ANALYSIS OF SURETY RESERVES

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Abstract *This paper is an introduction to the actuarial analysis of surety reserves. Its main goal is to help students and those new to surety business appreciate fundamental considerations and properly recognize these considerations in the determination and evaluation of reserves.*

I. Introduction

As for any actuarial project, the first step in the analysis of surety reserves is to identify and define the purpose and scope of the actuarial engagement. Within this framework, possible objectives include:

1. Evaluation of statutory (SAP) reserves;
2. Evaluation of reserves determined in accordance with generally accepted accounting principles (GAAP reserves);
3. Evaluation of reserves for income tax purposes (tax basis reserves);
4. Evaluation of reserves for purposes of merger, acquisition or divestiture; for financial planning; or for other financial purposes.

Evaluation is used here in a general sense to communicate both the determination of reserves and the assessment of the propriety of reserves set by others. The paper emphasizes general guidelines and particular cases may require modification of these guidelines to accommodate unusual circumstances or data limitations.

II. General Description of Surety Business

The term "surety" refers to both fidelity bonds and pure surety bonds. Fidelity bonds guarantee a collateral contract between two parties. For example, an employer may purchase a fidelity bond covering fraudulent or dishonest acts of employees. Such bonds typically cover direct loss attributable to covered

acts of employees and entitle the surety to recover its losses from the employee causing the loss. Because recovery might not be possible, such bonds are more akin to insurance, than, say, contract bonds.

Surety bonds, as opposed to fidelity, also apply to a broad spectrum of situations - contracts, judicial proceedings, and licenses to name a few. Compared to fidelity bonds, surety bonds come closer to pure suretyship, i.e., the issuer of the bond lends its name and credit to guarantee the obligation, but has minimal risk of ultimate net loss.

The word "surety" is also used to refer to a company that underwrites these bonds. However, the word "surety" need not appear in the name of a company for the company to function as a surety.

Surety companies are regulated by the insurance laws of the various states, as well as laws applicable to companies in general. Although bonds do protect against loss, the general purpose of surety bonds is best described as the guarantee of performance by one party of an obligation to another. The applicable terminology is:

Principal	=	One who undertakes to perform, to fulfill a contract, or meet an obligation, e.g., a contractor for a construction bond.
Obligee	=	The second party to the agreement with the principal, the individual whose interests will be protected by the surety bond.
Surety	=	The company (or individual) who guarantees the performance of the obligation of the principal to the obligee, e.g., a client whose reserves are being reviewed.

Within this context, the principal causes the loss to the obligee and the surety settles the loss by fulfilling the obligation. Usually, the surety may settle the claim by payment of an amount determined in accordance with the bond or by completing performance of the obligation. The surety is then entitled to recover its loss from the principal.

Because recovery of loss is possible and the probability of recovery is a key consideration in underwriting surety bonds, surety companies are generally deemed to assume minimal insurance risk.

Depending on the type of surety bond, the assumed risks are largely moral hazard and credit risks. In this context, surety premiums are interpreted to be primarily a fee for financial service.

III. What do Surety Reserves Represent?

We can now relate the scope of actuarial services in reviewing surety reserves to the above objectives.

The nature of recoveries and collateral supporting potential recoveries vary and are limited only by the combined imagination of the surety and principal. Possible sources of recovery include cash deposits, contract monies, letters of credit, mortgages on property, shares in projects, and more.

The nature of possible recoveries is a key consideration in evaluating reserves. Allowable credits against direct loss reserves vary with type of reserve as follows:

SAP reserves	-	Cash and cash equivalent collateral usually construed to include contract monies, cash deposits, letters of credit, and the like.
GAAP reserves	-	Recoveries for which a legal right to collection exists as of the date reserves are evaluated and there is a reasonable probability of collection.
Tax reserves	-	All probable sources of recovery recognized on a discounted basis.

The interpretation of these guidelines may vary by jurisdiction.

In general, SAP reserves will be greater than or equal to GAAP reserves, which in turn will be greater than or equal to tax reserves.

It should also be noted that the actuarial review normally encompasses both loss and loss adjustment reserves. And, in cases, there are statutory requirements for additional reserves (e.g., 5% of earned premium).

IV. Collateral

There are both general considerations and considerations specific to particular types of collateral. Also, the evaluation of collateral for open known claims will generally be different than the evaluation of collateral for incurred but not reported claims.

The first general issue is whether the collateral is dedicated to specific surety bonds, applies to several surety bonds (e.g., a line of bonds automatically issued to a single principal without reunderwriting), or applies to multiple obligations of the principal to several potential creditors. A second general issue is the relation of the amount of collateral to the size of the obligation - is there sufficient leeway to allow for fluctuation in the value of the collateral as the obligation is performed. And, the third general issue is whether the collateral can indeed by called upon and collected.

With regard to specific types of collateral:

A. Contract Money - The obligee and principal may have agreed to payment on an installment basis with holdback of a portion (the "retained percentage") of payments due the principal until the obligations are satisfied. The value of this contract money will vary with the extent of completion of the project and prior payments.

   Also, at the time that the principal fails to perform, there will be future payments due on uncompleted work at the time of default. These contracted amounts are payable by the Obligee in exchange for performance.

   The phrase contract monies includes both these future payments and the retained percentage described in the first paragraph. The contract monies are in the possession of the obligee at the time the principal defaults and may be netted against the amount of loss covered by a bond.

   For open claims, the amount of available contract money can be computed on a claim by claim basis. For IBNR claims, the value of contract money must be estimated.

It is possible for the surety to hire contractors for less than the contract monies available and achieve a profit in some cases.

B. Letters of Credit - Letters of credit commit a financial institution to afford funds on behalf of the principal to designated parties under specified conditions. For example, a letter of credit may become payable upon payment of direct losses by a surety. Letters of credit should remain in force until discovery periods or other bond provisions determining the ability to file claims have expired.

C. Project Shares - A surety bond might be secured by a contingent share in construction projects available for sale. Because such collateral cannot be collected until the project is actually sold and sale cannot be guaranteed, it should not be considered cash equivalent in determining SAP reserves. Depending on collectibility, it may or may not be appropriate for GAAP reserves.

D. Mortgages - A surety bond might be secured by a contingent mortgage obligation. Until cash for this obligation is received, it should not be considered cash equivalent. However, the contractual right exists throughout the course of the project or obligation. Such mortgages typically would qualify as uncollected recoveries for GAAP, but not SAP, reserves.

These examples do not cover all possible forms of collateral, but they are sufficient to illustrate the applicable principles.

V. Coverage Considerations and Company Operations

The potential for loss (in particular, IBNR loss) varies with coverage. For example, fidelity bonds may incorporate a discovery period after expiration of a bond for discovery and reporting of claims incurred during the bond period. Contract bonds may have terms that coincide with projects and have wording minimizing the potential for IBNR claims after the obligee accepts the project and releases contract monies.

Review of coverage, growth, and mix of business is therefore necessary input to the evaluation of reserves. Actuarial analysis should reflect the

groupings in which the client monitors its business and their respective rates of growth. For example, the mix of contract and bid bonds, the size of bonded projects and contractors, and the underwriting standards employed by the client have implications regarding carried reserves.

Of special importance are claims operations and the flow of claims information. For example, a surety can advance funds to a contractor to avoid a default or await a report of claim before acting to satisfy the obligation to the obligee. In the first case, a claim has not technically occurred, but in the second case one has. Claim frequency can vary significantly for sureties with similar books of business.

Sureties will also approach recoveries differently - for example, a large surety may forego a recovery that is important to a small surety. The company placing less emphasis on recoveries will, other things being equal, have a larger percentage of closed claims. Surety claims in a sense have two closing dates - the first is when direct payments to the obligee are complete, and the second is when the surety has completely recovered its funds from the principal. The actual closing date is, of course, when the company's claim department decides that a claim is no longer active.

Lastly, it should be noted that allocated and unallocated claim expense will vary with the election to perform or indemnify on defaulted obligations, emphasis on recoveries, and use of inside or outside attorneys.

VI. Reinsurance

Reinsurance agreements must be reflected in reserve analyses. Depending on the situation, this can require review of contracts or cover notes, investigation of whether reinsurers are authorized, modeling of fronting agreements, review of side agreements, etc.

In reviewing SAP reserves it should be noted that reinsurance of surety business is often uncollectible, not because the reinsurer is financially weak, but because collateral and other recoveries reduce the overall size of losses covered by the reinsurance. Thus, if gross claims less cash and cash equivalent collateral generate indicated reinsurance recoveries, but gross claims less GAAP recoveries do not, the statutory reserve will reflect uncollectible

reinsurance. Such reinsurance can be valuable to a surety because it increases statutory surplus.

VII. Other Accounting Conventions

In applying loss reserving methods that rely on exposures, actuaries must understand how the exposures are earned. For example, if a loss ratio approach is employed for an audit client, actuaries must verify that premiums are properly interpreted or adjusted, as appropriate, before using them in reserve reviews.

Unearned premium reserves and earned premiums need not be tied to surety bond terms on a contract by contract basis. For example, premiums for six month bonds may be earned over twelve months periods. Such conventions can distort loss reserve estimates derived using loss ratios or other ratio methods.

Sureties have few "loss driven" reserves. For example, retrospectively rated business is uncommon. However, reinstatement premiums do apply to some types of bonds. A reinstatement premium is paid to reinstate coverage after a loss has been incurred and reduced the limits of coverage. Thus, on a low frequency line, frequency for reinstated bonds should be higher than frequency for bonds in general.

Bond counts and bond penalty amounts merit similar considerations.

VIII. Example of Typical Transactions

This example illustrates the general accounts to be modelled and estimated in the actuarial review of reserves for a surety.

The principal "P" contracts with the obligee "O" to perform an obligation in exchange for consideration. The surety "S" guarantees "O" that the obligation will be satisfied for the agreed consideration and charges "P" a premium for this service.

The penalty of the surety bond is the value of the obligation identified in the surety bond. Typically, the obligee will retain a percentage of this value. For example, if payments are to be made in installments of 20% subject to 15% retention, then

A. Until the obligation is 15% complete, the obligee will retain funds equal to the completed value.

B. After the obligation is 15% complete, the obligee will retain between 15% and 35% of the value, depending on the extent to which the project is complete and whether installments have been paid.

If the principal defaults, the contract monies at the time of default will correspond to the uncompleted portion of the project plus the amount retained by the obligee on completed work. This money is available to offset the costs to the surety of completing the work or indemnifying the obligee. Depending on who retains a contractor to complete the work, the funds may or may not pass through the surety and be classified as gross loss payments.

The loss to the surety is the difference between the cost of fulfilling the obligation and the available contract monies[1]. This amount is collateralized by a letter of credit, deposit, or other form of security to the extent that the surety expects contract monies might prove insufficient to cover losses. Insofar as this collateral is liquid (aka cash equivalent) the surety may offset its loss on SAP, GAAP and tax accounting bases by the amount of contract monies and collateral.

If collateral is insufficient to fully indemnify the surety, the surety has a right of action against the principal and can recover its losses in court assuming that the principal can be served and has sufficient assets.

Reinsurance will also affect the net loss amounts to be recorded. Typically, the reinsurance will only apply after other sources of recovery have been exhausted. Therefore, the recoveries allowed by the applicable accounting conventions will also determine the estimated amount of reinsurance recoveries.

Loss adjustment expense is often not recoverable. On the other hand, foregone interest earnings may be.

IX. Actuarial Objectives

The amount of carried reserve is:

A. The Gross Reserve - the difference between gross incurred losses and gross payments to

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[1] Contract monies do not apply to all bonds.

date (thus, possibly including or excluding contract monies),

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B. Allowable Uncollected Recoveries - collateral, reinsurance, contract monies, etc. This amount varies with the applicable accounting conventions.

Basic decisions in determining actuarial approaches are whether to estimate this reserve amount net or gross, and how to identify corresponding payments. In general, it will be expedient to evaluate each component separately because that will facilitate putting pieces together in consistent fashion in order to agree with SAP, GAAP and tax accounting. Thus, the actuarial review will often include the following estimates:

A. Estimate gross incurred loss

B. Estimate gross reserves by subtracting paid amounts.

C. Estimate recoveries (both incurred and uncollected) by type of recovery.

D. Results of combining steps A, B, and C to generate "best" reserve estimates.

E. Analysis of the uncertainty in estimates and determination of a range of reasonable reserves.

F. Comparison to benchmarks (e.g., industry experience, underwriting targets, consistency with changes in operations).

X. Selection of Actuarial Methods

Various actuarially sound loss reserving methods may be used. Selection will vary with size of company, available data, nature of surety business, etc. Considerations that influence selection should include:

A. Analysis of Controls and Reporting - In order to understand the recording of losses (including loss adjustment expenses, and recoveries), the actuary must understand:

1. How losses are recorded as to account, amount and period.

2. How available data are recorded and maintained?

3. How sources of recovery (reinsurance, salvage, subrogation, contract monies) are identified and matched to loss records? In particular what is the relative timing of these transactions?

B. CAS Loss Reserving Principles[2] - In particular,

1. Homogeneity - Is data in appropriate groupings to render reasonable estimates in accordance with the purposes of the actuarial evaluation?

2. Credibility - Is the best use of available data made? Could better, more certain estimates be derived by incorporating additional information or selecting alternative data for analyses?

3. Data Availability - What data is available? What are alternatives? Can available data be reconciled to carried reserves and audited data sources?

   Is the data understood? How does the client define a claim? Do recorded amounts for gross loss include or exclude contract monies? What about contract monies and recoveries in excess of costs?

4. Patterns - Emergence, Settlement, Reopenings, and Development in General - Are operations and books of business sufficiently stable to warrant analysis of development patterns? Are net or gross patterns better suited to actuarial objectives? What changes in operations have occurred and how do they affect development patterns? Are actuarial measurements and assumptions regarding development consistent with company operations and coverages?

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[2] Casualty Actuarial Society Statement of Principles Regarding Property and Casualty Loss and Loss Adjustment Expense Reserves 5/24/88

5. Frequency and Severity - Is analysis of claim frequency and severity appropriate? Does severity correlate with bond penalty so that bond penalty can be used to estimate severity? Do particular large claims merit special attention? Is a model of distribution by size of loss appropriate?

6. Coverage and Limits (Specific and Aggregate) - Are the nature of coverage and applicable limits appropriately reflected in the actuarial analyses?

7. Reinsurance & Portfolio Transfers - Is reinsurance properly reflected? Should ceded and assumed business be separately analyzed? What about individual contracts?

8. Accounting Principles - What accounting principles apply to the estimates? Are estimates consistent with applicable accounting principles?

9. Salvage, Subrogation, and other Forms of Recovery - Recoveries are especially important in the accurate determination of surety reserves. Recognition of recoveries varies with applicable accounting principles. Is the actuary able to distinguish and estimate the different types of recoveries? Is reporting and recording clear? Are gross and net estimates of loss logically consistent?

10. Discounting - Should reserves reflect the time value of money? Is appropriate discounting employed?

11. External Influences - For example, if there is a downturn in the construction industry, an increase in surety claims might be expected? Is the analysis of reserves consistent with external indications or are special adjustments appropriate?

12. Loss-Related Balance Sheet Items - Are there unearned premiums, collateral amounts, deposits or other accounts that are functions of the amount of loss or otherwise directly related to loss

estimates? Are they within the scope of the actuarial review? Are they consistent with actuarial estimates?

13. Reasonableness and Uncertainty - What benchmarks have been established for testing the reasonableness of estimates? What about uncertainty and the reasonable range for estimates?

XII. Conclusion

The actuary's professional obligation lies in the integrity of the overall evaluation and not the algorithmic execution of a particular calculation. As described above, methods should be selected in light of the purposes of the actuarial analysis, client and industry characteristics, and approaches used for comparable clients. Professional attention to pertinent considerations identified in this paper will help ensure both quality and responsiveness of actuarial analyses of surety reserves.

But, a help is not a guarantee. Each individual practicing actuary is responsible for the value of professional services and the accomplishment of the goals of an actuarial engagement. It is the individual commitments of professional actuaries to this responsibility that guarantees quality and responsiveness.