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CAPACITY AND SOLVENCY—INTERNAL CONSIDERATIONS

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1. Definitions of capacity and solvency.
2. How can capacity be measured?
3. Qualitative aspects of solvency.
4. Effects of inflation.
5. How available is capital?
6. Insurance risk vs. investment risk.

MR. JOHN C. WOODY: We have come here today to talk about capacity and solvency as those concepts relate to insurance companies.

In simple terms, capacity refers to the ability of an insurer to assume risks, and solvency refers to the insurer's ability to pay its obligations when due.

I should state at this point, that most of the following discussion assumes that premiums are adequate in the opinion of the actuary responsible for their determination. The premiums may turn out to be inadequate, but this is unintentional.

Capacity has two aspects: the maximum claim amount the insurer is prepared to incur as a result of a single event, e.g., one death, one ship sinking; and the maximum aggregate of risks in force, e.g., total risk amounts of life policies, total premium volume.

Both aspects of capacity are related to solvency. Setting a limit on the potential claim amount resulting from one event, to be retained by the insurer, is a risk theory problem whose solution involves the amount of the risk reserve, or surplus, of the insurer. The writing of new business imposes a strain on the insurer's surplus, particularly for life companies, so it is possible to become legally insolvent by writing good business. For property/casualty insurers, there is a direct link in the generally accepted rule that premiums should not exceed some low multiple of surplus.

Having introduced this session by telling you no more than you know, I have the obligation to tell you why the subject seems worth discussing.

I start by quoting some words of Tore Melgard, Managing Director of the Storebrand, of Norway:

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One of the most pressing problems for the world's insurance industry is that individual risks are getting larger and larger, ever more complex. Hazards are increasingly difficult to assess, and the accumulation of individual risks subject to natural catastrophes has increased tremendously.

But the insurance companies, have they not also grown larger and larger? Have they not become so rich and have not their resources been so strengthened that they can cope with these new large accumulations of values and thus easily be able to meet the challenge of industry, shipping, and trade?

The answer to this is a clear and definite no.

... While risk accumulations are increasing ... from year to year, insurers are ... getting poorer and poorer.

Mr. Melgard is referring to property/casualty companies and to asset erosion from declines in the market values of common stocks. Life companies, too, have seen some asset erosion and insolvencies even in New York and Massachusetts.

Interestingly enough, the failures to which I refer resulted from excessive claims, whereas the causes used to be poor investments and/or excessive administrative expenses.

Obviously, it is the job of the actuary to determine the prudent limits on his company's assumption of risks, i.e., to determine its capacity.

Equally, it is up to the actuary to protect solvency by determining adequate premium rates and by setting reserves so that funds will be available when needed.

We hope this session will shed some light on these actuarial responsibilities.

Stan Khury will lead off by discussing the question, "How can capacity be measured?", and qualitative aspects of solvency.

MR. C. K. KHURY: Thank you, John.

My portion of the presentation is concerned with two items: the measurement of capacity and the qualitative aspects of solvency. My hope is to treat both areas and then conclude with a brief review of the interaction between capacity and solvency.

First, let me deal with solvency. John has pointed out the full spectrum of definitions of solvency. For my immediate purposes I would like to draw a parallel with the state of health of the human body at a given age. Two discrete choices are immediately obvious: life and death. If the body is alive ... however minimally, it is in fact alive ... and I would liken the state of being alive to an insurer being solvent. On the other hand, once all vital signs have stopped ... then the body is said to be dead ... and I would liken the state of being dead to insolvency.

Now, it's not hard to imagine all sorts of possibilities that can arise

from drawing this parallel. Imagine, if you will, GEICO at the peak of its crisis. While it was alive ... that was only possible with the aid of respirators, transfusions, major surgery, and all sorts of other good things. The point is that just knowing the body is alive really isn't much information. There's being barely alive ... through various plateau's of health/sickness ... all the way to the pinnacle of health.

The same is easily true of an insurance enterprise. It can be barely solvent ... solvent ... or quite comfortably solvent. How do we go about fixing the degree of solvency of an insurer?

In the case of the human body, in order to determine the degree of health, we take certain key measurements and a physician synthesizes the information and makes a pronouncement ... usually broadly qualitative ... such as very poor, good, passable, normal, etc. One point to note here is that for each measurement the physician takes, there are well-defined bounds of normalcy.

Now let's turn to the insurance enterprise. Here the problem of assessing the degree of solvency is two-fold:

- . One facet is the identification and validation of the aspects that should be measured.
- . The second facet is the quantification of the ranges of normalcy for the aspects already identified.

What I hope to accomplish today in the short time available is to share with you my laundry list of the aspects to be measured and the rationale therefore. I will make no attempt at quantifying the ranges of normalcy. That is a vast subject worthy of its own research and study.

Here goes:

1. Premium to Surplus Ratio. The appeal of this ratio is more intuitive than anything else. In other words, given two companies, identical in all respects except that one company has a surplus account twice the size of the other's, one would say the company with the larger surplus is the better off. But more importantly, we know nothing of the intrinsic well being of either of the two subject companies. We need to look at more.
2. Kind of Business. If it were possible to rank the different kinds of business on a scale from 0 to 1, depending on the riskiness inherent in the covered peril, one could derive a composite index of riskiness for every company's book of business. Thus given two companies, identical in all respects, one specializing in medical malpractice insurance while the other is writing automobile physical damage insurance exclusively, one would have to say the physical damage company is better off from a solvency standpoint than the malpractice company. Once again, this additional measure is not enough to determine the degree of solvency. We need more.
3. Reserve Adequacy. If it were possible to develop some kind of barometer that would measure the degree of adequacy of loss

reserves ... on a scale from 0 to 1, where 0 would denote gross inadequacy and 1, gross redundancy; we would be in a position to rank various companies based on just this measure. The closest thing we have to this barometer is the Schedule P runoff. Thus given two companies, in all respects identical, except for the degree of loss reserve adequacy, we would be in a position to choose between them. Once again, this measure is not sufficient by itself to determine the degree of solvency of an insurer. We need more.

At this point, I will just list the other factors and perhaps the rationale could be developed through the discussion period:

4. Rate Adequacy (Current)
5. Underwriting Standards (Current)
6. Investment Portfolio Composition (Current)

The extremes for each measure are quite obvious. Just where along the continuum of each factor an insurer elects to operate is a function of the judgment and inclination of the owners/managers/policyholders of the enterprise. At this point, however, we could begin to identify some key points of the solvency question:

- * There is no one universal measure of solvency.
- * The degree of solvency of an insurer is a synthesis of several different measures of various elements of the insurance enterprise.
- * Some of the key factors to be measured are: the premium/surplus ratio, the degree of riskiness inherent in the insured portfolio, the degree of adequacy of loss reserves, the degree of adequacy of rates, the liberality/conservatism of underwriting standards vis-a-vis the rates in effect, and the degree of riskiness inherent in the investment portfolio.
- * The degree of solvency is constantly changing. Any one reading is good only for that particular instant.

Now I would like to turn to the question of capacity. Once again one could draw a parallel to the capacity of the human body. Given a specified degree of health, a person has different capacities depending on the task to be done. For example:

- . Walking
- . Swimming
- . Playing Golf
- . Sitting
- . Running
- . Etc.

Obviously, a person would have practically an unlimited capacity to sit, but that same person might have a limited capacity for swimming! Now, in determining the capacity of this one person, a physician would take various measurements, and then advise the person accordingly.

The question of insurer capacity is much the same! One would have to take certain readings ... and based on a synthesis of these readings, determine the capacity of the insurer. Once again, the issue comes to us in two broad sections:

- . One is defining and validating the types of readings to be taken.
- . The other is to define the implied capacity corresponding to each such reading and to all readings in combination.

I will discuss only the factors that I believe pertain. The question of implied capacity is worthy of its own research and study.

I suggest that exactly the same readings taken to estimate the degree of solvency are needed to determine capacity. Specifically:

1. Premium/Surplus Ratio. If this were the only reading, a ratio of 200 to 1 might suggest that this insurer is a bit over-extended ... that its true capacity should be at premium levels much less than it is presently handling. Conversely a company writing at 1 to 200 could expand its portfolio without impairing its financial health. Clearly, cases such as these are quite extreme ... but they do illustrate the fact that the current premium/surplus ratio can serve as an indicator of the true capacity of an insurer.
2. Kinds of Business. Here the connection to capacity is less clouded. If an insurer has been successfully transacting a highly volatile line of business for many years, then by merely changing the mix of business (and assuming the same competence in managing the new portfolio) the capacity of this insurer can be expanded as the degree of riskiness of its book is reduced.

The extension of the other factors to capacity measures is straight forward; the remaining factors are:

3. Loss Reserve Adequacy
4. Rate Adequacy
5. Underwriting Standards
6. Investment Portfolio

Once again, some key points could be made about capacity:

- * There is no one universal determinant of insurer capacity.
- * The capacity of an insurer is a by-product of several difference measures of various elements of the insurance enterprise.
- * Some of the key factors to be measured are: the premium/surplus

ratio, the degree of riskiness inherent in the insured portfolio, the degree of adequacy of loss reserves, the degree of adequacy of rates, the liberality/conservatism of underwriting standards vis-a-vis the rates in effect, and the degree of riskiness inherent in the investment portfolio.

- * Insurer capacity is constantly changing. Any one reading is good only for that particular instant.

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By now you will have noticed a great similarity in the components of solvency and capacity; they are two sides of the same coin. Whatever enhances solvency will enhance capacity ... and conversely. In other words, instead of two subjects, we have but one.

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MR. FRANK IRISH: In life insurance companies there have been many attempts to define acceptable levels of surplus. For a long time the generally understood measure of soundness was the ratio of surplus to liabilities, which has a distant resemblance to the premium-surplus relationship in casualty. But there has been little agreement in life insurance circles on the proper level of surplus ratio. Furthermore, there is a growing recognition that the surplus ratio is too broad a measure, not sufficiently sensitive to the various aspects of a company's operation that affect its soundness. As in casualty, the life business needs more delicate measures.

Thus recent studies of surplus have tended to focus on developing more precise relationships between surplus levels and the underlying risk levels. One approach, for example, has been to examine all the possible sources of loss, and set targets that represent a reasonable protection against each such risk. Total surplus needs are then defined as the sum of these numbers, and it is a very straightforward matter to relate changing surplus needs to changes in the nature of the company's operations. There have also been approaches that are mathematically more sophisticated, involving probability distributions and the use of stochastic models to determine the probabilities of surplus depletion.

It is natural for an actuary to think in terms of the amount of surplus that must be maintained to meet the needs of the company. Perhaps less natural is the reverse process, to ask about the amount of risk that can be taken on as a function of the level of surplus, but this is exactly what the capacity question is. As Stan says, the capacity and solvency questions are equivalent and I want to expand this concept by saying that the equivalence is like solving the same equation for two different dependent variables. The solvency question is: "What should the level of financial soundness be, given the type of business in my company?" and the capacity question is: "What type of business should my company do, given its current level of soundness?" Frequently, the capacity question is a matter of whether the growth of the company is to be limited in order to maintain the desired level of solvency. When we explore these questions, we see the life insurance analog of what is already a commonplace in casualty insurance.

One can, of course, find some examples of the capacity approach to life insurance matters. For instances, there is the well-known question of setting retention limits for a company's reinsurance program; here the question very obviously is the type of insurance risk that a company can absorb as a function of its surplus. A different kind of example is discussed in Bertram Pike's paper (TSA XXIX), in which the relationship between growth and surplus in Group Insurance is explored. Once the capacity-solvency relationship has been decided, the growth of the business, which is essentially growth of the amount of risk assumed, is limited by the growth of surplus, which is a function of the earnings of the existing business. Pike shows how the growth-earnings relationship works out in specific cases.

It should be very clear that these various attempts to measure capacity and solvency must involve details of the company's operation that go far beyond the numerical aggregates of size and surplus. When we speak of "qualitative aspects of solvency", we refer to the quality of a company's assets, the quality of its reserves, and the risk characteristics of its mix of business.

The treatment of quality in surplus studies depends very much on whether surplus is viewed as protecting mainly against sudden fluctuations, or mainly against long-run deterioration in experience. The long-run view is mainly a matter of whether the reserves properly and conservatively reflect the earning power of the assets and the level of mortality, morbidity, and so forth that may be incurred on the business written. If this discussion were being held thirty years ago, the problem of reserve soundness would have been of first priority. Today this is no longer true, partly because of changes in conditions (the levels of interest and mortality rates) and partly because of the corrective actions that were taken.

It seems that reserves on inforce business are so strong today that long-run soundness of reserves is of little import in solvency calculations. I don't think, however, anyone can deny that there is a recent tendency toward weakening of reserve standards, and at some point a life company may find that reserve soundness once again become a limiting factor. But for now it does not seem to be the main problem.

What we must recognize is that the very real redundancies in reserves are not a resource which can be drawn upon to meet sudden fluctuations in experience. As a matter of fact, one can easily conceive of a life insurance company that is technically insolvent, despite its capability, by any reasonable measure, to meet all of its future obligations. The threat of such a situation underlines the importance of short-run fluctuations as a determinant of surplus needs. There may be a few situations, however, these policy reserves can be drawn on to meet a surplus crisis, as in Group Pension, where destrengthening of reserves on existing business is apparently allowed; and in evaluating solvency this possibility must be taken into account.

When one evaluates surplus needs, one is trying to analyze what would happen in a disaster. The characteristics of a particular company's operation are very important in estimating the amount of surplus depletion. Premium margins and reinsurance arrangements provide extra protection in a crisis. In Group Insurance, the degree to which a loss can

be shifted to the policyholder, through retroactive rating agreements for instance, is important in estimating risk. In Group Pension, interest rate guarantees and cash-out guarantees can make a company vulnerable to certain kinds of asset depreciation; the typical Group Pension product mix contains a very wide spectrum of such provisions, all the way from complete guarantees down to no guarantees at all on some products.

Many of these risk aspects of a company's business are, of course, somewhat within the control of management. The capacity question does indeed present management with a many-faceted choice, a multi-variate trade-off between the rate at which it should grow, the types of business it wishes to do, the types of risk it wishes to assume, and the ability of its capacity to keep pace with these changes. The administration of this complex trade-off creates management problems. In a company with many product lines, it is often effective to make each product line responsible for its own solvency. This places responsibility for company soundness one step down the line, and makes the tradeoffs a little less complex. There are also plenty of arguments, of course, for making the tradeoffs at the corporate level rather than the product-line level. In either case, the way in which capacity and solvency questions are handled is likely to become a central issue in the determination of how planning systems are structured in a life company.

MR. WARREN P. COOPER: I'm sure that there are more than a few of us in this room who remember those rosy days in the sixties -- not such a long time ago in historical perspective -- when highly regarded insurance scholars wrote about surplus surplus. The phrase clearly meant that the property-casualty industry was over-capitalized, that there was excess capacity to supply the public's insurance needs at that time and for the foreseeable future. So funds were diverted from insurance uses in many ways: buying up stock, extraordinary dividends, expansion into other, not always related, industries. Back then who could foresee a tumbling equity market, a halt in the steady flow of capital gains, a plunge in the overseas value of the dollar, rampant liberalization of reparations by statute or change in legal doctrines, and double-digit economic inflation?

We all know what the stock market of the early mid-seventies did to our net worth. We have dealt with downturns before, though not such severe ones, but this experience was unique: for the first time it was accompanied by severe inflation. Let's look more closely at what the various types of inflation did. Suppose that by the early seventies surplus surplus had been disposed of, and our capitalization was in balance with our needs for supplying the insurance product. Now enters the inflationary devil. If we actuaries had been able to predict the spiral accurately, our rates of change in price would have exceeded those underlying the common general economic indicators for two reasons: first, because we would have been pricing a future benefit and second, because the elements of the overall economic system that must impact the property and casualty industry -- medical, auto repair and construction costs -- were moving upward at a faster clip than other elements. While profit loadings in the premiums would also rise, they would probably not have contributed enough cash so that surplus would grow to meet the increased capital requirements that rate changes alone demanded. Certainly the insurance operation would not generate the funds needed to back the public's

demand, inspired by inflation, for increased values and higher limits. But in this perfect scheme we are considering, our reserves, both premium and claims, would also have grown and in turn produced more investment income, which by falling through the income statement to the surplus account, might have made up the slack.

But, unfortunately, we are not dealing in a perfect world: in fact, in this case the real scenario could not have been much less perfect. Seemingly unable to cope with changing rates of inflation, we actuaries undershot the necessary price levels, and by doing so we not only depressed the profit expectations, we obliterated them by understating the loss component. (Who, by the way, should have been in a better position to foresee the so-called "MALPRACTICE CRISIS" than the Actuary?) While the rating manuals reflected our skimpy prices, our underwriting colleagues, captivated by a trio of favorable annual income statements, conscientiously forgot the balance sheet and decided to compete vigorously, which, of course, depressed income levels further. About the same time the securities markets tumbled and capital gains disintegrated into losses, just as underwriting losses were putting their demands on our net worth. Quite swiftly, then, we went from surplus surplus to adequate surplus to inadequate surplus, and we ended up in this last condition at a time when our delayed perception of necessary price increases and the insuring public's requirements for expanded coverage were both demanding higher levels of capacity than ever before.

Are there lessons to be learned? That should be obvious! We must learn to be hypersensitive to economic inflation, which, we should note, tends to proceed in only one direction. Further we must find techniques to cope with changing rates of inflation. We actuaries have more or less publicly admitted our failing by openly looking for whatever help we can get from economists. Several companies have added these arcane (from an actuarial point of view) specialists to their staffs or expanded existing capabilities. At our major rating organization we have enlarged research capabilities and established two Economic Applications Actuarial Subcommittees. The lessons are not only ours, of course. The underwriters also have learned that adequate prices, while always important, are crucial when rampant inflation hits. They have, for a time at least, become more sober about the use of judgment rating schemes. Regulators, too, have a lesson from this history. While it is never popular to encourage rate increases, especially when inflation is eating into the consumer's income, the regulatory community must focus on the economic dynamics of the industry and permit prices that will generate capital for future demand. I don't wish to open our discussion here to the thorny problems of affordability and subsidy, but we should point out that capacity (and its close relative, solvency) are also matters of public concern.

So far I have only mentioned economic inflation. There is one other type -- frequently called "social inflation" -- which may have even more impact on capacity. "Social inflation" comprises such phenomena as liberalized tort doctrines, changes in attitudes toward injury reparations, and a new public perception of the social responsibilities of commercial and institutional organization. Shifts in social expectations are creating a demand for increased amounts of coverage, a need for new forms of insurance, and substantially higher bills from insurers -- all factors

that create a need for increased capacity to support prospective operations. They also make demands on surplus to support past operations. Each time a new legal doctrine is established or an old one liberalized, our current reserves swell. Some examples: the imposition of comparative negligence, striking guest statutes, liberalized and escalating compensation awards, strict liability, new methods of apportioning damages to multiple defendants, burgeoning awards for punitive exemplary damages. An exhaustive list, unfortunately, would be much longer. Some cases are much more subtle. Consider the current litigation involving DES. As carriers we are in a very difficult position event to guess at our potential liabilities. We will not know what they are until several courts several years from now have handed down appealed decisions. This side of "social inflation" will probably prolong the need for reserve strengthening in some sensitive casualty lines until substantive changes are made in our tort and reparations systems. In the last two years we have seen appreciable strengthening in the industry, and we hope we have caught up with the problem as well as current knowledge allows, but some reserve deterioration is almost certain to remain with us. It represents, in effect, a retrospective call on capacity.

One last call on net worth needs a brief mention here. Over the last few years, stock companies have changed their situation in the equity world. A few years ago they were considered growth stocks, but lately there has been greater emphasis on yield. As a consequence managements have been raising stockholder dividends to respond to market pressures. Dividends, of course, are paid from retained earnings and retard surplus growth.

If, then, we find ourselves undercapitalized, what can we do about it? What about outside sources of funds? Basically there are two. First, the companies might sell capital stock. The market for such equities appears minimal at best. Second, debt instruments may be offered; and we have recently seen some quite successful debenture sales here and abroad, but they account for a small portion of the capital necessary. In reality the industry is not heavily leveraged; debt is a small part of liabilities. Debt, moreover, places one more demand on the companies' earnings, net worth, and capacity, when the time comes to pay interest and amortize sinking funds. In the November 1977 issue of Best's Property/Casualty Review the editors estimated that over the prior 10 years only \$3.6 billion was contributed to capital from outside the industry and of that, \$1.3 billion was used to form new companies not part of existing property and casualty fleets.

So we are drawn to the clear conclusion that the capital needs -- both replenishment and expansion -- in the main will have to come from operations. In a property and casualty company there are two sources of income: underwriting gain and investment income. In the past the industry seems to have depended only on the latter for the supply of net retained earnings. Not long ago, in a written decision, the Commissioner from New Jersey concluded that the companies in aggregate were not even interested in realizing an underwriting profit, but just in the use of the cash that insurance operations generate. Recent experience shows that such an attitude was unwise; total dependence on investment earnings can be too risky. Past practices have exposed our assets almost disastrously, while we are not paying sufficient attention to insurance

earnings. It seems clear that if we are to resolve the capitalization problem, both sides of the house will have to contribute. Further, the contributions will have to continue over a period of several years to produce a capital base that will not only meet current requirements but one that will also respond to a public need for more insurance as well as future bouts with the inflation disease.

All of this means that management, stockholders, policyholders and regulators are going to have to cooperate in the effort, for without this cooperation the fate of the industry may be bleak.

The above remarks, of course, implicitly define capacity in terms of net worth and premiums. It is possible, under such a definition to expand capacity overnight, just by relaxing requirements of the statutory blank. Consider what would happen if rules were changed regarding salvage and subrogation, prepaid expenses; unauthorized reinsurance, agents' balances, equipment, earned but not recorded premiums and other non-admitted assets, some of which we take into account in our GAAP records. Consider also what the IRS would do with the sudden explosion in the income statement. Some new accounting sleight of hand, though artful and well-intended to increase capital, could destroy a major part of it under current tax law and practice. Beyond tax considerations there are good and sufficient reasons to keep statutory accounting precepts in place. Insolvencies do occur, and even under current accounting practices they sap general capacity through the guaranty associations. In reality regulatory interest seems to be moving in the opposite direction; consider current calls for MSVR's, liabilities for taxes to be paid on capital gains and the like, all of which will further shrink surplus and thus a company's ability to write new business under current solvency tests.

There is an interesting, though perhaps parenthetical, aspect to capacity and dwindling surplus. Under the solvency tests a company is criticized for a high premiums to surplus ratio, but those regulators who judge prices on a return-on-net worth argument would impose lower dollar earnings on any company so criticized. Where ROI is so intimately connected with the industry's ability to respond to public need, the consideration of price and net worth must be carefully thought out. Simple imposition of standards applicable to unrelated businesses can only obfuscate matters and exacerbate the capacity problem.

I would like to suggest that, rather than play accounting tricks and abandon classical insurance accounting, we seek some amendments that will not disarrange our tax lawyers and, more importantly, that we search for more sensitive measures of capacity. With due regard to elder, eminent scholars of the business, I think it is due time that we look to tests beyond the premium/surplus ratios. They were devised at a time when property insurance dominated the industry, which now has a preponderant interest in casualty coverages, and at a time when the unearned premium liabilities, predictable as they are, represented a much greater percentage of total liabilities; now the uncertain claims reserves represent the lion's share. The premium/surplus ratios also ignore distributional differences among companies, the quality of their assets, the risk in their insurance portfolios, and so on.

Perhaps we actuaries can help here. The problems seem to fall into our arena; certainly they are stochastic in nature. I personally have no answers, but I would like to throw the problem out into the room with the hope that someone will ponder it and perhaps find a solution.

MR. ROBERT G. MAXON: Over the past few years, the American public has become increasingly aware of inflation. The media have given extensive coverage to changes in the Consumer Price Index, the wholesale price index and so on. The consumer can see the impact of inflation almost every time food or gasoline is purchased or the monthly utility bill is received. Since 1970, inflation has compounded at an annual rate of roughly 6 1/2% per year.

The life insurance business, too, has been forced to become more sensitive to the effects of inflation. Companies have increased the sophistication with which they analyze their business in order to quantify the impacts of inflation and to develop strategies for coping with inflation.

Capacity & Solvency Factors

In order to get some appreciation of the effects of inflation on capacity and solvency - it may be helpful to look at the interrelationships of several items - Growth

- Mix of business
- Profits or contribution to surplus
- Surplus targets - surplus standards

I would like to make some general observations about each item in turn and then give a short wrap up.

Growth

Inflation has generally had a positive impact on growth. With inflation, a general need for both more and different kinds of coverage has developed.

In all areas, our business has been responsive to these needs for additional coverage. Ordinary life insurance sales have increased as consumers have recognized the need for more coverage to protect estates and increased earning power. The average size ordinary policy sold in 1976 was some 48% higher than in 1970.

Group life insurance has grown in response to wage inflation, to increased numbers of employees, and to employee pressure for more benefits. Group life insurance in force passed the trillion dollar mark in 1976, up some 82% since 1970. Other parts of our business have also shown dramatic growth, the premium developed from health coverages is up 85% since 1970 as a result of expanding demands for health coverage and in response to medical care costs escalating at a faster rate than the overall Consumer Price Index. The most dramatic growth on a percentage basis has been in the Pension - Annuity field. Total annuity premiums and considerations are up 275% over 1970 because of increased recognition of need to save for retirement, the growth of private pension plans, and expansion of new products (variable annuity, guaranteed interest contracts and Pension separate accounts).

Mix of Business

Several trends have been evident over the past couple of decades. It has been well documented that permanent life insurance has been capturing a decreasing share of the savings dollar. This has been caused by the increasing popularity of lower premium forms of insurance, the growth in term insurance and the expansion of group life insurance. These trends have de-emphasized life product forms with heavy investment elements which provide some offset against profit erosion caused by inflation. As noted earlier, premiums for Health coverages have grown at a faster rate than total premium income, causing a slight shift of mix toward health lines. On the other hand, the growth in annuity consideration has been the most dramatic of all. Pension & Annuity considerations account for over 20% of premium income of life companies. This share has doubled in just the last seven years. Thus, we have seen a considerable shift in the mix of business with no evidence that the trends will not continue in the future.

Profits/Contributions to Surplus

As a general observation, company profit margins have decreased over the last 10 to 15 years. Several factors have caused this decline: the business mix shift to lower profit margin contracts; more experience rating; development of administrative-service-only contracts; growth of pension separate accounts and variable annuities and the substantial increase in competition. These profit margin pressures have in turn put pressure on the ability of companies to generate earnings.

Inflation has had a particular impact on two significant elements affecting profitability: investment income and expenses.

Total investment income of life companies has gone up about 85% in the period 1970 - 1976. Some profit margins have been helped by this growth in investment income. Yet at the same time, ordinary dividend scales have benefited by this excess interest and increasing payouts to Group contractholders has occurred. Increased competition has forced companies to pass along much of the improvement that has occurred in investment income.

The life industry has responded to the impact of inflation on expenses in a variety of ways, and to date has generally been successful in minimizing the effects of inflation. As a whole, the industry has been able to overcome the impacts of wage inflation by the effective utilization of computers. Many of the clerical functions, e.g., premium billing/collection, service transactions and quotations, benefit payments, etc., have now been mechanized throughout most of the industry. In addition, many companies have standardized policy forms and procedures. This has helped to increase productivity and overcome wage escalation. At this point in time, one must wonder whether or not the industry as a whole has reached a point where diminishing returns will develop with more computerization.

Target Surplus Levels/Surplus Standards

Most companies have begun to establish target surplus levels or some

form of surplus standards which take into account factors which measure the surplus needed to support insurance and investment risks associated with specific lines of business. For most companies, overall surplus to liabilities has decreased over at least the past 10 year period. But it should be clear that the various lines of business require different surplus levels. For example, disability income and group LTD require a higher level than other health coverages. In the group pension area, it should be clear that a pension contract with an interest guarantee would need more surplus than a contract without the interest guarantee.

More risk sharing on the part of policyholders and the development of administrative-service-only contracts has decreased the need for surplus to write contracts in some lines.

Perhaps there have been a couple of good aspects to the inflationary environment - the insurance industry has been required to be more aware of the various kinds of business it engages in, and the industry has come to recognize that it must manage its resources better in order to stay in business and provide the public with needed insurance coverages.

MR. GUNNAR BENKTANDER: I would like to put questions to John Woody and to Stan Khury.

But before that, let me explain shortly my own thinking in this area.

Profit, or rather expectation of profit, is the insurers price for carrying possible fluctuations in the negative direction on the risks assumed.

Obviously a risk with a low potential dollar fluctuation needs only a modest profit expectation, whereas high potential fluctuations in the underwriting results of a certain risk should be compensated by a higher profit expectation.

If the profit margin in the rate of a certain risk is small relative to the potential adverse fluctuation we would like only to accept a small part in it. If the rate and thus also the profit margin is increased, we are willing to write a higher amount. The natural request of an insurer/reinsurer that high acceptances, which could lead to large fluctuations, should lead to higher profit margins, has been referred to as price for capacity. Such price could be calculated if we define a "measure of the risk". A simple measure is the variance of the results.

Now to the questions. John Woody said that capacity has something to do with solvency. Has it not also very much to do with profitability and with the company's risk aversion?

Stan Khury said that capacity and solvency are two sides of the same coin. I will agree to this if we allow for very strange forms of coins individually designed by each company. Instead of the traditional form of a quarter we will have to allow for all possible forms of conic sections. Let us think of two companies A and B which are identical in solvency criteria from premiums to surplus to kinds of business written to investment portfolio. Question: Will their capacity be the same? My answer is no! Should it be the same? My answer is: I don't know!

It will not be the same because the risk willingness or its inverse, the risk aversion, will differ between A and B.

MR. DONALD D. CODY: Our studies of capacity in a mutual life insurance company indicated two investment and investment-product related areas which caused large relative infringements on capacity: common stocks held in the general account, and individual and group annuities having guaranteed investment characteristics. The surplus needs caused by these items were judged against a scenario involving an ongoing variable and inflationary economic environment and eventually a serious 5-year recession with double digit bond yields. This scenario did not involve true depression, but rather was similar to the economic environment in the United Kingdom in recent years. Economists attach a small but nevertheless significant probability to the occurrence of this type of scenario in this country.

First of all, as to common stocks in the general portfolio - surplus capacity is called on to recognize the downside potential in common stocks. To the extent that common stocks are a significant percentage of surplus, the capacity utilized becomes quite large. The property-casualty companies, which traditionally have held a much higher percentage of surplus in common stocks, have suffered great losses of capacity on this score and the corporate options of life insurance companies have also been affected.

The holding of common stocks is based on the belief that in the long run greater after-tax yields can be obtained than for fixed dollar securities. However, the surplus constraint makes dollar cost averaging in common stocks rather difficult. Life insurance company investment officers have not had a good record in common stocks in recent years probably because they seem to follow principles which are proper for unconstrained portfolios such as pension funds where continued cash flow assures dollar cost averaging. However, to obtain such dollar cost averaging in general portfolios of life insurance companies, it is necessary to follow a different investment philosophy involving net selling and net buying of common stocks in a pattern which is different from pension fund common stock procedures.

It seems, therefore, that not only do common stocks in the general portfolio put a serious drain on capacity which can be better used otherwise; but also in the kind of economic environment to be expected in the foreseeable future, common stocks in general portfolios are unlikely to compete in investment return with fixed dollar securities.

The guaranteed investment type of annuity, both individual and group, is a regular annuity on the face of things, but the cash value guarantees and the use of new money interest payments tend to attract a great deal of hot money which may or may not be connected with annuities, but certainly will follow the most attractive future returns offered in the markets or by other intermediaries. The new-money type interest rates can be offered only if the funds received are invested in long term securities. When the insurance company can no longer sustain the level of interest needed to retain the funds, the long term securities underlying the contracts may have to be sold when market values are well below book values; or the cash-outs must be honored with funds received

on other contracts which must nevertheless be credited with interest compatible with new investments, thereby creating a drain on net income. It is at this point that surplus is needed and it is this potential drain that infringes on company capacity.

The problem would be of lesser import if these contracts provided adequate profit margins to permit the building of such surplus. From what I have seen of the offerings, it is unlikely that much such current profit is available.

These two illustrations suggest that while companies may hold common stocks in general portfolios and may offer annuity contracts with liberal cash value guarantees and high total interest rates, it is desirable to keep both of these items in control so that company surplus capacity, better used for normal insurance risks, can be retained. Prodigal use of holdings of common stocks or issuance of this kind of contract may begin to threaten future company viability.

MR. FRANK IRISH: As we have said, the quality of assets is an important element of solvency in a life insurance company. Different classes of assets have very different risk characteristics, with common stocks typically being the most risky class. Bonds and mortgages, being normally carried at book value, are less subject to asset depreciation, but in a crisis a certain proportion of these assets will become worthless, and another portion will have to be downvalued.

The implications of protecting against this kind of financial crisis are clear. A large portion of a typical life company's surplus (I would guess at least two-thirds) is there to meet the investment risk. This is true at least for the large companies.

Of course, in any discussion of the investment risk, we also have to take the Mandatory Securities Valuation Reserve into account. This is a liability item in the life statement, but really operates as an allocated surplus account, available to cover certain kinds of losses. Paul Otteson made some comments about MSVR in a panel yesterday, to the effect that he didn't like it in life insurance and hoped it never came to casualty insurance. Well, it is true that forced allocations of surplus are always theoretically repugnant - it means that the money is there to buffer the company against only one kind of risk, rather than all kinds. But, in a rough way, it forces companies to gear their financial goals to their asset mix. As to the question of whether the mandatory reserve is just as good as free surplus for solvency protection; in a large life company, I think the answer is almost certainly yes. Almost any crisis that is a threat to solvency is likely to involve the type of asset losses that involve the mandatory reserve. In a small company, I'm not so sure.

Finally, we have to look again at the capacity question. Investment policy obviously has a tremendous affect on the capacity to accept insurance risks. Investment and insurance have traditionally been treated as separate policy-making categories; merely recognizing that they are not is a giant step forward in most companies. A more ambitious investment policy may produce a better yield in the long-run, but it may impinge upon the company's ability to increase its insurance business, and vice-versa. We all have to face up to this trade-off.