpRisk North America-2015**, NYC, March, 2015.
- Opdyke, J.D., Invited Presenter, "Estimating Operational Risk Capital with Greater Accuracy, Precision, and Robustness," **Risk Week – Yale**, New Haven, CT, December 9-12, 2014.
- Opdyke, J.D., Invited Workshop Leader, "From Loss Data to Capital: Implementing a Comprehensive Operational Risk Capital Estimation Framework Under the AMA-LDA," **OpRisk North America-2014**, 4-session, 6 hour Workshop, NYC, March, 2014. Attendees included representatives from multiple federal regulatory agencies.
- Opdyke, J.D., Invited Presenter, "Better Capital Planning via Exact Sensitivity Analysis Using the Influence Function," **American Bankers Association: ABA Operational Risk Modeling Meeting**, Washington, DC, July 18-20, 2012.
- Opdyke, J.D., Invited Presenter, "Robust Statistics vs. MLE for OpRisk Severity Distribution Parameter Estimation (with and without truncation)" **ORX Analytics Modeling Forum**, San Francisco, California, September 27-29, 2011.
- Opdyke, J.D., Invited Presenter, "Robust Statistics vs. MLE for OpRisk Severity Distribution Parameter Estimation," **American Bankers Association: ABA Operational Risk Modeling Meeting**, Charlotte, North Carolina, August 10-12, 2011. Discussant: Bakhodir A. Ergashev, Ph.D., Lead Financial Economist, Federal Reserve Bank of Richmond.

Operational Risk Webinar Presentation

Opdyke, J.D., "Estimating Operational Risk Capital with Greater Accuracy, Precision, and Robustness … OR … How to Prevent Jensen's Inequality from Inflating your Operational Risk Capital Estimates," February, 11, 2013. Over seven dozen registrants included 41% bankers, 29% consultants, 10% investors, 7% regulators, 6% academics, and about 3% each from insurance and risk management associations.

Selected Operational Risk Client Projects

- For the Enterprise and Operational Risk Group, designed and implemented a comprehensive Operational Risk Capital Estimation Framework. Based on statistically rigorous methods designed to withstand regulatory review, the framework allows for i) the proper treatment of truncated distributions; ii) capturing diversification benefit by estimating dependence across units of measure; iii) statistically benchmarking scenario analysis data; iv) robustly combining internal and external loss data where appropriate; and v) utilizing multivariate KRI-to-capital regression models (frequency, severity, and both concurrently) when translating loss data into Basel II–AMA capital estimates.

- Designed and implemented a comprehensive operational risk capital estimation framework covering almost 100 units of measure. Statistical code explicitly employed data combining methodologies to use both internal and external data, thus increasing statistical power and at least partially overcoming data paucity issues; utilized a wide range of truncated severity distributions to account for data collection thresholds where appropriate; and robustly incorporated scenario analysis data into the parameter estimation process using internally consistent statistical methods. Estimates of both regulatory and economic capital were consistent with expectations and passed "reasonableness" tests.
- Researched, tested, and developed robust statistical alternatives to MLE for more stable and reliable capital estimation and (truncated) severity distribution parameter estimation.
- Designed and Implemented an original capital estimator designed to eliminate the capital overstatement bias caused by Jensen's Inequality; the estimator also dramatically increased the precision and robustness of capital estimates, ceteris paribus, making it unambiguously better than LDA-MLE-based capital estimates.
- Development, testing, comparison, and implementation of agglomeration and reverse agglomeration algorithms for the data-driven determination of units-of-measure.
- Designed and implemented homogeneity analyses and testing of external versus internal loss data.
- Incorporated multivariate regression approaches to mitigate heterogeneity within units of measure and account for time-varying real truncation thresholds. Regression methodology utilized both discrete and continuous KRIs in estimating parameters of the severity distribution(s), unarguably the largest drivers of capital.
- Conducted a comprehensive review and comparison of severity and frequency distribution estimation methodologies; data combining methodologies for combining internal and external loss data; competing methods for selecting severity distributions; and methods for incorporating scenario analysis data into severity and frequency estimation process that were internally consistent with data combining and estimation methods employed.
- Robust severity estimators tested, compared to non-robust alternatives (e.g. MLE), and implemented under constrained optimization with scenario analysis data.
- Conducted comprehensive testing / agglomeration of internal, external, and combined loss event data across dozens of units of measure.

Selected Client Testimonials

- "In addition to scientific rigor, the project also required creative problem solving to effectively develop statistical solutions to problems previously unsolved in the banking industry within a highly scrutinized regulatory arena. …From a pool of candidates that included a number of highly specialized economics and statistics consulting firms and senior academic statisticians and actuaries from leading universities, I selected J.D. for the project. I hired J.D. in part because of his academic background in robust statistics, but mainly because of his reputation for solving difficult, previously unsolved analytical and statistical problems in non-academic commercial settings. On the job, under tight deadlines, J.D. did not disappoint. …I would hire him again as a consultant for high stakes, complex, or large scale projects that involve creative solutions to complex mathematical or statistical problems, quantitative modeling, data management, or advanced statistical/econometric analytics."
- "JD demonstrated that he is an expert in statistical analysis techniques for operational risk modelling … I am very pleased with the outcome, and would readily employ JD for future engagements of this type."

Selected Related Project Work

- Extensive PD, LGD, and EAD modeling and model validation for multiple banks and multiple portfolios.
- Designed and implemented numerous copulae models; multivariate Poisson and Negative Binomial regression; and Scale and GAMLSS regression of severity distribution parameters (methodologically identical to regressing operational risk KRI's).