

RECORD OF SOCIETY OF ACTUARIES 1982 VOL. 8 NO. 1

MATCHING OF ASSETS AND LIABILITIES

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Matching is an important response to the risk of loss from changes in interest rates, a major risk to life companies and pension plans under conditions of inflation.

1. What methods can be used for matching?
2. How does one measure the degree of matching for a company or a plan in assessing the adequacy of company or plan assets to fund the liabilities?
3. To what extent can matching be meaningful when associated with segments of the business in which the insureds can practice investment anti-selection?

MR. DANIEL J. MCCARTHY: In New York, there are a large number of mutual savings banks, many of them with billions of dollars of assets, who have historically by law, regulation, moral suasion, or a combination of all these, invested virtually all of their money in long-term, fixed interest mortgages. Virtually all of them are currently losing money, because the interest cost to attract new deposits far exceeds the rate of return they receive on their investments. In fact, the FDIC has had to step in and bail out a number of them or arrange shotgun weddings with a large dowry to the suitor and in general assist organizations who were by their own terms soundly managed, but who as a result of a very substantial mismatch of assets and liabilities found themselves with financial problems beyond their control. You could take that same scenario and change some of the words--insurance company in place of mutual savings bank, guaranteed fund for FDIC--and be discussing the insurance industry. Although the industry has not had to worry about occurrences such as bailouts and shotgun weddings so far, it is not beyond the realm of possibility. So, we are certainly dealing with a timely topic as it affects all kinds of financial institutions. It affects plan sponsors who are dealing with long-term obligations for pension plans; it affects insurers who often don't know how long or short-term their liabilities are; and it affects a variety of others who have to plan in this uncertain situation.

MR. ROBERT H. STAPLEFORD: The matching of assets and liabilities has become a crucial issue confronting financial institutions across Canada and the U.S. Indeed, the earnings of many financial corporations have been mauled in recent years by a mismatching in the terms of their assets and liabilities. Underlying the need to monitor the consistency between assets and liabilities has been the dramatic increase in the rate of inflation during 1970's and early 1980's. Uncertainty about the real value of long-term investments and the realization of negative real rates of return in recent years has caused investors to shorten their time horizons which has forced life companies to develop new products to meet these demands on both the asset and liability side. The Mutual Life Assurance Company of Canada's most popular

annuity product has provided a floating rate tied to short-term yields. The interest rate on mortgages is now renegotiated after periods of five years and less and it is possible that the bulk of residential mortgages in Canada will be on a floating rate basis in the near future.

Inasmuch as the increase in the rate of inflation has forced companies to enhance their awareness of matching techniques, the current uncertain outlook for the North American economies only emphasizes the need for sound matching practices. Many economists believe that the present economic initiatives coupled with a decline in real energy costs will cause a long-term drop in inflation. Even if this scenario were to be true, and this is far from certain, it seems apparent that life companies selling individual and group annuities and pension products providing new money guaranteed returns must monitor the degree of matching between their assets and liabilities very closely in future years.

Why Matching Is Important

Why has matching become such a crucial issue? There are several reasons and inflation is at the root of several of them.

- (i) Uncertainty about the outlook for inflation has caused the capital markets to operate under conditions of extreme volatility. Predicting economic performance has been virtually impossible. In the face of such volatility, life companies have faced mounting policyholder demands through surrenders and loans. Cash flows to shorter term guaranteed products have grown dramatically whereas cash flows to the traditional longer term whole life policies have shrunk and in many cases, have become negative. Many policyholders have split the savings and protection elements of the insurance dollar. Because of the growth in products with guaranteed returns and the volatility of the market, the financial risks have become enormous for companies operating without an acute awareness of their degree of matching.
- (ii) The trend in future product development, as exemplified by Universal Life, exacerbates these concerns.
- (iii) The nature of new money products necessitates the practice of sound matching techniques. The pricing of such products assumes that premium dollars will be invested in assets providing a specified yield. The need to develop consistency between investment strategies and marketing objectives is essential. Marketing goals must not only recognize the nature of assets available in the marketplace, but also the company's ability to acquire such assets. The thin profit margins permitted by the competitive nature of the business provide little protection if pricing assumptions are not realized. Systems to monitor whether pricing assumptions have been realized are essential.
- (iv) Matching will enable the more accurate allocation of investment income which is necessary to better understand the profitability of various lines of business or products.
- (v) In Canada, the Superintendent of Insurance has reacted to these concerns because of the financial risks that mismatching can bring. If companies

are in a mismatched position, it is required that valuation rates of interest be more conservative and greater reserves be held.

Techniques of Matching

There are two general types of matching techniques that are practiced today. The first is notional direct matching in which the cash flows from assets are approximately the same in size and duration as the liability cash flows. The second is an application of immunization theory. Many companies have developed ingenious ways to apply these techniques, but these two approaches underly most applications. I have precluded direct matching although it may be viewed as a specific example of notional matching. It is impossible, other than in an isolated situation, such as a large single premium annuity quote for a company, to have its liability flows directly offset by corresponding asset flows. Assets of appropriate terms are not always available nor is it administratively possible to develop information systems to monitor liability flows to permit the formulation of the required investment strategy for direct matching. Furthermore, such precision is not required as other techniques are sufficient.

The matching process should not be viewed as a straight jacket to unduly limit a company's freedom to exercise its judgement and accept risk when it believes the rewards justify the risk. But, systems to assess the risks associated with changing levels of interest rates are essential in the present economic environment. If a company then elects to adopt a mismatched position, it is doing so with a knowledge of the risk that is undertaken. The acceptance of such risks should also be compared to the company's capacity to accept the risks without threatening financial solvency.

Notional Direct Matching

Many Canadian companies have segregated their assets into pools supporting various liabilities. An example of notional direct matching is the practice by which companies support short-term liabilities such as:

individual annuity products offering returns that move with short-term rates such as bank prime,

pending claims and amounts on deposit where it is no longer feasible to provide portfolio returns, or

a pool of pension funds awaiting a more opportune time to invest in the bond or stock markets have been segregated and a specific pool of assets have been identified to support them. Such assets would include short-term paper, floating rate mortgages and bonds and even preferred stock where the dividend rate is tied to short-term market conditions. The popularity of the products supported by short-term assets is such that, this pool of assets at Mutual Life has grown to nearly 10% of the company's assets in less than 2½ years.

Such arrangements are not immune from the risks associated with mismatching. Generally, the liabilities are demand liabilities allowing policyholders the right to expect cash on demand. Even though the rate floats, many floating rate assets are neither demand assets that may be called at the option of the lender nor particularly liquid. A major shift out of this fund

would precipitate a liquidity problem. Therefore, it is essential for a company to appreciate the liquidity demands of these liabilities and maintain sufficient liquidity.

A further example of notional matching may be found in some pension funds providing post retirement increases for pensioners. A type of enhancement program that is growing in popularity is the so called excess interest formula whereby pensioners receive an increase equal to the return on a specified portfolio of assets in excess of a base return. For example, our company plan recently introduced an excess interest program whereby annual pension increases are equal to the return of short-term Government of Canada bonds in excess of 4%. By segregating the assets supporting retired life liabilities and investing in the appropriate assets, pension fund managers can practice a form of notional matching.

Immunization

A matching technique practiced on a broader scale is the traditional immunization concept which involves computing the time weighted present value of asset and liability cash flows, i.e. the Macaulay definition of duration. Although this technique has several shortcomings, they can be overcome so that immunization techniques can have valuable practical applications.

We have used the traditional immunization method in two ways at Mutual Life.

- (i) The pricing of our individual annuity and group pension accumulation products utilizes immunization practices. These products provide a guaranteed return, for various terms up to five years, that is derived from current returns on fixed income investments, primarily bonds and mortgages. Application of immunization principles has enabled us to determine several packages of assets with mean terms similar to those of the various liabilities. The return to be provided to the policyholder is derived from the return of the asset package. This work has been helpful as a guide to the formulation of an appropriate investment strategy.
- (ii) The second application of immunization principles is a segregation of the company's assets, excluding the short-term fund, into new money and average money pools. The new money fund supports such liabilities as individual accumulation annuity products, immediate and deferred life annuities and group pension deposit administration policies. The average money fund encompasses most insurance liabilities with guaranteed loan and surrender values and surplus. We have applied immunization as a tool to control the mismatching risk in the new money fund by ensuring that the mean terms of assets and liabilities are similar. Although the average money liabilities have no predictable patterns of cash flow and immunization principles cannot be applied directly, it is beneficial to analyze the characteristics of the asset supporting these liabilities.

Several companies have carried this segregation of assets to a much greater degree. Assets have been segregated into funds supporting lines of business or even particular product lines. We did not move beyond the creation of average and new money pools because of concern about unduly limiting the

flexibility of the Investment Division. Maintaining only two large pools limits the administrative difficulties associated with an actively managed portfolio and provides the Investment Division with greater scope to find attractive assets without accepting an inordinate amount of risk. Adherence to strict matching requirements on several portfolios could restrict the number of investment opportunities thereby forcing policyholders to accept lower investment returns.

One of the major problems associated with the immunization concept is that cash flows are assumed to be independent of interest rates. For the most part, new money liabilities are independent of cash flows. Individual annuity products are designed with restrictions placed upon the ability to surrender and group products provide market value adjustments which limit the risk should policyholders wish to cancel contracts. However, asset flows are dependent upon the level of interest rates. Two examples would include:

- (i) Extendable bonds that permit the lender to extend the issue at predetermined rate. Governments, particularly the federal government in Canada, have been major issuers of extendible bonds. One issue that was marketed in 1981 provides a 15½% return until June 1, 1986 but, the lender can agree to exchange those bonds for bonds providing a 15½% return maturing June 1, 1993 at anytime before June 1, 1986. This privilege comes with a cost in the form of a reduced initial yield, but, it enables the lender to lock in current yields for 12 years with an option to redeem at par in five years.
- (ii) Repayments of mortgage principal are influenced by the level of interest rates. Our mortgage contracts allow mortgagors to prepay a portion of the principal. If interest rates were to decline substantially, it would be more attractive for mortgagees to pay down their mortgage rather than invest their savings dollars elsewhere. Such action would shorten the term of the assets and could create a mismatched position.

We addressed this problem by projecting cash flows under several interest rate scenarios. Mean terms and surplus positions were determined for each of the scenarios. This dynamic approach to projecting cash flows overcomes the problem of assuming the cash flows are static and enables a better appreciation of the mismatching risk.

Another example utilizing immunization concepts is in dealing with the seasonal nature of cash flows. Our individual annuity business is particularly heavy in January and February when individuals deposit funds to registered or qualified products in order to receive deductions on the previous year's tax returns. At this time of year, the competition is particularly fierce and margins are thin. The pricing of these products assumes mortgages will support many of the liabilities. Yet the first of the year is not an active time in the mortgage market. Companies could be faced with a major problem if interest rates declined before mortgage products became available. A degree of protection is provided by buying marketable bonds with terms similar to those of the mortgages that are ultimately desired. Because the mean terms are similar a company can partially immunize itself. If rates decline, the bonds can be sold at a profit and the proceeds, including the gain on the sale, can be reinvested in lower yielding mortgages when they are available

This protection is only partial due to taxation implications and the changing spreads between bonds and mortgages. Investing in financial futures could provide similar protection although we have not pursued this approach.

Problems Associated With Matching

The matching work that we have done is essential in the present volatile economic environment. However, the work is by no means perfect nor does it guarantee total protection against all changes in rates. Below are three of the problems associated with our matching practices.

- (i) Inasmuch as we have tried to project cash flows under various scenarios, we have little historic data upon which to base our projections. If interest rates were to decline precipitously, would people pay off their mortgages more quickly than we have assumed? It is difficult to appreciate all the impacts on cash flow that a major upward or downward shift in interest rates would have.
- (ii) The flexibility provided to policyholders to move their funds from floating rates to guaranteed rates presents challenges. It forces continual monitoring of the internal transfers especially in times of changing interest rates. Systems must be flexible enough to provide almost instantaneous information so that appropriate investments can be made before the market moves too far.
- (iii) What is the future role of stocks and real estate in the investment strategy of life companies? Traditionally, equity-related vehicles have provided the greatest real return. Yet, with sources of long-term funds drying up and even becoming negative can these assets be used to support short-term liabilities? The obvious answer is no. However, some companies have imputed fixed income returns to equity investments to permit the directing of new money premiums to purchase stocks and real estate. In essence, the par policyholders or shareholders are accepting a much greater degree of leverage. Clearly, there are risks involved. Yet, if we accept the position that we are risk managers and not risk averters and that the equity investor will be compensated for their risks, equity investments may well have a role to play in the investment strategy of companies where investable funds are primarily derived from new money guaranteed products.

Matching and Investment Anti-Selection

Are matching techniques applicable to liabilities where policyholders can practice investment anti-selection? Primarily, such liabilities refer to insurance policies with guaranteed surrender and loan values. Because these cash flows are so unpredictable, traditional matching techniques are generally not applicable. Despite the difficulty in analyzing traditional insurance liabilities, the risks are such that such analysis is necessary. It is encouraging to see the work being undertaken by the Society's C-3 Task Force.

Conclusion

Concerns about the matching of assets and liabilities have forced closer lines of communications between investment personnel and those responsible for

product design and pricing. The future holds more of the same. This area is of vital concern to life companies and represents an interesting challenge to us all.

MR. VINCENT M. TOBIN: Most people will agree that immunization is a money management technique and that as such, the final decision as to whether or not to immunize lies in the hands of the pension administrator and the investment manager. But some in the financial community consider any form of immunization to be gimmickry. They even go so far as to state that it is being unwisely used to reduce contributions at the expense of higher investment income or yields available from alternative investments. Others see it as an almost foolproof way for locking in higher yields over some predetermined period of time. The actuarial viewpoints are also mixed. One camp holds that the interest rates may be increased to reflect the higher yields that almost certainly result from immunization. The other camp holds that there should be no interest rate change, or if you're wholly invested or highly invested in fixed income investments, then the interest assumption should be lower than if you were wholly invested in equity investments. Many theoreticians in the financial community support using a market rate of interest rather than the interest rate associated with the actual investments of the plan.

It has to be recognized that immunization can have a very wide appeal to pension plan administrators. Administrators claim that you obtain more flexibility in other investments by locking in the immediate liabilities and that you also can accept higher risks in other investments in the pension plan's portfolio because the liquidity requirements are taken care of by a complete dedication of the pension payments over the next 15 or 20 years.

You then have complete mobility of assets from one part of the portfolio to another. Other administrators' claims are that the rate of return on the immunized portion of the portfolio should be a good gauge for testing the performance of money managers in actively traded bond investments; the low risk features fit in well with the fiduciary requirements of ERISA and lower investment fees.

The question of market timing brings up two important aspects of the immunization concept. The proponents say that immunization is a means of avoiding market timing errors. The detractors say the biggest market timing error of all may be the initial entry into an immunization program. While immunization minimizes the probability of a yield which is less than the stated target, it also minimizes the chance for any profit in excess of that target.

Immunization covers a very wide range of vehicles. The ultimate form of immunization for a pension plan is the single premium purchase from an insurance company of annuities to cover a fixed group of pensioners. There is also the guaranteed investment contract, either with no withdrawal permitted over the period or with a penalty being applied on withdrawal. There can be an arrangement with an investment manager covering either a dedicated portfolio or alternatively, contingent immunization. There is always the possibility of in-house management of a portion of the portfolio with a rather loose link to the pension payment.

One definition of immunization is that a portfolio is immunized for a holding period if the value at the end of the period, regardless of the course of interest rates during the period, is at least as large as it would have been if the interest rate function had been constant throughout the period. Each of the items that appear to be immunizations might well be tested against that definition.

The dedicated portfolio and contingent immunization currently appear to be two of the more popular forms of immunizing pension plan assets. The dedicated portfolio is a passive bond strategy with a complete dedication or almost complete dedication of assets to a fixed stream of pension payouts over a period of 10, 15 or 20 years. Contingent immunization is rather new in the field. It involves setting up a target rate of return combined with active management of the bond portfolio as long as the anticipated return from active management will exceed the targeted rate of return. If the anticipated rate from active management drops below the target rate, then the active strategy switches to a passive strategy. The existing portfolio is immunized and the target yield is locked in for the balance of the immunization period. The net result of this contingent immunization is that it maximizes upside potential while providing downside protection.

One of the most important concerns of the actuary is to insure client understanding of the immunization process. He should insure awareness, that while the immediate gain of the immunization will give a high probability of a certain yield over time, that it does not guarantee that high yield is going to be higher than some alternative form of investment. He should point out that immunization can vary from a completely irrevocable strategy, such as the entry into a single premium contract, to a rather loose arrangement with a trust company that can be rearranged at any time. He should also stress that immunization is not the only means for reducing pension plan contributions. And most important he should emphasize that a contribution reduction at this time might not be in the best interest of the plan, the company, or the plan participants.

Other concerns of the actuary include the manner in which the gain should be recognized, the appropriate asset valuation method and Schedule B treatment of any changes that might be made in either the interest rate or the asset valuation method.

The concern with the recognition of gains is whether to defer recognition or to anticipate gains up front by increasing the interest rate. There are two basic viewpoints on this. Viewpoint one holds that immunization is merely another investment decision, and therefore no change in the interest rate is justified. Viewpoint two states that since there is less risk in attaining the targeted rate, an increase in the interest assumption is justified. The most common way of affecting that increase is to equate the actuarial value of the pension payments that are being immunized to the market value of the assets that are also being immunized. Holders of this viewpoint claim that if you go into the ultimate form of immunization, the single-premium purchase of annuities certain, the affect on the annual valuation is one of changing the interest rate. You rid yourself of both certain assets and certain liabilities and the effect is an increase in the interest rate for that portion just purchased. The actuary should not force the plan into this ultimate form of immunization because he is reluctant to change the interest rate in any form of immunization that falls short of the ultimate form.

To the actuary, success of an immunization program depends on significantly removing the reinvestment problem, that is, if success is determined or defined in terms of changing the interest rate.

One approach is to immunize the total pension liability. However, because the payout period of the liabilities will exceed the maturity period of assets acquired at the outset, there is an unavoidable reinvestment risk which reduces or eliminates the hoped-for advantages of immunization. A better approach is to immunize a portion of the pension liability (e.g., payments of the next twenty years) so the assets can be related more directly to the pension payments.

In implementing an immunization program, there has to be some interplay between the actuary and the bond manager. The actuary has to prepare certain calculations, starting with the projection of all pension payments. Additional calculations could include segregating out the payments that are due after the end of the immunization period, matching the liabilities to a predetermined value of assets to be immunized, and calculating the mean duration. The bond managers would then attempt to match the income and maturity stream with the projected pension payouts and select a portfolio which had the same duration. Once the bond manager has determined the market value of that portfolio, the actuary's job is over if there is complete matching. The market value then becomes the value of the liabilities.

In conclusion, I would simply suggest that actuaries not be negative when they are asked to work with the plan administrator and the investment advisors in trying to reach a determination as to whether or not immunization can be of real advantage to the pension plan.

MR. MCCARTHY: Matching has implications for product pricing and competitiveness, for line of business management and profitability and for required company surplus to assure solvency. This is a hierarchical question, in that the pricing question is a product level question. The profitability question is a line of business management question and the surplus or solvency question is a company-wide question.

The risk to insurance companies from the mismatch of assets and liabilities is being referred to as C-3 risks. The implications of the analysis of the C-3 risk is not that a company should necessarily seek to match its assets and liabilities 100%, even if that were possible, but rather it ought to be considering the consequences of a mismatch.

In the Record for last year's Ottawa meeting, there is a simple one-page table on page 1060 of that volume* which illustrates for various potential swings in the environment and oversimplified investment strategies the type of results that can occur as the result of being significantly mismatched. For some types of products though, the matching strategy may be impossible or at least severely non-competitive.

*Record, Society of Actuaries, Vol. 7, Number 3

Below is a list of strategies that companies are currently following to deal with investment sensitive products.

- (i) Short-term contracts, in terms of interest rate guarantees, matched by very short-term assets. This minimizes the asset risk considerably, but under many circumstances will not produce the most competitive rates.
- (ii) Short-term contracts (interest guarantees of a year or less) backed by mid-term assets, i.e., assets with a five-year average maturity. The asset risk for that degree of maturity is relatively manageable except in times of very sharp and severe discontinuity. There will be times when this strategy will give a higher interest rate going in than the short-term asset investment strategy. That is the basis of its appeal.
- (iii) Short-term contract with conventional long-term bond investments. This strategy was used in the mid-seventies but is no longer common.
- (iv) Short-term contracts and relatively short-term investments hedged with futures. There are all kinds of difficulties here, including regulatory problems, tax problems and trading costs. But present futures instruments enable you, at relatively nominal costs, to extend your protection horizon about 18 months.
- (v) Aggressive mismatching. This approach is to look for investments that would be materially better than average. These would not typically be fixed-term investments. Companies who use this approach will, if they are soundly managed from an investment point of view, have opportunities to make gains. They will also, in certain environments, run the risk of significant liquidity problems and surplus squeeze problems.

MR. THOMAS E. SKILLMAN: Life of Virginia has recently come out on Universal Life with a guarantee of the higher of short-term rates or long-term rates. I was wondering how you immunize against a program like that?

MR. MCCARTHY: The guarantee is for a three year period. Instruments now available, coupled with a hedge strategy, will enable you to match for a three-year period. Using the present instruments available, leaving aside some of the unique Canadian investments, it is hard to imagine how you could extend the guarantee out much further unless you were including a significant risk charge to build an accumulation fund.

In discussing your short-term pool concept for various kinds of liabilities, you mentioned that pending claims are included in the pool. Pending claims are not new money to the company. They actually come out of other assets and you therefore do not necessarily have the luxury of reinvesting the money. How does this fit in with your short-term pool concept?

MR. STAPLEFORD: We were concerned about the fact that if we continued to offer a portfolio of returns which, last year for our company was 10½%, when an individual, who is trying to decide what to do with a death claim, has high short-term rates available, that we would have little opportunity to hold on to the funds. So by moving notionally the assets to a separate fund investing in short terms, we did indeed absorb some longer term losses but felt it was worthwhile to retain the funds.

MR. MCCARTHY: I appreciate why you do it as a fund retention device, but it does involve, in effect, notionally taking a loss on something else.

MR. STAPLEFORD: That is quite correct.

MR. DANIEL A ANDERSON: One reason for putting the pending claims in the fund is if you are crediting interest on those outstanding claims to the policyholder at a current rate of interest, then you are matching in another form. My question was whether yields on the pool where you separate out your assets for your new money type products are fully reflected, or do you anticipate fully reflecting, those in your dividend structure?

MR. STAPLEFORD: We have two pools. One would be the new money pool and in that pool we strive to have a matched position. If that pool generates profits, there would be a transfer of assets to the average money pool which is really the par policyholder's. So, it will enable a clearer allocation of investment income and I think it does enhance the dividend granting formula.

MR. ANDERSON: So you do not have any par products in your new money fund pool?

MR. STAPLEFORD: That is correct.

MR. DAVID M. CANTOR: The product of immunization and the ability to do it is being somewhat oversold. It is trying to be sold to people who have positive cash flows and have no need to immunize or to go to a designated portfolio. With regard to the change in your interest rate when you move to one of the immunization techniques, there can be a different answer with regard to whether you are talking about the funding assumption for the plan or the rate used for FASB disclosure purposes. As an example, if you are currently using a 7% funding assumption and you have a group which consists of retired lives and active people which are not vested for FASB disclosure purposes, you should use the interest rate that you know that the assets are going to earn. The 7% assumption you were using for funding purposes might have been thought of initially as being 12% on current assets and 5% on reinvestment of future contributions with the 7% a blended rate. Thus, if we change our valuation of the retired liability to be at 12%, our next logical step should be to value everything else at 5% and that second step is not taken.

MR. TOBIN: I totally agree with you. If the bases for the 7% assumption was truly an anticipation of a combination of 12% and 5%, then that is a decision to be reached by the individual actuary. If they believe that 7% is truly the valid long-term rate, and have not been using a higher rate for pensioners because of the reluctance of the retirement committee to publish a higher rate or the actuary to use one, then there is some validity to using this almost guarantee of a higher yield to make an upward adjustment.

I also totally agree with you on the idea of the thing being oversold to plans where there is no cash flow problem.

MR. ALLEN E. ARNOLD: Matching of assets with pensioner liabilities might be undertaken either to immunize a plan sponsor from the effects of changes in interest rates or to protect pensioners from losses at a premature liquidation of the fund. Nevertheless, the main attraction of immunization now is that it seems to justify cutting contributions.

Immunization does not cut contributions. When market and valuation interest rates are equal, immunization does not affect contributions at all. It is the fact that market interest rates are very high which may justify reducing contributions. Temporary recognition of current market rates can be achieved directly without adopting immunization as its justification. Immunization should be considered on its own merits; it is not necessary to immunize in order to cut contributions.

MP. MCCARTHY: This discussion of pension plan valuations today is largely academic from the point of view of establishing an insurance company's liabilities under existing valuation law. But these kinds of analyses could well become very possible in a different valuation environment, such as that of the 1990's, and would require actuaries establishing insurance company liabilities to examine these interplays and how they would affect determining a company's liabilities. We are not there now, but we seem to be moving in that direction and may get there someday.

Concerning the question of aggressive mismatching that some companies are examining, last year there were companies that were putting a fair amount of money into and receiving a fair amount of money from investment sensitive products and then investing that. The New York Insurance Department became concerned about the liquidity of these companies and their ability to withstand shock lapse results in adverse environments. Because of 50-year-old rules that were written into the New York law for entirely different purposes, they had the ability to sharply restrict additional new annuity business that those companies could write. The Department required companies--as a condition associated with a suspension of the rule--to respond to a number of questions dealing with (among other factors) the term of this asset in relation to that of their liabilities. As a result, the department found to its satisfaction, as far as I can tell, that the companies who were writing this business were adequately liquid at that time in terms of their asset portfolios. Now, at that time it was not difficult to be in that position. Had they looked a year earlier, they probably would not have been quite as content with the results. This is one instance in which a regulatory body has recognized the issue and asked for some demonstration as to what a company is doing. They didn't state that you must be matched. They asked for an explanation and defense of the company's position. To a certain extent, in some draft regulations in California, that also seems to be an approach that the department there is taking. I believe that although this has not been an area of regulatory emphasis in the past for insurance companies, it does appear that at least in the insurance departments that are geared up to think about these questions, they are going to be raised more in the future.