
SOCIETY OF ACTUARIES

Article from:

# Risks and Rewards Newsletter

February 2003 – Issue No. 41

# Expensing Executive Stock Options:

## An Economic Middle Ground

by Jeremy Gold

Until recently, the corporate mantra was that stock options were not worth anything (in a financial reporting sense) until they were exercised. Shareholder-side theorists argued, very practically for the theorists, that they must be worth something or executives would not be so anxious to receive them. Per the theorists, the correct value of the options was to be determined by a suitably calibrated Black-Scholes model and the value should be expensed when the option was granted.

The executive side had theories as well. In addition to denying any value for newly issued out-of-or-at-the-money options, they argued that restrictions on exercise and forfeiture on quit diminished the value to the executives. To this they added a well-founded economic argument: the value of any good to an individual (his or her marginal utility) diminishes as more of the good is acquired. Executives are always over-exposed to their company's performance and stock and would always prefer another cash dollar to another dollar's worth of company stock (tax and other considerations aside).

Suppose that the Black-Scholes value of a particular option is $100. The executive-side arguments about utility and restrictive rules imply that the value to President Smith is only $60; by which they mean exactly this: Mr. Smith would accept $60 in additional compensation in lieu of the option.

Part of this diminished value may be described as "actuarial." Suppose Mr. Smith has a 20 percent chance of forfeit by quitting and that his tenure is unrelated to the performance of the company and its stock.[1] Taking advantage of this independence and relying on Møeller (2001) (NAAJ), we would recognize that for every five Mr. Smiths, only four would survive the forfeiture rules and thus the actuarially adjusted Black-Scholes value of the option would be only $80.

The remainder of the value discount we may attribute to Mr. Smith's over-exposure to company stock and to exercise restrictions. We note that regardless of Mr. Smith's preferences, the after-actuarial-adjustment cost to the shareholders of the options granted is $80 while the value to Mr. Smith is no greater than $60.

Why would rational contractors (shareholders and executives) be so wasteful? Why not just give Mr. Smith the $60 and be done with it? Now the theorists on both sides should be able to agree: "it's the incentive effects, stupid." Restricting Mr. Smith's option rights and over-loading him with securities tied to the firm will motivate him to stay with the firm and to perform more productively. How much will these incentives produce for the shareholders? If the negotiators have been sufficiently shrewd, the answer is $20.[2]

With this background we are ready to reach the accounting middle ground implied by the subtitle of this article. After the actuarial adjustment, the cost to the shareholders is $80 and that must be the credit entry for the transaction. The debit entries include compensation of $60 (which Mr. Smith would have been paid in cash, absent options) and an asset (human capital) of $20. The $60 becomes a current charge against corporate income. The $20 asset must be written down in a fashion that reflects the periodic diminution of Mr. Smith's forward-looking motivation. Under the fair value accounting paradigm (likely soon

1) If this were not the case we would not call this contingency "actuarial" and we would have to parse the associated discount into actuarial and "market or company-related" parts.

2) The negotiators will have to be shrewd indeed to deduce Mr. Smith's marginal utility (particularly in the case where options are layered on top of previously issued stock and options) and in estimating how motivated he is likely to be.

to replace the historic cost paradigm), the option would have to be marked-to-market at each reporting date with gains or losses (both actuarial and those attributable to recalculating the Black-Scholes value) becoming shareholder income or expense. To the extent that market value changes also affect Mr. Smith's incentives, appropriate adjustments would be made to the fair value of the human-capital asset.

## Acknowledgments

The author wishes to thank Lawrence Bader who began this conversation earlier this year; Benjamin Feller, who introduced the actuarial adjustment; and Keith Ambachtsheer (who, in turn, cites Brenner and Luskin), who made me aware of the human-capital asset.

## References

Ambachtsheer, Keith P., The Ambachtsheer Letter #199, August, 2002.

Møeller, Thomas, "Hedging Equity-Linked Life Insurance Contacts," *North American Actuarial Journal Vol. 5, No. 2*, April, 2001, pp. 79-95.

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## Redington Prize Nominations Due May 31

To promote investment research, the Investment Section sponsors a biennial prize of $2000 (U.S.) for the best paper on an investment-related topic written by an SOA member. The prize is named after F. M. Redington, the eminent British actuary who coined the term "immunization" in a 1952 paper that was published in the Journal of the Institute of Actuaries. The council has awarded six prizes since its inception:

1. "The Risk of Asset Default" *TSA XLI* (1989): 547-582 by Irwin T. Vanderhoof, Faye Albert, Aaron Tenenbein and Ralph Verni.
2. "Multivariate Duration Analysis," *TSA XLIII* (1991): 335-376 by Robert R. Reitano.
3. "Multivariate Stochastic Immunization," *TSA XLV* (1993): 425-461 by Robert R. Reitano.
4. "Interest Rate Risk Management: Developments in Interest Rate Term Structure Modeling," *NAAJ Vol. 1 No. 2* (April 1997) by Andrew Ang and Michael Sherris.
5. "Quasi-Monte Carlo Methods in Numerical Finance," *Management Science* (1996) and reprinted in Chapter 24 of *Monte Carlo: Methodologies and Applications for Pricing and Risk Management* (1998) by Corwin Joy, Phelim Boyle and Ken Seng Tan.
6. "Term Structure Models: A Perspective from the Long Rate," *NAAJ, Vol. 3, No. 3*, (1999) by Yong Yao.

The council is now seeking nominations for the next award. The criteria for selection are as follows:

**Publication Years:** The paper must have been published during the calendar years 2000 or 2001.

**Author:** A member of the SOA must have written the paper. In the case of a paper with multiple authors, a member of the SOA must be a major contributor to the paper.

**Content:** The topic must be judged to be timely, primarily of investment nature and of substantial value to SOA members.

**Source:** The paper may appear in any recognized SOA format, including *North American Actuarial Journal, Transactions, ARCH,* study notes and section newsletters. The paper may appear in non-actuarial journals or publications deemed to be of at least comparable quality by the Prize Committee. Such publications include, but are not limited to, The *Journal of Portfolio Management, Financial Analysts Journal, Journal of Finance and Journal of Financial* and *Quantitative Analysis.* If the paper is a result of an SOA seminar or colloquium, it must have been published either in a conference book available to the membership or in an acceptable journal. The journals, books and newsletters should be published in 2000 or 2001.

**Judging:** The selection criteria will include factors such as investment content, originality, practical significance, timeliness, relevancy and educational value to the membership. A prize will be awarded only if the Prize Committee deems the best eligible work to be of sufficient merit to justify an award. The Prize Committee members are Nino Boezio, Paul J. Donahue, Steven Easson, Luke Girard, Jeremy Gold, David Li, John Manistre, Robert Reitano, Michael Sherris, Elias Shiu, Ken Seng Tan, Richard Wendt and Yong Yao. The final decision for any award will rest with the Investment Section Council.

**Submission:** The paper must be submitted prior to May 31, 2003. The submission should be e-mailed to *nboezio@sympatico.ca*.