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**IMPACT OF DOUBLE-DIGIT INFLATION  
ON PENSION PLANS**

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MR. HOWARD FLUHR: The topic of this session is "The Impact of Double Digit Inflation on Pension Plans". One obvious impact, not often mentioned is that pension actuaries have had a number of sessions to discuss inflation. A look at programs of the Society from several years ago will reveal that inflation was rarely a topic. A look at the program for this meeting reveals that more than 20% of session time is spent discussing inflation and the new economics. It is certainly a challenge to all of us who have to work with plan sponsors and with investment managers to try to find ways to cope with this increasingly out-of-control problem.

As an example of how society adapts to changing conditions and becomes accustomed to what seemed bizarre not long before, there was a recent news letter of a Big 8 accounting firm which published an article entitled "Adjustment for Triple-Digit Inflation in Argentina". We hope that we do not find ourselves discussing triple digit inflation at the next session of the Society.

Without belaboring the obvious, let me remind you of some of the all too familiar recent statistics. During the 1970's there were two years in the United States and two years in Canada when we experienced double digit inflation, and it seems rather clear that we will have more of the same in 1980 and perhaps throughout the 1980's. Although the experience in Canada has not been identical with the United States, and in general has been somewhat lower, the order of magnitude has not differed very much.

Although we all have theories on how to reduce, or at least control, inflation, this session will not address that issue. Considering the fact that the leading and most highly respected economists in the world, amongst them several Nobel Laureates, are in utter disagreement on the causes and cures of inflation, we are thankful that we are not charged with dealing with those issues. We need only deal with inflation from the point of view of pension plans.

Some have compared inflation with the weather -- "everyone talks about it, but no one does anything about it". I, for one, do not accept that analogy since the mere awareness of, and constant discussion of, inflation, affects its level. What I am referring to is the psychology of inflation. We have all heard it and have all participated in it -- buy before the next inevitable price rise; borrow now and pay with cheaper dollars later; get pay increases which compensate for price increases; there is no point in trying to save. All of these reactions to raging inflation only serve to fuel the very fires we need to quell. One wonders how Adam Smith would have reacted to these modern examples of enlightened self-interest.

In any event, this notion of reactions to inflation being inflationary can serve as a back-drop, and perhaps a tether, to a discussion of the impact of inflation and how to cope with it. Please also consider these questions: 1) Is there an underlying or imbedded rate of inflation? If so, can it be ascertained? 2) In the world as it exists now, can observations of the past help predict the economic future?

The format of this session will be as follows: We will hear from our speakers, but in between their talks we will have some time for questions and then we will have a period at the end for questions that can be addressed to all of them. First, Clyde Beers, a principal of TPF & C in Philadelphia, will discuss actuarial assumptions and he will also make some comments on the issues of design and funding. Then, Mike Greenstein of Metropolitan Life will discuss design and pre-funding for post-retirement indexing. Richard Lemieux, Vice-President of Mercer, Montreal, will then discuss these topics from the Canadian perspective. We will then have time for additional questions.

MR. CLYDE BEERS: What is the impact of double digit inflation on pension plans? There is a quick and easy answer -- make no changes in your fixed-benefit pension promise, believe in the capital market theorists and reap high rates of investment return, and use "realistic" actuarial assumptions and drive costs downward to their lowest level in years. On the surface, then, the most logical answer to the question is that the value of a fixed benefit has declined and plan cost should come down dramatically. I suspect that many actuaries will face real pressure to implement this scenario over the next year or two.

Let us examine the question in more detail. I will postulate two main points:

- 1) There is no stability at high inflation and the result may be instead that cost will escalate rapidly in the future.
- 2) Because of these risks it is essential to have a rationale and policy for all aspects of
  - plan design,
  - investment return, and
  - funding.

Let us look at each of these issues in turn.

There is no stability at high inflation.

There is a fascinating book by one of America's most respected financial men, Sidney Homer, called A History of Interest Rates. Homer traces interest rates since the time of the early Babylonians. He finds interest rates the thermometer of society. Low interest rates are typically characteristic of peace and stability. High inflation is a likely sign of the decline and fall of empires. The decline most often comes at inflation rates of about 20% to 25% annually.

At high inflation, we will either crash to low interest rates as in the depression, soar into hyperinflation as in Germany between the Wars and as previewed by our recent 20% prime rate, come down gently as the U. S. did after the Korean War during the Eisenhower years.

In conclusion, do not count on double digit inflation for the next 20 to 40 years -- the duration of most pension liabilities.

It is essential to have a rationale for all aspects of: plan design, investment return, and funding.

In the area of plan design the biggest risk is clearly post-retirement indexation. Recent German labor court rulings call for indexation of German pension benefits at the full rate of inflation. We should not presume that the same political scenario cannot happen in North America. On the other hand, in the U. S., David Rockefeller recently called for less indexation in government programs and the AT&T pension plan was changed from a generous final average pay plan into a dollar per month plan for hourly employees and a career average plan for salaried employees. Different organizations will handle design policy in different ways. Whatever the policy, it is important for the actuary to anticipate both current and future cost and funding status based on the current benefit structure and probable changes.

Second, companies need a coherent policy for investment of plan assets. If I had the answer to the investment problem, I probably would not be here. Suffice it to say, achieving a real rate of return net of inflation has not been easy over the past 10 to 15 years.

From a funding point of view, I prefer

- to forecast plan costs, assets and funding status over the next decade to help the client select the appropriate cost method,
- to develop actuarial assumptions using a macro-economic analysis for structure, and
- a micro-economic analysis to modify the structure to a specific client situation.

In general, the structure is based on the capital market theories of Ibbotsen, Sinquefield and others with a dash of pessimism based on real experience over the past 15 years. I will briefly describe a structure for setting the economic assumptions of investment, Social Security and salary increases.

For investment return, I look for six elements to set the investment assumption:

- 1) inflation
- 2) real return on investment
- 3) expense
- 4) margin for underperformance from the indices
- 5) margin for volatility over time
- 6) prior performance and policy

In the area of inflation, it is obvious that no one has the ability to foresee the future. So the important thing is to understand what kind of an assumption is conservative. If the benefit structure is a nonindexed one, such as most of the plans that we deal with, a low inflation assumption is conservative. By conservative I mean it produces high current costs and rapid funding. On the other hand, if the benefit structure is indexed, as many governmental plans are, it may be more conservative to assume a high rate of inflation rather than a low rate of inflation. The reason for this is that I believe there are adequate data to assume that the real investment returns, the second element of the system, are inversely related to the absolute level of inflation. At low rates of inflation, there will be the potential for high real investment return and at high rates of inflation the possibility of real rates of return may not even exist. This kind of data is borne out, for example, in a study by Phillip Kagan for the Bureau of National Economic Research, and by data published by TPF & C. The process of inflation is that of robbing those who have accumulated assets and transferring to those who do not yet have them. We have to recognize that this process can certainly come at the hands of the market value of these funds.

The third element is expense levels and it is clear that these are no longer insignificant. The restructuring of the AT&T system is clear evidence that corporate sponsors are concerned with the levels of investment expense and looking for ways to cut that expense to smaller amounts. Fourth, we have to recognize and provide a margin for underperformance from the indices. Most of the data that we have seen indicate that three-quarters of the institutional investors cannot beat the standard indices. In other words, the median institutional investor is underperforming from the Standard and Poor's by a fair amount. Fifth, we need to look at a margin for volatility over time -- plan terminations, which is when the rubber really hits the road as to whether or not there is adequate funding. And even those funds that have performed well may at that particular instant have a poor investment situation. Finally, we have to look at prior performance and policy. Certainly, the funds that are in the bottom quartile of performance should not have the highest investment return assumptions. At low inflation rates, perhaps up to 3% real return in excess of inflation might be appropriate. At very high inflation rates, I would suggest that real returns of much in excess of 1% ought to be looked on with some suspicion.

The second area would be the assumptions with regard to Social Security. These, of course, have to be closely aligned with the assumptions for salary increase in order to develop consistent projections of future benefits and I look for a two-stage assumption setting process. One is the level of the underlying inflation assumption. Again this should be consistent with the investment return assumption and also with the salary increase

assumption. Second, a productivity impact or the effect of a national wage increase in excess of inflation rates. Again, these ought to be low at high inflation rates. That is, real wage increase will likely decline as inflation rates increase.

In the area of salary increase I look for a five-part model, namely: inflation, the national productivity impact which is factored into our Social Security assumptions, industry variation from those averages, company variation and individual promotional impact. The last item is often overlooked and often misunderstood. Basically, this is the rise in wages as an individual is hired at a junior accountant level and finally rises to be a financial vice-president. That can add significantly to an employee's overall pay progression during a career and it is important that the pension funding contemplate that increase if adequate funding is going to occur when the employee comes to retire. If this promotional impact is occurring in a growing organization where a number of promotions during a career occur, it may be that the salary increase assumption could actually exceed the investment return assumption using these kinds of building blocks for the assumption process. That certainly is not what we would typically see in our average valuation calculations.

Finally, I would like to comment on actuarial methods and to indicate that what is conservative at low inflation rates may turn out not to be conservative at high inflation rates. Specifically, at low inflation we typically think of Aggregate Cost as being one of the most conservative cost methods perhaps followed or closely akin to an Entry Age valuation, with the Unit Credit valuation methods at the least conservative end of the scale. At high inflation rates it may turn out that Aggregate Cost becomes a low conservative or cost deferral approach and some of the projected Unit Credit methods, depending on your assumptions, can turn into extremely conservative valuation procedures. So, I would urge you to approach with caution estimates of changes in cost method depending on the nature of your assumptions.

In conclusion, I think that we need to be careful of lowering plan cost dramatically at a time when we anticipate that inflation rates will continue at very high levels if our basic assumption is that those with high inflation rates will stay stable and that real investment return will occur at these high rates.

MR. MICHAEL GREENSTEIN: Clyde, have you observed when considering the inflation of the '70's, the phenomenon of compression in the salary scales when you look at observed data and therefore, there is a potential for the under-estimating of salary increases in the forecast?

MR. BEERS: When we look at actual salary increase patterns I think we are seeing some very surprising issues. In one case I can think of, we looked at salary increase patterns for existing employees from the 40's, the 50's, the 60's and the 70's. Surprisingly enough, the average salary increase for those individuals was independent of the decade and, in fact, averaged in excess of 10% per year. What was happening was that those individuals in the 40's and 50's, during times of low inflation, who were in fact getting promoted, were the survivors and they had extremely high promotional increases. Those promotional increases were leveling off in the 60's and 70's, but the inflation was driving the salary up to such a level that we

were still getting enormous salary increases compared to the typical assumptions of 4%, 5%, 6% per year. I would say that at high inflation rates, we tend to see less differentiation by age. In other words, at low inflation rates we typically see very high salary increase rates at young ages grading down to an inflationary increase at the older ages. At the highest inflation levels that we have been having for the last 4 or 5 years, that age differential tends to disappear.

MR. FLUHR: Do you have any plans now where you are assuming salary increase rates equal to or greater than the investment return assumption?

MR. BEERS: Almost all.

MR. FLUHR: Is that a new phenomenon?

MR. BEERS: I would say within the last 5 years. Where we actually do analysis and study patterns that go through this building block approach, what happens is that you add that final element, the promotional increase, and there is no comparable number on the investment side. If you take into account any margins for underperformance from the indices or volatility over time there is an offset. The corollary, however, is that no matter what you do, if a high investment return is assumed, cost will probably come down. That is, the investment return assumption so dominates that cost will decrease with the absolute level of the investment return assumption.

MR. GAIL JOHNSON: Can you tell us what assumptions you are actually using?

MR. BEERS: Most of the valuations that we are doing now that I am personally responsible for, the investment return assumption is varying between 6% and 8%, salary increase assumptions would be lower for the 6% valuations and might be up in the 7% to 9% range for the higher interest rate assumption. I have recently refused to value at a 10% investment return.

MR. THOMAS LONERGAN: Could you tell us how you get a handle on this promotional element in the salary increase? How you go about investigating this?

MR. BEERS: What I typically do is take a look at actual employees if we do not have our gain and loss analysis set up to provide that data. We only have a good gain and loss analysis broken down by age groups for the last 4 or 5 years in most of our valuations, but if we want to look at long-term rates of increase, I typically take 3 employee groups -- one under age 35, one 35 to 50, and one 50 and over -- and select a sample of employees and get prior salary histories for various time periods. I then take a look at what the actual inflation rates were during those time periods, what actual industry average increases were during those periods, and then try to reconstruct what happened. Now one of the things that you have to recognize is that if you take this approach you are working with the survivors only, so there tends to be a high promotional component in that kind of an analysis. That has to be factored into your thinking when setting assumptions.

MR. LONERGAN: So essentially you are evaluating the ongoing participant over time and comparing that with inflation and so forth over that period.

Over the long run, do you think that salary increases can exceed the investment return? There are some people who believe that it cannot continue over the long run.

MR. BEERS: I think I would agree with that, but you have to define your terms. The long run for some people is five years and for others it is fifteen. Over those kinds of time periods I think the answer is very clearly, yes. All you have to do is look at the last fifteen years and we have had exactly that. If you mean the long run being 50 years, I would say -- probably, no. The problem is that plans may not survive that long run. If you add in this individual promotion component and then on the other hand subtract out a margin for conservatism on the investment return assumption then my corollary would be yes; very likely that could be an appropriate structure for assumptions.

MR. LONERGAN: When I think of long run I think of at least 40 years from the standpoint of setting assumptions. Now that does not mean that I am going to be locked in for 40 years because I know I am probably going to look at assumptions seriously in three years. If you believe for a healthy economy that salary increases cannot exceed interest rates over the long run and you are setting assumptions for a 40 to 50 year period, then it could be argued that it is not appropriate to have a salary increase assumption that is greater than the investment return assumption. Do you have any comment about that?

MR. BEERS: I think it is a valid argument if you understand that the salary increase that you are talking about is average salaries in the economy and not individual salaries which are affected by individual promotions.

MR. LONERGAN: If we vary salary increases by age, could it be argued that this would be discriminatory?

MR. BEERS: Possibly, I guess. Clearly, the pyramid narrows at the top and you do not have as many promotions at age 50 as you might at age 35.

MR. NORMAN LOSK: I think I agree with him that in the long term we must be in a position to earn real investment returns; that is, there must be a gap between investment returns that are available at inflationary levels and salary increases. At least the portion, other than what Clyde describes as the promotion portion of the salary increase, that relates to those economic items. I think you could argue if there were no promotional increase pattern available that there should always be a gap between investment returns and salary increases. Have you given any thought to using the technique that seems to be common in life insurance companies when pricing new products -- that of using graded assumptions starting at high levels, perhaps with a very narrow real return level, and grading them into something that makes economic sense in the long haul?

MR. BEERS: I think it is desirable, as a practical matter, but I do not think it is being done very often. It is well suited to an aggregate type calculation where you do not need to establish an "entry age". It is not very well suited to a unit credit or entry age valuation method, and we do not have an awful lot of cases that are being valued in that manner. So it really would take a fairly fundamental change in our procedures to move in that direction. If we continue to get these very high rates, say three years from now, and we are still stuck with 14% rates of return on assets, I think it is going to be very difficult to tell a client that you cannot assume something in the 10% to 11% range. It is going to be ingrained in our thinking and in our economy. At that point we may well be forced into this concept of graded rates over time.

MR. THEODORE KOWALCHUK: In many cases we use a somewhat lower interest rate after retirement than before retirement. I was wondering if you do that very often?

MR. BEERS: I really have not seen that as a prevalent valuation technique. I think it does have some merit, particularly if a client has a stated policy of periodically increasing retiree benefits although that might raise questions from the Internal Revenue Service as to whether the contributions were appropriately deductible.

MR. KOWALCHUK: If you have many rather highly compensated executives and you are using very high salary scales, very quickly, if not immediately, you are over the \$110,625 maximum. Are you projecting for the full projected benefits well in excess of the 415 limits?

MR. BEERS: With high salary increase assumptions it may not be just high paid executives that hit that limit, it may be the young employees as well. Generally speaking, up to this past year we were escalating the limit from a valuation point of view. Since the most recent IRS comments, we have fixed that limit for valuation purposes, at least for purposes of determining a tax-deductible limit.

MR. FLUHR: Now Mike Greenstein will discuss design and pre-funding in response to inflation.

MR. GREENSTEIN: In the last 30 years the U. S. economy has changed from a low inflation/high productivity environment, such as was prevalent in the 1950's and through the mid-1960's, to one which is characterized by high inflation/low productivity. Inflation rates have increased sharply since 1965, and reached the double-digit level in 1974 after the oil embargo. Inflation reached the double-digit level again in 1979. The decade of the 1970's experienced an average inflation rate of just over 7%. This was the second highest inflation period over any 10-year interval in the last 100 years. The highest period was one which included the World War I years. After the World War I period, prices actually declined, by almost 19%. Today, in contrast, economists are forecasting the 1980's to suffer even higher price increases than those of the 1970's. My company, for example, expects prices to increase by 13.5% in 1980, and we are forecasting increases which will average perhaps 8% - 9% per year for the 10-year period 1980 - 1989. Other forecasters, such as Chase Econometrics, for example, are expecting similar increases.

The impact of past inflation on pension plans has been very significant. We have seen a period of relative stability change to one of virtual uncertainty. In qualitative terms, employees are now uneasy about the financial certainty of their pensions, where they formerly had confidence in the U. S. pension system. Quantitatively, we have seen pension costs increase sharply as a result of salary increases which followed inflation, and as a result of asset values which declined because of rising interest rates and stock market uncertainty; and also because of pension increases to those already retired. In the past, during periods of low inflation, pensioners as a group could expect to live out their 15-year life expectancy before the erosion of purchasing power became a significant factor in their standard of living. Today pensioners are retiring earlier, and living longer. If inflation continues at or near double-digit levels, then a pension which is adequate at retirement age 60 may be eroded to less than half its value before age 70.



Results from a number of surveys completed over the past few years report that while most companies do not increase benefits after retirement, the larger companies do, and are doing so more frequently. A 1979 Bankers Trust survey reported that over 80% of 100 major corporations sampled have increased pension benefits in the last 5 years. A recent TPF & C survey of 94 large employers reported that over 50% granted pensioner increases in 1978 or 1979. One large company that I know of increased post-retirement benefits 5 times in the last 10 years, the most recent occurring only this month. The increases total almost 2/3 for one who was retired over the full period.

Persistent high level inflation will bring mounting pressures on the private pension system to index benefits in some way. Pressure will come from retirees, union groups, and eventually from government.

We all know that the President's Commission on Pension Policy is currently studying the major issues facing the private pension system. In its Interim Report, issued last May, the Commission concluded that inflation adjustments for employee pensions, while encouraged, should not be required at this time. The Commission concluded, for now, that as a matter of public policy, emphasis should be placed on increasing coverage rather than providing full inflation protection. Priorities do change, however. Note, for example, that the William-Javits bill, introduced into the Senate in 1979 as the ERISA Improvements Act (S.209), contains a provision which charges the Secretary of Labor to conduct a study of the feasibility of requiring pension plans to provide cost-of-living adjustments to retirees. I understand that this bill will be reintroduced in the next Congress and that the cost-of-living study is still in the bill. While these actions are not particularly ominous right now, we might remember that one role of government is to fulfill basic needs where the private sector is unable to satisfy those needs.

One rather interesting article I read recently offered the premise that post-retirement benefit increases are now a virtual necessity to retirees -- and the benefit is not one-sided.

It concluded that, without post-retirement inflation protection, employees will eschew liberal early retirement provisions because they cannot afford to retire. If older employees do not retire, and they may now stay on to age 70, employers may be faced with declining productivity as well as other employee relations problems. As a consequence, the pension plan fails in one of its important objectives, which is to cause an orderly and amicable replacement of older employees.

If we reject the doomsday scenario, in which the private pension system collapses and Social Security becomes the universal pension system, then it is logical to assume that if inflation persists at high levels, indexing will become prevalent and frequent. Several questions must be answered when post-retirement indexing is considered:

- What index will be used to measure the loss in purchasing power?
- What portion of that loss will be restored to retirees?
- How frequently will the increases occur?
- Will the cost of the indexed benefit be shared by the retiree in some way?

- Will the cost be pre-funded or paid after the increases occur?
- What investment policy will maximize returns in an inflationary environment?

What index will be used to measure the loss of purchasing power?

The Social Security System currently pays over \$100 billion per year to more than 35 million people. Of course all benefits are now fully indexed to the Consumer Price Index. When the July, 1980 benefit increase of 14.3% was announced, much attention was given in the press to the issue of whether the CPI is the correct measure of the loss of purchasing power. For example, does the CPI overstate the inflation rate because of the way the index is constructed? More importantly, does the CPI accurately reflect inflation losses to retirees, or is a separate retiree index needed? Retirees for the most part have paid-up mortgages, receive indexed Social Security benefits which are not taxable, and have medicare coverage. Note, for example, that while the CPI increased by 98% in the 1970's, the medical component increased by 111% and the housing component increased by 105%. In the interim report of the PCPP, the Commission recommends that the Bureau of Labor Statistics conduct a survey of consumption patterns to see if a separate index for retirees should be maintained. An interesting tangent on this question is. . . Should benefits be indexed by amounts which exceed the average pay increases for active employees? The General Accounting Office recently criticized the COL increases paid to Federal civil service and military retirees, calling such increases "highly inequitable", since the COL increases exceeded pay increases for active people.

What portion of that loss will be restored to retirees?

Deciding on the portion of the loss of purchasing power which will be restored to retirees is largely academic for private plans. Very few, if any, private pension plans are fully indexed. Most plans which pay post-retirement increases cap the amount at 3% - 4% per year, largely as a cost control device. Some plans with cap provisions have paid additional ad-hoc increases to offset high inflation. There are no easy answers. One might say that if inflation runs along at less than 3%, then indexing is not really needed; but if inflation runs away at 8% - 10%, then 3% - 4% indexing does not work. It is unlikely that private plans will ever provide 100% inflation protection, but we will see, I believe, more deliberate attempts to relate increases more closely to actual inflation losses.

How frequently will the increases occur?

The timing of increases is essentially an administrative matter. Where increases are granted on an ad-hoc basis, the plan sponsor determines the timing of the increases. Where increases occur automatically, they may be once a year or after the inflation index increases beyond a certain level. The federal civil service retirement system, I believe, adjusts benefits twice a year.

Will the cost of the indexed benefit be shared by the retiree in some way?

Employers may be willing to provide some COL protection, but are obviously wary about the costs of open-ended increases, even on an ad-hoc basis.

Employers would like to see employees share in the cost in some way. According to a 1979 J&H study conducted by the Harris organization, almost three-quarters of those surveyed would be willing to make additional contributions to their company pension plans in return for benefits that increase with the cost-of-living. It would appear that this is a possible solution which offers the greatest potential for meaningful inflation protection. This concept would very likely be given great impetus if (when?) tax shelter is extended to employee contributions under qualified pension plans.

The New York State Retirement System introduced a new plan in 1976 (mandatory for new employees). This plan has an interesting indexing feature. The plan is a final average plan with 50% Social Security offset. The plan is contributory at 3% of pay and pays unreduced benefits at age 62. It has a post-retirement "escalator" clause which is capped at 3%. The 3% is payable only if retirement occurs at age 65. Zero percent is payable if retirement occurs at age 62. Proportionate increases are payable for retirement at ages 63 and 64. It is interesting to note that 3% employee contributions roughly pays for either the early retirement provision, or the post-65 escalator provision; one cannot have both. So it appears that the employee is paying for the one plan feature that is entirely under his own control.

Will the cost be pre-funded or paid after the increase occurs?

Whether the cost of an increase will be pre-funded or paid after increase occurs will usually depend on whether the pension increases are automatic, being written into the plan, or on an ad-hoc basis. In most cases the pension increases are granted on an ad-hoc basis, and funded afterwards. This largely because the amount of the increase, and therefore the liability, is unknown. A plan may pre-fund even an ad-hoc increase, however, by paying additional contributions into the fund between increase dates. This amounts to temporarily amortizing existing accrued liabilities more rapidly. In such a case, the plan's unfunded liability would increase to the "normal" level at the time of the ad-hoc increase.

If a plan does not pre-fund the increase, then the usual ERISA standards will apply. The minimum standard permits funding over 30 years, but a higher actual contribution level should be recommended. The argument here is that these costs should not be funded beyond the period of average life expectancy for retirees. One method that we recommend for funding ad-hoc increases, that has a certain logic to it, is to fund the increase in level amounts over 12 - 13 years where the level contribution is equal to the first year pay-as-you-go amount. This, in effect, separates the indexing cost from "regular" costs.

When post-retirement increases are automatic, the cost would be level-funded by recognizing the pension increase in the actuarial assumptions. When the increases are capped at some level, then an increasing benefit assumption might be factored directly into the pension valuation. When the increases are fully indexed, level funding is accomplished by choosing actuarial assumptions which would be applicable if there were zero inflation.

Of course, contribution levels would be substantially higher than otherwise. The premise here is that investment income on the higher asset base will

track inflation over the long term and that the excess investment income will be sufficient to provide the indexed benefits. The trick, of course, is to find the investments.

This type of funding, incidentally, goes to the heart of the issue of what is real pension cost in an inflationary environment. This subject received the attention of the PCPP this past year. At one session early this year, Mr. Herbert Heaton, Comptroller of the Rockefeller Foundation in New York, outlined to the Commission the indexed pension plan of the Foundation. The Academy of Actuaries also appeared before the Commission at a later date and commented on the so-called "Heaton" plan. I urge any of you who are not familiar with this plan to look it up. It has been discussed widely in the pension press. It was also the subject of a New York Times editorial last July 28. In simple terms it may be described as a variable annuity, funded using short-term investments, based on a 3% assumed investment return.

What investment policy will maximize returns in an inflationary economy?

Every pension valuation is based on an underlying assumption that over the long term a positive real rate of return can be earned in addition to inflation. It is the challenge of plan sponsors to lend truth to the actuary's assumptions; and find those investments which will track inflation. . . and indeed they are trying. In recent years we have seen pension funds invest in types of investments which were not used, or even available, previously. The insured guaranteed investment contract, for example, has been used to "lock in" fairly high rates of return. Those rates are currently being quoted at 12% - 13%. Real estate looks like it will be a major outlet for pension funds in the next few years. One can now expect double-digit rates of return on real estate funds. In the stock market we see investment strategies which attempt to carve out a sector of the market which is expected to substantially outperform the general market. Energy accounts and so-called "special situation" accounts are examples of this. Very recently we have seen interest in money market or short-term funds; more attempts to get those double-digit rates of return. And finally, we are seeing some attention given to perhaps the most speculative, and certainly the least traditional investments of all, the options and commodities markets and such other "exotics" as gold, diamonds, art, etc. Oddly enough, we may soon see a return to investing broadly in the stock market. Our economists tell us, for example, that total rates of return of around 15% can be expected in the 1980's and 1990's.

The interest in all these investment alternatives is the reaction to a changing environment, changing to one where inflation is expected to continue, if not at double-digit levels, then certainly at higher levels than ever before.

MR. DALE OGDEN: It has always bothered me that there are so many situations where it seems politically expedient to try pay-as-you-go funding. That seems to work fine when you have a growing economy or a growing company, but what happens in the situation where the company no longer is growing or the economy is no longer growing? The money just does not exist to pay these funds. In light of that, would you ever recommend to a client pay-as-you-go funding?

MR. GREENSTEIN: Do you mean pay-as-you-go funding on post-retirement increases? No, I would not recommend it and I think I would have to say that, in general, this is a phenomenon that you see mostly in large clients and large clients generally do pre-fund their pension liabilities. Small clients, I think, do not provide for post-retirement increases at all and therefore they can capitalize on the current investment environment which is a paradox, if you will, because we are seeing lower pension costs as a result of higher inflation.

MR. LOSK: I was interested in your comment that indicated that there is substantial employee sentiment for paying a portion of the cost of a post-retirement indexing mechanism. I wonder if you or any of the members of the panel are familiar with any program which has required the employee to pay that cost at retirement through the form of some sort of an actuarial reduction?

MR. GREENSTEIN: I have not seen that, although I have been seeing the discussion in the press and in some of the actuarial literature. There is one other source of asset that should be considered when reviewing the need for post-retirement increases. That is, if there are any savings and investment plan or profit sharing assets which also accumulate to provide some post-retirement benefit. The adequacy of the total benefit at retirement should be considered.

MR. FLUHR: Now Richard Lemieux will discuss this topic from the Canadian perspective, which may very well be instructional to those practicing in the U. S.

MR. RICHARD LEMIEUX:

#### Assumptions

What is the impact of double-digit inflation on the assumptions used in valuing pension plans? Let us first look at the so-called economic assumptions:

- inflation;
- investment return; and
- salary scale

Unless times have changed from the days I was writing the exams, the actuary has not learned much about inflation. I appreciate that it rather falls within the realm of the economist and that there are also many schools of thought within that discipline, which makes it difficult to subscribe to a well accepted theory. On the other hand, it should by no means restrain the actuarial profession from establishing proper communication channels with the economists.

Along these lines, we can only encourage the initiatives like the one taken by the Canadian Institute of Actuaries in the Spring of last year in organizing a special meeting with a number of eminent economists, as well as a panel presentation like the one this morning.

The so-called inflation assumption is the common denominator which is first established and then added onto the long-term investment return and salary progression.

Double-digit inflation is forcing the actuary to use more realistic assumptions, i.e. individually explicit as opposed to an implicit basis producing overall satisfactory and equivalent results. Multiple or varying assumptions over the projection period are also becoming more and more common as well as more complex, especially with computer facilities.

For instance, while still infrequent, there are a few actuarial valuations with inflation assumption like 12% for three years, decreasing to 9% for five years, then to 6% for a further ten years before stabilizing at 3% per annum.

With regard to the interest rate, there is evidence, as it occurred in the 40's and the 70's, that the net or real investment returns decrease during a prolonged period of inflation. The opposite was also true during the 30's when price deflation brought real interest rates up close to 6%.

While most economists argue that two-figure inflation has produced instability in our North American economy, a few assert that it is only a matter of time before we adjust. At first, it was something we have never experienced before and it appeared unbearable. As human nature has done in the past, we shall adjust accordingly: a real rate of return will be required by investors on top of inflation.

In many cases inflation, as well as union demands, has flattened the career-earnings curve, i.e. narrowed the projected spread over the employee's career.

As we just noted, we should not impute to inflation only some of the changes we have already experienced, or that are coming up.

In addition to employees' demands and needs, there will be changes in demography, working habits, social consciousness, shortage of manpower, etc. . .

While the non-economic assumptions are usually extracted from the actual experience of a plan, it might be advisable to use some judgment and make some adjustments in advance. These other-than-inflation factors will play an important role and must be taken into account.

This is very true, especially for turnover which will be affected not only by employment opportunities as inflation increases, but also by the expected shortage of manpower starting in the mid-80's. Another factor could be whether deferred benefits are fully vested, as well as locked-in and subsequently adjusted for inflation after termination of employment.

The assumed retirement age should be affected similarly by any shortage of manpower, the prospect of any indexing after retirement and the working habits, that is, opportunity of a second career.

With regard to disabilities, an increasing number of plans now provide for accrual of pension credits only while a member is entitled to benefits payable under a separate insured program maintained by the employer. In a prolonged period of high inflation, employees should be expected to go back to work as soon as possible, unless their benefits are at least partially indexed.

Design

The private pension system started in the late 40's and 50's in Canada with career average or money purchase types of plans. Then, in the 60's and 70's, there was a move toward final-pay-based retirement benefits. With the full taxability of governmental benefits, the retirement income objective is usually higher in Canada than in the United States. In a majority of plans, Canadian employees are required to contribute toward their accruing retirement benefits.

As one analyst of the pension system puts it, "The rapid expansion of final earnings plans indicates that sponsors are willing to assume the risk of experience deficiencies during inflationary periods arising with respect to active employees, because of their ability to shift the incidence back to the employees."

As a minimum, employers still with career average plans have proceeded with periodic updating of accrued benefits on the basis of current salaries.

There has been one well-publicized move in the other direction with the Provincial government of Saskatchewan changing its final pay arrangement to a money purchase plan. But there is definitely no trend in that direction for Canada as a whole.

Canada's pension system has been under intense study by federal and provincial governments in the last few years. There is widespread dissatisfaction in some quarters with the status quo and strong demand for changes both in the Social Security system and in private pension plans covering employees.

The Government of Canada's Task Force published the so-called "Lazar Report" earlier this year with a number of options and policy alternatives. The firm I am associated with sent a questionnaire to 1,746 large industrial and service employers across Canada to obtain their opinions on the ten critical policy options and measures suggested by the Task Force. We received 483 responses.

Among the inflation related issues, there were:

	<u>Yes</u>	<u>No</u>	<u>No opinion</u>
1. Strengthening the current employer sponsored pension system	79%	11%	10%
2. Move away from defined benefit plans to defined contribution plans	36%	50%	14%
3. Establishment of a system of mandatory pension plans	60%	32%	8%
4. Enlarging the Canada/Quebec Pension Plan	24%	65%	11%
5. Earlier locked-in vesting	70%	27%	3%

	<u>Yes</u>	<u>No</u>	<u>No opinion</u>
6. Updating of deferred pensions	44%	51%	5%
7. Maintenance of the real value of pensions-in-pay and life annuities	48%	38%	14%
8. Compulsory two-thirds survivorship provisions	65%	30%	5%

The vote to strengthen the private pension system is overwhelming with 79% in favor. The survey surprisingly indicates that business is ready for change in pension legislation, in sharp contrast to employer attitudes a few years ago, with respect to the following:

- mandatory membership (with 60% in favor);
- earlier vesting (with 70% in favor);
- compulsory two-thirds joint and survivor pensions (65% in favor).

While inflation can hardly be said to be the sole factor in this recent change, it has definitely contributed to enlighten the weaknesses of our pension system.

(Prefunding for) Post-retirement Indexing:

What is more natural than, after introducing a modest career-average earnings plan and then changing it to a final pay plan, to expect a move toward at least some form of escalation or adjustment to pensions in payment.

Except in the very limited number of plans providing for an automatic 2% maximum adjustment, the vast majority of private pension plans do not explicitly set aside any additional monies during the working career of members in order to grant some post-retirement indexing.

Double-digit inflation brings the question up with even more acuity with regard to the adequacy of private pensions. For years we have designed pension plans which we have praised and sold to employers and their employees. How many plans are introduced to prospective members with the following words: "Your company's pension plan will contribute to your financial security when a loss of your income will occur because of retirement".

There is one message which has been coming from employees and unions as well as employers and governments: "the viability of private pension plans depends on their ability to protect workers against inflation well after retirement".

At the last round of bargaining, the auto makers and UAW agreed on periodic pension increases to retirees for the next three years instead of other benefits to active employees. But it should be stressed that, in the United States, retirees remain contributing members of the UAW after retirement. In Canada, union members do not have the same political strength with the bargaining units since they stop paying union dues upon retirement.



As an illustration, in the pulp and paper industry, there has been updating of accrued benefits for active employees at every collective bargaining round. But nothing has ever been included in the settlements for retirees except for one or two isolated cases, although ex-gratia ad-hoc adjustments were granted by the Company outside of the bargaining process.

Over the last three or four years, a surprisingly high number of employers have granted ad-hoc adjustments in benefits to their retirees.

While the costs of these benefits have invariably been borne by the Company, it seems that these periodic boosts have quickened and the increases are growing larger.

The additional liabilities generated by these improvements have been offset by experience surplus accumulated through terminations among membership and "excess" investment earnings, as well as special contributions to be made by the employer over the permissible amortization period (that is, up to 15 years in most Provinces).

For a while there was discussion (and a restricted number of public plans have introduced it) proposing that a permanent  $\frac{1}{2}\%$  to 1% levy could be collected among active employees matched by an employer contribution, in order to pay for the current retirees additional benefits. But the prospects of an increase in the contribution rate payable under the Canada/Quebec Pension Plan, as well as the non-refundable feature of the former contribution, have cooled the interest in this proposal.

The most recent development toward improving pensions in payment has been the allocation of the so-called "inflation induced investment returns" earned on the underlying funds of current pensioners' liabilities.

The actuarial liabilities as well as the accumulated assets with respect to "pensions in payment" must be kept separate from those underlying active members. This does not have to be done physically but only by maintaining separate accounting.

In 1977, a Committee which had been created by the Government of Quebec to study the financial needs of older people and the viability of pension plans, recommended that a maximum interest rate (average real rate of return of the economy) be used in funding pension benefits and that fund earnings in excess of the latter be used exclusively to provide for additional benefits to members. Many analysts in the pension area have also come up with or supported the latter approach.

For some time plans applying to Provincial public service in British Columbia had been providing full Consumer Price Indexing on a quarterly basis. The program had been set up on a pay-as-you-go basis with the index supplements paid out of a fund built from employee and employer contributions.

New legislation was introduced last June in the British Columbia legislature to provide for a 1% contribution from employees matched by the employer, which contribution is to be directed to a separate account. The "Inflation Adjustment Account" consists of the latter extra contributions plus the investment earnings on the account plus excess investment return on that

portion of the fund assets held in respect of pensions currently in payment (over and above that assumed in the most recent actuarial valuation). Indexing is to be dealt with on an annual basis and to be limited in that the present value of the total supplements to be granted is not permitted to exceed the balance in the Inflation Adjustment Account.

The indexing is based on the full change in the Consumer Price Index subject to the foregoing limitation. When the annual indexing occurs, the present value of the pension increase is to be transferred from the Inflation Adjustment Account to the basic account which supports pensioners.

There are problem areas with regard to determining the amount of excess earnings, but these should be overcome easily once the principle of giving them back to the pensioners has been accepted. Is the accrued benefit fully funded at the time of retirement? If not, is the employer deemed to have borrowed from the Plan? How is the rate used to calculate the amount of excess earnings determined? And so on. . .

Such an arrangement is established on the premise that the investment manager will outperform inflation. On the contrary, should the Consumer Price Index increase at a faster pace than our investment yields over the long term (as sustained by the detractors of pension adjustment), not only will pension plans be in difficulty but our whole economic system will be in jeopardy. We shall then run the risk of losing much more than our pension system.

One of the risks of this arrangement would be for the fund manager to react by adopting a conservative approach toward investments and to stick to fixed-income securities. I believe that only investments in equities can ensure achievement of the inflation rate as well as a real rate of return.

Some people argue against the use of active employees' contributions to pay additional benefits to current pensioners because of the so-called "inter-generational transfer". On the other hand, the same people are letting the excess earnings realized on the underlying funds in respect of retirees to be used to pay current service costs or to improve accrued benefits of actives.

While the employer is bearing the risk of inflation prior to retirement, the retirees are taking the risk after retirement and they should benefit from any "inflation-induced investment returns". We, as actuaries, are not disclosing all the facts, and substituting demonstrations for impressions, when we say that a 1% inflation rate increases pension plan costs by 7% to 10%.

Finally, double-digit inflation will likely provoke a major change in the administration and responsibility for pension plans. Inflation threatens the viability of the pension system with the employers running the risk of increases in their costs and the employees facing the loss of the value of their retirement benefits. Facing a common enemy or danger, opponents unite their efforts in order to survive. As the saying goes "if you cannot fight them, join them". As was recently done with the appointment of the UAW President, Mr. Douglas Fraser, to the Chrysler's Board of Directors, we can see the establishment of joint committees, with equal representation from management and employees, assuming the responsibility of those Inflation Adjustment Accounts at the least. On one hand, employers do not want to pay the full bill for indexing and, on the other hand, employees are concerned about the value of their "deferred wages".

Both parties will share in the responsibility of overseeing the investment of the underlying assets as well as determining how the additional funds available from year to year will be distributed.

MR. FLUHR: I think before we get into the questions on Canadian practices and experience, I would like to ask a question of Clyde as to how he is dealing with the problem of plans with benefits unrelated to salaries -- that is, fixed dollar benefits, so that the actuary cannot then really anticipate inflation in any way.

MR. BEERS: My general impression is that the investment return assumptions under those plans are somewhat more conservative than that used for the salaried related plan, although I would need more data to back that up. But certainly the assumptions are moving up as they are for salaried plans. There are some things that we have seen recently, particularly in the multi-employer plan area, which I must admit have surprised me. I saw one multi-employer plan valuation where a salary scale was used to value a dollar per month benefit. It does a very nice job of deferring costs well into the future. I think there is a growing concern, particularly post-ERISA, in the individual employer plans with the issue of the present value of vested benefits. In the Uniroyal situation, where they declined dollar per month increases in favor of a money purchase arrangement, this may be a forerunner of situations where the very level of pension liabilities gives financial institutions cause for concern over the security of the firm.

MR. FLUHR: Mike or Richard, do you have any comments on dealing with that problem? One of the things that strikes me in what Clyde was saying is that there are situations in which an actuary's client has a salaried plan and a hourly plan, the hourly plan benefit not related to salary and in which both plans have their assets invested in the same manner, perhaps in one trust. How do you cope with the issue of investment return? Do you have the same assumption, or do you have a lower one for the hourly plan, since you cannot anticipate any increase in benefit for the hourly plan, although you know that at every negotiation, the benefits will rise.

MR. LEMLEUX: I have very limited experience, but in Canada I am not sure it would be accepted necessarily by the taxation people if you allow for future increases.

MR. FLUHR: You can be sure in the United States it would not.

MR. GREENSTEIN: I think the issue is similar to a career average plan where past service updatings occur from time to time. They are not anticipated and the liability is unknown until it is granted. I think also you can set your assumptions on the flat benefit plan with a greater certainty than you can in a salary related plan because you are not so much concerned about the relative offsets that you look for in a salary related plan. So I would say flat benefit plans are perhaps using higher interest assumptions rather than lower.

MR. FLUHR: Have you seen that?

MR. GREENSTEIN: Some.

MR. DAVID KASS: If we accept this **scenario** of double digit inflation projected into the future, that means that a dollar that is available today is a fatter dollar than a dollar that is made available at some extended time in the future. If we ask our clients to fund with dollars today in hard dollars to pay out the baloney dollars in the future, I find we get a certain amount of resistance. I suspect I am not unique in this. How do you square your responsibility as actuary to plan participants with the peculiar economic **verities** that we find in this type of hyperinflation? Also, have you had an opportunity to reflect on whether an actuary's responsibility in signing off that something is funded on an actuarially sound basis is met merely because it meets some statutory tests?

MR. BEERS: I think I can summarize the question as to why we should put any money in these plans. There is no question that if you looked at the actuarial practices in the 50's and 60's we tended to use very conservative assumptions, often entry age funding methods and the whole name of the game was high tax deductible limits, and put as much money into the plan as possible. I do not have very many companies or many clients who are putting in the maximum tax deductible limit anymore. There is a desire for lower funding levels. Part of the reason for this desire, I think, is that in the typical final average pay plan, plan benefits may be virtually fully funded on a realistic basis at today's rates. Whether that will exist 5 years from now is another question.

I do not think that the actuary, though, is in the position of trying to dictate to a client what his funding policy ought to be. The actuary's role ought to be the presentation of facts and alternatives that allow a client to understand the trade-offs that are available. The fundamental message that we bring to a client's situation is that there is a very wide range within which we can comfortably operate and that it is our responsibility to, if you will, blow the whistle when you get out of that range. It is very difficult to be precise as to where you are when you are out of that range, but I think that we would all agree that in terms of our standard practice there is an awful lot of room between the least conservative and the most conservative approaches that we are using.

MR. GREENSTEIN: I would like to add that I think the answer to that question also rests squarely on the issue of whether or not that plan will provide indexing at some meaningful level because, if it will, then as a management decision, the company has to decide if they are going to pay for it now or pay for it later.

MR. FLUHR: I think also that this issue relates to an implicit assumption, one that is never stated and rarely thought about; that is, the assumption that this economic system will survive, that it will not change so drastically that all of these assumptions are meaningless.

Earlier on, after Clyde spoke, we heard questions about an economic system in which the rate of return is exceeded by salary increases.

We all learned enough in reading Samuelson about marginal increments to productivity -- that you cannot have a viable economic system when that does not happen. Although that is still true in other parts of the world, that has not been our experience recently. I am not enough of a student of economics to know whether or not the system can survive in that situation,

but we have to make certain very fundamental assumptions, and one of them is that, whatever the funding period, the system will survive relatively intact, and that all the other assumptions in general bear some resemblance to reality. Clyde spoke of the need to look at the current circumstance and making his best judgment. All we have is our best judgment, and we are fortunate that annual valuations allow us to reconsider our judgments.

MR. PAUL JACKSON: If you had a closed economy in which you had 10% inflation, let's say, and no one ever received a pay increase and no lender got a higher rate of interest, no public employee received an increase, and no pensioner got a benefit increase, it seems clear that everybody at the end of the year would end up with 90¢ on the dollar of what he thought he was going to get. Now we're faced with a scenario where you have the 10% inflation, where certain workers indicate it is not fair to work and not have an increase due to inflation, where there is a contention that the retiree loses; therefore, we must index and give him a greater benefit. The lender has to find somebody who is willing to borrow at that rate and insists on a real rate of return. It seems to me that in order for this sort of scenario to work the people who select the lenders must locate certain sectors of society which are going to bear more than 10%, and I wonder if this system really operates this way.

Mr. Lemieux, for example, indicated that you first select the rate of inflation and then add a real rate of return for your interest assumption. It has been my experience that as inflation rises real rates of return decline and become negative. Maybe you just cannot find borrowers willing to pay that much, but what sector should be protected from inflation? Which are the sectors that should be hit with twice as much in order to balance out the total?

MR. GREENSTEIN: I am not sure I have an answer for you, Paul, but I would perhaps make this comment. I think we are just getting used to inflation at the levels that have been prevalent over the last 10 years in this country. Therefore, we are going through a period of readjustment and I think the real answer lies in the investment sector; that is, to find those assets that will produce a real rate of return over a long period even given the levels of inflation that we have. Certainly we could have negative real rates of return from time to time as inflation really goes high, but I think that it is just a challenge to the system to find those outlets that will produce real rates of return over the long period.

MR. BEERS: I think it is instructive to look at what has been happening -- as to who has suffered and who has gained over the last 15 years, in trying to answer the question of who is likely to suffer or gain over the next 15 years. Generally speaking, our data indicate that workers can achieve average wage increases very close to the rate of inflation, plus or minus a small amount, over any extended period of time as short as 5 years. In other words, the average wage increase may vary from year to year from the inflation rate, but is close to the average inflation rate over a 5-year period. Over the past 15 years, as we heard this morning, there has been a massive growth in the amount of transfer payments or free money that has been granted by the government from one sector to another. That leaves one sector which has borne the brunt of this inflation, and that is the investor.

MR. FLUHR: To what extent does the fact that the investor is bearing that brunt not translated into price increases?

MR. BEERS: I am not really sure how long this process can keep up. I think the underlying structure of business, however, is less sound today in terms of its fundamentals than it was 15 years ago. In other words, debt ratios are higher, companies are borrowing more, and I think one of the important messages of the two speakers this morning was that the indexation of benefits and other programs leaves government with less flexibility to manage our fiscal affairs. This less flexibility creates volatility in rates of return when the government does have to step in and try to alter things. So, we get 20% prime rates and people talking about the next round going to 25% or 35% prime rates.

MR. GREENSTEIN: On the subject of dual or multiple interest rates, which we have heard several times this afternoon, my question is: isn't this simply an attempt to anticipate, for some stated period, gains and losses which would be measured against what you really believe to be the underlying long-term trends? If it is true that your dual rates are applicable for short periods of time, what have you gained by doing it?

MR. KASS: To the extent that reflects your best judgment then you are going to be closer to the mark; that is, by using "a select and ultimate approach" to any of these things. Failure to do something merely because it anticipates future gains and losses would be on a par with using 1% interest and 0% salary scale and 99% employee turnover. Why don't we make our best judgment in advance if we feel that some modification in assumptions that is practical to implement will give us a better reading. If we were at 0%, 1% etc. and someone had the audacity to suggest we might move to 6% interest you would be anticipating in the same fashion. I think you would be doing something worthwhile.

MR. LOSK: I would like to make two points on that question. First of all, I agree fully with what was said just now. Actuaries, by law, now make their best estimates of future events and if multiple interest rates is the best estimate, then that is what is used. Secondly, everyone in the room, I am sure, has had a client or two ask them why if prime is at 12% you are assuming 6%? There are lots of reasons, but I simply have found it much easier to tell my clients that I start in the early years, after a valuation date, assuming something very close to what exists at the time, and then let it grade into something that makes some long-term economic sense over a period of time.

MR. FLUHR: Mike said that inflation drives the cost of pension plans down. I assume that you were referring to cost as a percent of payroll, as opposed to dollars (whatever the dollars may be worth). Also, not in relation to the income available from the plan sponsor, because as Clyde said the plan sponsor is also being devastated by inflation in his whole business, not just in his pension plan.

MR. GREENSTEIN: Yes.