Risky Business:
A Review of *Risk Management* by Michel Crouhy, Dan Galai, and Robert Mark

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As I was gathering my thoughts to write this review, an uncle sent one of the many post-mortems of Long Term Capital Management (LTCM). Old news, perhaps, that a few of the best bond traders on Wall Street, with support from not one, but *two* Nobel Laureates, lost enough money to push the entire world financial system to the brink of collapse. Yet there was a certain charm to being reminded of the story by this *particular* uncle, who, ignoring the most basic rules of personal finance, sold the house in the early '90's, and parked the money in tech stocks.

In the face of this example of how much better it is to be lucky than smart, why should we bother with weighty tomes such as the book under review? That the meltdown of Barings Bank did *not* require Nobel Laureates --- just a trader willing to take ridiculously large positions --- suggests that the only thing worse than the flawed risk management procedures we have are no procedures at all. The methodologies recommended by the authors, two of whom were named “Risk Manager of the Year” by the Global Association of Risk Professionals (GARP), may not be the last word in quantitative risk management. They are, however, useful “first words” for bankers confronted with ever increasing complexity in technology and available products.

To their credit, the banking regulators of the OECD countries realized these needs even before the market meltdowns of the '90's, and so *Risk Management* begins at the beginning, with a review of the history leading up to the current banking regulatory environment. This review, like much else in the book, is exhaustive (and sometimes exhausting!). Nevertheless, risk management is currently such a hot topic in many financial institutions primarily because of ever increasing regulatory pressure.

The authors also include a summary of the innovations in financial theory that have made modern risk management possible. Readers will probably find this account, though technically accurate and reasonably complete, less useful than preceding sections. The problem is that the authors assume that the reader shares their mathematical facility. Most such readers will already have seen this material elsewhere. Other readers will probably require book length expositions of such topics as the Capital Asset Pricing Model (CAPM) and options pricing theory before tackling this book. An introductory note of warning would be helpful here!

However, the reader is rewarded in subsequent chapters for braving the mathematical difficulties of the first one. In addition to the obligatory discussion of the “Value at Risk” approach to market risk, the authors provide clear and complete discussions of credit risk (which is still the largest source of risk faced by most banks). Because the authors are willing to use a formula when formulas are called for, the competing methodologies of CreditMetrics, Credit Plus, and the KMV Corporation are set forth in sufficient detail that that an experienced practitioner could implement all three and compare them (Don't bother, though --- the authors claim that all three give roughly the same answers on the same inputs.). The discussion throughout is filled with "extras for experts," such as an inventory of the most critical parameter dependencies in each model.

Recent thinking in the field has identified a plethora of different kinds of financial risks, including the currently fashionable topic of "operational risk." Here, the authors admit from the beginning that "operational risk (OR) is not a well defined concept…." On the other hand, the authors observe that "the difficulties in assessing OR do not imply that it should be ignored …", especially since the regulators are increasingly aware of its importance. In fact, many of the catastrophic losses that have placed entire institutions in jeopardy, such as Joseph Jett's arbitrage of Kidder's bond trading systems, are properly classified as operational losses. What is notable about the coverage is that it is the first time that I have seen a plausible discussion of how operational risk should be, not only measured, but also managed.

Operational risk also includes the risk of fraud. Bloomberg's recent list of the "ten largest financial fiascos of the past 10 years" includes eight due at least partly to fraud that remained undetected until losses exceeded $100 million. I would argue that the problem is simply that we are all so wedded to quantitative methods and the technology to implement them that we forget that emotions play a big role in *any* human activity. According to the *Time* Magazine coverage of the demise of Barings, Nick Leeson's colleagues heard him throwing up in the bathroom every morning before starting work for the two weeks prior to the day that the collapse was announced,. Yet nobody before the collapse thought to make the obvious connection between such a dramatic symptom of extreme stress and Leeson's position as a "big swinging d-ck".

The authors do not keep it a secret that quantitative methods sometimes fail. Towards the end of the book is a short chapter on "model risk," or the risk that the calculations used for pricing and/or hedging are somehow inadequate. In that laundry list of things that can (and have!) gone wrong, former Treasury Secretary Robert Rubin was quoted in the October 4, 1998 edition of the *New York Post* as saying,

> *"The other author of the Black-Scholes model was Fischer Black, who worked with me at Goldman. I was always told how our model showed that one of our positions would be going up while another was going down. But when trouble came, all those positions went in one direction, which was down."*

Nevertheless, if, as is now widely recognized, the banking business is not about money, per se, but about managing financial risk, quantitative risk management is here to stay. Financial practitioners who accept this development will welcome *Risk Management*.