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Spinoff/Terminations and the Value of Pension Insurance: Discussion

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DISCUSSION

LARRY MERVILLE*: This paper attempts to value the insurance provided by the Pension Benefit Guarantee Corporation (PBGC) under Title IV of ERISA (1974). The author's approach is to use an option pricing framework to develop two put option valuation models. After an introductory overview of the issues and problem, the author presents two put models in Section I of the paper: (1) One model under the assumption of voluntary termination by the firm and (2) a second model assuming bankruptcy (involuntary termination) on the part of the firm. Section II of the paper contains some empirical estimates for the value of PBGC insurance using the models from part one plus some actual pension data from a survey reported in *Pensions and Investment Age* (July 11, 1983). The author concludes that the actual value of PBGC insurance to a company is fairly represented by the value of the put option and is bounded by the two put option values developed under the voluntary and bankruptcy scenarios of Section I. He also concludes that simply taking the difference between the actuarially determined value of the accrued benefits (A) and the value of assets in the pension fund plus 30 percent of equity ($F + 0.3E$) is a very low estimate of the real value of PBGC insurance to major U.S. corporations.

On balance the paper is well presented, technically correct, and tackles a difficult valuation problem. It attempts to place the decisions available to the firm with respect to a defined benefit pension program under ERISA in a value maximizing framework. However, there are at least three major assumptions made in the paper which effectively limits its importance and generality:

- A. In the referenced Amoroso [1] study of 1982, it turns out that only 72 percent of all pension benefits were both guaranteed *and* vested. The percentage of firms offering vested defined benefit plans today must be

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- significantly less than 70 percent. Thus, it might be argued that the paper addresses a problem which will disappear of its own volition and not be very important in the near future as firms switch out of defined benefit pension programs into either no programs or defined contribution programs.
- B. Analyzing the PBGC insurance valuation problem within a firm value maximizing framework through a put model procedure implies some givens which may not be close to being true in the real world. For example, in going from Equations (2), (3), and (4) to Equation (5), the partial differential put valuation equation, involves more than Ito's Lemma. It also assumes that it is possible to either form a hedge portfolio consisting of the traded put option and the underlying pension assets (plus 30 percent of equity) or some underlying general equilibrium conditions exist. Since the PBGC insurance put cannot be traded (or more importantly sold) by a firm, then the resulting valuation model [e.g., Equation (6)] is only theoretical with the actual market value of the put being no doubt significantly less due to its nonmarketable character. That is, should the PBGC price its insurance based on a put asset which is only theoretically traded in a market of its own?
 - C. The so-called "empirical estimates" of the two models presented in the paper depend in large part on a specification of the firm's funding behavior [see Equations (8) and (10)]. Other than that the signs of the coefficients seem to make sense, the author offers no theoretical justification as to why either Equation (8) or (10) is correct or why (8) and (10) are both correct but have different forms. Thus, the results in Table II, Panels A and B, should not be taken too seriously when making PBGC insurance pricing policy conclusions. The "empirical estimates" are more simulations than tests of actual data.

The models and their tests would be enhanced if the following suggestions were considered: (1) include in the models some of the diffusion equations relating to default-free bond pricing models (see Richard [4] and Dothan [3]) or consider put pricing models with interest rate uncertainty (Courtadon [2]); (2) improve the empirical estimates by combining the fund assets beta (β_F) with the firms equity beta (β_E) through a proper weighting scheme (e.g., $\sigma_S^2 = (W_F^2\beta_F^2 + W_E^2\beta_E^2)\sigma_M^2$); (3) account for the early exercise problems of the American put since most firms with pension plans do pay dividends, (as in Roll [5]); and (4) inclusion of taxes in the model would change the value of the PBGC insurance put.

To summarize, the author should be congratulated on modeling a very difficult financial valuation problem concerning the true value of PBGC insurance. He has completed a promising beginning as opposed to his beginning of a promised completion.

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