The New Arsenal of Risk Management

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For the first 70 years of the twentieth century, corporate risk management was largely about buying insurance. Risk management in the financial services industry was also rudimentary. The low level of interest in risk management was influenced by Modigliani and Miller who argued that a company's value was not affected by capital structure or hedging. The capital asset pricing model (CAPM), developed by William Sharpe and others, contended that risk should be managed primarily through portfolio diversification by investors.

All this began to change in 1973, with the publication of the Black-Scholes-Merton options-pricing model. The core idea addressed by Black-Scholes-Merton was optionality. Embedded in all instruments, capital structures, and business portfolios are options. For example, the holders of equity in a company with debt in its capital structure have an option to buy back the firm from the debt holders at a strike price equal to the company's debt. Similarly, the emerging field of real options identified the options implicit in a company's operations – for example, the option to cancel or defer a project based on information from a pilot.

The emergence of various computational tools facilitated the quantification of risk. The handheld electronic calculator enabled easy calculation of option prices. In 1975 the first personal computers were launched. In 1979, VisiCalc, the first spreadsheet designed to work on a personal computer was launched. By the 1980s, the trading desk had various computational tools to identify, price, and trade different kinds of options. Among the most influential machines were workstations and software that allowed traders to run Monte Carlo simulations on laptops, instead of the expensive and inaccessible mainframe computers used earlier.

Derivatives markets began with currencies, equities, and interest rates and quickly expanded to include energy, metals, and other commodities. Later, instruments emerged that allowed the hedging or transfer of credit risk. By the end of 2007, the total value of derivative contracts had reached almost $600 trillion.

A company's equity can be seen as a cushion against the risk of performing badly. The risk that its market value will go down is borne by the shareholders. No such cushion is provided by debt. Interest must be paid on debt no matter how the company performs. A company must have an appropriate debt-to-equity ratio. Too large a cushion, i.e., using more equity capital than is required means that the company is using capital inefficiently. Too small a cushion means the company is running the risk of default or financial distress or not exploiting growth opportunities due to smaller-than expected operating cash flows. The optimal debt level is determined by a company's key market, financial, and operating risks. It is directly affected by actions that mitigate those risks. Managers can therefore add value by separately and more efficiently hedging some of the risks ordinarily managed by the equity cushion.

Many important innovations in risk management have been pioneered by the banking and securities industries. This is not surprising. First, financial institutions are in effect risk intermediation businesses. Second, these industries are rich in data and thus are amenable to quantification of risk using new technologies. Third, they are typically highly leveraged and are closely monitored by regulators who, have pushed for improved risk management as bank failures can play havoc with the financial system.

Till the early 1990s, most commercial banks lacked tools such as VaR, credit risk portfolio models, and RAROC (risk-adjusted return on capital). In contrast, securities firms and investment banks had become quite sophisticated in their use of risk-management tools. Because securities firms and investment banks were skilled at packaging and trading risks, and commercial banks were skilled at originating credit, a wave of mergers began. Eventually distinctions between the two kinds of organizations blurred.

Commercial banks can now refine their portfolios to retain only those risk categories in which they have a comparative advantage. They can modify their credit exposure with credit default swaps that protect against a given company's financial distress. Thus, they can lend more to a particular customer without increasing their overall exposure to that customer's sector or increase their exposure to a sector without necessarily having to make fresh loans.

Risk management capabilities vary across organizations. Not all banks have demonstrated excellence in risk management in recent times! But Goldman Sachs is a good example of an organization which excels at risk management. Goldman ensures that its managers are familiar and comfortable with risk, can debate freely and are willing to make decisions quickly when necessary. The company's aggressive hedging in 2007 in the subprime mortgage markets was a striking example of this. Sensing that trouble was brewing, Goldman decided to move quickly to reposition itself. Of course, the bank was also lucky in getting both the decision and the timing correct.

Creating a risk management culture so contrary to people's instincts and fears isn't easy. Goldman's success stems from four factors.

Beginning in the early 1980s, Goldman recruited experts in mathematical modelling, who provided the quantitative and intellectual rigor.

Under Jon Corzine's leadership, Goldman restructured its risk-control systems, establishing the Firmwide Risk Committee to oversee market and credit risk worldwide. The committee, which meets weekly, aims to ensure that certain risk-return standards are applied consistently across the firm. This kind of an integrated, top down approach certainly seems to have helped Goldman.

From its earliest days in 1869 to its IPO in 1999, Goldman was funded largely by its own partners. Goldman's partners usually left as much as 80% of their after-tax earnings in the firm, withdrawing substantial amounts of capital only at retirement. Goldman’s most senior executives continue this heritage. The fact that employees still own a significant portion of equity helps reinforce the partnership culture.

Finally, Goldman’s values lay a strong emphasis on risk-management. New hires are taught that reckless behaviour can harm the firm’s reputation. They are encouraged to solicit independent views from risk, compliance, legal and other control functions when potentially controversial choices arise.