Book Reviews

Alternative Risk Strategies, by Morton Lane, 2002, London: Risk Waters Group Ltd.

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As vividly revealed throughout Morton Lane's edited volume, *Alternative Risk Strategies*, the market strives incessantly towards greater efficiency. Alternative risk strategies comprise a set of relatively new approaches to risk management that essentially pose new capital market solutions to traditional insurance methods—and, in some cases, new insurance solutions to established capital market mechanisms. Examples include securitization of insurance liabilities (life insurance or property catastrophe risk), risk swaps, private equity capital guarantees, and M&A insurance. As defined in this book, the scope of alternative risk strategies extends to nontraditional investments by insurers, including asset-based securities and hedge funds. In each case, the impetus for developing these new strategies is improved efficiency in transferring or financing risk. Both the wide sweep of alternatives and the details of individual structures provide fascinating evidence of the creative innovation stimulated by market competition.

The book is divided into six sections. The first describes different types of alternative risk structures, including reinsurance, CAT bonds, industry loss warranties, risk swaps, contingent capital, finite risk insurance, and captives. The second section includes three papers that focus on determination of market price for CAT bonds and reinsurance. The third section focuses on computer simulation models of catastrophe loss and terrorism risk. The fourth section, entitled "Industry-Specific Practices and Solutions," includes a variety of papers focusing on new developments in management of insurance company assets and liabilities. The fifth section includes essays dealing directly with risk management from a portfolio perspective. Finally, the last section focuses on accounting, legal, and regulatory issues associated with alternative risk transfer.

Taken as a whole, the book's essays reveal a tension between the potential efficiency gains from alternative risk strategies and the fact that these so far have gained little foothold in the insurance industry. The reasons why are nearly as interesting as the solutions themselves. In addition, there is a nagging concern, echoed several places throughout the book, that the diversification benefits associated with particular risk strategies may break down in a crisis—exactly when you need them most. Overall, however, the contributors present an objective view of alternative risk strategies that is positive on balance. Although development on the insurance side admittedly has been slow, the authors take the position that alternative risk strategies will continue

to grow in importance because they provide improved diversification opportunities compared to traditional mechanisms.

The source of efficiency gains associated with these new risk strategies emanates from opportunities for merging and blending traditional insurance functions with activities previously restricted to banking. As Morton Lane states, "All of the contributions involve the intersection of insurance and finance. All the contributions involve transactions that have one party ceding risk and another party assuming it . . . . Sometimes this transfer takes place within insurance markets, sometimes between insurance markets and capital markets." Allen, Bain, Jones, and Shah (Chapter 28) view alternative risk strategies as having two components: (a) securitization of insurance liabilities and (b) "insuratization" of new kinds of risk. As such, the book includes several essays that focus on the most well-known example of insurance securitization: catastrophe bonds. Cummins, Lalonde, and Phillips (Chapter 2) argue that traditional reinsurance is not efficient because the market is subject to price and availability cycles. On the other hand, holding large amounts of capital to protect against catastrophe may not be efficient either. CAT bonds enhance efficiency because they transfer risk from insurers to the entire capital market in the form of a zero beta security. Similarly, securitization of life insurance allows a company to extract the value embedded in its ongoing business, thereby freeing up capital needed to support additional growth. Millette et al. (Chapter 19) write, "The development of securitization technology and a knowledgeable investor base allows capital to become a less critical factor for success, and provides a vehicle to allow the highest-skill participants to lead the sector."

Just as it can be efficient for insurers to securitize their liabilities, thereby spreading risk to capital markets as a whole, it can also be efficient to "insuratize" certain capital market transactions. Gabriele Zeindler (Chapter 21) focuses on the emergence of new guarantee structures for private equity. She argues that insurers are particularly efficient at providing these guarantees because private equity has low correlation with liabilities and only moderate correlation with existing investments of insurers. Likewise, new insurance products are emerging to reduce risks associated with mergers and acquisitions (Govrin and Kaiser, Chapter 22). The book's message is clear: insurance is one type of financial capital and, as such, represents one alternative for managing risk. Some risks are better managed with insurance solutions; others with capital market solutions. Alternative risk strategies represent the market's collective attempt to bridge the institutional and regulatory silos of the insurance and banking worlds. As Clive O'Donnell (Chapter 30) concludes, "[Alternative risk transfer] has come about because of imbalances in the positions of banks and insurers."

As the book makes clear, although risk swaps and securitizations in financial markets outside of insurance have experienced tremendous growth, the insurance industry has not been particularly successful in transferring its liabilities to capital markets. Taken together, the essays suggest multiple reasons for this sluggish response. Perhaps the most important cause, as noted in several essays, is "lack of transparency" or "data uncertainty." Creation of a catastrophe bond requires detailed information about the underlying risk. Although analysts use complex catastrophe simulation models to generate data needed to rate the bond, the models have a lot of uncertainty. Depending on the particular model used, estimates of risk can vary widely (Khater and Kuzak, Chapter 13). A second issue is how recovery for a CAT bond or swap is triggered. As

Cummins, Lalonde, and Phillips (Chapter 2) point out, securities with indexed triggers are more efficient than securities with indemnity triggers due to lower transactions costs, but only the largest insurers can handle these without incurring undue "basis risk." In addition, though triggers based on industry loss does not have the moral hazard problems of indemnity triggers, industry loss data are hard to obtain quickly and accurately.

A third limiting factor is absence of an established pricing model for insurance risk transfer. Major and Kreps (Chapter 10) present empirical evidence to show actual reinsurance prices vary widely for the same risk and are difficult to reconcile with theory. Shaun Wang (Chapter 11) tackles this issue directly. Wang argues the competitive price for a CAT bond depends on both the supply (insurer) and demand (investor) sides of the market. From the insurer's perspective, CAT bonds are an alternative to traditional reinsurance whereas from the investor's side, CAT bonds must be compared with other corporate bonds. Wang uses historical CAT bond prices together with the underlying "loss exceedance curves" for these bonds to infer the market price of risk. (A "loss exceedance curve" shows, for increasing levels of loss, the probability of exceeding that loss.) Wang uses this information to transform or "risk adjust" the loss exceedance curves so that the discounted expected value of loss in the transformed curve matches the observed market price. This transformation thus allows one to quantify and incorporate the observed market price of risk into a familiar insurance pricing framework. Although his model does a good job of replicating the prices at which CAT bonds have actually traded, one wonders somehow whether those observed prices were really "right" to start with. Can this model be used to establish "fair" CAT bond prices going forward? Wang's paper is stimulating and readable, providing ideas to keep researchers busy for a long time.

In addition to data problems, transactions costs, and pricing uncertainties, many analysts believe the CAT bond market has not taken off simply because the price of its substitute, reinsurance, has been perceived by insurers as costing less. Major and Kreps (Chapter 10) present strong empirical evidence to show that CAT bonds so far have been a more expensive risk transfer alternative for insurers than traditional reinsurance. One factor that complicates this comparison is that CAT bonds often provide multiyear coverage whereas reinsurance contracts typically require annual renegotiation. Thus, CAT bonds help to protect insurers against volatility in the reinsurance market. Because this benefit is difficult to quantify, however, insurers may tend to undervalue it.

Fundamentally, alternative risk strategies increase efficiency to the extent that they provide expanded opportunities for portfolio diversification for all capital market participants. Although the text provides numerous examples of this, there are a couple cautionary threads running through some of the essays. Citing events leading to the collapse of the Long-Term Capital Management hedge fund in 1998, Blum, Dias, and Embrechts (Chapter 16) argue that the observed correlation between outcomes for different risks can suddenly increase in an extreme downturn, leading to a much larger loss than anticipated. The key point is that linear correlation may be insufficient to describe the dependence between risks, in particular in an extreme "tail" scenario. Modeling the underlying copula, not just the correlation coefficient, may be needed in order to understand the behavior of a financial product in an extreme event—and to be able to price it fairly.

Bill Riker (Chapter 25) echoes this view, stating that "experts . . . have made surprisingly little progress in managing true tail risk in their business" and that "management of tail correlation in insurance organizations is probably the most important and most difficult issue faced by insurance organizations." Although the theoretical case is compelling, copula modeling is difficult on a practical level because typically there are insufficient data. As Riker points out, scenario testing and subjective parameter setting may be the only options. Although diversification benefits associated with ordinary fixed-income products clearly do dissipate under stress, Heike and Kiernan (Chapter 27) believe this tail dependence does not apply to CAT bonds. Lack of tail dependence suggests a potentially very important benefit of CAT bonds that may not be fully reflected market price.

The second cautionary note concerns the degree of credit risk that insurers have taken onto their balance sheets in the form of asset-backed securities over the past few years. Ironically, although insurers have not been too successful in marketing their liabilities to the capital market, they have aggressively taken on new asset risk, especially credit risk shed by the banking industry, in an attempt to exploit regulatory arbitrage opportunities, diversify their investment portfolios, and improve ROE. Remy and Greiger (Chapter 18) worry that insurance companies may have taken on too much credit risk, leading to an unintentional concentration of systemic default risk in the insurance industry. David Rule (Chapter 32) cautions that if insurers have indeed taken on credit risk that they do not understand, then alternative risk strategies, rather than increasing market efficiency, could, at least temporarily, lead to a deterioration in risk assessment standards.

Two essays included in this volume do not fit neatly into the discussion above, yet are extremely interesting and deserve special mention. The first of these focuses on an important question faced by many insurers, particularly those not publicly traded—namely, how to measure cost of capital. According to CAPM, only systematic risk affects the cost of capital. Given the low market beta associated with insurance liabilities, however, this typically results in a cost of capital that "just feels too low" given the risk the insurer is taking on. An alternative approach bases cost of capital on an insurer's total risk. Neil Doherty (Chapter 24) presents a cost of capital model that appropriately reflects both systematic and nonsystematic risk. According to Doherty, although only systematic risk impacts the required return to equity, nonsystematic risk increases the probability of insolvency and thus imposes real costs on bondholders. These nonsystematic frictional costs lower the expected earnings of the insurer, while systematic risk results in a higher discount rate. Doherty's essay provides a theoretical framework without any attempt at empirical investigation. The industry urgently needs a practical approach to measuring cost of capital that goes beyond the simple CAPM framework. Doherty's paper is a good starting point.

The second essay, perhaps my favorite among the 32 essays in this volume, is the paper by Gordon Woo on modeling terrorism risk. According to Woo, the fundamental distinction between natural hazards and terrorism is that "Nature may be subtle, but is not malicious" (Einstein). Woo describes new models that draw upon biological principles of cell formation as well as the behavior of ants and birds ("swarm intelligence") to understand and predict terrorist behavior. Although it is hard to see how all of this stuff can be quantified, the leap to sociobiology is fascinating.

This book is useful on several levels. First, it provides a great deal of "how to" reference detail about specific risk-transfer mechanisms, such as the particular features of the CAT bonds issued to date or how to set up a captive. Second, several essays describe succinctly some of the most important theory emerging in this area—in option pricing, dependence modeling, and cost of capital. Third, although the essays are wide ranging, a clear message emerges, made all the more compelling by the fact that so many authors are conveying it: Despite slow growth in the insurance sector, alternative risk strategies are efficient because they increase opportunities for diversification, either for the issuer or the investor. Over time, this drive for efficiency will continue to push the industry toward greater acceptance of new methods for managing risk.

Asset Pricing, Frontier of Real Estate Finance, Vol. 1, by Jianping Mei and Hsien-hsing Liao, New Jersey: World Scientific

Reviewer: Tong Yu, University of Rhode Island

This volume is a collection of articles that demonstrates how finance can be applied to obtain new insights into real estate risk and valuation. The book contains 11 chapters, focusing on the following four subjects: (1) risk and return behaviors of real estate investment (Chapters 2–4); (2) short-term trading strategy of securitized real estates (Chapter 5); (3) impacts of real estate investment on the value of institutional investors (Chapters 6–8); and (4) risk and return behaviors and benefits of international real estate diversification (Chapters 9–11).

Chapter 1, "Introduction: Real Estate Analysis in a Dynamic Risk Environment," summarizes the book and highlights the importance of analyzing real estate investment.

Chapter 2, "The Predictability of Returns on Equity REITs and their Comovement with Other Assets," by Crocker H. Liu and Jianping Mei, extends return predictability literature by including real estate, particularly equity real estate investment trusts (EREITs). EREIT is traded as a stock on the stock exchange but represents an underlying ownership in the portfolio of real estate. They find that expected excess returns for EREITs are more predictable than expected excess returns for other securities.

Chapter 3, "The Predictability of Real Estate Returns and Market Timing," by Jianping Mei and Crocker H. Liu, provides moderate evidence that investors can exploit the level of predictability associated with excess returns using various active market timing strategies to realize the superior performance over a buy-and-hold strategy.

Chapter 4, "A Time-varying Risk Analysis of Equity and Real Estate Markets in the U.S. and Japan," by Crocker H. Liu and Jianping Mei, shows that Japanese equity and real estate markets do not behave in a parallel manner to U.S. capital markets by applying a present value model which allows for a time-varying expected discount rate in conjuncture with a vector autoregressive (VAR) process.

Chapter 5, "Price Reversal, Transaction Costs, and Arbitrage Profits in Real Estate Securities Market," by Jianping Mei and Bin Gao, examines the return reversals of exchange-traded real estate securities using an arbitrage portfolio approach. They find reversals could be exploited by arbitrage traders if trading costs are ignored. However, the arbitrage profits disappear after considering transaction costs.