

RECORD OF SOCIETY OF ACTUARIES 1978 VOL. 4 NO. 1

CLAIM RESERVES

Moderator: PETER L. HUTCHINGS. Panelists: WALTER J. FITZGIBBON, JR.,
RAFAL J. BALCAREK**, SPENCER KOPPEL, HERBERT ORENSHEIN*

1. Review of methods and statutory requirements in the establishment of claim reserves for property and casualty, life and health insurance.
2. Discussion of different approaches in casualty and life blanks; e.g., incurred but not reported reserves.

MR. SPENCER KOPPEL: Before getting into the subject of claim reserves, by way of background, about Combined, Combined Insurance Company is primarily an accident and health company, and more specifically, the majority of its accident and health business is on individual accident and sickness policies which provide typically small indemnities for loss of time and hospitalization. Our A&H claim reserve file at year end 1977 consisted of 300,000 claims with a total reserve of \$100,000,000. The average claim was reserved for about \$300. The bulk of our claims are reserved for amounts of \$200 or less; however, we do have some large, group LTD claims in excess of \$100,000 each.

One aspect of our business which requires special attention is our system of Remote Claim Processing Units. Combined has several subsidiaries and branches located throughout the United States and in Canada, the United Kingdom, Ireland, West Germany, Australia, and New Zealand. Each unit has its own claim processing system which grew up as a result of the types of business processed and the technology available at the time the operation was established. As a result, each claim processing system is somewhat different from all the others, even though the business is very similar. The Actuarial Department for all of these units is located in Chicago. Therefore, it is our responsibility to monitor the processing systems in each of the units, to have documentation available to us as to how claims are processed and be made aware of any changes to these claim processing systems that would have an effect on the level of reserves. This situation also requires us to be aware of developments in distant locations which may have an effect on claims and claim reserves such as mail strikes, natural disasters, high levels of unemployment, inflation, or the introduction of a new national health care, Social Security, or other disability scheme such as workers' compensation.

To these ends, we have developed some procedures which we follow to alert us to any significant changes which occur. Each year around November, a questionnaire is sent to the person or persons responsible for the claims processing and administration at each of the units, asking specific questions about the operation with particular emphasis on those changes

*Mr. Fitzgibbon, not a member of the Society, is a Fellow of the Casualty Actuarial Society.

**Mr. Balcarek, not a member of the Society, is a Fellow of Casualty Actuarial Society.

which have occurred since the last questionnaire was completed. The items on the questionnaire are designed to jog the memory of these people to remind them of anything that was done during the year that may have an effect on the level of claims or claim reserves. This questionnaire has uncovered many changes which were made to the system in the particular unit which, while perfectly justifiable from an administrative standpoint, had material effects on the amounts of claims paid and the reserves still outstanding. As an example, the installation of a new automatic check writing system to pay claims more quickly in a unit will have the immediate effect of reducing the backlog of open claims in the course of settlement. If a claim reserve system is based on an average factor per claim outstanding such as ours is, one might, at first glance, assume that the system has automatically adjusted for the fact that there are fewer of the claims outstanding after the implementation of that system than before and that, therefore, no special adjustment need be made to the reserves. Upon further analysis, however, as was indeed the case of our own company, one finds that the remaining claims still open are of a significantly different nature, that is, they are more severe claims on the average than those that were outstanding before the system was implemented. This annual questionnaire will ferret out changes such as this which the administrative head might not have considered to have an effect on claim reserves, but that we in the Actuarial Department can recognize as having a material effect.

Another procedure that has been instituted at Combined recently has been to periodically have a representative of the Actuarial Department visit each of the units for the specific purpose of reviewing claim reserve processing. At these visits we hold a mini-training session for the personnel involved, describing the underlying concepts behind the claim reserve system and the reasons we require the information that we do; the result has been a much better understanding between us and the non-actuarial personnel at the other units. We observe that for a period of time following the visit, the units are keenly aware of changes in their systems which would have an effect on the claim reserves, and are quick to point them out to us. This effect wears off with time and will require periodic return visits. These visits have reduced the mystique of claim reserves that exists in the mind of a non-actuary.

Over the years we have instituted various special Early Warning Systems studies which are done prior to setting the final reserve levels. These studies are designed to spot potential inconsistencies or inaccuracies in reserves at the policy form, line of business or overall company level.

For example, we study the current year's loss ratio and compare it to the anticipated and past loss ratios for critical lines of business. Unusual ratios may point to a problem in the reserves. Of course this also may serve as a red flag to uncover lines of business or forms which may be going sour.

As another test, for each reporting unit, we compute independently ahead of the time the actual reserve is determined, a prediction of the level of reserve we anticipate. For example, sometime in December, based on November figures, we estimate the year end reserve within a reasonable range. A unit whose reserve when actually computed falls outside that range is given special attention to find the reason for the discrepancy.

Usually the discrepancy can be explained but it is commonly caused by an event that we were unaware of prior to that time and frequently indicates that an adjustment is required.

Other studies are done to keep monthly statistics on the number and amounts of claims reported, claims paid, claims closed by payment and closed without payment. These statistics are maintained in aggregate by reporting unit, and by line of business. They serve to alert us to any unusual increases or decreases which may have been caused by duplicate or dropped records which have happened from time to time. They also alert us to any unusual claim department activity which may have occurred in the month.

One question which frequently is raised is the desirable level of margin for adverse deviation. It is difficult to establish any single standard for the level of margin required for claim reserves. The level required is dependent upon various factors.

1. The amount of historical data available upon which the reserve is set. Obviously, the less data that is available, the greater the margin that should be added for safety.
2. The overall size of the claim reserve relative to the surplus level and premium level of the company or reporting unit.
3. The number of claims involved. For example, if the reserve were \$10,000,000, a higher margin is required if it is made up of 10 claims than if it is made up of 1,000 claims and a lower margin would be needed if it were made up of 100,000 claims.
4. The variability of the reserve from year to year, or the unpredictability of the particular line.
5. Of course, for each company, because it is subject to Insurance Department examination, there is a desire to avoid adverse comments in the report and this desire tends to make us want to err on the side of conservatism as well.

These rules relate not only to an entire company, but also for individual reporting units and lines of business. As a result, the overall margin for error for the entire company as a percentage of the total reserve will be the result of the averaging of some higher and some lower margins for individual lines of business.

Another question frequently raised is whether interest adjustments are appropriate on our claim reserves.

Our practice has been not to include any interest assumption on short term claims. I define short term claims to be claims of a duration of two years or less. In addition to the obvious practical reasons such as the immateriality of interest relative to the total reserve level on short term claims and the difficulty in computing an interest discount for them a third, regulatory reason, has developed from our most recent NAIC examination. The test which was applied to our claim reserve level was to take the payments developed for the two years following the examination date plus the reserves that are still outstanding (using tabular

reserves for LTD lines) and comparing that development with the reserve held at the beginning. Since we are to be examined for adequacy of our reserves without an interest assumption, it becomes practically impossible to include an interest assumption in our initial reserves other than that for claims of longer than two years' duration.

From a purely theoretical approach, the use or non-use of any interest assumption would seem to be properly determined by whether any interest on funds held for claims incurred is assumed in gross premium calculations, at least on GAAP financial statement.

Some special comments are appropriate regarding long term disability claims. This line of business, by its long term nature, requires special handling. This long term nature has several implications.

1. Reserve adequacy or inadequacy is not determined for many years following the date they are set. The actuary setting current years' reserves will typically have little experience to help decide on the current level. Further, with the recent trends towards higher severity, the actuary's responsibility is to consider how much added trend, if any, should be taken into account on this year's file.
2. A one year runoff of claims of all durations may show some unusual results, especially if later durations are strengthened. This may result in a phenomenon which has attributes of a self fulfilling prophecy if the actuary doesn't mentally make adjustments for the strengthening which shows up in the runoffs (actually the reserve still outstanding) while not being in the initial amount of the reserves.
3. Interest assumptions have a significant impact on the level of reserves. Therefore, a runoff of reserves without adjustment for interest when it was used in the initial calculation will show a deficiency even if actual experience precisely followed expected. At Combined we have modified our analyses to show runoffs with credit for the interest assumed in the calculation.

In closing, the subject of claim reserves is frequently misunderstood both within and outside the actuarial profession. As an example, I recently received a memorandum from the head of the Claim Department in which he talked about reserves for a new policy type that we were developing. He was referring to a conversation he had with another individual, which conversation he relates as follows: "He was especially curious about how we might go about determining the reserves, as he felt this would be a very difficult thing to do. I told him I did not know what data you might use and that it was entirely possible you might simply follow your usual practice of howling at the moon while gyrating over the body of a dead goat." While I am sure he knew that this wasn't exactly the practice, it does indicate the mystique that exists about the process of setting claim reserves and liabilities.

Even within the actuarial profession, there seems to be wide differences of opinion as to the level of judgment required used in establishing claim reserves. I personally happen to be a proponent of the use of a great deal of judgment in tempering the data that is developed from past history. Over the years, we have observed that formulas, untempered by judgment, tend to lead us down the wrong path. In effect, it causes one to miss changes which

will have a major impact on current and future results. It is necessary to constantly watch the results; in a claim reserve system, Murphy's Law clearly applies -- if anything can possibly go wrong, it will. Translated to claim reserves, this can be stated that if an error is found, it will have understated the level of reserves.

MR. HERBERT ORENSHEIN: Beneficial Standard Life Insurance Company is one of relatively few companies whose major source of premium income is in health insurance. Claim reserves for health insurance policies quite often determine whether or not a given calendar year has been profitable or unprofitable.

Beneficial Standard Life is a subsidiary of Beneficial Standard Corporation. Beneficial Standard Corporation's stock is registered on the American Stock Exchange. Therefore, Beneficial Standard Life has the dual problem of calculating values on both statutory and GAAP accounting bases.

We prepare financial statements each month. These monthly statements, because of chance fluctuations and fluctuations due to seasonal factors, could show erratic results. An attempt was made to develop a claim liability valuation system which recognized unusual occurrences and industry or company trends in a given period but avoided drastic swings from month to month.

For example, we reflect inflation patterns in claim liabilities, both the inflation due to rising costs of hospital care and inflation reflected in larger size policy benefits sold in current years. We do so by comparing three consecutive 12 month periods ending at the current valuation date and project from the values determined.

We estimate the Incurred But Not Reported Liability from the claims reported in the immediately preceding 90 day period.

One major problem in determining claim liability is a direct result of interpretations of disability income policy language by our Law Division. Reserves established at 1974 and 1975 year-ends were inadequate, especially for the disability income policies which provided lifetime accident and two year sickness benefits. Disabilities did not terminate in accordance with the 1964 Commissioners Disability Table. A substantially greater number of policyholders remained disabled one year or more than we assumed. The cause of disability in many cases was back problems. There was no medical evidence of a physical disability nor sufficient grounds to deny the claim. There was no solid basis to warrant denial because of misrepresentation. Remarkably few such cases were said to be caused by a degenerative sickness rather than accident which is easily explained by the difference in maximum benefit periods for accident versus sickness. Claims were reclassified as accident claims at the end of the two-year sickness maximum benefit period at the insistence of the claimant and on the advice of our counsel despite initial statements by the claimant that disability was due to a sickness. One claimant argued that his back injury was caused by a series of minor accidents resulting from sitting down and standing up at his job.

It is our intent to reflect this increasing cost disabled life table in an orderly manner without ignoring the trend towards higher reserves per claim. We decided to use a three year base period which would allow for a progression of increases month by month without erratic adjustments from one month to the other as relatively few long term disability claims were added to or

deleted from the inventory. The number of miraculous cures resulting from settlements on such disabilities defies statistics. In cases where a settlement was proper and possible, the cure almost always immediately followed receipt of the check. Poor experience is due primarily to over-insurance and/or unemployment. Two statistics reflect this situation; namely, the percentage of accident claims as opposed to sickness claims and claim cost by age that reflect a relatively flat pattern of costs per \$100 of monthly benefit. On some forms we have decreasing costs between ages 40 and 60. The high ratio of accident claims is explained by the difference in benefits between accident and sickness policies combined with a trend towards consumerism, misinterpretation of policy language by lawyers and the courts, and a disregard for fairness to favor the insured at what some jurors believe to be the expense of the carrier. I believe this favoritism is at the expense of the honest insureds who pay in the form of increased premiums or unavailability of coverage. On one series of policies with 143 claims in inventory, lifetime accident claims account for 97 of such claims or 68%. Based on our age distribution of disabled lives (our average age is 46 years), 25% to 30% accident claims would be appropriate for the 1964 Commissioners Disability Table. An example of the claim cost pattern by age is reflected in two major policy forms where graduated claim costs per \$1 of benefit for five year age groups as a percent of the lowest age group are:

Age Group	FORM A		FORM B	
	*	Actual	*	Actual
30-34	100.0%	100.0%	100.0%	100.0%
35-39	130.0	114.8	153.8	147.8
40-44	170.0	115.3	230.8	195.7
45-49	225.0	104.6	315.4	243.5
50-54	285.0	87.6	415.4	291.3
55-59	355.0	66.7	538.5	334.8

*1964 Commissioners Disability Table weighted for maximum benefit, elimination period and monthly benefit.

The claim pattern by age creates an interesting phenomenon as respects GAAP benefit reserves. We developed (by a method of least squares) a curve of claim costs which gives us the best fit of the values for the central ages of the five year age groups and determined net annual premiums and reserve factors for each age and duration. These factors were applied to our in-force by issue age and duration. These reserves were compared with those developed using the 1964 Commissioners Disability Table. The reserves required in the aggregate for all loss-of-time forms studied, based on our actual experience, was 74% of the reserves required using the Commissioners Disability Table. The absolute level of claim costs were substantially higher than the Commissioners Table and were reflected in our loss ratios. We had filed for and obtained rate increases on these policy forms with the result that current rates on one form is $4\frac{1}{2}$ times the original rate charged. Although loss ratios still continue at a high level for most forms most premiums are now adequate to provide for future benefits and remaining expense asset amortization. For GAAP purposes, we cannot reduce reserves but had developed this data to determine if we had to increase reserves to $4\frac{1}{2}$ times the current level to reflect the premium increases required on some forms.

Ten years ago, it was possible to calculate claim liability factors on a simple basis and reasonably reflect loss ratios. Some companies varied incurred but not reported claim reserves to maintain a constant loss ratio percentage month by month. These liabilities generally were conservative. In the late 1960's, loss ratios climbed and the liability for incurred but not reported claims declined to keep loss ratios constant. We were not aware of the changing times and continued the practice of adjusting the incurred but not reported reserves downward to keep loss ratios steady. By the time we realized what was happening, incurred but not reported reserves were inadequate, loss ratios substantially higher than recorded, and new means for calculating reserves and liabilities required.

Today, the calculation of reserves at Beneficial Standard Life requires a complicated series of programs, massaging data of individual claim payments over the last three years, current claim inventories mechanically established and maintained, continuous follow-ups of liabilities established at various points in time, and analyses to eliminate chance fluctuation while retaining the effects of trends.

A series of 129 computer routines (sorts, merges and calculations) are required to analyze the reported and unreported claims by company, separate loss-of-time from hospital and medical expense data and split loss-of-time data into short-term and long-term claims. Principal Sum and Litigated claims are analyzed separately from loss-of-time and hospital and medical expense forms combined. All data is initially analyzed by policy form number although certain loss-of-time forms contain some medical expense benefits. Similar forms are grouped during the procedure to get more significant data at various steps and common claim liability factors for the group applied, where appropriate, to the number of claims in inventory by form to obtain the liability.

Are current reserves and liabilities adequate? To answer this, we must go back to the purpose of insurance. The purpose was to provide protection for those lives subject to a loss whose probability of occurrence in any given year is relatively small with the cost to be shared by similar individuals with like chance of occurrence. If current trends continue with respect to claims practices and jury awards and individuals receiving payment for items not covered, then the probability of occurrence will approach one, the cost will become prohibitive and the possibility of providing insurance approach zero. We will be in a budgeting situation rather than an insuring one. Although the public cries for reduced insurance rates it is only the public, through its juries and legislators, that can change the rules so that honest claimants get fair treatment and dishonest ones are denied.

MR. WALTER J. FITZGIBBON, JR.: My assignment today is to discuss briefly both the loss and loss expense reserves which are required in property and casualty insurance, and some of the methods which are used to set these reserves. Later Rafal Balcarek will give some perspective on the size and importance of these reserves. He will also discuss some of the problems encountered in property/casualty reserving.

A loss (or claim) reserve, at a point in time, is an estimate of the amount the insurance company will have to pay, at some time in the future, to satisfy obligations arising out of the insured events which have already occurred but which have not yet been satisfied. Thus, a loss reserve is

required for the auto accident which happened on the last day of the accounting period as well as for remaining lifetime annuity payments for a worker collecting compensation disability benefits arising from an accident which occurred years ago.

Most of the events which give rise to benefit payments can be identified as having happened at a specific time. For example, an auto accident happened on January 1, 1978. This date, the "accident date", is known, recorded and is basic to establishing the reserve. The date the accident was reported to the company is also recorded and used to determine the delay in claim reporting. Claims may be settled with one or several payments and, of course, the date payments are made will be recorded and used in reserving.

Property and casualty claims may range from a small medical bill which is paid without delay when submitted to a multi-million dollar liability suit requiring extensive investigation, the hiring of defense lawyers, and years of delay in working through the legal system to a trial and verdict. Further costs may be incurred on appeal of the verdict. The expenses incurred by company employees or others in investigating and settling claims are known as loss adjustment expenses. These expenses may be incurred in connection with a particular claim, for example, hiring a defense attorney or may be overhead expenses incurred in maintaining a claim department, the salaries, rent, travel, etc. A reserve must be held for the amount of expense of both kinds required to settle all claims incurred to date.

The loss adjustment expense reserves are significant. Aetna Life and Casualty, for example, at 12/31/77, carried a loss reserve for all lines of business combined of \$2,178,000,000. In addition, it carried \$286,000,000 or 13.2% of the loss reserve to be spent settling all losses. For the Medical Malpractice line, Aetna carried a loss expense reserve equal to 39% of the loss reserve. The defense costs are often substantial even for claims which will eventually close with no loss payment.

How are reserves set for property/casualty claims? There are no prescribed techniques. There are a large number of techniques in common use in the business and there are statutory minimums against which to judge the final answers.

The choice of methods will depend upon the lines of insurance written and the internal operating policies of the company.

Aetna Life and Casualty writes nearly every form of property/casualty insurance. During 1977, nearly two million claims were reported to the Company. About 86% of these claims were settled without an estimate of the settlement value of each claim being reported to the Home Office. The claims were investigated in the field and then simply paid. The actuaries in the Home Office reserve for unpaid claims of this type using formula approaches such as projecting payments to ultimate. The techniques are similar to those used to reserve most Group A & H claims and are undoubtedly familiar to most of you.

The other 14% of the claims which were individually reserved had reserves of over \$3,000 each established by the claim department. These estimates were set after investigation and consideration of the facts of each case. Aetna's Claim Department must set its first estimate of a claim within 48 hours after the claim is reported to them. These initial

estimates will not be sufficient to settle all the claims. Experience tells us the facts yet to be uncovered will move the values higher. This means techniques are required to estimate probable settlement values for claims. These techniques may include:

1. Applying an estimated average value to all reported claims. The average value will be revised as claims within the reported block mature and the percentage closed begins to become significant.
2. Applying an average value to claims which remain open, varying the averages by the age of the claims.
3. Applying a development factor based on past experience to the reserves estimated by the Claim Department.

And so on. There are numerous techniques and these are described in Casualty Actuarial Society literature.

The reserving method selected for one company may not be best for another. The question of the stability of the operating practices of the particular company is important here.

There is another important question to be faced in reserving once you recognize that your calculated reserve is only an estimate of the required amount, and that the amount established as the reserve will ultimately be shown to be incorrect. I concede that the chance you are exactly right, to the dollar, is not zero but it is small. The reserve will be over or under the amount needed to settle the claims. Where should the reserve be set? You cannot set up a "range" of values in a financial statement, a single value must be selected.

Do you want the reserve so high it will never be deficient? Adding the entire surplus account to the reserves won't guarantee this. Do you want the reserve to be over 50% and under 50% of the time? 90% - 10%? The answer to this question has a great impact on the reserve held.

Reserves for Workers' Compensation, Auto Liability, Medical Malpractice, and Other Liability are shown in the annual statement in an exhibit known as Schedule P. It is here that minimum reserve tests are applied to the losses of the latest three accident years. Losses incurred for these accident years are expressed as ratios to premiums earned. Each of these loss ratios must be at least equal to the lowest ratio of the five immediately preceding years. If the ratios are lower, additional reserves must be established to reach the minimum. The minimums can range from 65% to 75% for Workers' Compensation and from 60% to 75% for other lines. The rules are different for very small or new companies where actual experience is not used at all.

At 12/76, I reviewed 41 companies, including the largest 30 in the industry. Twenty-eight had to set up additional reserves to meet the test minimums. Sixteen had set up such reserves at 12/75. The additional reserves set up at 12/76 averaged 1.8% of the total reserves for the lines in Schedule P and reduced surplus by an average of 2.5%.

At 12/31/77, the minimum reserve tests are likely to force many more companies to set up significant additional reserves and in the process, to

reduce their surplus significantly. This will happen because of the recent improvement in the business. The year 1977 will probably be the best year of the last eight and will require additional reserves.

If reserves must be increased to reach minimum levels, the excess over the reserve which would have been held is funded directly from surplus. The excess reserve does not affect earnings.

The minimum reserves, which were required at the end of 1977, are making many companies look critically at the rules which caused them. The tests apply separately to each line of business. No matter how much your reserves exceed the minimum for one line, these reserves cannot be used to offset requirements in another line.

The property/casualty business is cyclical and the tests have been criticized because of the way they apply at various points in the business cycle. When loss ratios are lowest, i.e., when things are going best, additional reserves must be set up. When experience is deteriorating, when loss ratios are highest, you do not have to set up any additional reserves.

It is also necessary to set up additional reserves for rather mature experience. Losses of 1975 for Auto Liability are perhaps 85% paid by the end of 1977 yet a minimum reserve may replace a company's estimate.

I believe some improvements can be made to the minimum tests but we must make changes carefully because the tests do help prevent company optimism from understating loss reserves and overstating surplus.

Earlier I mentioned that recording both the date of the accident and the date of reporting of the claim permit the delay or "lag" to be determined. The reserve which is set up to provide for payment of unreported claims is known as the "IBNR" or Incurred But Not Reported reserve.

There are many methods which can be used to estimate this reserve and many definitions of what constitutes IBNR. Is a claim considered reported when the claim department learns about it on the telephone, or must claim information enter the computer for the claim to be considered reported. If a claim has been closed, only to reopen later, is the reopened claim an "IBNR" claim? Some of the projection methods used may be quite sophisticated but great uncertainty continues to surround this reserve.

One basic question seems to return. I know how many claims are expected to occur and I have an estimate of the rate of reporting of these claims. When more claims than expected are reported, has a speed up in reporting occurred? This could result from claim department procedural changes and would mean the IBNR number should go down.

Or, has the rate of reporting remained unchanged with the same percentage unreported on a larger base. That is, claim frequency has increased, and the IBNR goes up.

Surprises occur and the basic question of which way to move the reserve returns. And it is difficult to answer.

The line many casualty actuaries think of first when IBNR reserves are mentioned is Medical Malpractice. Experience has shown us that claims for

this line emerge very slowly and that substantial errors can be made in making early estimates about the ultimate level of losses.

To illustrate the substantial delay in reporting or the so-called "long tail", I have analyzed the 12/31/77 reserves for this line of business established by my company, Aetna Life and Casualty.

Claims incurred for 1977 would be expected to be reported as follows:

25% by the end of 1977
 60% by the end of 1978
 80% by the end of 1979
 90% by the end of 1980
 94% by the end of 1981
 96% by the end of 1982

Estimates of total losses on reported claims established by the claim department would be the following percentages of total losses both reported and unreported:

11% at the end of 1977
 32% at the end of 1978
 65% at the end of 1979
 80% at the end of 1980
 88% at the end of 1981
 93% at the end of 1982

Some explanation will clarify these tables. At the end of 1977, 25% of the claims incurred in 1977 will have been reported. The claim department will make an estimate of total losses to be paid on these claims which experience has shown to be approximately 11% of ultimate total losses on claims incurred in 1977, both reported and unreported as of 12/31/77. It is then up to the actuarial department to establish reserves to cover the 89% balance. These "actuarial" reserves will be for both claims unreported as of 12/31/77 and for increases in value of reported claims above and beyond the estimate of the claim department.

Before concluding, I would like to give an example of a reserving situation which is causing some concern in the property/casualty industry these days. The U. S. Longshoremen's and Harbor Workers' Compensation Act provides benefits for accidental injuries arising out of and in the course of employment and also provides occupational disease coverage. Benefits include payments for the length of the disability for the injured worker. In the event of death, the widow or widower is entitled to funeral expenses and 50% of wages for life or until remarriage, with the benefit raised to 66 2/3% if there are any dependent children. Nothing unusual so far.

The law also provides that on October 1 of each year the benefit will escalate to follow the change in the national average weekly wage. For the last three years these escalation percentages have been 6.7%, 7.6% and 7.2%. Let us suppose that a 30 year old widow with no dependents begins to receive an annuity settlement under the Longshoremen's Act of \$14,326 per year. Not an unusual amount considering the prevailing wage levels for these workers.

A reserve using National Council on Workers' Compensation Insurance tables would be calculated for the claim. The tables would consider 3 1/2% interest,

5% annual benefit escalation, 1960 U. S. Life white females mortality table and U. S. Employees' Compensation Remarriage Tables. The reserve established in the case cited would be \$550,000.

The remarriage assumption has a considerable influence on the reserve. Suppose the widow does not remarry and that she lives her full life expectancy or 48 more years, as estimated by the Dept. of H.E.W. If the benefit inflates 5% per year, she is collecting more than \$75,000 per year by age 65 and \$142,000 in her last year. The total payment would be \$2.7 million. Remember that Workers' Compensation benefits are tax free and that benefits cease upon remarriage after two years' benefits are paid as the final "dowry" payment. Is the reserve set up on the case "adequate"? How should adequacy be determined? Should a Schedule P runoff test, which charges subsequent payments and reserves against the initial reserve, continue to be produced for such cases? These are some of the reserving questions casualty actuaries, with regulators helping us, will have to answer.

MR. RAFAL J. BALCAREK: The loss and loss expense reserves in Property and Casualty Insurance are easily the largest item among the liabilities, e.g., at the end of 1976 for companies licensed in the State of New York (see Exhibit I) they amounted to \$40.8 billion or 59.7% of total liabilities excluding capital and surplus. At the same time they were twice as large as capital and surplus.

Loss and loss expense reserves are estimates and as such they share an attribute common to all estimates which is that they are less than 100% accurate. The estimates can be too high or too low. In recent years, they tended to be uniformly on a low side. It may come as a shock to our friends in the life business that the Property and Casualty Convention Statement presents a fairly detailed record of a company's past reserving practices. This record is, of course, available to everybody and it is eagerly surveyed by various people interested in the fortunes of individual companies. Especially investment analysts seem to be spending long hours over the figures, making all kinds of comparisons and arriving at all kinds of conclusions. Worst of all they seem to take a delight in publishing and distributing their findings. Therefore, it should not be a surprise that company actuaries responsible for loss reserves have not yet whole heartedly embraced the proposition that they should certify the loss reserves in the convention annual statement.

I keep a running record of reserve developments for 20 largest independent stock groups and according to my figures their loss and loss expense reserves established at the end of 1974 developed by the end of 1976 a deficiency of 10.5%. Of course, there was quite a little spread among the individual companies ranging from 9.3% adequacy to 19.8% inadequacy.

As a rule, the severely under-reserved situation does not develop overnight. Generally, we can observe a gradual accumulation of loss reserve deficiencies over a number of years, till at some point they become unacceptable, normally at the bottom of the underwriting cycles and have to be suddenly corrected. This usually hits the headlines as it results in a dramatic drop in earnings, drop in capital and surplus, drop in the price of company stock, early retirement of top executives and in extreme cases, even actuaries.

The obvious question is whether it is possible to determine fairly accurately at any point of time the amount of loss reserves necessary to fully pay the already incurred liabilities. There are two schools of thought on the subject. The first one is the "elementary school" composed of relatively new arrivals at the casualty loss reserve scene who are very confident that they have the right solution. After a while these people become educated and are ready to join the "graduate school" which has come to the conclusion that the precise answer will never be found. To inject a personal note, I was no exception. I started with the first school of thought and belong now to the second school.

As I see it there are a great number of difficulties in making accurate estimates and because of the nature of the business, there are no satisfactory methods of removing them. To illustrate this permit me to make a comparison between a death claim in life insurance and a bodily injury claim in automobile insurance. In case of a death claim the facts to be developed are as follows: (1) Did the person in question actually die? (2) Was he insured by the company? (3) For how much? Generally, all these questions can be answered with a great degree of precision. In addition, the beneficiaries are highly motivated to promptly report the death case to the company.

In the case of a bodily injury claim in automobile the facts are not so definite. First it has to be established that there was an automobile accident. Second question is whether our insured was at fault? Thirdly, was the claimant injured and if he was injured, how severe are his injuries? The last question, how much we are going to pay, can be answered with any degree of certainty only in relatively few cases when there is no dispute that our insured was at fault and the claimant's injuries are so severe that the compensation will easily exceed the policy limit. Most of our claims are not as straightforward and the amounts of payment may vary from 0 to policy limit or even higher. Lastly, the reporting of the claim to the company can be delayed as there is no such urgent motivation as it is in life insurance to promptly report the claim to the company.

Company actuaries responsible for loss reserves have usually developed a formidable volume of claim statistics ranging over very long period of time. Just about everyone of them has his favorite methods of evaluating loss reserve; however, in principle these methods are not very much different. Generally, these are statistical approaches designed to provide an estimate for the various segments of reserves which have to be separately established. The actuary tries to break down the losses into homogenous groupings by coverage, type of loss, date of occurrence, date of report, etc. This enables him to develop various statistics such as speed with which claims are reported, settled, reopened, average amounts of settlement, etc. These statistics compiled over a fairly long period of time provide trends which can be interpreted and extrapolated and thus the actuary arrives at statistical projections of what the ultimate loss payments are going to be. However, the statistical projections, no matter how competent, are not foolproof. There are several reasons for it:

1. The various statistics have fairly large standard deviations, consequently they lack precision.
2. The loss experience is subject to unexpected and sudden changes, therefore, extrapolations from past statistics do not always provide reliable

estimates of what is going to happen in the future. For example, in 1977 we benefited from a very substantial drop in automobile claim frequency. Apparently, this took everybody by surprise and even now we are still searching for a satisfactory explanation of this phenomenon. Changes in economic variables have a pronounced effect on our future payments on claims incurred in the past. Unfortunately these changes are very hard to forecast even for professional economists. In recent years, statistics for my company indicate that there have developed substantial delays in reporting large liability cases. As an example the largest liability claim paid in the history of my company was reported five years late.

3. There can be very substantial changes in your statistics resulting from internal operational changes especially in the claim handling and claim recording areas. In the past the effect of these changes was so serious that we observe now very carefully all the changes in the claim procedure manuals in order to determine in advance their possible impact on our claim statistics. One of the most valuable lessons I have learned during my career is that you have to be careful about circulating claim statistics among claim personnel as some of these people may take active steps to "improve" them.

Discounting of Loss Reserves

The vast proportion of the Property and Casualty loss and loss expense reserves are not discounted. We reserve one dollar for each dollar of future payments regardless when that payment is going to be made. In other words we disregard the time value of money. The origins of this practice are lost in antiquity. However, many years ago the cash flow cycle was very short, there were practically no long tail payouts, consequently as a practical matter, it did not make much difference whether the reserves were discounted or not.

Recently, there has been more and more talk about changing this practice. The Committee on Property and Liability Insurance Companies Financial Reporting Principles of the American Academy of Actuaries proposed to the American Institute of Certified Public Accountants that their revised audit guide would explicitly permit discounting of loss reserves. It appears that AICPA referred the issue to the FASB for final decision.

This does not necessarily mean that discounting of property and casualty loss reserves is around the corner. Perhaps the best I can do is to quote the Committee:

"The Committee recognizes that the adoption of its recommendation that loss reserves and related items be carried at present values would invalidate many of the customary guidelines, standards and rules-of-thumb that have prevailed in the industry. Any extension of this principle to regulatory accounting would require a wholly new perspective on the quantification of such concepts as reasonableness of rates, underwriting capacity, experience reporting and experience rating, regulation for solvency, reserve adequacy, and other vital matters; it could have significant tax consequences, conceivably requiring revision of the tax laws. Leaders of the industry, possibly including many actuaries in their roles as company officers, may consider the resulting practical problems

so grave as to outweigh any considerations of actuarial or accounting principle, and we therefore expect vigorous dissent from our views. It is not clear that these problems will prove insuperable, but it does seem likely that their weight will prevent immediate acceptance of our recommendations. Nevertheless, we considered it our responsibility to submit our recommendations on the basis of actuarial principles rather than to offer pragmatic solutions in the guise of professional recommendations. However these issues may be decided, it will be essential that the true bases for the decision be recognized."

EXHIBIT IPROPERTY & CASUALTY COMPANIES
Licensed in New York

	<u>1976</u>	<u>1968</u>	Annual Rate of Growth
	\$Millions	\$Millions	%
Outstanding Losses & Loss Expense	40,767	13,747	14.55
Surplus	21,062	15,649	3.78
Net Written Premium	48,244	20,848	11.06
Net Earned Premium	45,841	20,183	10.80
Net Investment Income	4,083	1,444	13.87
Paid Losses & Loss Expense	27,109	11,884	10.86
Total Liabilities	68,271	27,312	12.13

MR. PETER L. HUTCHINGS: At this point in the program it's time for questions or comments to be made from the floor.

MR. ISRAEL J. KLEINMAN: Would you have a significantly different unreported claim liability if you studied claims by date reported rather than date incurred?

MR. ORENSHEIN: At Beneficial, we record both the date of loss and the date reported for each claim. However, to determine the incurred but not reported liability we follow up the claims that were unreported claims as of one year ago and adjust the dollars paid in the 12 month period to reflect the remaining liability on those claims. The value thus obtained is then adjusted by a claim volume factor. The claim volume factor reflects the change in claim volume in the immediate past with the volume 12 months ago. Additional amounts are held for litigated and long term disability claims which were unreported a year ago and currently are reported or had been settled or terminated.

MR. HUTCHINGS: Mr. Koppel, you mentioned the subject of margin for adverse deviation and the differing needs for different lines of business. Could you give us a little bit more detail on the kind of thought process that goes into this determination?

MR. KOPPEL: For newer lines of business and in some instances, new reporting units, such as going into a new country, we will tend to be somewhat more conservative in establishing reserve levels. For the more established lines where we have history dating back many years we will establish much lower margins. Another aspect that comes into account is the reserve as a percentage of the total claims incurred. In some lines, the increase in reserve from year to year is a small part of the claims incurred. In other lines, such as the case of long term disability there is a large reserve still outstanding relative to claims incurred such that if you strengthen them by, say, 5%, you may find that you are increasing your loss ratio by quite a large margin. There are, therefore, some practical considerations involved. Our rule of thumb for our total group of companies is a 5 to 7% overall margin. For those lines of business for which we establish higher margins, communication with management concerning the level of these margins becomes an important aspect of my job. More often than not this explaining is on the difficult side since claim reserves involve an aspect of actuarial science that is less rather than more scientific. The non-actuary tends to expect much more in the way of hard facts and less in the way of judgment than is actually employed in setting reserves.

MR. HUTCHINGS: On the casualty side, as I understand it, there would appear to be an adverse fluctuation provision implicit within the statutory minima. In addition to any money that might be set aside for adverse deviation, is there a formal recognition of the need for margin as a general matter in your field, gentlemen?

MR. FITZGIBBON, JR.: One of the things I said as I described how those statutory tests work was that the reserve you set up need not produce a loss ratio greater than 75%. So, in the event a company is consistently running loss levels that are significantly beyond 75%, then there is no requirement for it to make any addition to reserves. I said that out of

the 40 largest casualty companies, 26 had to set up additional reserves but for almost all of those 26 companies the incremental amounts were insignificant. There are many companies that have substantial histories of upward development of claims (upward development meaning that the same claims show higher and higher costs as actual history emerges) yet the statutory tests do nothing to require them to strengthen their reserve provisions. It is also possible to avoid the application of these provisions since major reserves such as the incurred but unreported reserve, which I know for my company for malpractice is a lot larger than the case reserves, can be assigned to the accident years as you see fit and it is possible to avoid the application of the test simply through the device of the allocation of the formula reserves. In summary, the tests are not stringent and there is no formal recognition of the need for margins despite the development problem of the industry with respect to the major reserves that are shown for a five-year run-off in Schedule P of the Casualty blank.

MR. HUTCHINGS: One other theme that came through in several presentations was the situation in which evidence accumulates of a significant problem of reserve adequacy and the extent to which one chooses or has the option to choose to phase in or to jump in. I think I heard some phase-in thinkers and some jump-in thinkers. Insofar as it is the actuary who did the pricing and it is the actuary who determines the reserve which measures the effectiveness of his own pricing, this can get a little complex. What is the panel's view as to the relative wisdom of jumping in or easing in to a reserve correction process?

MR. ORENSHEIN: We struggled with that problem for a long time. One problem is that we do our calculations on a monthly basis, and if on December 31, you are going to tell your company that you have a liability of \$10,000,000 and on January 31 you tell them that you have a liability of \$7,000,000 or \$13,000,000, you are going to get a very quick reaction from company management. I do not think that as a practical matter you can vary the reserve that fast.

Beneficial's claim liability system, therefore, was designed to provide for gradual changes over the course of a calendar year. We do not believe erratic results determined month by month based on chance fluctuations or seasonal fluctuations are valid at each point in time. Certainly, company management could not make decisions based on results of one erratic month or quarter. Therefore, our entire system is geared to a grading basis which reflects current experience and projects into the future.

MR. KOPPEL: In addition to the remarks made by Mr. Orenshein, I'd like to point out that the decision depends to some extent on the level of certainty as to the fact of the deficiency as well as its magnitude. It would be very embarrassing to have strengthened claim reserves for one particular line of business based on evidence at the time of the strengthening and have to turn around and go in the opposite direction when the facts become clearer. The less certain we are of the underlying facts and reasons for the deficiency, the more likely we are to spread the strengthening over a long period of time.

Another consideration is the relative importance that the level of claim reserves has on the loss ratio development for a particular line of business. If most of the loss ratio for a line is in claims paid, then even a relatively large strengthening in the claim reserves will not have a sig-

nificant impact on the loss ratio. However, in some other lines such as long term disability, claim reserves have a significant impact on the loss ratios, and even a moderate strengthening on the reserves, especially where older claims are involved, will have a significant impact on the current year's loss ratio. Especially for group LTD, it may be impractical to accomplish all the strengthening in a single year since it will have the effect of artificially raising the current year's loss ratios.

MR. BALCAREK: It would appear that sudden and large corrections are fairly frequent in Property and Casualty insurance. However, I do not advocate it. I would prefer to phase it in. On the other hand, we have to remember two things. First, the size of the reserves is very large in relation to earnings, e.g., in my own company the reserves amount to some \$630 million compared to our annual earnings including investment income of some \$60 million. Consequently, a relatively small adjustment, say 5%, will look very large and affect the earnings in a major way. Secondly, the possible error is very large and your estimate of deficiency may substantially change. You may be starting with an estimated deficiency of \$20 million and after you phase it in you may come to a conclusion that the original deficiency was really \$40 million. A few jarring experiences like that would motivate you towards a more rapid adjustment.

MR. MICHAEL C. ALTSCHULER: Is there an attempt to achieve consistency between loss assumptions used in reserving and those used in pricing?

MR. BALCAREK: There is no attempt to achieve such consistency.

MR. FITZGIBBON, JR.: There is no attempt made to set reserves using ratemaking assumptions. Reserve levels are generated for major lines by emerging claim experience rather than assumed experience. Reserves are set using broad groupings of data, for example, country wide experience, while rates are made by state, by territory, etc.

At Aetna, there is communication between reserving and pricing actuaries. Reserve trends may have pricing implications. Reserves are set for claims which have already occurred while rates are made for future periods.

