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Capital, corporate income taxes, and catastrophe insurance

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Abstract

We provide estimates of the equity capital needed and the resulting tax costs incurred when supplying catastrophe insurance/reinsurance using a partial equilibrium model that incorporates a specific loss distribution for US catastrophe losses. After consideration of insurer investment in tax-exempt securities, tax loss carry-back/forward provisions, and personal taxes, our results imply that the tax costs of equity finance alone have a substantial effect on the cost of supplying catastrophe reinsurance. These results help explain a variety of industry developments that reduce tax costs. Also, when coupled with non-tax costs of capital, these results help explain the limited scope of catastrophe insurance/reinsurance.

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1. Introduction

The magnitude of the tax disadvantage of equity financing (or equivalently, the tax benefits of debt financing) is an important and sometimes controversial issue in the corporate finance literature (see Graham, 2000). This paper quantifies the tax disadvantage of equity financing for catastrophe insurance arrangements. The focus on this particular sector is interesting and important for several reasons. First, the tax costs have important public policy implications. For example, the desirability of government reinsurance or indemnity

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for large losses from natural catastrophes or terrorism depends on private market supply of catastrophe insurance, which in turn depends on the magnitude of the tax costs. Also, proposals to reduce the tax disadvantage by allowing insurers to establish tax-sheltered reserves for catastrophe coverage have been introduced in the US Congress. Second, as we discuss more fully in the paper, efforts by insurers/reinsurers to mitigate the tax costs help to explain a number of developments in catastrophe insurance/reinsurance markets during the past decade.

To bond promises to pay policyholder claims following major catastrophes, insurers need to hold large amounts of capital (assets in excess of the present value of expected claim payments). Typically, equity holders provide most of the capital backing policyholders' claims.¹ The tax, agency, and asymmetric information costs associated with equity finance therefore are part of an insurer's cost of capital and correspondingly an important determinant of the cost of supplying insurance in general and catastrophe insurance/reinsurance in particular. Without implying that agency and asymmetric information costs are unimportant, we focus on the tax costs associated with equity finance. This focus reflects that tax costs are more easily measured and, as mentioned above, taxes are central to public policy proposals related to catastrophe and terrorism insurance. The specific question that we confront is: how large is the tax disadvantage of equity financing in the context of catastrophe insurance? Surprisingly, there has been little research on this question.²

We provide "ballpark" estimates of the magnitude of the tax costs of equity financing using a partial equilibrium, single-period model of insurance pricing and capitalization that incorporates specific loss distributions for US catastrophe losses. After consideration of a number of issues, including insurer investment in tax-exempt securities, loss carry-forward and carry-back provisions, and personal taxes, our analysis implies that tax costs of equity capital have a substantial effect on the cost to US insurers of supplying catastrophe reinsurance for high layers of coverage. In many cases, estimates of the tax costs exceed 100% of the present value of expected claim costs. Thus, if the tax incidence falls on consumers, insurers purchasing reinsurance would need to pay more than twice what they expect to receive in claim payments for such coverage.³ The high levels of capital needed to supply reinsurance translate into relatively high costs of supplying catastrophe coverage in the primary insurance market.

A natural question given our findings is why insurers do not issue more subordinated debt to bond their promises to policyholders. Our informal analysis of this issue emphasizes the adverse impact that debt renegotiation or bankruptcy would likely have on policyholder

¹ Compared to many corporations, property-liability insurers are highly levered when policyholder claims are considered liabilities. For example, the industry as a whole has a liability to asset ratio of roughly 70 percent in 1996. Our discussion, however, focuses on the source of funds used to bond promises to pay policyholder claims.

² A number of papers have highlighted the tax disadvantages associated with holding equity capital to bond promises to pay catastrophe claims (e.g., Harrington et al., 1995; Harrington, 1997; Jaffe and Russell, 1997; and Myers, 1999), but we are not aware of any studies that have quantified the magnitude of the tax costs on insurer equity.

³ A consensus appears to exist in the insurance literature that the incidence of the taxes nominally paid by insurers falls on policyholders, at least in the long run. For example, most models used for insurance rate regulation explicitly assume that the policyholders bear the tax costs nominally paid by insurers. See, e.g., Derrig (1994), Myers and Cohn (1987), and Doherty and Garven (1986).

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