

1987 VALUATION ACTUARY
SYMPOSIUM PROCEEDINGS
SESSION 7A

TAXES, REINSURANCE AND APPLICATIONS OF
ASSET/LIABILITY MATCHING TECHNIQUES IN OTHER BUSINESSES

(OPEN FORUM)

MR. THOMAS M. McCOMB: We have a very distinguished group of speakers today. If you find a cohesive thread through the four presentations that will be given, then you understand absolutely nothing about the Valuation Actuary concept because there is no cohesive thread. These are four separate topics, but fortunately they are all related to our discussion, and you will have the opportunity to hear and see interplay among them. Our first speaker is Virgil D. Wagner. Mr. Wagner is a member of the Academy, a fellow of the Society, a member of the Conference of Actuaries. He is life actuary with the American Council of Life Insurance. Since he works out of Washington, D.C. he is imminently qualified to tell us all that we'd want to know about the tax implications of the proposed Valuation Actuary.

TAX ISSUES

MR. VIRGIL WAGNER: When Mr. McComb asked me to speak on tax issues, I hesitated on the grounds that there is really little that is known, or can be known, about the subject until the Valuation

Actuary proposals are pretty well defined. He assured me that I need not worry. The first day of the Symposium was to be a "how to" day. The second day, he said, was to be devoted to theory and speculation, so I would fit right in. With that license, I will go ahead and speculate.

There are no answers; there aren't even any specific questions. However, let me assure you, I believe the tax result of any valuation change will be a major consideration, if not the major consideration, to be addressed before any proposal can be accepted by insurance company management. I say the major consideration because no matter how sophisticated the final actuarial reserve basis is, or how acceptable it is to management as the "right" liability, if it is not tax deductible, it automatically becomes unacceptable. If basic policy reserves are not eligible for tax deduction, that fact most likely will torpedo any proposal, good or bad.

RESERVES BASED ON ACTUARIAL JUDGMENTS

My comments today are meant to start you thinking, if you haven't already, about some of the tax issues associated with proposals being discussed and speculate on some possible ways to address those issues. If you have already given a lot of thought to the subject, you probably won't learn much more from me.

First, if I am to discuss tax issues as part of this Symposium on the Valuation Actuary, I need to back up for a moment and define what is meant by the expression "Valuation Actuary proposals" or "Valuation Actuary movement." I have noted a wide range of meaning given to these terms in conversations and presentations.

For years companies have used a "valuation actuary," lower case, with a requirement for an actuarial opinion, qualification standards, and standards of practice. The original proposal for a "Valuation Actuary," upper case, was offered by the Joint Committee on the Role of the Valuation Actuary. This proposal was to require by law that a Valuation Actuary be designated by the Board of Directors of a company and that the appointment be reported to regulators. This would provide recognition and support in order that he or she could be held fully responsible and accountable for establishing the reserves. The ultimate implementation of this concept (although never proposed in this ultimate form) would be for regulators to rely entirely on the Valuation Actuary's professional judgment, with no formula reserves incorporated into the valuation law. Hence, inherent in this concept of the Valuation Actuary is the substitution of actuarial judgment for rigid formulas. The extent to which this substitution is made in a proposal, I consider it a Valuation Actuary proposal. If it doesn't do this, it is merely a change of some other type in the valuation laws.

It was recognized early on that, at least as an interim step, a solvency level must be defined by law, and so we soon got a mixture of formula and judgment. The term "Valuation Actuary proposal" is now commonly used to mean anything from the pure concept which would depend entirely on the actuary's judgment, to a beefing up of the current, lower case, valuation actuary's role through improved standards of practice or other revisions to the Standard Valuation Law.

Two common threads seem to hold through these meanings. One is that the Valuation Actuary must consider the asset side of the balance sheet in determining the adequacy of reserves. The second is that the Valuation Actuary will utilize some type of scenario testing -- that is, projected cash flow analysis being the leading candidate. The reserve thus established will be a number representing the Valuation Actuary's best judgment based on these tests; or it will be a formula reserve which has either met or is exempt from the requirements of these tests.

Current tax law provides for tax reserves which are based on the highest interest rates and the most recent mortality tables permitted by a majority of the states. This result is limited to no more than the actual annual statement reserve and allows the cash value of the contract as a minimum. This precise formula in the tax code was designed to define, for all companies, a maximum deduction which is uniform by company, thereby eliminating the discretion inherent in

allowing the statement reserve as the tax reserve. By tying to the minimum prevailing interest rates and most recent mortality tables and requiring the Commissioners Reserve Valuation Method (CRVM) method, the tax reserve is an NAIC formula reserve and is generally considered by tax authorities to be the minimum reserve permissible by state laws.

Further, where there is any choice, the tax law specifies that the alternative which produces the lowest reserve must be used. It follows that maximum tax reserve deductions under any valuation system will, in the absence of clear and explicit definition, be construed to be the lowest reserve level which can be clearly identified as permissible by state law, and which is uniformly applicable to all companies. Given the intent of a uniform, nondiscretionary minimal reserve, it seems clear that "actuarial judgment" is not a reserve basis likely to go far at the Treasury!

Even if a reserve based on cash flow testing and actuarial judgment were acceptable as to interest and mortality assumptions, the reserve would likely be viewed as containing elements beyond the traditional interest and mortality and therefore would not be acceptable as the tax reserve. For example, any proposal which eliminates or modifies the Mandatory Securities Valuation Reserves (MSVR) would be evidence that asset fluctuation reserves have been incorporated into the basic reserves. Also, there would be a basic question as to whether such a reserve is computed in accordance with the CRVM. This is an

important question since the CRVM is the underpinning for arguments supporting the immediate deduction of life insurance acquisition expenses in computing taxable income.

To directly address any or all of these issues would require a reopening of the entire life insurance tax reserve issue. Remember that the tax law was framed in a climate where any life insurance reserve deduction was questionable. There is a prevailing view that life insurance reserve deductions are nothing more than early deductions for death claims. In the new-found world of "time value of money," this view has rapidly gained popularity. Of course, this is an extreme view. However, to allow no more than the cash surrender value as the tax reserve is a modification of this position which is not so extreme. A cash surrender value limit on tax reserves could easily gain favor in any new legislative effort. The revenue options paper prepared in mid-1987 by the congressional staff again challenges life insurance reserves, and includes an option to limit reserves to cash values. I'm sure the industry would not want to reopen a full blown discussion of appropriate tax reserves given the climate I have described.

FORMULAS AND ACTUARIAL JUDGMENTS

So far I have referred only to problems associated with reserves based on actuarial judgment, with no formula reserve being utilized, even for solvency determination. This is a long-term idealistic objective, at

best, so you might say that this discussion has been irrelevant to any current near-term proposal. However, any one of the Valuation Actuary proposals relies on actuarial judgment to some degree. Since most current thinking, for the most part, is that some combination of formulas and actuaries' discretion would be used, let's look at these approaches.

Two variations are commonly discussed. In the first case a formula reserve would be established as a minimum, but this minimum could be held only if the actuary can demonstrate that the minimum is adequate. Alternatively, in the second case, a higher "safe harbor" reserve would be established for formula, but the actuary could set reserves at a lower level by making proper demonstrations of adequacy.

In the first case, where a minimum formula reserve is prescribed, it seems clear that tax reserves would be equal to those calculated by the minimum formula. That minimum would be the lowest permissible basis under state law. Where reserves are set by the Valuation Actuary at higher levels because the company chooses not to perform the analysis needed to justify the minimum level, the company has thereby voluntarily chosen the higher reserve. The company could have done the analysis and held the lower minimum reserve; so, the formula minimum was the minimum reserve permitted by law. In the situation where the company was unable to justify the minimum reserve due to the character of its assets and liabilities or other factors, it can still be argued that the company voluntarily used the higher

reserves because it could have managed its affairs so as to qualify for the minimum reserves. Hence, the formula minimum was again the lowest reserve permitted by law; they just didn't avail themselves of it. To get full deduction of reserves under this system, a company would have to manage its affairs and perform the necessary analysis to qualify for the minimum level. There would not be a choice of holding the higher reserves and getting a full tax deduction. Tax considerations would force valuation reserves to the minimum level, a concern of the NAIC which has already been expressed about the current system.

It is less clear just what would happen in the second case, where higher safe-harbor formula reserves are specified in the valuation law with a provision to hold reserves at lower levels by demonstrating their adequacy. If there is also a formula minimum, we're right back to the first case where that minimum is the tax reserve. In the absence of a formula minimum, the concept of a lowest permitted reserve is unclear. The valuation law would presumably include a formula basis for safe-harbor reserves with language permitting the use of lower reserves under specified conditions. If the formula reserve qualifies as the maximum allowable tax reserve, there would seem to be an opportunity to "elect" these more conservative tax reserves by performing no further tests.

This wouldn't be acceptable to tax authorities. On the other hand, if a company does perform the necessary analysis, the resulting lower

reserve set by the valuation actuary would become the tax reserve by virtue of it being the lower of statement and computed tax reserves. These reserves would be set at a level below the formula reserves in accordance with the actuary's analysis and judgment. Therefore, they are of the same nature as under the pure Valuation Actuary concept, and leave us in the same quagmire. Tax auditors will question the basis of this ill-defined deduction and will most likely find reasons to reduce it or even disallow it. This opens the entire issue of how appropriate tax reserves are to be computed. As I stated before, I don't think the industry wants to open up that issue.

One possible solution, if we do propose statutory reserves based largely on actuarial judgment, would be to incorporate a tax reserve formula in the tax code. I believe this approach is similar to that which is done in Canada, where there is both a maximum tax reserve and a Valuation Actuary. If this could be done on a dynamic basis, it might be acceptable. It would have the advantage of taking the tax reserve out of the NAIC arena as it is now. I personally believe that incorporating a tax reserve formula into the tax code would be the best overall solution if it did not require opening the subject of appropriate reserves. The short-term risk of that seems to outweigh the long-term gain, at least right now.

The challenge to drafters of any change to the valuation laws then, is to dovetail any of the proposed reserving standards with the existing tax law. One suggestion is to reduce the results of the actuaries'

scenario testing to a specific interest rate to be used in a CRVM formula, and thereby avoid introducing any new factors or methods. Another possibility is to write the law in such a manner that there is a prescribed "realistic" reserve level over which any additional reserve is clearly required in a specific amount by the state regulatory agency. This possibility would be limited to well-defined, severe, situations. Even then, it may only work if it's a formula reserve over the formula reserve.

The idea is to tie into "required by law" rather than "required by Valuation Actuary." "Required by law" has some precedent in the tax code, whereas a law requiring the Valuation Actuary to establish an additional amount is not really the same thing. A disadvantage of these kinds of solutions is that they impose heavily on the flexibility and judgment left to the Valuation Actuary.

Let me mention a few tax issues which may not really be new, but are moved to the front burner as a result of, or as a byproduct of, the work on the Valuation Actuary concept. One of these issues is tax effected (after tax) cash flow projections. Recent tax law changes have further complicated an already troublesome task for actuaries. The first is the general instability. How does one make projections with tax law and rate changes constantly in the mill? Added to this instability (actually one result of it) are vast discontinuities. A company may flop in and out of the new Alternative Minimum Tax or in and out of special small company status. Another complication involves

the treatment of operations loss deductions given Alternative Minimum Tax and/or consolidations with a non-life or other life company. Add these to differences in taxation of income streams from bonds, mortgages, and real estate. I know some actuaries have put considerable effort into systems for producing these after-tax cash flows and I anticipate that there will be a lot more forthcoming. In fact, during this Symposium, the latest in software is being discussed. Under a Valuation Actuary system, enormous pressure is brought to bear on these cash flow projections. In the old days, these projections were used to discuss financial planning with management, or even for rating purposes. Now, these tricky decisions about investment and reinvestment rates and the resultant tax effects would directly affect this year's balance sheet.

Finally, the revision of the Standard Valuation Law, if it comes about as part of the Valuation Actuary movement or otherwise, offers some opportunity to clean up some of the tax reserve problems which exist. For example, it has been suggested that the revision could include identification of more specific mortality table requirements in lieu of the language requiring the one which produces the lowest reserves or one adjusted appropriately for the risk. An example of this would be a table specified for certain forms of mass-marketed products with limited underwriting. Perhaps tables could be specified where the tax law now gives regulatory authority to Treasury to give us the clarification. In other words, the pending regulation on mortality tables would be replaced by specificity in the Standard Valuation Law.

We might even tackle the definition of the CARVM or the CRVM for variable products!

I hope I have encouraged all who are thinking about new valuation laws, whether it be to install some form of the Valuation Actuary concept or merely to touch up existing laws, to seriously consider tax implications. By anticipating these problems, solutions can be made a part of the project. If not, these unresolved issues sooner or later will halt the project in its tracks.

MR. McCOMB: One reason I am the moderator for this particular session is that I'm one of the few people not a member of the next speaker's firm who can get all of the firm's letters and initials in the right order. John E. Tiller, Jr. is a member of the Academy and a fellow of the Society. He is the manager of the Life Practice of Southern California for Tillinghast, Nelson & Warren, Inc., a division of TPF&C. He is formerly Vice President and Actuary for Transamerica Occidental and is currently co-authoring a text on life reinsurance. There is no one better qualified to talk to us about our next topic.

REINSURANCE PROBLEMS AND THE VALUATION ACTUARY

MR. JOHN E. TILLER, JR.: Before we talk about reinsurance, I would like to mention another endeavor that many of us follow. There is a term in football about "hitting the seam" between the zones.

In the life insurance industry, we use reinsurance in a similar manner. I do not think there is any doubt that over the past 10 to 15 years some gamesmanship was involved in certain reinsurance transactions. In many respects, reinsurance, at least of the so-called financial variety, has been used to take advantage of the "seams" between various states and different regulations, or to make the most of the cracks in the Federal Tax Code. My role in reinsurance transactions is one reason I am here today.

We have seen additional reinsurance regulation emerge in the past two to three years, such that something as simple and straightforward as reinsurance now has complicated regulations that require several attorneys to interpret. First, the industry did extensive planning, making the most of the gaps in the tax regulations, such as different tax phases and loss carry-forwards. From the Valuation Actuary's point of view, as well as that of general management, it makes sense to take advantage of these gaps and minimize taxes, presumably increasing the assets of the company. The common use of the old Section 820 eventually caused a need to change the way life insurers are taxed.

At one point, we had a regulatory reserve system which was unresponsive to a rapidly changing environment, and the industry started to use surplus relief freely. Surplus relief was used to move around surplus -- that is, to redeploy surplus from one company to another. This is a very legitimate function of reinsurance, with or

without the transfer of hard or cash assets. For a number of very good reasons, reinsurance moved from a risk venture to lower and lower risk transfers, and eventually to the point where there were some obvious abuses. I have seen treaties that had absolutely no risk transfer, such as those which called for a 17% Mod-Co interest adjustment for the life of the policies. Now, when the valuation rate is only 6%, it is difficult to accept a 17% permanent guarantee to a reinsurer.

There have been treaties with very little risk transfer of any nature. These essentially were nonproportional in nature, but were written as reserve credit on a proportional basis. I think my favorite "Special Treaty" was the one which provided that in the event of the insolvency of the ceding company, the reinsurance would be considered null and void as of the inception date of the treaty. No regulators could allow credit for that treaty, in my opinion. When you examine this history, you understand the legitimate concerns of regulators. We must address these issues if we are to be responsible Valuation Actuaries with respect to reinsurance. And the Valuation Actuary should be concerned. A lot of the concerns can be resolved simply by exercising common sense in determining which reinsurance receivables or credits are valid, and by being nonabusive in conducting reinsurance transactions. The regulators also have to be flexible in the way they view reinsurance. This is a two-way street.

In structuring my comments, I became aware of the confusion surrounding the supposedly simple topic of reinsurance credits. I abandoned my attempts to document and count the various committees, subcommittees, subgroups, informal groups, study groups, and task forces looking at reinsurance in the United States today. There is significant overlap of membership and the objectives of these groups; if I ever saw a case for national regulation, this might be it.

There have been different reactions in different states, and different timings of these different reactions. There has been a significant amount of trade press activity, as most of you have seen, regarding reinsurance. There has been character assassination of reinsurance by association, such as when Baldwin United had problems. Baldwin had reinsurance which played a role in its problems. Equity Funding went under, and Equity Funding used reinsurance as a tool. Therefore, reinsurance must be an evil thing. My personal opinion is that reinsurance played a very small role in Baldwin and Equity Funding. However, reinsurance does expose the differences in regulations and standards from state to state. It exposes the gaps in the system.

My comments are basically subjective because with all this confusion, there are no consistent guidelines. Hopefully, these comments will provide some practical guides for the next year or two in assessing the reinsurance implications for your companies. This definitely is not

a "how to" session: I do not intend to give any firm guidelines on how to proceed in a specific case.

THE FUTURE CAPABILITY OF REINSURANCE CASH FLOWS

The most important reinsurance issue for the Valuation Actuary is the future collectibility of expected reinsurance cash flows. To me that means that as a Valuation Actuary you should review the treaty in front of you as it is written. You must look at each agreement and see what type of risk and what cash flow can be expected, and under what conditions. How does that relate to the direct liability of the company? What is a reasonable credit or assessment of the situation? There is a major question related to the solvency or reliability of the reinsurer. Just because a company has an agreement and a number for credits does not mean the reinsurer will perform.

Will the reinsurer really pay off? What is the implication of that to your company? What guarantees has the ceding company made? In the case that I mentioned where there was a 17% permanent guarantee on some assets, it seems to me that the ceding company made a pretty big commitment, larger than the reinsurer. Maybe the ceding company has a liability rather than a credit as a result of the reinsurance.

LETTERS OF CREDIT (LOC)

I would like to discuss some of specific highlights of reinsurance,

focusing for a moment on Letters of Credit. LOCs have received bad publicity recently. LOCs are basically used to ensure the payment of a liability by an unauthorized reinsurer. Accordingly, they tie to the question of how to deal with an unauthorized reinsurer. The primary question regarding the LOC is: Will the funds really be there? Subquestions include: What is the credibility of the bank issuing the letter of credit? Is it approved by the Federal Deposit Insurance Corporation, or FDIC? Has it been accepted by your state insurance department? What standards exist and should exist? Is it appropriate to require that the reinsurer have, actually have in hand, the funds which back up the Letter of Credit? Or, can the funds be guaranteed in some other way? If the risk is transferred to the bank and the bank issuing the Letter of Credit unequivocally says that it will pay, should anyone be concerned about assets that may or may not be in the reinsurer as long as the ceding company can receive cash if it needs it? Is the Letter of Credit evergreen, or guaranteed renewable? Is there notification to appropriate authorities with appropriate time allowed to react in the event of cancellation or nonrenewal? What happens if the LOC is nonrenewable? If a significant portion of a company's reserves are guaranteed by a Letter of Credit and that Letter of Credit disappears, what is the company's position?

From history we find that the use of Letters of Credit emerged largely from the need to reserve for claims unsettled at year end, such as the unpaid claim liability in the property and casualty or health insurance.

Is an LOC an appropriate type of asset to back up a long-term liability, such as that generated by a structured settlement annuity or a Single Premium Deferred Annuity? Just try to factor that question into an asset-liability cash flow analysis. Perhaps the way to do that is to test an adverse experience scenario and see if the Letter of Credit pays off properly.

Other LOC problems concern the guarantor. Is it an affiliate company? Is it the ceding company itself that is in effect guaranteeing the LOC? Or is it the bank? If the bank is guaranteeing the Letter of Credit and as its asset it is using the stock of the ceding company, maybe that is not bad. Perhaps that situation should be seen as perfectly acceptable if that bank is unequivocally responsible for providing cash. I think the basic fact is that neither the regulators nor you, as Valuation Actuaries, should want Letters of Credit to be used to significantly and dangerously reduce the total assets backing up the industry's liabilities. I am not worried about a minor user, but we should not see significant amounts of liabilities dropping into the ocean or vanishing into thin air. In short, the Valuation Actuary must decide whether the Letter of Credit and the reinsurer combined are appropriate for the credit he proposes to take.

Let us now talk briefly about unauthorized reinsurers. This is related to the Letter of Credit issue; basically the actuary wants to be sure that the money can be collected. There is a proposal in some regulations requiring deposits -- quite significant deposits, in the

range of \$20 million -- in order to allow ceding reinsurance credits for the use of trusts, Letters of Credit, and receivable items in general with regard to unauthorized reinsurers. This is basically a counterpart to the requirement for capital and surplus in a domestic company. In that sense, the concept is reasonable. Whether you agree with the \$20 million amount or with the process by which those numbers are derived is not as important as addressing the question of whether it is appropriate for an unauthorized company to have a lower capital and surplus requirement, and therefore a lower cost of operating than does a domestic company.

One of the issues which has been debated is the responsibility of the Valuation Actuary in determining the solvency of his reinsurer. Will it be around to pay off? A recent proposal from the NAIC Small Company Subcommittee appears likely to be accepted by the NAIC and states that the Valuation Actuary would have no obligation to verify the solvency of an admitted reinsurer. We should assume that the regulatory system is working properly for admitted reinsurers. For non-admitted reinsurers, the reserves will be accepted without testing on the part of the ceding company Valuation Actuary, only if sufficient funds -- namely, assets greater than or equal to the reserves -- are held in trust or escrow for the sole use of that ceding company. The burden of adequate testing should fall on whichever company -- the ceding company or the reinsurer -- holds the assets supporting the reserves. A final statement in this recommendation is that "modified coinsurance or other devices" should not be used to defeat the

purposes of the valuation standards. While this settlement is vague, it may tell more than anything else discussed today about the direction of the Valuation Actuary.

MIRROR RESERVING

Another topic of concern is mirror reserving, an issue with much emotion on both sides. The regulators basically want to make sure that there are enough assets in the total system to back up the liabilities, that if there is a different reserving standard in a different state, there should not be a massive difference in total reserves, and that writing a reinsurance treaty will not result in the "disappearance" of millions of dollars of reserves.

The other side of this issue is that if an admitted reinsurer is authorized to do business in the state and because of some quirk in its system -- due to either different investment performance, different mortality experience, or lower reserve standards in its state of domicile-allowing -- should the reinsurance be required to hold higher reserves or should the ceding company have to hold the difference?

Actuaries can legitimately have different assumptions. A block of reinsured business can have experience that significantly differs from the entire block of business that a ceding company writes. Just look at the mortality and persistency experience of large amount term products in the past decade. The issue comes down to one of

reasonableness of administration and assumptions on the one hand, versus the integrity of the statutory reserve system on the other. In my opinion, some type of reasonable mirroring requirement is acceptable and justifiable, but the extreme of dollar-for-dollar justification on a line-by-line basis is unreasonable and impractical.

The topic of New York's Regulation 126 certification and testing was discussed at length previously during this Symposium, and I will not address that in depth. But, with respect to reinsurance, the actuary should add another element of cash flow for reinsurance payments and benefits. In scenario testing, the actuary should change the reinsurance assumptions to reflect the particular scenario being tested, consistent with the direct scenario. The reinsurer on the other hand must test on its assumed liabilities and should test retrocessions on the basis of the risks actually passed along. This implies that one can assume some payment from accredited reinsurers. We still have the questions of how to deal with unauthorized companies and how to use Letters of Credit for long-term liabilities in cash flow projections. There is an added complication for bulk and self-administered accounts because there is very little data available on actual experience.

This cash flow analysis and use of reinsurance is especially important when looking at some of the in force surplus relief treaties on annuities. The type of analysis required under Regulation 126 will reveal the problems of long-term, high interest guarantees to reinsurers referred to earlier regarding modified coinsurance and funds-withheld accounts, as well as any potential problems regarding

the non-proportional aspects of some of the supposedly proportional insurance treaties being used today. Incidentally, such treaties can be properly used and recognized for credits, but not necessarily in the way that they are structured today.

AIDS is a major problem in the future and should be specifically recognized in any testing you do with respect to reinsurance. At this point, I do not think the reinsurers themselves are in any particular danger, but they should specifically look at the additional mortality of AIDS fairly quickly because they have much less investment income in their products to offset any additional mortality losses. There has been more antiselection for AIDS on small amounts and these typically are not reinsured. Therefore, the retained risks may have worse mortality overall than those reinsured.

A few other miscellaneous points should be covered in passing. In considering modified coinsurance or funds withheld treaties, should a permanent spread or a permanent interest guarantee be allowed on the ceding company's fund, via the reinsurance treaty? A guaranteed spread to the reinsurer is acceptable if the ceding company can demonstrate that its crediting philosophy matches these results. There is a potential concern in coinsurance treaties with chargebacks of production bonuses or early allowances. To evaluate this, the actuary needs to take into account the expected persistency of the business. Guaranteed buy-backs, forced recapture or guaranteed recapture at a certain price and date should be considered in the current reserves.

Perhaps such items should also be assets for the reinsurer incidentally, but that might not be recognizable. Treatment of reinsurance differs between accepting and ceding companies. In the accepting company, reinsurance is treated like any other form of liability. Perhaps there is some additional concern over the potential insolvency or default of the ceding company, but I do not think that needs to be specifically addressed. Any retrocessions by the reinsurer should be treated the same way as a direct writer would treat his reinsurance ceded.

Most of this discussion is centered around the ceding company because most of the unique problems will arise there. The emphasis has been on proper ceding credit. In closing, I would just like to point out that the actuarial guidelines and the certification signed by a valuation actuary require a statement that the reserves make good and sufficient provision for all liabilities of the company. In making the statement I do not believe that you can automatically assume that the reinsurance treaties are such as to allow credit. You must look at the reinsurance agreements and see what is truly expected regarding both the risks transferred and the future cash flows expected.

MR. McCOMB: Thank you, Mr. Tiller. You've made my whole day by showing us how simple it will be to handle reinsurance. I thought that might be a problem. I'm glad to know that it's just a piece of cake.

Our next speaker is also talented, a good friend, and a wonderful actuary. Barbara J. Snyder is a member of the Conference, a member of the Academy, and a fellow of the Society. She is also a part of Tillinghast & Nelson, Warren, Inc., a division of TPF&C. She's done consulting work for 12 years and has been very active with continuing care facilities.

APPLICATION OF ASSET/LIABILITY MATCHING TECHNIQUES TO
CONTINUING CARE RETIREMENT FACILITIES

MS. BARBARA J. SNYDER: I would like to start out today by defining what the term "continuing care retirement community" (CCRC) means to those of us who work with the industry. First, in order to give appropriate credit for many of the statements I will make today, I want to say that the basis of many of my remarks today is the Actuarial Standards of Practice Relating to Continuing Care Retirement Communities which was adopted by the Interim Actuarial Standards Board in May 1987 ratified by the Board of Directors of the Academy in June, and mailed to the Academy members in July.

I am fortunate to serve as a member of the Academy Committee on Continuing Care Retirement Communities which was formed early in 1985. One of the first charges which we took upon ourselves was to develop a proposed Statement of Actuarial Standards of Practice, which was submitted to the Interim Actuarial Standards Board early in 1986, and resulted in the final form which you now have.

My discussion today will be brief as compared to what could be said. If you have a deeper interest in this subject, please read the Statement which is the source of my remarks today. As explained in detail in the Statement of Actuarial Standards, the term "continuing care retirement community" refers to a residential facility for retired people which provides certain social, housekeeping, and health care services. There is a residency agreement, or contract, between the CCRC and the resident or pair of joint residents which defines exactly those services which will be provided by the CCRC, the fees to be paid by residents for the services, and the degree to which services or fees may be modified in the future. The contracts are of long duration, and are most often for the life of the individual of the last survivor of joint resident. Services always include living quarters, access to a health care bed, and usually include other ancillary services such as one or more daily meal(s), maid service, flat laundry, transportation, social activities, and other similar services.

In return for the services promised by CCRC, each resident or pair of residents agrees to pay fees according to the specifications in the contract. Typically, the fee schedule has three parts: (1) a lump sum entrance fee or advance fee which is payable at or before entry into the community, a portion which may by contract terms be refundable; (2) periodic or monthly fees which are payable throughout the term of the contract; and (3) additional fees which are payable for certain services on an "as used" basis.

The CCRC's financial resources used to maintain physical plant and provide basic promised services are these advance fees, the periodic fees, and investment income as well as any gifts or other funds. Unless specifically provided otherwise by law or in the residency agreement, funds from any source may be used for any purpose. Therefore, the actuary is concerned with evaluating total current and projected revenues, versus total current and projected expenses regardless of the way management or regulation decides to apply specific revenues to specific expenses.

Now, in accordance with the types of actuarial statements we, as actuaries like to make, it is probably obvious to most of you that in order to assure that a CCRC will have funds sufficient to meet its obligations, the sum of the advance fee plus the actuarial present value at entry of the periodic fees should be not less than the actuarial present value at entry of the costs of meeting all of the CCRC's obligations to the resident. This structure emphasizes the long-term nature of the relationship between the CCRC and the resident.

Further, since the services and/or refund payments promised by a CCRC are contingent on the occurrence, timing, and duration of future event, the CCRC should be guided by actuarial principles. Actuarial principles are needed to assist management in estimating those revenue and expense items that are a function of future

population flow, and are also needed to develop fees that normalize or average out the impact of changing population flows.

The Statement addresses approaches to actuarially based financial management. Under the recommended comprehensive approach, the financial statements involved are the actuarial balance sheet, a statement of operations, a statement of changes in financial position, and a cash flow projection.

Section 6 of the Statement of Actuarial Standards and Practices specifically addresses cash flow projections. The Statement opens as follows:

In addition to being in actuarial balance, a CCRC must be able to meet its short-term cash needs at all times. Typically, a large portion of a CCRC's assets, such as physical plant, is nonliquid. As a result, a CCRC may be adequately priced from an actuarial present value analysis and yet encounter cash shortages in the short run, particularly during the early years of operation. A cash flow projection for at least ten years will reveal whether or not this problem is likely to arise.

I don't want to read the whole thing to you, but it goes on to discuss methods and assumptions. Finally, a formal recommendation is made which is entitled "Likelihood of Negative Cash Balance." It states:

The actuary should comment in the actuarial report about the likelihood that the CCRC is projected to experience a negative cash balance within the next ten years.

As a brief example of what I am talking about, Slide A shows a sample cash flow projection for the first 3+ years -- that is, 1988 for this community is a partial year and I have shown cash flow projections through calendar year 1991. This is a simple example, but it shows the operating revenue and operating expense items which come down to a net operating income. The reason the net operating income is positive in the first partial year for this particular example is that the community has assumed that it will fill as yet unutilized nursing home beds from the outside community -- that is, beds which are not yet needed by the healthy incoming residents of the community. I had another projection on the same community which in fact showed a negative net operating income because this assumption was not made.

Continuing Care Retirement Community

Sample Cash Flow Projection
(Value in Thousands)

<u>OPERATING REVENUE</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>	<u>1991</u>
Earned Entry Fees	666	1,834	1,763	1,751
Monthly Fees	514	3,002	6,005	6,225
Nursing Care Income (NET)	1,224	1,802	1,779	1,738
Ancillary Income	2	18	48	73
Resident Services	27	163	324	340
TOTAL OPERATING REVENUE	2,435	6,820	9,921	10,129
 <u>OPERATING EXPENSE ITEMS</u>				
Administration	118	730	766	804
Resident Services	22	146	153	160
Environ. Services	171	1,414	1,510	1,584
Food	177	1,508	2,075	2,163
Basic Health Care	131	1,000	1,359	1,417
Real Estate Taxes	56	35	368	386
Depreciation (Amortization)	261	1,567	1,571	1,566
Interest Expense	818	3,751	2,606	3,606
TOTAL OPERATING EXPENSE	1,754	10,467	10,411	10,673
NET OPERATING INCOME	681	-3,647	-490	-544
 <u>NON-OPERATING REVENUE</u>				
Net Investment Income	627	1,147	464	254
Endowment & Contributions	0	0	0	0
TOTAL NON-OPERATING REVENUES	627	1,147	464	254
TOTAL NET INCOME	1,308	-2,499	-26	-290
CUMULATIVE NET INCOME	1,308	-1,190	-1,216	-1,507

In any case, you can see that the net operating income after the first year is negative, with the major negative number occurring in the first full year of operations while the facility is filling up to assumed capacity or ultimate utilization. In this case, the ultimate assumed occupancy rate is 95%.

This projection was run for 16 years, which includes the partial first year. The net operating income is negative on a year-by-year basis through 1996, with 1997 being the first year of positive net operating income. The total net income, after adding net investment income, is negative through 1994, and the cumulative net income is negative through 1998.

Slide 2 shows the present value calculations at two discount rates. First, I should point out that the return on investment rate assumption for this projection was 7%. Work was done in connection with a bond offering, and the bond reserve investment rate assumption was 8.5%. The discount rates used for present values were 5% and 7%. The net present value at 5% is \$5,228 thousand, and at 7% is \$4,028. Therefore, if this was the only information you had available, you would say the facility was obviously charging adequate fees, and that it appears to be making enough money to maintain physical plant and still make a profit.

However, it is important to look back at the cash flows in Slide 1 and realize that the present values won't get you anywhere unless you can

survive negative operating income, as shown in Slide 1, of \$3.6 million in the first year and about \$.50 million for the following 3 years alone.

Further, referring back to the Statement of Actuarial Standards, as expressed in Recommendation 8 Sensitivity tests:

In addition to using good judgment in the selection of assumptions, the actuary should emphasize in any report that the stated results depend on the assumption and that actual experience may be different.

The recommendation goes on to suggest that the actuary measure the sensitivity of results to likely variations in assumptions, and monitor and compare actual experience with projections, as well as make revised calculations periodically.

SLIDE 2

	<u>DISCOUNT FACTOR</u>	
	<u>5%</u>	<u>7%</u>
INCOME (PV)	\$142,323	\$125,736
EXPENSE (PV)	<u>-137,049</u>	<u>-121,708</u>
NET PRESENT VALUE	\$ 5,228	\$ 4,028

I had mentioned in my example that I had another projection which did not assume filling nursing home beds initially from outside the resident population. In this projection, the first year net operating loss was \$421,000, the first year of a positive net operating income was 2001, total net income was not positive until 1996, and net cumulative income was negative for the entire projected 16-year period.

There are many assumptions which can affect these cash flow projections, and while the ultimate result may be a positive present value, it will be evident that the business cannot survive the 20 or so years that it takes to break out.

That is all I have for today, but I would again recommend that for those of you who are interested, the Statement of Actuarial Standards of Practice is an excellent resource.

MR. McCOMB: And now we come to a guy who, when people speak of him and his parent organization, they do so almost in awe. Dennis Uyemura is Senior Vice President of the First Interstate Bank Corporation. He is manager of the asset and liability management department. We're going to find out what the banks are doing about matching assets and liabilities. I'm very pleased to have him with us.

MR. DENNIS UYEMURA: Thank you for that introduction. Believe me, I'm the one who is in awe. I'm going to walk away with two impressions. First, the one which is more important is that in asset

liability management, I've got nothing to complain about. The complexity of my problems are nothing compared to some of the things I've heard during the Symposium. Second, I think you folks are creating a monster here, I'm going to go around the country saying that my view of actuaries is that they deal with taxes, reinsurance and continuing care facilities. I hope that doesn't cause you any problems in the future. What I'm going to try to do in the next few minutes is give you a very broad prospective on where asset liability management has a discipline.

I'm going to use the term, "asset liability management" and not "asset liability matching." The former phrase that is most common in banking circles and it's the only one I've been thinking about for about the past 6 years. I'll try to give you a very broad assessment of where we stand in the industry and then I'll go into some detail about the specific philosophy that my organization has and the problems and the status of our attempts to implement this discipline in our own particular organization.

First, what is asset and liability management to bankers? Very simply, to me it's top-down financial risk management of our consolidated balance sheet. Now, asset liability management in banking is a relatively young field. As a general discipline, it was not born until the 1980s, and for some very good reasons. It's kind of ironic, that here are a bunch of commercial bankers who go around to corporate treasurers professing to be financial experts capable of

giving the treasurers financial advice about structuring the risk characteristics of their borrowings, but who never applied asset and liability techniques to their own balance sheet. There are very good reasons why they didn't apply it, and I'll try to explain that to you. It sounds very simple, top-down financial risk management, it should be a very straightforward process.

Second, where do we stand in our ability to practice the discipline of asset and liability management? We've got a long way to go, but the problem does not involve theory, the problem does not involve analytical concepts. The theory of asset and liability analysis is far ahead of our practical ability to implement in the banking industry today. The major obstacles that continue to stand in our way are our ability to gather the appropriate data or input assumptions we need to apply these analytical techniques, and more importantly, internal consistency in management decision making -- that is, the incentive system. That is really the driving force for almost any entity today. Most incentive systems in the banking industry today are simply not yet in tune with asset liability management, and I'll show you, later in the slides, what I mean by that statement.

Third, what has been the role of regulators in advancing asset and liability issues in the banking industry? I bring this up only because of the conversation I had at lunch this afternoon. It was interesting to me to hear what a proactive role the regulators in the insurance

industry have been playing in bringing asset and liability techniques to the fore.

In banking, certainly the actions of regulators have played a major role in the genesis of our concerns in this area, but they have not, by and large, been very active in determining what types of techniques are being used, where the techniques are moving, and where concerns are moving into the future. So it's a multidimensional process: theory is in pretty good shape; implementation has a long way to go; and regulators have not been a particularly driving force.

While on the topic of regulators, I did mention that this discipline is about 6 years old in my mind. If we wanted to try to assign a specific birth date to the discipline in our area, I think a lot of bankers would cite October 1979. There were really two factors that generated the necessity for this discipline among bankers in the country. One was the "Saturday night special" of Paul Volker, in which he announced the major change in monetary policy in this country. The ramification of that announcement was the most volatile period of interest rates that we've seen in our history.

However, there was another factor for bankers and that was an act passed in 1980 called the Monetary Control Act, that set into motion a 6-year phase-out of interest rate ceilings on deposits within commercial banks, the deregulation effort in banking. Bankers were used to periods of relatively calm interest rates compared to what we've seen

in the past six years, plus they had regulated interest margins. That's the reason why bankers never applied asset liability techniques to their own balance sheet. They had regulated and protected margins.

Now I'd like to talk more specifically about my organization, how it views asset and liability management, and where it stands in the process of implementing the discipline. I think our view is unique among bankers, in that we spend a lot of time worrying about many risk dimensions. The purpose of asset and liability management, as we state it to be is: to maximize the risk adjusted return to our shareholders over the long run. Now, this sounds like motherhood, and apple pie, that you might read in any introductory corporate finance textbook. I think that those with Masters degrees in Business Administration were fed this kind of a statement in one of their first courses, that this should be the purpose of any corporation. Nevertheless, it is a very profound statement in my mind and points out a lot of the problems, not only in the banking industry but in corporate America today.

First, the key words in this statement are risk and return. That is, most high level decision making in the past did very much revolve around the return parameter, and, I think, continues to revolve around the return parameter, which is profitability or expectations of profitability. Tempering return expectations with risk implications is what we're trying to accomplish here. We're trying to insure that for any incremental activity brought into a consolidated balance sheet, the

incremental risk implications are more than justified in return expectations.

In banking, shareholder expectation is a particularly sensitive topic. The banking regulators are concerned very much (and rightly so) with depositor protection. This leads to a very different emphasis on risk management, from a regulatory prospective as opposed to an internal bank management prospective. I'll try to illustrate for you how that works.

As for the long run prospective, here again is where incentives stand in the way. Most incentive systems are geared toward near-term, current year results. We are actively trying to broaden that prospective in our organization and I'll talk a little bit about that.

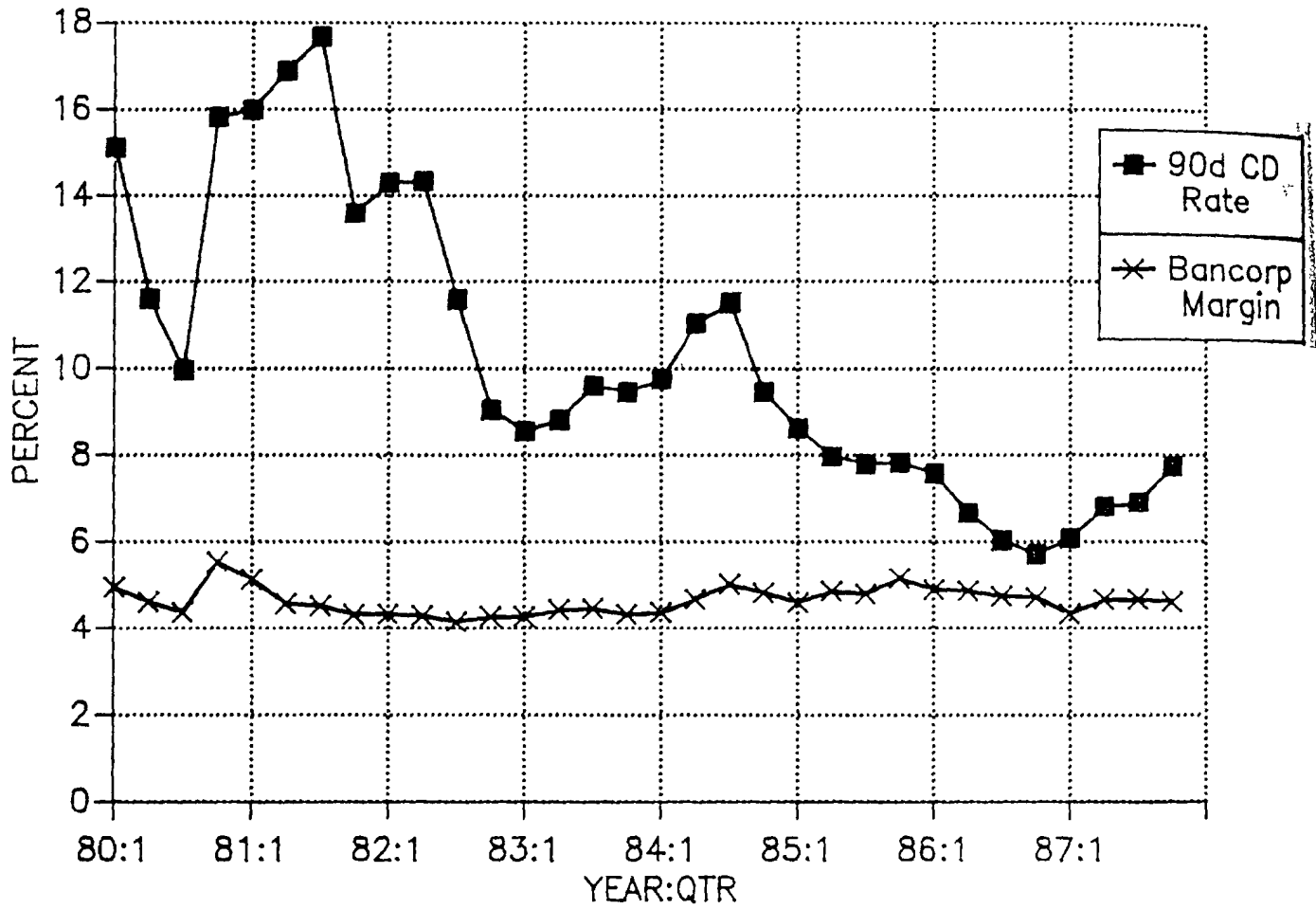
What are the risk dimensions that banks face? Clearly and historically, if you asked bankers in almost any decade, what their major risk was, I think the answer ninety-nine times out of a hundred would have been credit risk. Their job was to intermediate deposits and to extend credit. Because of this historical emphasis on credit risk, there are very elaborate internal mechanisms set up to evaluate, manage and control credit risk, in any banking organization. However, there were no formal mechanisms to control interest rate, liquidity and capital risks in banks. These are the asset liability management risks.

Capital adequacy is today the major focus of banking regulators. For better or worse, the regulators have expanded the concept of capital and set minimum standards. Whether these efforts have truly strengthened the banking system is unclear.

Liquidity is the short-term cash flow risk that will ultimately cause a bank to fail. Liquidity is, for the most part, a perception issue, a confidence issue. In economic terms, it is the force that links book versus market valuation concepts. That is, bank financial statements, by and large, are based on accounting conventions rather than market valuation concepts. Most regulatory statements and controls are expressed in terms of accounting conventions. That's not what the market responds to, the market responds to market valuation concepts. That the market imposes its discipline on big banks these days by removing its liquidity base, its ability to borrow in the open market.

Interest rate risk is the traditional topic of asset and liability management in banking. To show you one measure of performance of interest rate risk management is in Slide 1.

Net Interest Margin vs. Market Rates



The line, which shows by quarter, the average open market secondary CD rate since the first quarter of 1980 through the second quarter of 1987. I show that for reference in order to remind you of the volatility of interest rates during this decade. This graph shows the net interest margin, interest yield minus interest expense, for First Interstate Bancorp. This margin has been relatively stable in the face of major fluctuations in interest rates. Banks, by and large, have not fared too badly in the face of the increase in interest rate volatility that has occurred. Our organization is particularly happy with the results we've been able to turn in by this measure of success.

Now, what techniques do we use to manage interest rate risk? There are three major techniques. Everyone seemed to be familiar with gap analysis. Is there anyone here who is unfamiliar with gap analysis? First, I won't go into any details then, about how to conduct that technique. It's the only technique that bank regulators require of every bank today. It's a required report within our quarterly regulatory reports, it's called Schedule J in the FDIC Call Reports. Although we all fill it out, there's universal agreement that the numbers are meaningless, and there's agreement on this with the regulators as well. I'll talk about the reasons those kinds of reports do not have much meaning.

Second, we have net interest income simulation techniques. Looking at your schedule, your speaking schedules, I can see that there is a very active involvement with software vendors. The same is true in

the banking industry. There are some very nice balance sheets and income statement simulation modeling packages available today; they'll simulate your financial statements on a book value basis. They'll simulate it on a cash flow basis; they'll do duration analysis for you and they'll project your gap structure, any time period forward that you like. There's really no excuse for bankers not to simulate their financial performance and to test the sensitivity of their financial expectations to the input assumptions that they're making.

I'll talk about duration and elasticity in a little bit more detail. Few banks are using duration and elasticity, and it's had an unfortunate history in the banking industry. It has not been marketed as a concept very well. So if I had to make a rough estimate to you, it would be to assume that virtually a 100% of banks are using gap analysis, I'd say not much more than 10% to 20% of banks are using simulation techniques and less than 1% of banks are using duration or elasticity techniques.

I'm not going to explain what a gap analysis is, but I will explain why I don't think the way the regulators ask us to do it has any real analytical meaning or significance. Gap analysis is an income oriented technique. You simply display your principle cash flow expectations or re-pricing expectations according to maturity buckets or time zones. This is what one analysis might look like.

And now I'd like to talk a little bit about the difference between what we call contractual gap analysis and managerial gap analysis. Contractual gap analysis is what the regulators ask for. It's based on the contractual repricing or reset dates for any floating rate instruments in your balance sheet or the contractual maturity date of any fixed rate instrument or the contractual amortization pattern of any fixed rate amortizing item on your balance sheet. For items without explicit repricing dates, for example, prime-based loans, you will never know when prime is going to change next. Generally, the regulators will say, fine, put it in the time bucket where it could next change. Prime could change everyday, so banks will put prime-based loans in the overnight time bucket. It's a purely objective analysis, just like accounting tries to be very objective. But because of that objectivity, it loses practicality and reality. Interest rate sensitivity involves subjective estimates and subtle asymmetries that cannot be assumed away.

One illustration of this point is the real estate mortgage loan. Probably most of you have had at one time held a 30-year fixed rate real estate loan. How many of you held that to maturity and paid down the balances exactly on schedule? What percentage of those loans are actually held to maturity? Very, very few. Well, in our Call Reports, we'd have to report the scheduled pay-down pattern, assuming no pre-payments of loans. We know that's not going to happen. In fact, we know that the pattern obtained based on a no

prepayment assumption has absolutely no meaning and absolutely no significance.

Returning now to prime-based loans, the prime rate does not change everyday on an overnight basis. Extensive studies have been done as to the effective repricing characteristics of the prime rate and most bank holding companies understand very well how the rate behaves and how to display it on a subjective basis, in what is called the managerial gap analysis. So the managerial gap analysis tries to reflect management's best understanding and expectations about when items will actually be paid down or when they will be repriced. It is a subjective analysis, and for that reason the regulators seem to have a problem with it. It's based on period average balances as opposed to period end balances, it does take into account prepayment patterns. It also takes into account seasonality patterns: demand deposits and charge card receivables. All have very well-defined annual seasonality characteristics. That should also be reflected in these types of analyses.

And finally, what about deregulation impacts? I mentioned earlier that we in the banking industry just finished up a 6-year phase-out of interest rates ceilings on various types of deposit accounts. In the contractual gap analysis, those were totally ignored. We know that the regular savings account today, can be a floating rate account. And somehow that has to get reflected in your interest rate sensitivity analyses.

So the gap analysis has some strengths and has some weaknesses. It's a simple concept, all bankers are familiar with it, they can talk about it and they can think in terms of gap analysis. Almost every bank has an interest rate risk management policy stated in terms of some type of gap analysis. Its weakness is that it oversimplifies the situation. It has a very near-term, income oriented focus; it's a static analysis, it looks at a snapshot, point-in-time view of a historical balance sheet.

We can get around some of those limitations by turning to net interest income simulation models. We use these computer based models to forecast net interest income in a variety of interest rate environments. We can capture the dynamics of changes in our income statement with fluctuations in interest rate assumptions. We can forecast our funding requirements which is important in any cash flow or liquidity planning procedures. We can forecast our leverage situation and our ability to generate capital internally. Any plans to issue capital or debt to the open market can be put into these models. They can tell us when we're going to have to issue capital or debt and what magnitude and what kind of interest rate characteristics are necessary to stay within policy limits. The models can also be used to project your gap situations going forward.

I should add that the models today, by and large, can also do duration type analyses. The strength of net interest income simulation is that it is a dynamic analysis. That is, you can input in explicit assumptions about your future estimates of balance sheet mix changes,

marketing strategies, pricing strategies going forward, the spreads to market rates of your various basic products. You can forecast shifts in the yield curve or complicated changes in the shape of the yield curve. The weakness with gap analysis is that it tends to give management a very short-term emphasis and you tend to get a large volume of output that's very hard to communicate effectively to your management for their decision making purposes.

This brings us to duration, I had to put one equation in here at least, I guess. This is simple Macauley duration.

$$D = \frac{\sum \frac{CF_t \cdot t}{(1 + r)^t}}{PV}$$

I'm sure you're all familiar with it. This is the level of complexity that we use on a day-to-day basis. The reason we think that this is sufficient and we don't try to refine the theory side of all of this anymore is the problem that I eluded to earlier. And that is, the limitation of our ability to measure interest rate risk or liquidity risk or any of these risks, is not so much the theoretical framework, it's more our ability to make these subjective estimates as to what prepayment patterns are going to occur in the future, what the effective repricing characteristics of various administered rate accounts might be going forward.

Our senior management does not relate too well to duration values. Duration is expressed in the units of time and it's hard to relate to what a net equity duration of negative 5.3 years might mean in terms of management decision making. We convert the duration measure to what's called modified duration, or interest rate elasticity as we call it.

Interest rate elasticity is a much simpler concept for senior managers to understand. It is the percentage change in the market value of an asset or a liability, or net equity position, given a 1% rise in interest rates. A 1% rise in interest rates is just a benchmark. Of course, what we're really referring to is an infinitesimal change in interest rates. You can derive interest rate elasticity in the most simplistic sense, by taking the duration value and dividing by one plus the yield to maturity of any set of cash flows.

$$\text{IRE} = \frac{D}{1+y}$$

Now duration or elasticity is useful for a multitude of measurements as opposed to gap analysis and net income simulation, which are centered around income sensitivity assessments. On the other hand, duration or elasticity can help you gauge the impacts of interest rate changes on the market value of your equity, on your economic leverage ratio or equity ratio, on accounting net interest income or on total rates of return of any investment. There's a whole theory of these "target accounts" that have been published in several books. They all, if you're going to want to hedge any of these, require a different hedging condition. The hedging condition for insulating your equity

ratio, the ratio of equity to total assets in a market value sense is achieved by matching the duration of your assets to your liabilities.

To hedge the market value of your equity or your stock price, it's necessary to weight the durations by the market values of their respective components. Finally, there is a set of equations to hedge net interest income in an accounting sense. So this is a very versatile technique. It can hedge market value concepts and it can hedge book value concepts.

Now what I'd like to do is take all of that and apply it to a case study. Here is a bank balance sheet:

Interest Rate Elasticity

Situation:

\$1,000 of 12% 6-month loan
\$ 800 of 10% CD, ? maturity
\$ 200 of equity

The bank has one asset and one liability and some equity. It has \$1,000 of a 6-month loan. The loan is a perpetual loan, and it rolls over every 6 months and it resets to 200 basis points above the 6-month CD rate in force at that time. I'm assuming that on the day this loan was last reset, the 6-month CD rate was at 10% and therefore it's currently on the books at a 12% yield. The bank has an \$800 time deposit, a certificate of deposit. The current rate on that deposit is 10%. The bank has a good name in the marketplace, it can go out into

the open market and ask for a CD of any maturity it wants. I'm assuming that the yield curve is a flat yield curve, just to simplify the case study. I'm assuming that the last time when this CD was issued, all CD rates for any maturity were 10%. The bank has \$200 of equity.

Now let's assume you're the asset liability manager for this bank, and I'm the Chief Executive Officer. Your only task in life is to insulate the bank from interest rate risk. I don't want to bet on interest rates. I'm a conservative guy, I've got a 200 basis point spread on here, I like that spread, I want to protect it. So I tell you, insulate me from interest rate risk. The question becomes, What maturity CD would you pick? The answer to that question is not a simple one, and illustrates that asset liability management is indeed a multidimensional process.

Below is a summary of possible results if interest rates were to rise 100 basis points.

Interest Rate Elasticity			
Results of a 1% rate rise:			
Maturity (Months)	Net Interest Income (\$)	Equity (%)	Eq. Ratio (%)
3.0	-1	-1.4	-0.9
4.5	0	-0.9	-0.5
6.0	+1	-0.5	0.0
7.5	+2	0.0	+0.5
9.0	+3	+0.5	+0.9

Shown are how various parameters for that simple bank balance sheet would shift in response to that change in interest rates, for various possible maturities of CD that you might have picked. Each set of results is on a line so that the top line of results there refers to a 3-month CD and the bottom line refers to a situation had you picked a 9-month CD, to fund against that 6-month loan. There are three columns of results, they are labeled, Net Interest Income, Equity and Equity Ratio. The Net Interest Income column refers to the dollar change in annual net interest income that would occur in response to a 100 basis point rise in interest rates. Therefore, if you had picked a 3-month time deposit, as in that first line, and rates had risen 100 basis points, your annual income would have fallen by \$1. That's what the -1 indicates and conversely if rates had fallen, your income would have risen by \$1. What that means is, if you had picked a 3-month CD, you would not have insulated this bank, in an income sense, from interest rate volatility.

Moving to the next column, the Equity column, if you picked a 3-month CD and rates had risen 100 basis points, your equity value, the market value of your equity or your stock price would have fallen by 1.4%. Incidentally, for your information, our organization has a sensitivity in its equity, its stock price of about a negative 6% for every 100 basis points. That's pretty routine for large banks these days.

In the final column, the Equity Ratio, if you picked a 3-month CD and rates had risen a 100 basis points, your equity ratio, the ratio of equity to assets, would have fallen by 9%. Notice in just scanning through this slide, there's no line that has zeros across the board. There's no line that allows you to insulate your bank from interest rate risk in all dimensions by picking a single CD maturity.

Indeed, if you were most concerned about net interest income volatility, you would have picked a 4½-month CD. That would have removed interest rate volatility regardless of the magnitude of interest rate changes. If you were concerned about your stock price, the market value of your equity, you would have picked a 7½-month CD. If you were concerned about the equity ratio, you would have picked a 6-month CD.

Now who is it that's concerned about each of these columns? The asset liability manager is probably sitting there pretty perplexed. Traditionally, bank management has been very short-term income-oriented and many bank incentive programs are set up around current year's earnings targets. So traditionally, bank management would have pointed to the Net Interest Income column and said, pick the 4½-month CD.

That's a little different from a shareholder perspective. The wealth of a shareholder is a function of the value of that stock in the open market. And if shareholders were risk adverse, they would probably

want you to insulate the value of their holdings from interest rate risk. They would have said, "Pick a 7½-month CD."

Equity ratios, capital ratios, as I mentioned earlier, are the prime focus of the regulatory agencies in banks today. The regulators, if they wanted you to insulate yourself from interest rate risk would probably have pointed to that right most column and said, "Pick a 6-month CD." This is what I mean by risk management in banking being a multidimensional process. You can't completely remove risk, it's a matter of what risk dimensions and what risk trade-offs you want to make. The objective of asset liability management at First Interstate, is to give our management a complete view of the risk implications of any decisions they make. The Net Interest Income column is a book income oriented technique. The equity and the equity ratio columns are market-value balance sheet oriented techniques. The Income column is a short-term risk parameter. The Equity and Equity Ratio columns are long-term risk parameters in the sense that they're trying to evaluate the present value of all future expected cash flows.

That is why it's often said that in banking, asset liability management is an art and not a science. We can't even define what our objectives are in clear terms. There are trade-offs that we're constantly trying to make. Hopefully that gives you a little bit of an overview as to the situation in banking today, at least from one banker's prospective. Thank you very much.