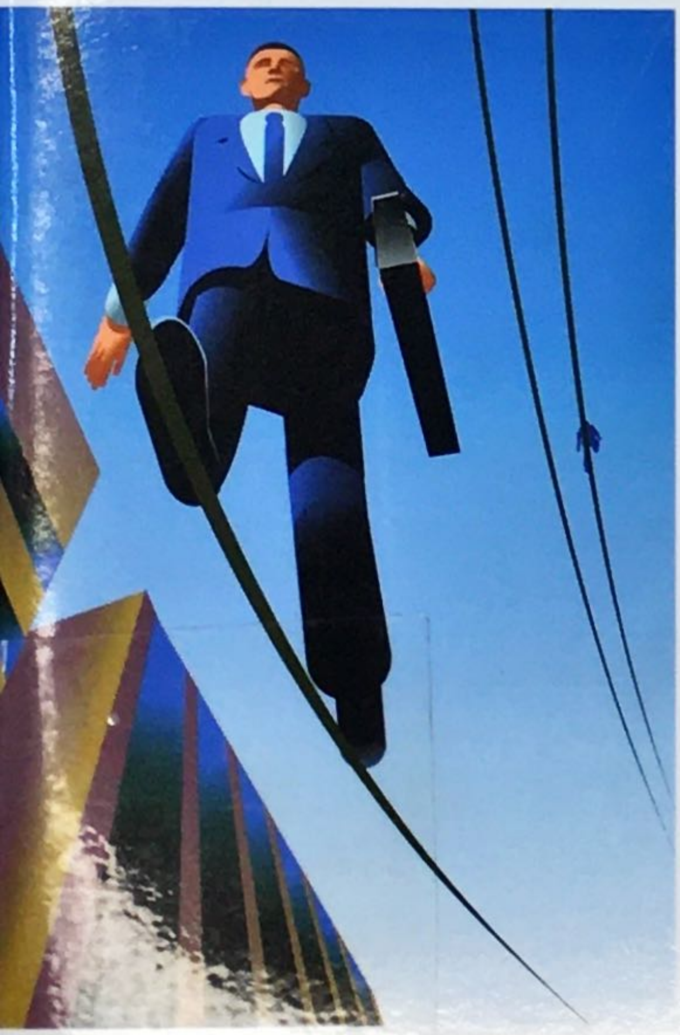
IDEAS WITH IMPACT

Harvard Business Review ON Managing External Risk



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Harvard Business Review

ON

MANAGING EXTERNAL RISK

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ON

MANAGING EXTERNAL RISK

A HARVARD BUSINESS REVIEW PAPERBACK

Contents

The New Arsenal of Risk Management

KEVIN BUEHLER, ANDREW FREEMAN, AND RON HULME

Executive Summary

THE GLOBAL BANKING SYSTEM is facing a severe liquidity crisis: In the first half of 2008, major financial institutions wrote off nearly $400 billion, causing banks around the world to initiate emergency measures. Similar crises have occurred within recent memory: Think of S&Ls, the dot-com bust, and Enron. Risk is, quite simply, a fact of corporate life—but because risk-management research has increasingly emphasized mathematical modeling, managers may find it incomprehensible and thus shy away from powerful tools and markets for creating value.

Buehler, Freeman, and Hulme, all with McKinsey, describe the evolution of risk management since the 1970s, show how new markets

have changed the landscape in both financial services and the energy sector, and explain what it takes to compete in the current environment. To demonstrate how significant a factor risk can be when incorporated into strategy and organization, they take the case of Goldman Sachs—which, despite its reliance on highly volatile trading revenues, has so far avoided the big write-offs that have afflicted its leading competitors. The authors believe that this is because Goldman takes the antithesis of the typical corporate approach—its culture embraces rather than avoids risk. And, they say, Goldman very efficiently employs all four of the following factors: quantitative professionals, strong oversight, partnership investment, and a clear statement of business principles, with emphasis on preserving the company's reputation.

Staying on the sidelines of risk management may have shielded some companies from crisis, but it has also prevented them from growing as quickly as they might have. In their companion article, "Owning the Right Risks," the authors outline a process that will enable executives in any company to incorporate risk into their strategic decision making.

DISCUSSIONS OF RISK usually come to the forefront in times of crisis but then recede as normalcy returns. As we write, the global banking system is facing a major credit and liquidity crisis. Losses from subprime mortgages, structured investment vehicles, and "covenant lite" loans are creating a credit crunch that may in turn trigger a global slowdown. In the past year major financial institutions have written off nearly $400 billion, and central banks around the world have initiated emergency measures to restore liquidity. Several other crises have occurred within memory: the U.S. savings-and-loan collapse in the 1980s and 1990s, Black Monday in 1987, the Russian debt default and the related dive of Long-Term Capital Management in 1998, the dot-com bust of 2000, and the Enron-led merchant-power collapse of 2001.

The resounding message is that risk is always with us. Executives need to wake up to that fact. Unfortunately, a growing emphasis on mathematical modeling has rendered much of the risk-management debate and research incomprehensible to those outside the finance function and the financial services industry. As a result, many corporate managers have shied away from the powerful risk-management tools and markets created over the past three decades—and thus have forgone considerable opportunities to create value.

Our aim here is to help managers understand both the advantages and the limitations of the markets and tools that are implicated in the credit and liquidity crisis. We will describe the evolution of risk management in recent decades, show how new markets have changed the landscape in both financial services and the energy sector, and explain what it takes to compete in the current environment. These analyses will help readers make sense of the crisis and will illustrate just how powerful a lens risk can be when applied to corporate strategy and organization. In the companion article published in this issue, we describe a process whereby executives in all companies can incorporate risk into their strategic decision making.

The Idea That Changed the World

For the first 70 years of the twentieth century, corporate risk management was largely about buying insurance. Risk management in the financial sector was also rudimentary: Bank regulators lacked tools for measuring risk in the system, so constructive intervention was difficult. Banks themselves had no way to control the interest-rate risk in their loan portfolios or to quantify and manage credit risk—in part because few alternatives to insurance existed. To be sure, some futures and options contracts were written and sold, but reliable tools for pricing them were rare, and the markets for these securities were thin and characterized by wide bid-ask spreads.

The low level of interest in risk management was also to some extent a product of prevailing thought in finance, originating with Franco Modigliani and Merton Miller's "indifference theory," which argued that a company's value was not (in most cases) affected by capital structure or hedging, and the capital asset pricing model (CAPM), developed by William Sharpe and others, which argued that risk should be managed primarily through portfolio diversification by investors. (For a summary of the main theories relating to the field, see the exhibit "The Evolution of Risk Management.")

All this began to change in 1973, with the publication of the options-pricing model developed by Fischer Black and Myron Scholes and expanded on by Robert C. Merton. The new model enabled more-effective pricing and mitigation of risk. It could calculate the value of an option to buy a security as long as the user could supply five pieces of data: the risk-free rate of return (usually defined as the return on a three-month U.S. Treasury bill), the price at which the security would be purchased

The Evolution of Risk Management

This timeline describes milestones in the development of risk management and their relevance today.

1952: Mean variance (aka modern portfolio theory)

Harry Markowitz

Essence: Investors can analyze risk as well as their expected return

Relevance: Provides the basis for portfolio choices to achieve the optimal level of risk for a given return

Late 1950s, early 1960s: State preference theory

Kenneth Arrow, Gérard Debreu

Essence: An efficient allocation of resources and risks requires a "complete" set of securities that permits agents to hedge all risks

Relevance: Underpins derivatives and shows that the ultimate role of securities markets is to efficiently allocate risk across society

1958: "Indifference theory"

Franco Modigliani, Merton Miller

Essence: In a perfect market (no taxes, bankruptcy costs, or asymmetric information), the value of a company is independent of its capital structure

Relevance: Doesn't hold true in the real world, suggesting the need for efficient capital structure and risk mitigation through hedging

1960s: Capital asset pricing model (CAPM)

William Sharpe et al.

Essence: Markets compensate investors for accepting ***systematic***—or market—risk, but do not discount for ***idiosyncratic*** risk, which is specific to an individual asset and can be eliminated through diversification

Relevance: Affects decisions about hedging—which should be left to investors—and about whether or not to mitigate specific risks

1973: Options-pricing model

Fischer Black, Myron Scholes, Robert C. Merton

Essence: The volatility of a security is a key factor in options prices

Relevance: Allows major new risk transfer, while the related field of real options means companies can put a value on waiting

1976: Arbitrage pricing theory

Stephen Ross

Essence: The price of a security is driven by a number of factors, which are either macroeconomic or market indices

Relevance: Permits segmentation of CAPM systematic risk into factors or components. If prices diverge from expected returns, investors can use arbitrage to bring them back into line

1977: Underinvestment problem

Stewart Myers, Clifford Smith, René M. Stulz

Essence: Stockholders refuse to invest in low-risk/low-return assets to avoid shifting wealth from themselves to debt holders (mirror image of the asset substitution problem)

Relevance: Suggests there is potential shareholder value in better risk management through better investment decisions

1979: Binomial option pricing model

John Cox, Stephen Ross, Mark Rubinstein

Essence: Taking into account variations over time in the price of the underlying financial instrument leads to more-accurate pricing of some options

Relevance: Allows much deeper markets for long-dated options and options on securities paying dividends

1993: A framework for risk management including hedging

Kenneth Froot, David Scharfstein, Jeremy Stein

Essence: The goal of risk management is to ensure that a company has cash available for value-enhancing investments

Relevance: Theoretically supports managers trying to manage risk as a strategic set of choices

(usually given), the current price at which the security was traded (to be observed in the market), the remaining time during which the option could be exercised (given), and the security's price volatility (which could be estimated from historical data and is now more commonly inferred from the prices of options themselves if they are traded). The equations in the model assume that the underlying security's price mimics the random way in which air molecules move in space, familiar to engineers as Brownian motion.

The core idea addressed by Black-Scholes was optionality: Embedded in all instruments, capital structures, and business portfolios are options that can expire, be exercised, or be sold. In many cases an option is both