

“CAPITAL ALLOCATION IN INSURANCE: ECONOMIC CAPITAL AND THE ALLOCATION OF THE DEFAULT OPTION VALUE,” BY MICHAEL SHERRIS AND JOHN VAN DER HOEK, APRIL 2006

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During the last couple of years, the topic of capital allocation has been widely discussed in the scientific community as well as in the insurance industry. One of the most important and often cited contributions in this field is Stewart Myers and James Read’s article “Capital Allocation in Insurance Companies,” published in the *Journal of Risk and Insurance* in 2001. They found an allocation method whereby the equity capital allocated to the single lines of business “adds up” to the overall equity capital of the insurance company. Their allocation method depends on the marginal contribution of a contract in a single line of business to the default option value of the insurer. Myers and Read propose using capital allocation to price insurance contracts, particularly in the presence of frictional costs of equity capital.

Professor Sherris and Dr. van der Hoek provide a fresh view of capital allocation. Using the contingent claims approach first introduced by Doherty and Garven in 1986 and utilized by Myers and Read, the authors assume that the ratio between future asset and liability values is log-normally distributed. With the further assumption of log-normal lines of business liabilities (p. 43) and specific allocations of assets to the lines of business (p. 47), they derive closed-form solutions for the default option values attributed to the single lines of business (p. 47), which allows a certain way of allocating equity capital back to the lines. In contrast to Sherris and van der Hoek, Myers and Read assume a log-normal distribution for the overall liabilities of the insurer as well as a log-normal distribution for the assets. The Sher-

ris and van der Hoek approach has the property that capital allocation to the lines of business can be determined by the explicit payoff structure by line. Furthermore, the authors provide examples for different capital allocation approaches proposed in the literature and for their own concept (pp. 52–56). The comparison of Tables 7–9 shows that the allocation method used will have a strong influence on the amount of capital allocated by line. The numerical examples show that in the case of stochastically independent assets and liabilities, the Sherris and van der Hoek approach leads to allocation factors similar to the ones provided by Myers and Read (p. 54, Table 9).

However, we are still left with the question of why capital should be allocated back to lines of business in the first place, and—if doing so proves to be appropriate—which method is best, given the goals and economic problems of an insurance company. Sherris and van der Hoek suggest using capital allocation primarily for pricing purposes in multiline insurance companies (pp. 39, 40, 47, and 56). However, Phillips, Cummins, and Allen (1998), Meyers (2003), and Gründl and Schmeiser (2005) argue that in the option pricing model framework, which is also used by Sherris and van der Hoek, capital allocation is simply not necessary in pricing insurance contracts. In the situation where frictional costs need to be covered, Gründl and Schmeiser show that the Myers and Read allocation method leads to inappropriate loadings on the insurance premiums compared to a direct integration of frictional costs into the option-pricing framework originally proposed by Doherty and Garven (1986) for dealing with corporate taxes. Even though Phillips et al., Meyers, and Gründl and Schmeiser are referenced in the article and critical results regarding the usefulness of capital allocation are reported (p. 40), we would have appreciated a specific discussion of how the Sherris and van der Hoek allocation method answers questions raised by earlier critics.

Sherris and van der Hoek claim that in addition to being useful for pricing purposes, capital allocation methods are important for “risk manage-

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ment and related insurer financial decision making” (p. 39). Indeed, in the insurance industry, capital allocation often serves as a basis for capital budgeting decisions, such as the decision to expand or contract certain lines. For this purpose, the cost of the allocated capital in a line of business is compared with a respective earnings figure, for example, expected gain. However, since equity capital serves as safety capital for the whole company and not for a single line, the costs of equity capital are common costs with respect to the lines. Therefore, the cost of capital allocation within the present structure of the insurer is a common cost allocation, which is always arbitrary. This arbitrariness—along with other serious problems of applying capital allocation and performance measurement for capital budgeting decisions (discussed more fully in Gründl and Schmeiser 2005)—may lead to suboptimal decisions.

The arbitrariness of allocation methods also explains two further observations. First, instead of analyzing to what extent a certain allocation method supports financial decision making, articles on capital allocation typically define certain properties that a method should possess (e.g., the “adding up” property in the Sherris and van der Hoek approach, or properties like “symmetry,” “consistency,” or “no undercut” [see Denault 2001; Valdez and Chernih 2003]) and evaluate the method only with respect to how these properties are fulfilled. Second, we believe that it is this very arbitrariness of common cost allocation that explains why there is no convergence in the capital allocation concepts thus far proposed in the literature.

However, in different model frameworks (e.g., allowing for problems of information asymmetry), capital allocation methods may be useful for managerial decision making. For instance, allocating capital could mitigate problems of moral hazard in the relationship between top and line management. A clear definition of the economic problem to be solved and solid evidence that the proposed allocation method is the right tool for the problem defined will enrich the ongoing discussion about capital allocation.

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AUTHORS’ REPLY

We thank Dr. Gründl and Dr. Schmeiser for their insightful comments on capital allocation in the insurance industry. We agree that capital allocation methods proposed in the literature and used by practitioners lack a strong theoretical basis and generally appear arbitrary. Indeed, much of the research on capital allocation methods seems to be focused on properties of capital allocation methods rather than the objectives of the capital allocation.

The default option value was a major focus of the paper by Myers and Read (2001), and our objective was to show how this could be allocated to a line of business in a multiline insurer. If you take a direct approach to pricing the payoffs on an insurance contract, then it is necessary to value the insurance loss payoffs promised to the policyholder and to allow for the impact of insolvency on these payoffs. How to do this by line in an economically consistent manner for a multiline insurer has to our knowledge not been properly addressed in the literature. Our paper develops analytical results for a model similar to that in Myers and Read (2001), which allows the determination of the impact of insolvency by line. We do not address the issue of capital allocation more broadly, whereas the paper by Sherris (2006) considers the allocation of capital to line of business and the fact that there are an infinite number of ways of allocating capital that will add up and that could be used for insurer financial

decision making. The purpose of the capital allocation has to be determined before an assessment of any capital allocation method can be made since the question is whether or not the proposed capital allocation method achieves its purpose. In these circumstances different capital allocation methods may be appropriate for different purposes.

We agree that there is much to be done in the area of capital allocation.

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