THE "C RISK" SYSTEM OF CATEGORIZING RISKS AND ITS POSSIBLE APPLICABILITY TO THE PROPERTY AND CASUALTY INDUSTRY

CAS Committee on Financial Analysis

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and Its Possible

Applicability to the Property and Casualty Industry

The purpose of this paper is to briefly describe a system of categorizing the risks to which an insurance company is exposed. The categories have become widely accepted in the life insurance industry. It is not the purpose of this paper to recommend that this system be applied to the property and casualty industry. The purpose is to make casualty actuaries aware of the existence and wide acceptance of these categories. This system should be of interest to casualty actuaries because an enumeration of the risks to which a company is exposed can lead to an increased awareness of risk, sounder business decisions and a better managed company.

Also, as a risk categorization system becomes more widely known, there may be a tendency on the part of regulators, rating agencies, creditors, and investors to extend these principles to the property and casualty industry. Consequently, it is critical that any system categorizing risk endorsed by the CAS has proven usefulness to the property & casualty industry.

It is hoped that this paper will stimulate interest by casualty actuaries in creating a system of categorizing risk that is appropriate to the property & casualty industry.

Also, whether or not the risk categorization system used in life insurance is applicable to property and casualty business, there may be technical research by life actuaries which has a bearing on property and casualty issues. The paper therefore builds a bridge to life insurance research on risk theory.

Background

The Society of Actuaries Committee on Valuation and Related Problems has been studying the problem of how much surplus is adequate to cover the risks to which a life and health insurer is exposed. This problem has not yet been solved. Although this paper makes no attempt to quantify any of the risks to which a company is exposed, the interested reader can see reference [1] for an example of how one company quantified the risks. The above SOA Committee considered several general contingencies for which it is appropriate to hold a contingency reserve (see references [2] and [3]). The contingencies have become known as the "C risks" and are briefly described below.

C-1: Asset Depreciation Risk

C-1 risk is the risk due to changes in the statement value of assets because of the possible default of fixed income investments, changes in market value of common stocks or real estate, or the physical destruction of property (such as the property used as security for a mortgage). Changes in the value of assets due solely to changes in interest rates are not considered part of C-1 risk. The amount of C-1 risk depends on the credit quality of the assets and the mix of the assets, among other things. C-1 risk seems to apply to any company with invested assets. Therefore, C-1 risk seems to apply to property and casualty companies.

C-2: Pricing/Underwriting Risk

C-2 risk is the risk that actual premiums or losses will differ from projected premiums or losses needed to generate a targeted rate of return. For property and casualty companies this might include the possibilities that expenses, claim frequencies, claim severities, or claims arising from catastrophes will differ from what is anticipated in setting rates. Pricing risk has received considerable attention from casualty actuaries (see, for example, [4] and [5]).

C-3: Interest Rate Change Risk

C-3 is the risk associated with fluctuating interest rates. C-3 risk includes the reduction/gain in value of fixed income investments if interest rates rise/fall and the losses or gains due to a change in interest rates when assets and liabilities are mismatched. C-3 risk is most serious for companies writing interest-sensitive products such as guaranteed investment contracts and single premium deferred annuities, but the risk is also an important consideration for property and casualty companies. C-3 risk has begun to receive attention in the casualty literature (see [6], [7], [8], and [9]).

C-4: General Contingency Risk

C-4 risk is the risk associated with external events, environmental factors, fraud, management incompetence or bad business decisions. New legislation and regulations also belong in this category.

Discussion

If one develops a categorization of risks for property and casualty insurers, it is critical to appreciate the dissimilarities between property and casualty and life insurance writers. Sources of risk for property and casualty insurers can be investigated and enumerated. However, it is not clear at this time that such risks can be forced into the C risk scheme developed by life insurance actuaries. Under-reserving is a source of a risk to which property and casualty insurers are more exposed than life insurers and under-reserving is not easily placed into the C risk categories. Bond callability and recoverable reinsurance are sources of risks to which both life and property and casualty insurers are exposed that are also not easily categorized.

After much discussion, the Committee did not find the C risk categories particularly elucidating although they are relevant. The Committee may or may not be able to find in its future deliberations useful aggregations or categories of such risks. Such aggregations may not be useful for the way the industry currently maintains its accounts (for example, carrying bonds at amortized cost); and further modification to any categorization scheme will likely be necessary, if different accounting procedures are used.

Conclusion

This paper does not argue that property and casualty industry should adopt the C risk system or any convention of categorizing risks to which an insurer is exposed. It is, however, important that we recognize specific risks and problems. It is less important that we force the industry's risks into general categories of risk. It is not clear whether Proposition 103 is a C-2 or C-4 risk, but no company doing business in California can ignore the effects of Proposition 103.

Enumerating the specific risks to which a company is exposed leads to an increased awareness of the nature of the insurance business, and an aggregation of those risks may clarify that awareness further. It is worthwhile for casualty actuaries to research, define, and quantify the types of risks most significant to the property and casualty industry and to possibly develop broad categories of such risks to aid in the understanding of the insurance process.

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