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## Valuing the strategic option to sell life insurance business: Theory and evidence <sup>☆</sup>

Paul J.M. Klumpes <sup>a,\*</sup>, Mark B. Shackleton <sup>b,1</sup>

<sup>a</sup> *Accounting and Finance Group, Warwick Business School, University of Warwick, Coventry CV4 7AL, UK*

<sup>b</sup> *Department of Accounting and Finance, Management School, Lancaster University, Lancaster LA1 4YX, UK*

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### Abstract

We present a simple put option pricing procedure within an asset–liability valuation model that can be used to estimate the incentives facing stock-based life insurance firms to voluntarily sell their businesses under various operating and regulatory conditions. Estimates are derived for samples of 11 sold firms and 24 continuing Australian life insurance companies over a period of industry consolidation. The put option values interact with other actuarial and accounting components of the fair value of these life insurance firms and are used to assess the effectiveness of accounting and actuarial measures of capital, under static or dynamic based solvency testing models. © 2000 Elsevier Science B.V. All rights reserved.

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\* Corresponding author. Tel.: +44-2476-572837; fax: +44-2476-523779.

*E-mail addresses:* paul.klumpes@warwick.ac.uk (P.J.M. Klumpes), M.Shackleton@lancaster.ac.uk (M.B. Shackleton).

<sup>1</sup> Tel.: +44-1524-594131; fax: +44-1524-847321.

## 1. Introduction

Recent years have witnessed a large-scale increase in the world-wide consolidation of financial services (Berger et al., 1999). Merton and Perold (1993) claim that these trends highlight the importance of management's strategic ability to exit from existing businesses, particularly for life insurance firms since they have long-term fixed liabilities. It has also led to increased demands by capital market participants for the public disclosure of the fair value of the assets and liabilities of life insurance firms. Barth and Landsman (1995) define fair value as the amount at which an asset could be exchanged in a current transaction between willing parties. Vanderhoof (1998) notes that although accountants, actuaries, regulators and analysts generally agree that the fair value of assets can be taken at market value, estimating the corresponding fair value of liabilities is far more problematic.

In the actual marketplace, which is characterized by change, uncertainty and competitive interactions, management may have valuable flexibility to alter its initial operating strategy in order to capitalize on favourable opportunities or to react so as to mitigate losses. Trigeorgis (1996) links this managerial operating flexibility to financial options. Thus, viewing life insurance funds as containing a put option, the liabilities play the role of the exercise price while the fund assets plus shareholder expectations of future profits on selling policies (the spread) play the role of the underlying asset or stock price.<sup>2</sup> Upton (1997) claims that option values are also potentially relevant to the fair valuation of life insurance firms.

This paper estimates management's put option to sell life insurance business as a separate component of life insurance firm fair value in Babbel and Staking's (1995) asset–liability model that distinguishes accounting and actuarial valuation elements. This calculation is potentially value-relevant to various decision-makers since an asset–liability valuation approach has recently been endorsed by the International Accounting Standard Committee (1999) as a basis for developing a uniform set of accounting principles for life insurance that is acceptable to both regulators and investors world-wide. The put value is based on a standard Merton (1973) two-variable, put option pricing model which Marcus (1985) extended to include a pension firm's termination option. We show that this asset–liability valuation model yields an estimate of the put option value of a life insurance business, which is terminated only when that action is optimal for the firm. The put option values derived allow for the calculation of fair value-based measures of capital in which the termination

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<sup>2</sup> The issue of life insurance policies gives firms the right to 'sell' the assets of the insurance policy plus a percentage of intermediary spread return to shareholders to the policyholders at a 'price' equal to the present value of life insurance liabilities. The gain to the firm equals the life insurance liabilities it transfers to the policyholders less the asset value the policyholders acquire.

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