



On Risk

WE ALL TALK ABOUT RISK, BUT WHAT IS IT? Although its meaning takes many forms, risk as most actuaries encounter it incorporates both the possibility of incurring a loss and the consequences if a loss occurs. Although risk can be viewed in terms of a bottom-up loss, I prefer a more general concept: the adverse effect compared to an expectation—quantified as the price that would have to be paid to eliminate that excess loss, or an estimate of that price, which can reflect risk preference (a key actuarial challenge, especially when prices for certain risks are over- or undervalued or where there is no market).

In contrast, many involved with financial markets view risk as volatility in the return from or value of an investment or financial instrument. I prefer my definition, although “degree of volatility” might be a special type of risk. Whole new fields of risk management and enterprise risk management have been developed to better deal with risks in excess of a given level of tolerable loss.

Since it’s easier to understand a concept with an example, let’s discuss risk in terms of subprime mortgages (note that prime mortgages are performing almost as poorly). This risk is one that several ex-CEOs now wish they’d never encountered.

It’s often forgotten that, before the current meltdown, these and similar investments were seen as a source of large reported profits. Thanks to the efforts of financial engineers seeking additional yield, complex products were designed promising bountiful returns for limited risk. These products incorporated greater contagion risk than was priced for. To quote Nassim Nicholas Taleb, the author of *The Black Swan*, “Profits were simply cash borrowed from destiny with some random payback time.”

Those ex-CEOs happily accepted accolades and incentives when the risk-related income associated with mortgage products exceeded their corresponding costs; that is, when the extent of the loss due to events for which the risk was charged wasn’t apparent. As compensation for taking on risk, premiums were earned—both with respect to risk aversion and to the inevitable fat right tail of the distribution. Believing the risks were remote, the CEOs were amply rewarded during the first part of their bet that an extreme event wouldn’t happen on their watch (assisted by slicing and dicing the components of risk into pieces to be shared with others, or by securitization, which wasn’t, unfortunately for them, properly recognized). Maybe they were unlucky, but companies can’t manage risks on the basis of luck without eventually getting burned.

We have found that, given the level of risk management applied, the price for the right-tail extreme risk wasn’t sufficient. And in some cases, neither incentive compensation nor

capital requirements appropriately reflected the risks (in this case, bets) taken during favorable and unfavorable periods. It’s clear that the subprime problem isn’t simply one of timing or an accounting standards deficiency but a failure to effectively manage risk. Maybe a better way of looking at the net return on risk would be over the expected lifetime of the risks involved.

From an outsider’s perspective, these were bets that for a while seemed like “risk-free” tranches or surefire excess yield taken on the basis of historical experience without proper risk management techniques to address the catastrophe or concentration risk (in the case of subprime mortgages, a large asset bubble, loose underwriting, and lack of independence of risk, all encouraged by securitization and external guarantees). Possibly some greed was involved, although it also might have resulted from somewhat-related normal quarterly earnings pressure.

To better understand the nature of return and risk over a given time horizon for certain financial instruments, I find it useful to categorize its components in terms of expected cost, risk, and return, including:

- › Time value of money applied to a risk-free set of cash flows, often reflecting a discount based on government spot rates and incorporating such factors as an inflation expectation and a sovereign risk premium, as applicable, although this may be an oversimplification;
- › Price of the risk associated with the expected liquidity (or timing uncertainty) and credit or counter-party effects; transaction and operational expense associated with the management of the assets;
- › Offsetting mitigating factors, including the use of risk management techniques such as pooling, diversification, third-party guarantees, or reinsurance, against liquidity or credit risk, although these may result in higher costs for the first three items;
- › The reward or profit for taking on the risk, although it’s often difficult to separate out this factor.

Will this situation happen again? Some have said that the mortgage crisis of the 1980s wouldn’t recur, in part because of new financial products, sophisticated risk management techniques, and smarter regulators. Although it’s uncertain what the next unexpected problem risk will be, it will occur again, and others will emerge. ●

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