

# Reinsurance and corporate taxation in the United Kingdom life insurance industry

Mike Adams<sup>a,\*</sup>, Philip Hardwick<sup>b,1</sup>, Hong Zou<sup>c,2</sup>

<sup>a</sup> School of Business and Economics, University of Wales Swansea, Singleton Park, Swansea, SA2 8PP, United Kingdom

<sup>b</sup> Institute of Business and Law, Bournemouth University, Fern Barrow, Poole, BH12 5BB, United Kingdom

<sup>c</sup> Department of Economics and Finance, City University of Hong Kong, 83 Tat Chee Avenue, Kowloon Tong, Kowloon, Hong Kong, China

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## Abstract

There are two main tax-related arguments regarding the use of reinsurance – the income volatility reduction and the income level enhancement arguments. The income volatility reduction argument contends that firms facing convex tax schedules have incentives to hedge in order to reduce the volatility of their annual taxable income and thereby lower expected tax liabilities [Smith, C.W., Stulz, R.M., 1985. Optimal hedging policies. *Journal of Financial and Quantitative Analysis* 19, 127–140]. The income level enhancement argument, advanced by Adiel [Adiel, R., 1996. Reinsurance and the management of regulatory ratios and taxes in the property–casualty insurance industry. *Journal of Accounting and Economics* 22, 207–240], is more specific to hedging via reinsurance. This perspective holds that reinsurance enhances current reported earnings via the receipt of reinsurance commissions and so increases tax liabilities. Consequently, insurance firms with high marginal tax rates should use less reinsurance than those with low marginal tax rates if tax matters. Prior studies using data on financial derivatives have produced mixed results on the validity of the first argument, while Adiel (1996) finds the second argument insignificant in his study of the use of reinsurance by a sample of United States (US) property-liability insurance firms. This study tests the two tax-related arguments using 1992–2001 data for a sample of United Kingdom (UK) life insurance firms. We find that UK life insurers with low before-planning marginal tax rates tend to use more reinsurance; in contrast, tax convexity is found to have no significant impact on the purchase of reinsurance and so the volatility-reduction argument is not supported.

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## 1. Introduction

The management of corporate taxes has been examined in the banking industry (e.g., Scholes et al., 1990; Beatty

et al., 1995; Chen and Daley, 1996) and in the insurance industry (e.g., Grace, 1990; Petroni, 1992; Cummins and Grace, 1994). Research in the United States (US) property–liability insurance industry (e.g., Petroni and Shackelford, 1995, 1999; Derrig and Ostaszewski, 1997; Gaver and Paterson, 1999; Ke et al., 2000; Petroni et al., 2000) suggests that managers can manage corporate taxes and/or meet regulatory capital (solvency) requirements through reserving and asset-liability management. Other research finds that these business objectives can also be achieved by transferring underwriting risks to other insurance entities through reinsurance treaties (e.g., see Hoerger et al.,

\* Corresponding author. Tel.: +44 (0) 1792 513035; fax: +44 (0) 1792 295626.

E-mail addresses: [m.b.adams@swansea.ac.uk](mailto:m.b.adams@swansea.ac.uk) (M. Adams), [phardwic@bournemouth.ac.uk](mailto:phardwic@bournemouth.ac.uk) (P. Hardwick), [hongzou@cityu.edu.hk](mailto:hongzou@cityu.edu.hk) (H. Zou).

<sup>1</sup> Tel.: +44 (0) 1202 965199; fax: +44 (0) 1202 965261.

<sup>2</sup> Tel.: +852 2194 2439; fax: +852 2788 8842.

1990; Berger et al., 1992; Adiel, 1996).<sup>3</sup> Indeed, since reinsurance is an important contingent financing (capacity enhancing) mechanism for primary carriers of insurance (Mayers and Smith, 1990) and taxes are potentially important determinants of firms' financing decisions (Graham, 1996a, 2003), the reinsurance-tax relation in the insurance industry is an important area for empirical research.

The corporate risk management literature (e.g., Smith and Stulz, 1985; Mayers and Smith, 1990; Garven and Louberge, 1996; Garven and Lamm-Tennant, 2003a; Graham and Smith, 1999) reports that if firms face convex (i.e., progressive) tax schedules, then risk management/hedging activities that reduce the variability of taxable income can help lower the expected net present value of future taxes (hereafter described as the income volatility reduction argument). Some studies test the income volatility reduction argument using data on financial derivatives, but produce mixed results.<sup>4</sup> For example, Barton (2001) and Dionne and Garand (2003) cite supporting evidence, while Tufano (1996) and Graham and Rogers (2002) find no support for the above view. Not surprisingly, Graham and Rogers (2002, p. 816) state that "... (whether) companies can reduce expected tax liabilities by hedging to reduce taxable income volatility is an important but unresolved hypothesis." In their analysis of the purchase of reinsurance by a sample of US property-liability insurance companies, Mayers and Smith (1990) and Garven and Lamm-Tennant (2003b) did not test the income volatility reduction argument of tax due to data limitations.

In this study, we test the income volatility reduction argument for corporate hedging using data on reinsurance purchases for a sample of UK life insurers over the period 1992–2001. Reinsurance provides a potentially interesting

setting within which to conduct this test for two reasons. First, unlike the use of financial derivatives, reinsurance cannot be used for speculative purposes and so our study offers a potentially cleaner empirical test of the income volatility reduction argument compared with prior studies using data on financial derivatives. Second, the reinsurance-tax relation is worth investigating because, in addition to the income volatility reduction effect, there is an alternative tax-related argument for reinsurance purchases – which does not normally exist in other forms of hedging (e.g., using financial derivatives). Specifically, Adiel (1996) points out that the receipt of reinsurance commissions increases the current period pre-tax earnings of insurers that purchase reinsurance and thereby increases their expected tax liabilities. Therefore, insurers facing high before-planning marginal tax rates are likely to use less reinsurance than insurers facing low before-planning marginal tax rates in order to reduce tax liabilities (hereafter described as the income level enhancement argument). We believe the income volatility reduction and income enhancement arguments are not mutually exclusive as reinsurance can affect both the level and variability of future taxable income. Hence, which tax effect predominates in the reinsurance decisions of insurance companies should be an interesting question worthy of empirical investigation.<sup>5</sup>

Examining the reinsurance-tax relation is important not only because reinsurance as an important risk management decision affects insurers' financial strength and solvency ability, but also because many industrial companies indirectly access reinsurance via captive insurance companies.<sup>6</sup> Indeed, Skipper (1998, p. 660) reports that over 90 percent of the top 500 companies in the US and over 80% of the top 200 companies in the UK have established captive insurance operations. Given such a widespread (indirect) use of reinsurance in the general corporate sector through captive insurance subsidiaries, the results of this study could also be of interest to parties in sectors outside the insurance industry.

If the income volatility reduction argument dominates managerial decision-making, insurance companies facing a convex tax position are likely to use more reinsurance

<sup>3</sup> Traditional risk reinsurance involves a direct insurer ceding all or part of its assumed underwriting risks to another company (the reinsurer) in return for a share of the gross premiums written (Berger et al., 1992). Risk reinsurance differs from more recent financial (finite) reinsurance arrangements that provide direct insurers with up-front capital representing the present value of liabilities with the level of ceded premiums linked to future claims and profit emergence. In contrast to risk reinsurance, financial reinsurance also involves very little (if any) transfer of risk from the direct insurer to the reinsurance company (Adiel, 1996). However, for our period of analysis (1992–2001) the use of capital support methods, such as financial reinsurance, was not widespread among UK life insurers (Sanders, 2000) and so financial reinsurance is deemed to be outside the scope of this study. Moreover, because we are concerned with the overall level of reinsurance in this study we do not distinguish between proportional reinsurance (i.e., where the reinsurer shares losses with the direct insurer on a fixed percentage of risks underwritten – e.g., quota share treaties) and non-proportional reinsurance (i.e., where a reinsurer only becomes liable for losses above the direct insurer's retention limit – e.g., excess of loss treaties). Winton (1995) observes that it is proportional reinsurance treaties that tend to predominate in the life insurance industry.

<sup>4</sup> The majority use of data on financial derivatives is due largely to the routine disclosure of such data in financial reports as well as the difficulty of obtaining data on other forms of corporate risk management (e.g., insurance purchases).

<sup>5</sup> Graham and Rogers (2002) report that there are tax shield incentives for corporations to hedge as more interest tax deductions can arise from expanded debt capacity. While such incentives are potentially important for industrial firms, they are relatively insignificant for insurers. For example, Gaver and Pottier (2005) note that conventional forms of borrowing (e.g., bank loans and bond issues) are typically very limited for insurers because under insurance regulations fixed debt contract claims are nearly always subordinate to policyholders' liabilities.

<sup>6</sup> A captive insurance company is an insurance subsidiary of a non-insurance parent company. Captives are often located in tax favorable offshore domiciles (such as Bermuda) and provide scope for managers of corporate groups to engage in transnational tax arbitrage (e.g., see Adams and Hillier, 2000). Non-insurance companies can access the reinsurance market via their captive insurance subsidiaries.

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