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**PENSION PLAN INVESTMENT STRATEGY—
ROLE OF THE ACTUARY/ROLE OF THE INVESTMENT MANAGER**

Moderator: D. DON EZRA. Panelists: ROBERT P. MILLS, BARRY A. MORRISON**. Recorder:
DUNCAN A. MC CALLUM*

MR. D. DON EZRA: I shall introduce the subject in a moment by drawing a distinction between asset mix policy for a pension fund, and market timing. Then you will have the treat of hearing two eminently practical presentations. Rob Mills, will show you how a plan sponsor, aware of the importance of matching assets to liabilities in a banking context, follows through on the same principles in its pension fund. Then Barry Morrison will give you an investment manager's perspective on market timing - a perspective gained from one of the very few firms in Canada that actually practises market timing, with considerable success. I will wind up the prepared part of this session as a panelist, with comments on the actuary's role in these matters.

I do not believe there is any standard terminology for the two types. I have always thought of one as asset mix policy, while the other is asset mix shifting, or market timing.

When you examine the asset mixes held by a given pension fund over time, almost always the first finding is that they have varied. Usually the variation is not large: for example, it might be that the proportion of the fund invested in common stocks reached a high point of 50% of the fund and a low point of 40% of the fund, over the past five years. No matter what the actual reasoning underlying the asset mixes held from time to time, in this example it is as if somebody had decided that it is unwise to hold less than 40% or more than 50% in stocks, but that within those limits market prospects should dictate some variation in the mix.

To me, the decision to hold between 40% and 50% in stocks (whether or not this is a decision consciously taken) relates to asset mix policy while the decision as to what proportion of stocks should actually be held at any given time is a market timing decision.

* Mr. Mills, not a member of the Society, is Senior Manager, Pension Fund of the Bank of Montreal.

** Mr. Morrison, not a member of the Society, is Vice-President of Black, Galper & Heessels Limited.

Policy establishes a track to run on; market timing involves temporary deviations from that track, or short-term movements within that track, if the track consists of a tolerance range.

The distinction would not matter, except that I see the two types of decisions as having entirely different rationales. For the policy rationale, I start with the observation that we live in a world of uncertainty. This is particularly true of capital market returns. Admittedly some events, or some returns, are less uncertain than others: think of these less uncertain events as offering some safety, or predictability. At the other end of the spectrum, extreme uncertainty offers an environment that simultaneously spawns both the opportunity to do well and the risk of doing poorly. Some asset mixes (typically those low in stocks and high in short-term fixed income securities) imply that the decision-maker prefers safety to opportunity-with-risk; other asset mixes (typically those high in stocks, or these days high in long bonds too) imply that the decision-maker is more willing to undertake risk in search of opportunity; and of course there is an infinite gradation of possibilities.

The fundamental point is that, in a world of uncertainty, asset mix is a powerful way to hedge against the effects of uncertainty, if one wants to hedge. I therefore think of asset mix policy as expressing the decision-maker's risk-tolerance, his area of comfort between the extremes of safety and opportunity-with-risk. Two consequences flow from this. First, the most appropriate decision-maker in a policy context is the person who suffers from the risk or who gains from the opportunity: typically the plan sponsor in a defined benefit plan and the plan member in a defined contribution plan; but never the investment manager. Second, unless either risk tolerance or the perceived degree of uncertainty changes, policy should not change; therefore policy tends to have a long-term focus.

Once an asset mix policy has been set, it is quite feasible to hold the fund at that asset mix forever - or at any rate until the policy is changed. Nobody compels anyone else to change the mix. Even as market values change, it is always possible to re-balance the fund back to its policy mix. This rarely happens in practice.

To me the reason is simple. If short-term investment prospects look appealing for a certain asset class, it is natural for the decision-maker to want to increase exposure to that asset class in the hope of increasing the fund's return. Of course, if the manager is wrong, the fund's return will be reduced - which means that the decision-maker should only make this asset mix shifting (or market timing) move when he feels confident about market prospects.

In the light of this analysis, there are four substantial differences between policy and market timing:

- o In a world of uncertainty, risk is unavoidable; the policy decision is a way of hedging against too much risk exposure. In contrast, market timing represents a deliberate exposure to a risk which it is not essential to take.
- o Policy typically has a long-term focus, while the focus of market timing is always short-term.
- o The policy decision is usually based on financial criteria, with risk and opportunity being translated into financial criteria such as: "What effect will this have on corporate pension contributions?" In contrast, market timing is based purely on investment criteria: which asset classes are likely to perform better than others, in the near future?
- o The appropriate decision-maker in policy questions is the risk-taker; the appropriate decision-maker for market timing is the investment manager. (Sometimes the plan sponsor plays both roles.)

That concludes the background to this session. It is now my pleasure to introduce Rob Mills to you.

Robert P. Mills is Senior Manager, Pension Fund with the Bank of Montreal. His work includes overseeing the management of about 620 million dollars of pension assets held in various Bank pension plans. In his position, Rob reports to the Investment Committee of the Pension Fund Society, makes recommendations with respect to asset mix, oversees in-house investments in bonds, mortgages, money market and real estate, and liaises with external equity managers.

Before joining the Bank of Montreal, Rob worked as a consultant to pension funds on investment objectives as a Vice-President of James P. Marshall Inc., and before that, he worked as a consultant with Woods Gordon in the marketing and Economics Group. During his stay with Woods Gordon, he participated in a major study of real estate investments on behalf of a number of major Canadian pension funds. Prior to working with Woods Gordon, Rob worked as Benefits Coordinator with Noranda Mines. As you can tell, Rob has wide experience in all facets of pensions.

Rob completed a Masters in Environmental Studies at York University and a Masters in Public Administration at Harvard. His professional interests include: The Editorial Advisory Committee of Benefits Canada, The Pension Investment Association of Canada and the Toronto Society of Financial Analysts.

Finally, Rob is a keen swimmer and skier, and enjoys jokes about economists and actuaries. As I have a degree in economics and actuarial credentials in three countries, Rob laughs at me a lot. Over to you, Rob.

MR. ROBERT P. MILLS: Setting Basic Objectives

The fundamental objective of a pension fund is to maintain sufficient financial assets to secure the retirement benefits of plan members. The plan sponsor wishes to achieve this objective at minimum cost and at a reasonable level of risk.

Assuming a given level of plan benefits, the cost of funding a plan will rise or fall relative to the rate of return achieved on plan assets. It is also generally accepted that the more risk one assumes, the greater will be the long-run return on investment.

Asset mix policy is the major means and perhaps the only significant way that a sponsor can influence risk and return. Many plan sponsors, in the absence of defined investment policy, have left the asset mix decisions to their investment managers. Others have first decided to set their own asset mix policy and then selected the management desired.

There are a number of ways to define investment risk. In our case, we define risk as the likelihood that plan assets will not grow as rapidly as plan liabilities. Thus, to control risk, we made our prime objective to match plan assets with plan liabilities. This involved identification of the liabilities and selection of appropriate asset mix combinations to match the liabilities.

Identification of Plan Liabilities

We found it very useful exercise to estimate our plan liabilities based on realistic assumptions with respect to growth in wages and investment returns. To help us in setting asset mix strategy, we separately estimated two categories of liability:

- 1) Liabilities related to retired plan members; and
- 2) Liabilities related to currently-active employees.

Retired Plan Members

These liabilities are assumed to be fixed when each plan member retires and the pension for each retiree to remain constant for his/her lifetime. To the extent that indexation or ad-hoc supplements are added to pensions, these liabilities can increase. However, in our case, we assumed these payments to be constant. When discounted at currently available rates of interest on long-term bonds, the size of these liabilities become considerably smaller than would be the case using the usual conservative actuarial assumptions.

Active Members

These liabilities related to active members grow over time primarily in relation to wage inflation. Our "realistic" assumptions in estimating the size of these liabilities were similar to assumptions used by our actuaries.

Investment Strategy

In order to minimize risk, the investment strategy was designed to match plan assets to plan liabilities. For each "class" of liability, an appropriate portfolio was selected to match the expected liability.

Using realistic assumptions with respect to expected returns on assets to discount the pension liabilities, we found that the defined plan liabilities were substantially less than the market value of assets held.

The difference is noted as an asset cushion to guard against unpredictable liabilities or unfavourable investment results. The resultant asset matching requirement is shown as follows:

<u>Assets</u>	<u>Liabilities</u>
<input type="checkbox"/> Asset Cushion	<input type="checkbox"/> Less Predictable Liabilities
<input type="checkbox"/> Salary-Sensitive Portfolio	<input type="checkbox"/> Salary-Sensitive Liabilities
<input type="checkbox"/> Fixed Income Portfolio	<input type="checkbox"/> Fixed Liabilities

SELECTION OF APPROPRIATE MATCHING PORTFOLIOS

Fixed Income Portfolio

To match the fixed plan liabilities, a fixed income portfolio was established to provide a stream of income and principal that would match the stream of fixed income payments called for by the plan. This can be done by exact cash flow matching (dedication) or the more approximate "immunization" method. We chose to use the immunization approach in the hope that we could achieve incremental returns in excess of the returns achievable through a strict matching approach.

Salary Sensitive Portfolio

The objective of this portfolio of assets is to exceed salary growth plus 2%. Put differently, the minimum objective is a 2% real rate of return after wage inflation.

In order to decide on an asset mix that would achieve a real return of 2% in excess of wages at a minimum level of risk, a series of simulations were made by the pension consulting firm, Pension Finance Associates. The analysis was based on a five-year time horizon and the results were tested for under various economic conditions. Only the historic return data is shown here.

Three scenarios were developed:

- "Most-Likely" scenario
- "Inflation" scenario
- "Depression" scenario

A five-year time frame was selected as an appropriate short-term risk horizon for matching pension assets and liabilities. Assets are valued at fair market value and total return is reported as income plus capital appreciation.

The historic experience was related to economic conditions in three periods. The inflation and depression periods are easily identified. As a proxy for the "Most-Likely" scenario, the average returns over the entire 1920 to 1981 period were selected. The returns in excess of wages for these periods are shown below:

<u>Average Returns in Excess of the Rate of Increase in the Average Industrial Wage</u>	
Most-Likely	: 1920 to 1981
Inflation	: 1971 to 1981
Depression	: 1929 to 1933

For each period, the rate of return on various assets was calculated. Standard indices were used to represent returns in each asset class.

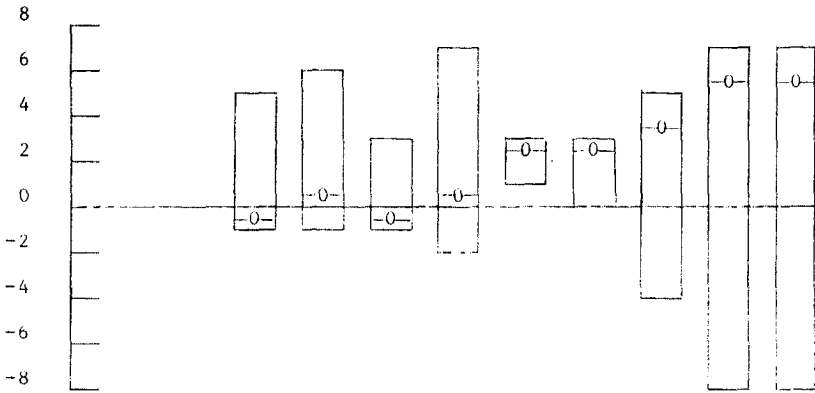
<u>Historic Experience Average Annual Return - Wages</u>			
	Most-Likely 1920-1981	Depression 1929-1933	Inflation 1971-1981
Common Stock	5 1/2%	-8 1/2%	1%
Real Estate	5 1/2%	-8 1/2%	6 1/2%
Bonds	-1 %	8 %	-5 1/2%
Mortgages	1 1/2%	7 %	-2 %
T-Bills	-1 %	5 %	-1 %

Using the above return data, numerous asset mix combinations were tested, nine of which are shown in Figure 1. The expected returns for each asset mix are represented by the bar-and-circle (-0-), and the possible range of returns is represented by the vertical boxes. Thus, for Mix 1, the expected real return is -1%, the lowest return range is also -1% (during inflation periods), and the highest return achieved is +5% (during depression conditions).

Expected Real Returns in Excess of Wages
Five-Year Time Frame

Figure 1

HISTORIC EXPERIENCE



Mix	1	2	3	4	5	6	7	8	9
Equities	0	0	0	0	0	20	35	50	85
Real Estate	0	0	20	0	40	20	35	50	15
Bonds	0	0	10	25	20	20	10	0	0
Mortgages	0	50	30	50	20	20	10	0	0
T-Bills	100	50	40	25	20	20	10	0	0

While not shown here, the results of the in-house scenarios were remarkably similar to the historic scenarios. Based on our assessment of the range of risk involved in the alternative asset mixes, Mix 3 was selected as a conservative core mix most likely to meet or exceed the wage rate under expected and extreme economic conditions.

Also, our in-house projections suggested that this mix would perform above historic standards for the next five years, given our expectation for high real rates of interest.

Cushion Portfolio

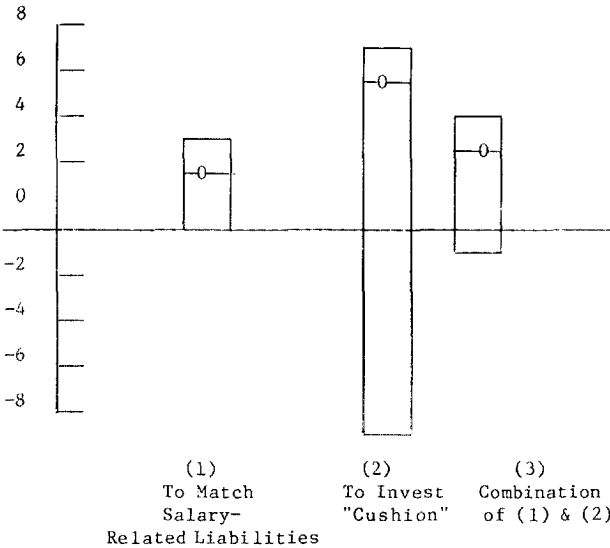
The assets available after matching the fixed and salary-sensitive liabilities were viewed as a contingency reserve. As such, our objective was to achieve high returns with a wide tolerance for risk. Scanning the alternative mixes and projected returns, we decided that Mix 9 would be appropriate.

Combined Portfolio

The expected range of returns of the conservative salary-sensitive portfolio, the cushion portfolio, and the two in combination is shown in Figure 2.

Expected Real Returns In Excess of Wages, 1982-86

Figure 2



TRANSLATING POLICY INTO ACTION

Once general agreement was reached on the overall asset mix policy, a Pension Investment Policy and Operations report was produced to document:

- Investment Strategy
- Portfolio Mix and Investment/Management Guidelines
- Performance Criteria and Measurement
- Investment Operations

PORTFOLIO MIX AND INVESTMENT MANAGEMENT GUIDELINES

Our basic approach is to stick closely to the policy mix we have adopted. We believe that any changes in the policy should only be made after intensive review, and should reflect fundamental changes in the economic environment or changes in the liabilities of the plan.

Our basic approach is grounded in the belief that no one can predict the market's ups and downs over a long period, and that the risks involved in trying to outperform the market outweigh the potential rewards. (For an interesting article on this topic, see "The Folly of Stock Market Timing" by Robert H. Jeffrey, Harvard Business Review, August, 1984.)

We made the ranges for asset mixes narrow as we wanted to ensure that the actual asset mix of the Fund does not stray too far away from the policy mix. We believe that we must stay close to the policy mix in order to control the risk exposure of the Fund.

PERFORMANCE CRITERIA AND MEASUREMENT

Our performance objectives and measurement criteria reflect the basic policy established.

In the fixed liability portion, the management objectives are:

- 1) To match the income and principal payments with fixed liabilities as projected by the Fund actuaries.
- 2) Within the above constraint, to maximize income through trading activity.

It is important to note here that market value is not considered important; rather, the matching objective and yield are the key objectives.

The management objectives for the wage-sensitive and other assets are:

- 1) To achieve rates of return in each asset class superior to returns that would be achieved simply by passively investing in Index Funds in each asset category.
- 2) To achieve incremental returns through superior investment selection.

In order to measure the performance of all the salary-sensitive portfolio assets, the return on this portion of the total Fund is compared to a benchmark portfolio. The benchmark rate of return for this portion of the Fund is created by multiplying the policy asset mix weights by relevant index returns.

EVALUATING THIS APPROACH

1. Generally, the matching approach is a sensible format for approaching pension fund risk.
2. Where pension committees are faced with responsibility for setting asset mix, a fixed asset mix policy reduces the risk that the policy will crumble in the face of extreme market conditions. Often, the best time to invest in an asset is when the economic environment is so negative that committees would be reluctant to do so. A fixed investment policy helps to avoid this pitfall.
3. While a fixed investment mix makes some sense, implementation of this approach does require flexibility. With mortgage and real estate investments in particular, there are often periods where suitable investments are simply not available. Our approach in this regard is to hold funds designated for mortgages and real estate in money market instruments until suitable investments can be found.
4. The use of a relatively fixed asset mix policy causes you to give up the potentially high returns available through asset mix shifting. However, you benefit through control of risk and "knowing where you stand".
5. The scenario approach to estimating investment risk has certain limitations. A serious limitation is that scenarios selected may not come to pass; rather, some entirely new scenario may emerge with unforeseen risk/return implications.
6. Depending on the time frame selected for analysis of risk/return, the conclusion reached can vary considerably.

MR. EZRA: It is an equal pleasure for me now to introduce Barry Morrison to you.

Barry wishes to be known that he was born in Little Current, Ontario, which is on the Manitoulin Island, just in case someone else in this room has the same distinction. He divides his education into two parts, official and unofficial.

With regard to his official education, he graduated from the University of Waterloo in 1968 with a Bachelor of Arts degree in Economics, and in 1974 he received accreditation as a Chartered Financial Analyst.

Now for his unofficial education. he received a post-graduate degree in Security Analysis after three years of effort at the Dominion Life Assurance Company, and a post-graduate degree in Portfolio Management after two years at United Funds Management Limited and four years at the Mortgage Insurance Company of Canada. Today he is one of the principals at Black, Galper & Heessels, Limited and is engaged in post-graduate work (this is a doctoral subject, no doubt) in market timing. He is also a "pit boss" at the fixed income tables. Over to you, Barry.

MR. BARRY A. MORRISON: Good morning, ladies and gentlemen and welcome to a session which, according to a study by R.M. Jeffries in the July/August edition of the Harvard Business Review, entitled "The Folly of Market Timing", will probably be a waste of your precious time. So if anyone wants to leave now, please be my guest. However, I think that you may learn something useful by staying and, if you left, you would certainly miss a subliminal message from our firm Black, Galper & Heessels, Limited. ("BGH")

The volatility of financial markets in the recent past has generated a demand for investment managers who have demonstrated skills in this area. Unfortunately it has also forced other managers who see this potential business, to attempt to adjust to this new philosophy; quite naturally there have been some spectacular failures and in fact another result has been even more volatility.

"Market timing" as it is practised by many, is doomed to failure in that it is almost impossible to accurately predict market moves on a short-term basis. Thus a frantic system of chasing markets develops with inferior returns achieved due to the reality that only a part of the move is captured and the considerable costs of transactions both in terms of commissions and the impact of acquisition/disposal activity on prices. This whole process is somewhat analogous to repeatedly shovelling snow from one side of the driveway to the other...nothing much is accomplished and the incidence of heart attack is increased immeasurably.

Hopefully, we will see more failures and more articles like that of Mr. Jeffries and people will abandon "market timing" and leave the markets all to us.

"Asset management" is a reasoned, logical, and straight forward approach which attempts to apply common sense and the principles of operating any business to the investment world. It is not steeped in tradition, does not have the oak covered walls, nor corner offices, nor billions under management, does not have a "black box" approach, and does not have extensive research departments nor trading operations. BGH is purely and simply a business. It is six partners whose game plan is to maximize revenues and minimize costs. As a business then, how do we set about to achieve our goals? Primarily we concern ourselves with existing clients in that we attempt to generate superior results and provide excellent service; secondarily, we actively market our services to new clients, but the bottom line is that we must increase the fees billed and since fees are based on market values, then we must concentrate on the market value of the assets to insure that they increase. This then becomes our goal, we must now develop and implement a game plan. So I promise not to talk about MPT, Economic Models, Beta, Style Offsets, Barr Rosenberg, etc. Today I want to talk about cars.

Let us assume for the moment that we are in the new car business and our star salesman has just sold a car for \$23,000. We congratulate him because the car has been difficult to sell, and quickly we figure out that after paying the salesman \$750 commission, we have netted \$2,250 on the cost of \$20,000. But have we really made any money or not? The answer of course lies in the cost of carrying that car in inventory for 12 months at 12.5%, which works out to \$2,500. In total then, we lost \$250 on that car but we have a happy commissioned salesman. This is not an unusual story in the investment business. In hindsight, we would have been better off putting the money in the bank and ordering fewer cars.

Thus we derive Rule #1 from this analogy that in our business we must understand the cost of doing business and that cost is the fairly predictable returns that we can earn by in effect putting the money in the bank, i.e., money market securities.

The second part of our auto business that we must understand is the inventory side of the operation. First, should we in fact have inventory and if we do, should we order red and/or blue cars? So it is the same in the investment business. Should we take on inventory in the form of stocks (blue cars) and/or bonds (red cars) or should we put the money in the bank?

We could flip a coin and decide that with heads we would order cars and with tails would leave the money in the bank. Further if heads came up we could have a second round to decide colour. But this procedure is a 50/50 proposition and is unsuitable in our business. Somehow we have to understand the odds.

In blackjack, the odds are known and if you play consistently over a period of time, the results are predictable. For example, if you have a two-card count of 17, and draw another card, the odds of busting (going over 21) are 69%. Thus to be consistent you would not take a card. In another hand if the dealer was showing 15, you know that since he must take another card, he will lose 58% of the time, and thus you would stand, i.e., not take another card even if you held 14.

Looking at the bond and stock markets, the experience in Canada, over the past 35.75 years, given 12-month holding periods, is that common stocks have outperformed cash in only 239 out of 429 months or 55.6% of the time. The bond experience is far worse as bonds have outperformed in only 47.2% of the observations. Hence in our three security universe the theoretical odds would be to hold bonds 24%, stocks 27% and cash 49% of the time.

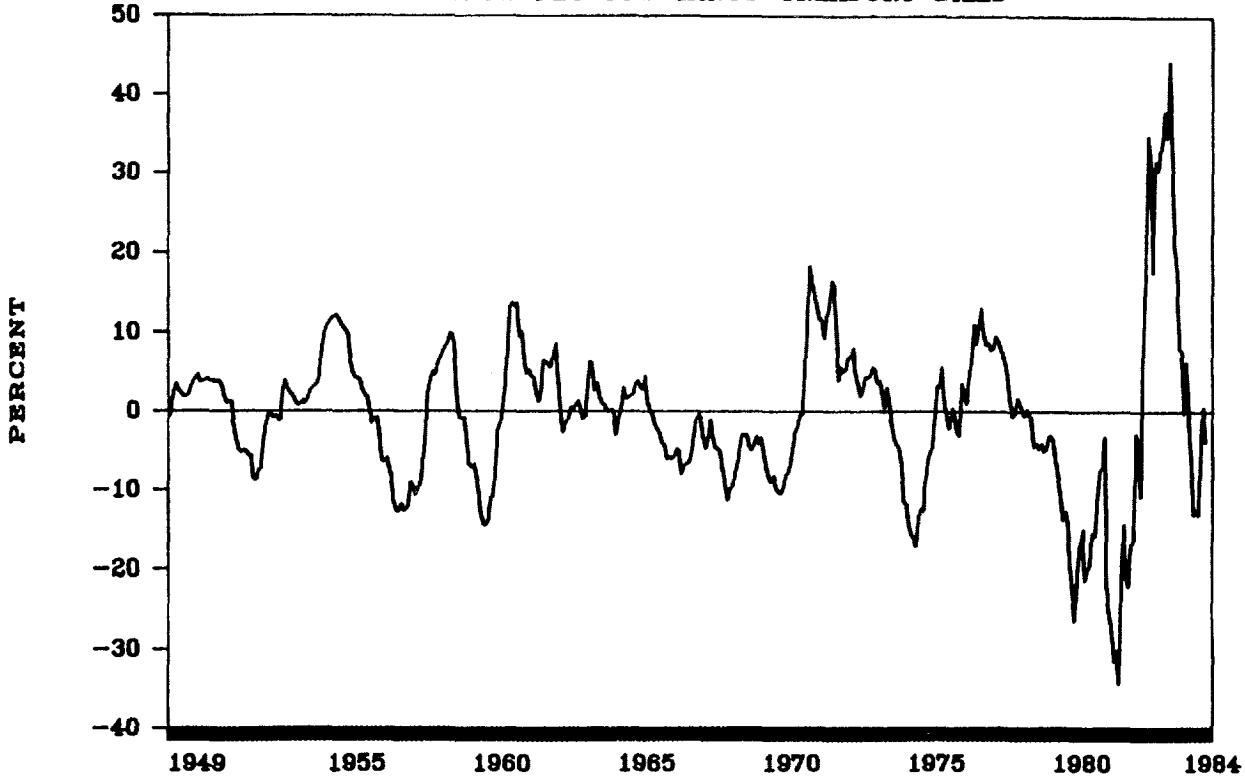
Let's look at the details on some charts. In the case of the bond market, you can see a tremendous volatility of return, and it's increased, of course. With higher interest rates, you have larger moves in the capital value for the bonds. There are periods of 4 or 5 years where you are better off holding treasury bills. It works out to 47% of the time only that bonds are better, so it means that 53% of the time you would be better off with treasury bills.

In the stock side (Chart 2), stocks tend to be even more volatile. Again, there are many observations above and below the line, but the stock market tends to spend less time in the negative category. If you add up all the points, all the 12-month observations, stocks beat treasury bills only a very surprising 56% of the time. So if we construct a very simple portfolio of bonds and stocks and cash, the odds work out that we should be in bonds 24% of the time, stocks 27% of the time, but cash 49% of the time.

Therefore, Rule #2 in our business is that if we buy stocks and/or bonds, over 12-month periods the odds are against us. In other words, we had better be prepared to sit in cash for periods of time until we see major opportunities.

BOND MARKET

12 MONTH RETURNS MINUS TREASURY BILLS



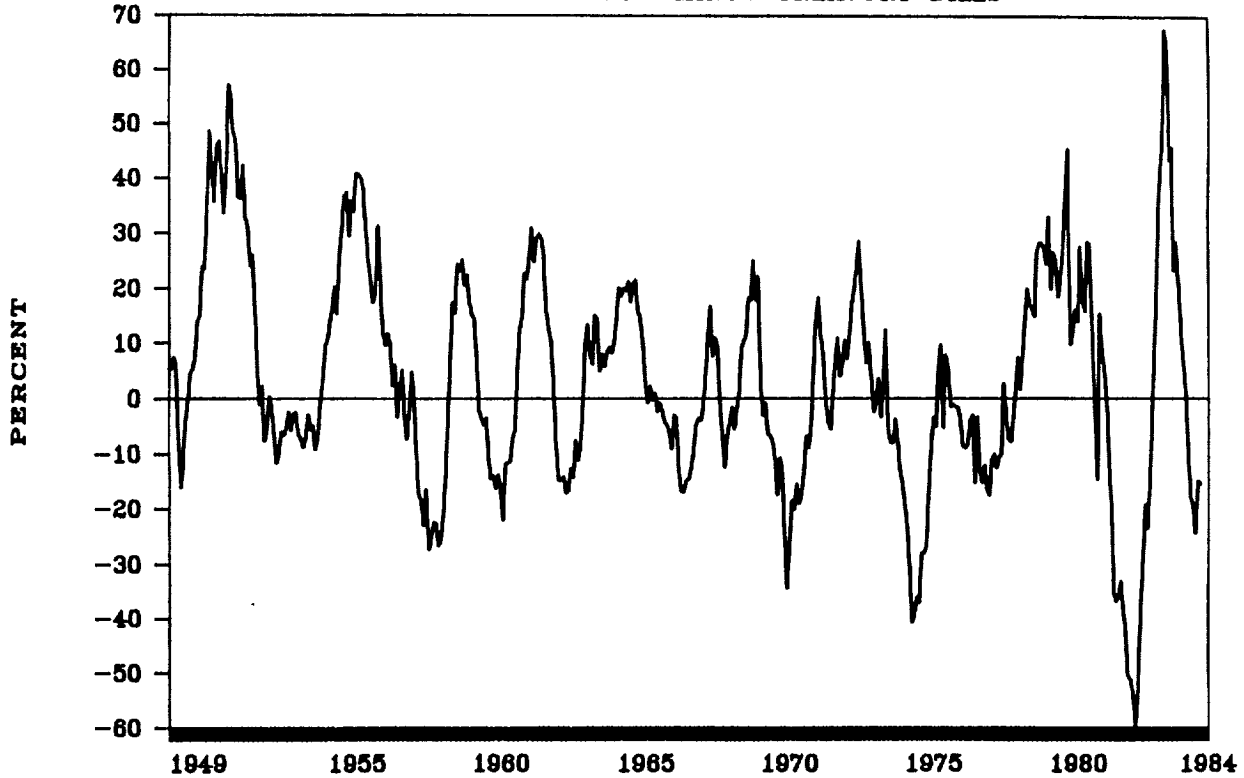
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PANEL DISCUSSION

CHART 1

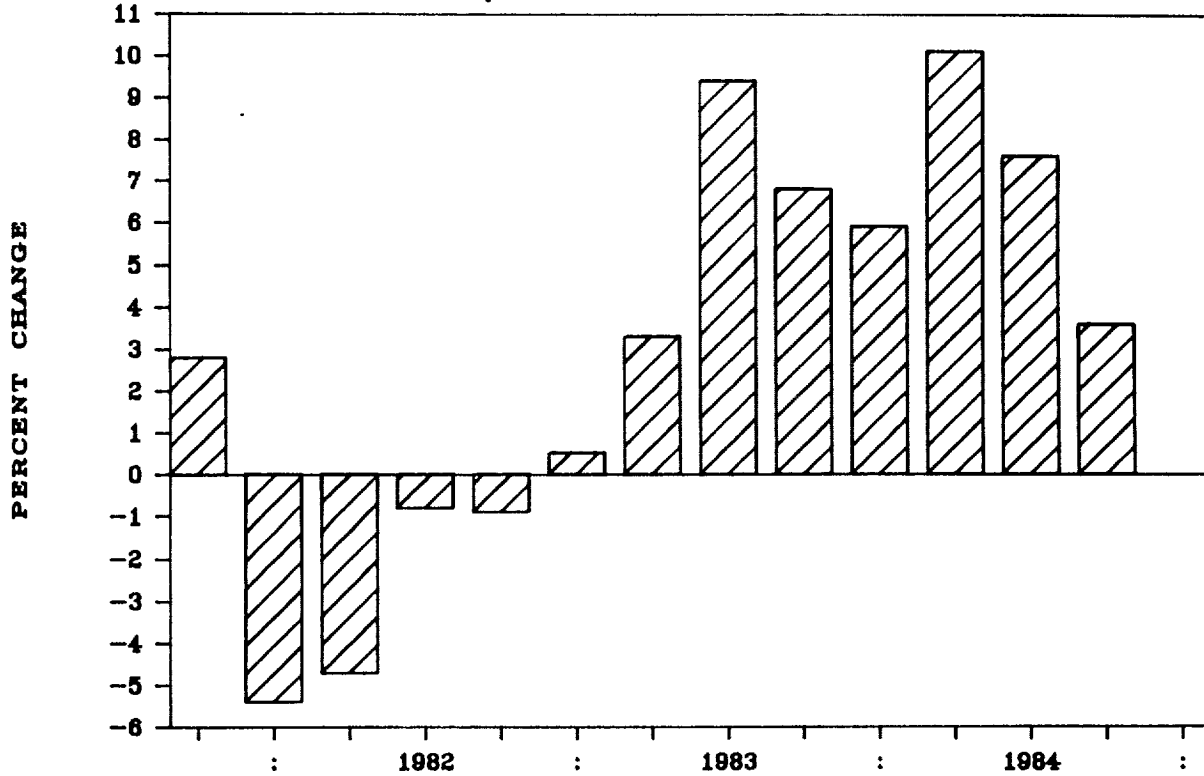
STOCK MARKET

12 MONTH RETURNS MINUS TREASURY BILLS



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QUARTERLY RATES ANNUALIZED



Understanding the basic odds in blackjack will help your success at the tables, but if you can count the cards remaining in the deck during play your potential winnings could be substantial. Thus our third Rule of operation is that we must endeavour to count the cards. The problem in the investment management business, however is that one does not at all times know how many cards are left in the deck, that cards will often disappear and that cards may appear of which you do not understand the significance. In addition, there are literally thousands of cards and it is impossible to quantify them all. However, through experience, one develops a certain feel for the cards to watch for and count.

Basic to our strategy is that we believe in market cycles. Now of course in bull markets conventional wisdom will prove why the market will never go down and in bear markets will prove that it will never go up but this is only human nature. There are cycles in every part of our very existence and as simple an observation that night follows day and day follows night, the investment business is no different. Our challenge then becomes defining location in the cycle and more specifically what is up and what is down. This is where the card counting plays an important role.

Critical cards which can be analyzed at the moment in the common stock market area are:

1. Location in market cycle
2. Location in economic cycle
3. Corporate profits
4. Valuation of stocks
5. Other market players

In the bond market we will look at the following cards:

1. Location in market cycle
2. Monetary policy
3. Fiscal policy
4. Inflation
5. Capacity utilization

Looking at the stock cards, we can start with the economic cycle. We are now ending the recovery phase (Chart 3), where you get very high rates of growth in GNP. Now it's slowing down a bit, because the economy is going through a transition to the expansion phase from the recovery phase it has been in. We have clearly 8 quarters of expansion so far, and we know that over the post-war experience economic cycles have lasted about 45 months on average, so we are about 1/2 way through the cycle, and there is still some room left. That's constructive to start.

Looking at the third card (Chart 4), people theorize that stocks are a function of future corporate profits and that a stock's value is equal to the present value of future corporate profits. As we can see, corporate profits have expanded with the recovery. We don't have a case like 82 again, where you could blindly buy any common stocks, but we are still in a position to find good, but temporarily broken corporate profits.

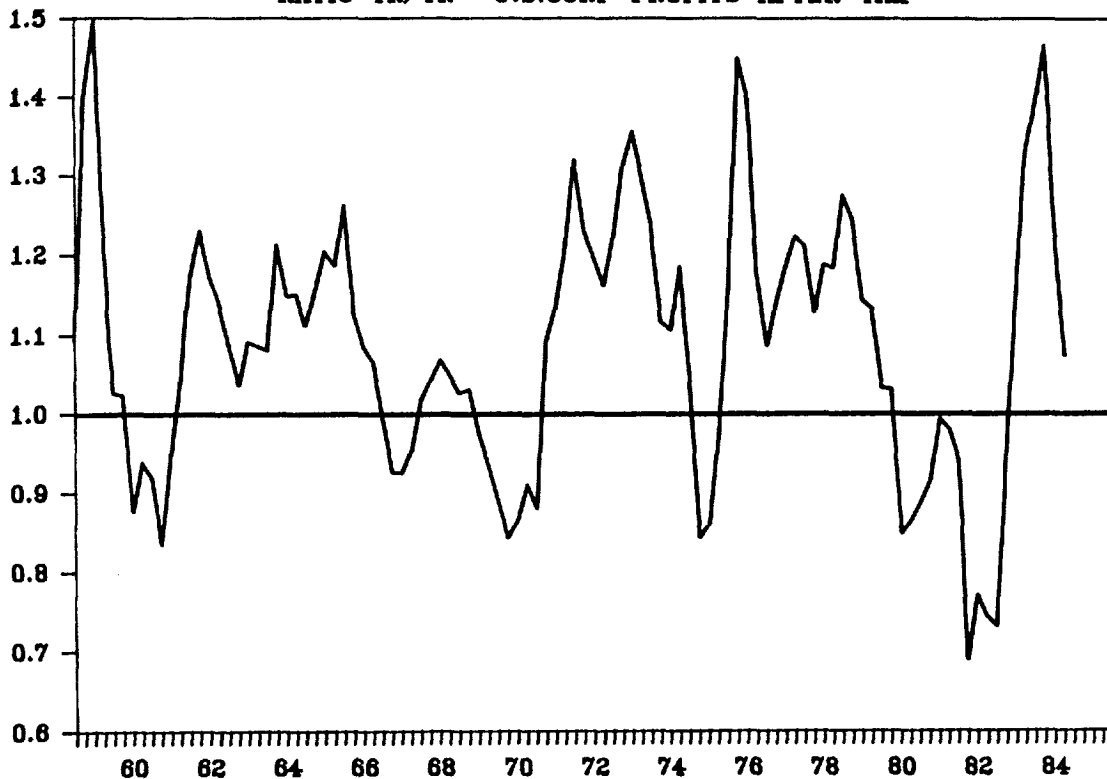
The 4th card, for the stock market is a value indicator (Chart 5). We simply take the ratio of the TSE index to the Book Value of that index and adjust the trends in that ratio over time. As we can see, again, it's much like Corporate profits - we are early in the cycle, perhaps 1/2 way through in this indicator. We are not yet at a full buy signal, but this is something we will have to watch very closely.

The 5th card is what I call the "Herd Indicator" (Chart 6). This is simply an exercise where we take the Pension Finance Associates Measurement Service in Canada and we chart the Median Equity weights of pension funds in Canada. As we can see, when we look at the 74-78 period -- pension funds basically were dead. On common stocks, tremendous value was realized as soon as they changed their minds and come rambling into the stock market through the 78-79-80 period. Again, when this indicator is very low, you can buy stocks blindly, while other managers are throwing them out the window. Over to the bond area, the Bond side was perhaps getting down in the buying range but has come back since.

Monetary policy, of course underlies the whole monetary fiscal process and the act of printing money to finance budget deficits can have profound impacts on economic cycles. When inflation gets out of control they try to control inflation and that of course has another impact. As we see, charted up here is the real U.S. monetary base, (Chart 7) which basically underlies the whole system and really measures the federal reserve's impact on what they are trying to accomplish.

CORPORATE PROFIT INDICATOR

RATIO YR/YR - U.S. CORP PROFITS AFTER TAX



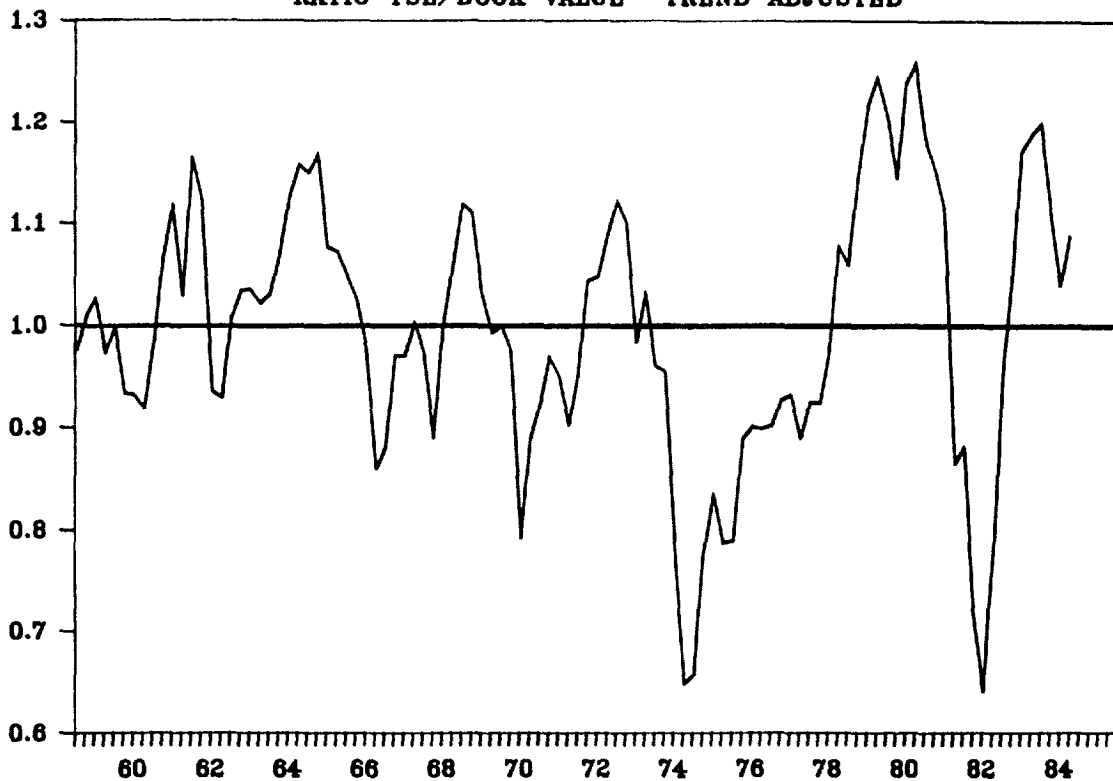
PENSION INVESTMENTS

CHART 4

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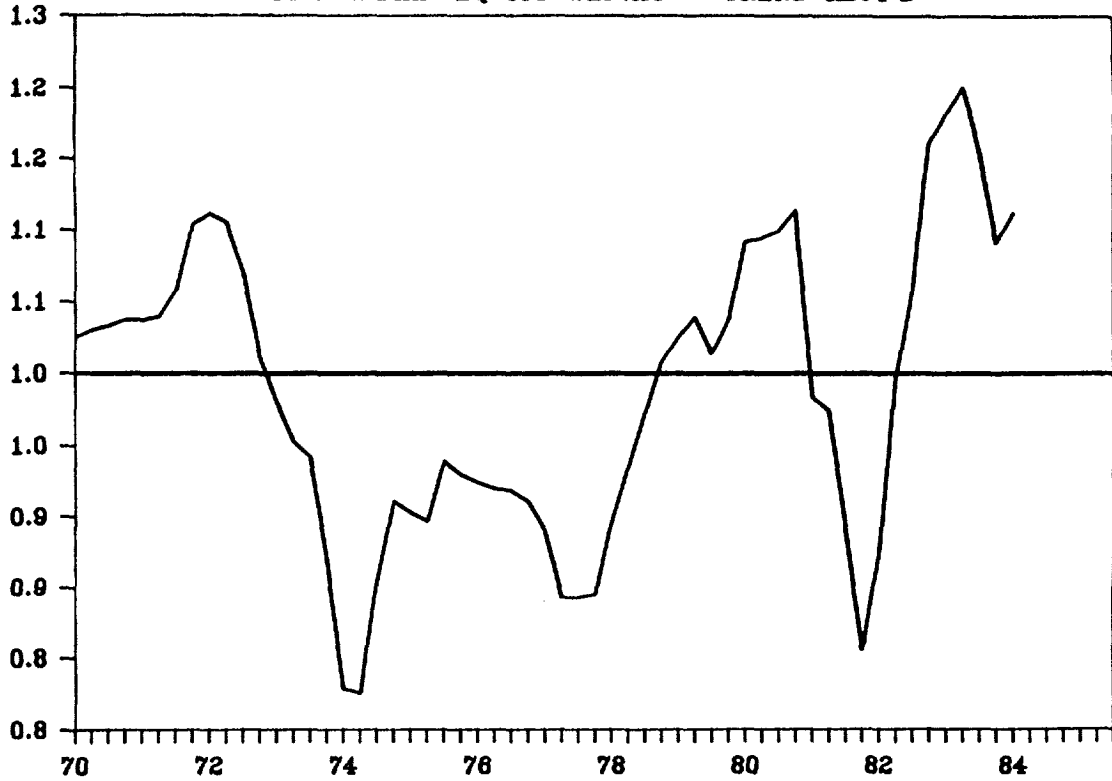
BOOK VALUE INDICATOR

RATIO TSE/BOOK VALUE - TREND ADJUSTED



THE HERD INDICATOR

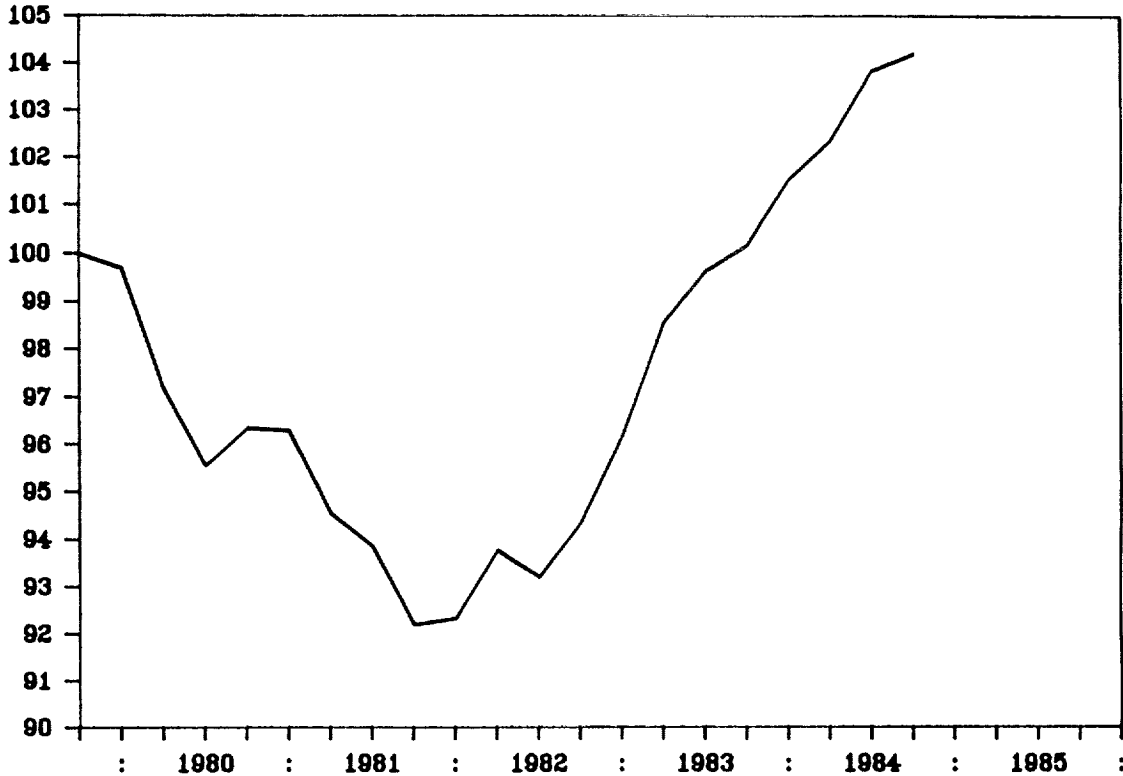
PFA MEDIAN EQUITY WEIGHT - TREND ADJT'D



U.S. REAL MONETARY BASE

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PANEL DISCUSSION

CHART 7

Since the collapse in the summer of 82, we can see that they panicked and started printing money again and it's not unusual to see the type of economic recovery we have had. They are printing far too much money, so that's very negative for bonds because as we get through the cycle inflationary pressures come back and we have to start the whole process again. So you have lost your window on the bond market from a monetary point of view.

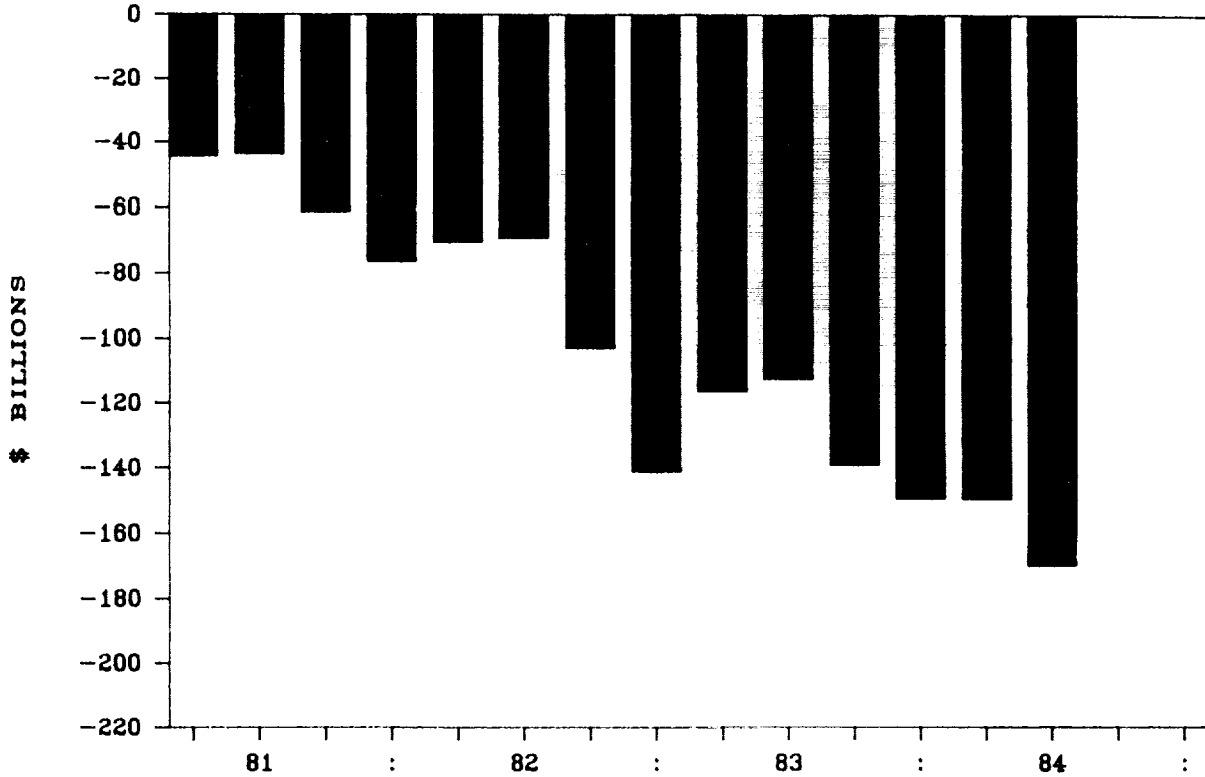
Looking at fiscal policy (Chart 8), the next chart is a slightly different way of looking at the U.S. federal deficit budget situation. It shows a cyclically adjusted deficit that tries to take out the impact of the economy on the deficit. We know that as you go into a recession your revenues drop off, the expenditures pick up through transfer payments and so on, so the deficit really goes higher than it would in a normal part of the economic cycle and conversely, when you come out of the recession and into recovery, revenues pick up very fast and expenditures slow down. So what we would expect to see, of course, is not this type of a picture. We have had a serious deterioration in the U.S. Federal deficit. What this says to me is that any new revenues coming in are being spent. They are not being used to pay down the deficit. The problem here, of course, is that they are not preparing for the next economic recession, and perhaps the next time around we will go to a 400 billion dollar deficit, and then 500.

The inflation chart (Chart 9) is extremely important to our view at BGH. We believe that interest rates are simply a function of the direction of inflation, and that if inflation rises or falls, interest rates will ultimately rise or fall as well. It's not a perfect correlation but over time, it hasn't been too bad. We have had a tremendous decline in inflation and I guess you could like bonds if in fact it were going into negative territory, but the decline is over, we have seen the bottom of inflation. It is hitting back up the other side now. Very negative for bonds.

The 5th key bond card (Chart 10), is capacity utilization. We have observed it over time, and once the U.S. economy goes through the 82% capacity level, surcharges in materials, labour and so on, start to develop, and you ultimately see a pick up in inflation. You can see in the past it has been lagged anywhere from 60 to 90 months before you see the inflation rate picking up. We have gone through the 82% level. September will be reported this afternoon probably around 82.9 or 83%. So again, that's negative from a bond point of view.

CYCLICALLY ADJUSTED BUDGET DEFICIT

2200



PANEL DISCUSSION

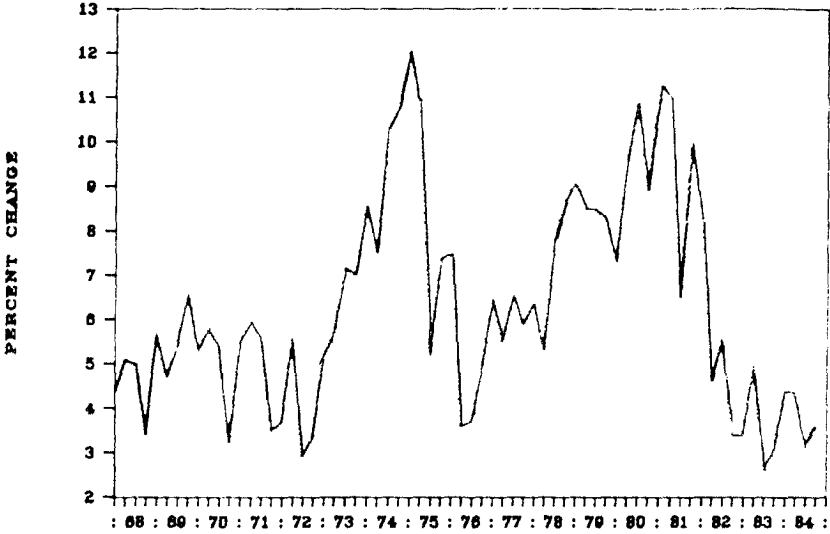
CHART 8

U.S. CONSUMER PRICE INDEX

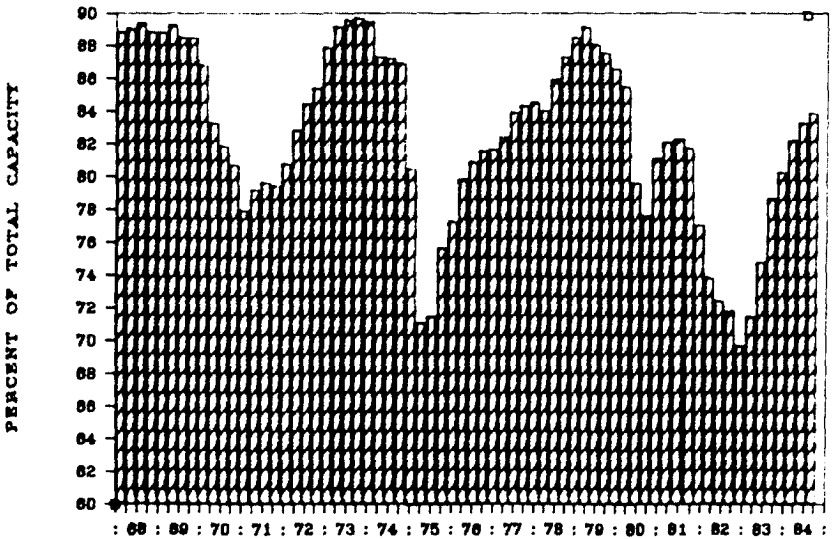
SIX MONTH CHANGE ANNUALIZED



U.S. INFLATION RATE IMPLICIT PRICE DEFLATOR



U.S. CAPACITY UTILIZATION RATE



So adding this all up, remembering again looking at the odds of the business, we conclude that a mix in our proposal at the moment, would be the whole roughly 50% in stocks, 50% in cash 0% in bonds, and the stocks have only been increased in the past 2 or 3 weeks. We have moved that up about 25 or 50%. We are looking for a second leg in the stock market - an inflation leg commodity based type of market cycle.

We would expect the following returns from each category and would weigh a portfolio as follows:

	Expected Return	Portfolio Weight
Cash	12% - 14%	50%
Bonds	0% - 10%	-
Stocks	20% - 30%	50%

Of course we are hedging to a degree at this point in the market cycles, but as in blackjack, the cards showing at the moment and the cards that you have counted, and hence have a feeling for the ones that remain in the deck, do not favour betting all of the marbles on this hand. We know that there will always be more "hands" dealt as the casinos are open 24 hours a day 7 days a week, and that there will be points in time when we will bet heavily and other times when we get up from the table and cash in our chips.

Over the past 10 years, we have made numerous moves in and out of markets and our average positions have been:

Cash	39%
Bonds	30%
Stocks	31%

So we followed our first Rule in that cash has been the favoured category. The success of our decisions to take on inventory in the form of red and/or blue cars then will be measured by the rates of return we have earned. As we can see from the PFA universe, the annual results have been good, but not spectacular. The scoreboard reads:

Quartile	No. of Times
I	4
II	5
III	-
IV	1

Characteristically, we find that we tend to be early getting out of markets, i.e., selling on the way up and then early entering falling markets. Such was the case in the 1979 to 1981 markets as we turned in two second quartile and one fourth quartile performances and over the three-year period ranked 60th percentile. This relative under-performance was caused by selling stocks too soon in 1979 but it did crash later, and this move proved to be correct and by buying bonds too soon in 1980 and 1981, but being vindicated in 1982 and 1983 by the largest bull market in history. Thus, we reached a point in 1982 when all the cards were right, we ordered all the red and blue cars we could afford and braced ourselves for the action. As at September, 1982, the cash position was 3%. We locked the doors on the dealership and waited until the lineups were long enough and impatient enough to pay premium prices for our inventory.

In the 12 months ending June, 1983 our funds earned in excess of +60% and ranked around the 5th percentile.

By January 1984, we had sold all of the red cars (bonds) and held 70% of the portfolio in Treasury bills and the balance in stocks.

The reality of the investment management business and the mechanics of performance measurement are such that to rank in the first quartile over time does not require that you rank there in each measurement period. In fact, in our case even though we have only been in the first quartile 4 times out of 10, we rank in the 5th percentile over the compound periods of 2 through 10 years.

While on the topic of measurement services, we would suggest that with an active manager such as ourselves that only pages 1 and 2 are relevant, i.e., total fund - annual returns and total fund - compound returns and that the other 60 or 70 pages are meaningless. In fact we have found that the bulk tends to confuse not only the issues but also our clients.

From an actuarial point of view, we would make two observations: Market values are all that matters and secondly since we expect to be evaluated over a reasonable period such as 4 to 5 years then returns in the total fund should be based on the same time frame.

In conclusion, I apologize for being more bliminal than subliminal and would leave you with this analogy to remember this presentation. The Titanic in its time offered supreme luxury, unquestionable safety and generally the prospect of a very pleasant, rewarding and exciting cruise. This is not unlike the euphoria that surrounds bull markets in bonds and stocks. However, there comes a point on the voyage where the safest place in the ocean becomes the iceberg (Cash). I can personally attest to the fact that being on the iceberg is a cold and lonely place, but progress while slow is steady and predictable. It is also the perfect spot to watch the Titanic go down with most of the confident passengers onboard.

MR. EZRA: And now for the last of the prepared presentations: the actuary's role in the context of actuarial assumptions, asset valuation and investment objectives.

In general, I think it is useful to bear in mind two guiding principles. First, in areas where the actuary is qualified to help, be helpful. Second, in areas beyond the actuary's professional competence, do not hinder. While these are as unexceptionable as motherhood, they are ignored surprisingly often. Let's consider actuarial assumptions first.

The assumptions actuaries use in formal actuarial reports are invariably cautious, both because professional training requires it and for a number of other reasons, typically the desire to create a contingency reserve against adverse economic experience, or to pre-fund benefit improvements that have not yet been promised. In my experience, a plan sponsor finds it very helpful to have "best estimates" of what his current plan's obligations amount to, and what future improvements might be worth.

This helps in many ways:

- o Knowing realistic values of these amounts (however subjective they may be), the plan sponsor is in a position to make an intelligent decision on whether he wants to fund for improvements in advance of granting them, or after granting them. This is an area where the actuary is pre-eminently qualified to help. The plan sponsor then knows how much of a cushion is being implicitly built into the valuation.

- o Further, this approach shows clearly that the actuarial assumptions used in the formal report are not meant as best estimates of the future, but are simply tools for creating a cushion of the desired size. It is in this context that a discussion of whether 5% or 6% is a more sensible actuarial "interest rate" assumption makes sense: which one creates the appropriate cushion? Heaven knows it is very difficult to explain actuarial techniques to plan sponsors, and using assumptions that both actuary and plan sponsor acknowledge as unrealistic is no help to the profession; but as a tool for implementing funding decisions, it all makes sense.
- o A further advantage of this approach is that an estimate of the size of the cushion can be very useful in helping the plan sponsor decide on investment risk tolerance.

So in setting actuarial assumptions, the actuary can contribute a great deal as an adviser -- but he has no expertise as decision-maker in funding policy matters. There I think his decision-making should be confined to determining whether the assumptions and methods necessary to implement a funding decision are acceptable to or offend his professional conscience. Offence could be caused by cushions that are either too small for benefit security or too large for tax deductibility.

Next, asset valuation. While the investment side of pension funds is not one where actuarial training provides any special expertise, the actuary is still responsible for valuing assets in the formal actuarial report. Here I believe the actuary should consciously avoid hindering the investment activities of the fund. I want to make my point by referring to a specific case that I am aware of.

In this case, there were three different asset valuation methods used simultaneously, for different asset classes. In my experience, that is an instant danger signal.

Market value is the natural starting point for asset valuation, in the sense that it reflects an investor consensus on the impact of changing economic conditions on the worth of the assets held. There are some theoretical reasons why market value may not be entirely appropriate for use by pension funds:

- a) pension funds can usually take credit for the illiquidity premium contained in security prices, since pension funds are not forced to trade;

- b) market prices are set by some mixture of taxable and non-taxable investors, so they may not represent the worth of the assets to purely non-taxable investors such as pension funds;
- c) market prices are set, not by all investors, but only by those executing trades, so market prices represent a consensus at the margin rather than a consensus formed by polling all holders of securities; but they cannot be too far out from an overall consensus without triggering large-scale buying or selling that readjusts the prices appropriately.

In practice these objections are outweighed by a single overwhelming virtue of using unadjusted market values: the unadjusted values are objectively set (in the sense that the plan sponsor, the investment manager and the actuary play no part in setting them), whereas any adjustment to reflect the three theoretical reasons set out above would have to be subjectively assessed. Note one other point: any adjustment for the three reasons would be in the nature of technical adjustments, and any post-adjustment valuations would still reflect market movements. In other words, such adjustments would not be smoothing in their effects, but would still reflect market volatility fully.

In this case there were two departures from market value:

- o certain immunized bonds were valued by discounting them as if they yielded 6% per annum;
- o equities were valued by first establishing an "expected" rate of return of 6% per annum, and then moving this "expected" valuation one-fifth of the way towards market value each year (subject to the final value never being more than 20% away from actual market value each year).

Each of these departures from market value has a different rationale.

The immunized bonds have a financial rationale. This bond portfolio is so constructed that it has the same duration as the pensioner obligations. With this degree of matching between these assets and these obligations, these assets will always be sufficient to meet these obligations (subject to the absence of extreme mortality fluctuations or capital market conditions). This is very like an annuity purchase. Consequently it is legitimate to place identical values on these assets and liabilities.

The natural way to achieve this is to value them both at their market values. But the Pension Commission of Ontario will not permit the use of current market yields to value these obligations, legitimate though such a course of action might be; the PCO insists on the use of a lower discount rate, thus effectively forcing an overvaluation of these obligations. The corresponding overvaluation of these bonds is a direct response to the PCO position, and achieves the financial goal of placing identical values on these assets and liabilities, in conscious pursuit of a minimum funding policy, avoiding any valuation cushion.

There was no implication in this action that the bonds are undervalued by the market, or that one day they will be worth the much higher value placed on them in the actuarial valuation. The sole purpose was to remove that group of assets and obligations in considering funding policy. The fact that immunization is a very constrained investment policy, and might hurt the fund's return, was acknowledged as an acceptable investment constraint, in order to achieve the minimum funding objective.

In those circumstances, I could not see that asset valuation method for those bonds as being a hindrance.

I came to the opposite conclusion with the fund's stocks for the following reasons:

Suppose first that stocks return 6% every year, based on market value changes and dividends paid. Then the actuarial valuation of the stock portfolio will coincide with the market's valuation each year.

Suppose next that stocks do not produce identical returns each year, but on average they return 6% per annum. Then the actuarial valuation of the stocks will sometimes be above market value and sometimes below, but the long term trend will be identical. The actuarial valuation then represents purely a smoothing technique, reflecting smaller fluctuations than market value, but without any persistent upward or downward bias.

Now suppose that, in addition to annual fluctuations, stocks produce an average return in excess of 6% per annum. Then the actuarial valuation method becomes more than just a smoothing technique. The market value will now usually exceed the "expected" value, and most of the time the "expected" value will have to be moved upwards one-fifth of the way towards market value. After a while, the compounding effect of the market value returns in excess of 6% per annum will be so powerful that two curves (market value and "expected" value) will diverge substantially and the actuarial value will fall to the bottom of the 20% corridor and be pegged there almost permanently.

This implies that for most of the time stocks will be valued below market, if their actual long term average return exceeds 6% per annum. The actuarial valuation method thus produces a downward valuation bias against stocks. My fear (and I have seen it happen) is that this could easily produce a bias against stocks in the fund's investment policy, since in the long term other asset classes have no bias against them in the actuarial valuation. Think of it this way: if at the end of next year the actuary is going to value bonds at market and stocks at 80% of market, wouldn't the plan sponsor have to anticipate a vastly superior stock return before he committed any more money to stocks? Even more: wouldn't he be very tempted to sell stocks and reinvest in bonds, simply to have every 80 cents of value placed by the actuary on stocks written up to 100 cents of value placed by the actuary on bonds? (Imagine the impact on contributions!) Any bias against stocks has very serious adverse consequences for the fund's future investment returns.

And of course the reverse happens if the long term return on stocks averages less than 6% per annum; then stocks are given an artificial appeal by the asset valuation process.

The obvious question is: where did the 6% figure come from? The asset valuation method is only unbiased if somebody believes that 6% per annum is the most likely long term return on stocks. In this case, nobody expressed this opinion. Rather, 6% was used because it represented the discount rate for valuing the plan's obligations.

This is a gross distortion of the way in which the 6% figure should be interpreted: not at all as an expectation, but purely as a tool for establishing a funding target.

While it is easy to understand the desire to smooth out the effects of the large fluctuations that occur in the market values of assets, it could be better done in either of the following ways:

- o Value assets at market and obligations at their best estimate, which implies changing the valuation basis for obligations as the economic forecasts implicit in market prices change. However, this would throw the Pension Commission of Ontario into great confusion and they would almost certainly refuse to accept valuations on this basis.
- o Value obligations artificially (as at present), and smooth the aggregate market value of fund assets except that it is still all right to treat the immunized bonds separately).

The huge advantage of smoothing the aggregate fund value is that it does not distort the market's comparison between different asset classes. It is thus neutral with regard to asset mix policy, which is perhaps the most important element of a fund's investment policy. In my view, any asset valuation method which is not neutral in its impact on asset mix policy should definitely be rejected for use.

If there is to be smoothing, there must be some base or long term trend around which smoothing takes place.

For reasons already explained, the discount rate used for valuing obligations is not suitable. The most suitable rate for an asset valuation method is one that reasonably reflects future long term expectations.

One method would be to postulate that safe investment returns (i.e., excluding the "risk premium" in stocks) might be expected at (say) 2.5% per annum in excess of inflation in the long term. Then the "expected" rate of return each year, instead of being 6% per annum, becomes the actual experienced rate of inflation plus a further 2.5%.

This also has the advantage of linking the rate of asset increase to the rate of liability increase, since it is that very same rate of inflation that is the biggest influence on the rate of salary escalation which affects the data underlying the valuation of obligations.

I have discussed asset valuation at some length, because in my experience this is an area in which, despite the best of intentions from a funding perspective, actuaries often unconsciously become a hindrance in the execution of investment decisions.

Finally to investment objectives, and my comments here will be brief.

In the actual establishment of policy and objectives, the actuary's role is potentially very valuable, because in my view an understanding of the obligations is essential for proper planning of the asset side of the equation, and who but the actuary can provide that understanding? Actuarial projections of cash flow, assets and obligations are frequently used in this context, though I must point out that the degree of detail built into such projection models for benefits planning purposes usually represents gross overkill for asset mix policy purposes.

Objectives, I think, are frequently confused. I want to draw a distinction between pension financial objectives and pension investment objectives. From a financial viewpoint, of course it is important to a plan sponsor to have his pension assets grow faster than his obligations. Some salary-related or inflation-related measure, such as "inflation plus 3% per annum", thus becomes an important financial benchmark against which to compare the achieved investment return. But I think it is irrelevant in judging whether or not to be pleased with the investment manager. The manager has no control over the obligations or inflation. In the capital markets, he is a price taker, not a price maker. So if the markets do not permit the assets to grow faster than the obligations, that is bad news financially, but do not blame the investment manager. The appropriate investment benchmark is related only to the capital markets, and it should be some neutral blend, or index, consisting of the securities from which the manager can choose.

That concludes the prepared presentations.

MR. JIM BIGGS: I was particularly interested in your discussion of the method of asset valuation and the impact it may have on the investment process. I think what

concerns me is that you seem to be suggesting that the plan sponsor doesn't know what the actuary is doing in adopting this asset valuation method and therefore he is being misled by the results. Isn't it perfectly credible that just as the plan sponsor understands that the actuary is using a 5% or 6% investment return assumption after consultation with the plan sponsor in determining funding targets, that it may be appropriate to use an asset valuation method which may have a similar conservative bias so long as the plan sponsor fully understands that this is a part of the achievement of a particular funding target?

MR. EZRA: You are quite right and I guess the point I would like to clarify in what I said is that I don't think there is the slightest problem in a conservative asset valuation bias in order to build a cushion there as well as in the liability side.

I think the main area of problem is when we value different asset classes in different ways and we have a conservative bias in some asset classes and not in others. In other words, where the market's relative valuation of two asset classes as being distorted by the asset valuation process, that is the problem. There is no problem at all, you are quite right, in building conservatism into the general asset valuation basis.

MR. V. SCHUROWLIEW: Mr. Morrison, you spoke a lot about investing in bond market movements and stock market movements. I am mainly interested in mortgages and if you have any comments to make about your investment policy in mortgage over the past years, I would really appreciate it?

MR. MORRISON: I did not get into how we accomplish moves, but I think you could tell from the types of moves that we have made in the past ten years that we require extremely liquid marketable securities. In fact, our investment universe is very narrow. At the moment, our short term investments are strictly invested in treasury bills because interest rate spreads do not justify moves into other paper in Canada. We have a problem selling treasury bills to buy bank paper and pick up 5 cents in yield. This is a classic error in our view. In the bond area, we limit ourselves to Government of Canada bonds and perhaps 2 provincial bonds and 5 corporate bonds, but we are emphasizing liquidity and marketability. In stocks, we have a universe in Canada of perhaps 80 stocks - again, the most liquid and marketable securities.

From our point of view, we cannot consider mortgages because although they are easy to buy, they are often very difficult to sell. You do not have the liquidity and the marketability that would allow us to make moves. We think we can generate returns in trading Canada bonds that will exceed a passive approach in the mortgage area. So, for our style, mortgages do not fit. I could say the same about real estate or venture capital deals, or private placements - we restrict our universe to very marketable situations.

MR. MICHAEL COHEN: I wonder if I could ask the panelists how they view what one might call the new technology in financial markets - things like options and financial futures. Would any of them view these as suitable pension plan investments or strategies for enhancing investment performance?

MR. MORRISON: Again, we have a problem with options. You are paying a price in the option for security. If we believe that an asset is going to decline in time, then we will sell it. The other problem we find, especially in Canada, and it is not the same case in the United States, is that the markets have not really developed, which leaves low levels of liquidity and marketability. They are very small markets. They are fine for individuals with 1,000 or 10,000 shares.

From a large pension point of view, we really cannot see the value in it. Now there are managers who have developed strategies and have added incremental returns. I have seen all types of managers who will show you spread training techniques in the bond area that add incremental value. They talk about adding a 1/4 or 1/2 point, but I think they are missing the big dollars when they spend too much time on these small potential rewards.

MR. MILLS: We have not looked at these seriously. I see nothing wrong with using them, but as Barry says, it is the question of whether you are making any money using them that concerns us. Given our asset mix policy, I would have liked to have been able to buy real estate futures but they are not sold.

MR. BIGGS: Barry, going back to your comment with respect to mortgages. I do not know what the situation is here in Canada, but in the United States, we have a substantial body of mortgage backed securities available which are readily traded and liquid. Do you have such securities in Canada, and if you did, would your attitude be different?

MR. MORRISON: No, we do not.

MR. BOB CLANCY: Mr. Mills, regarding asset mix, I am not really sure I properly understood all the underlying assumptions with regards to your 3 scenarios and the meaning and range of results that you can generate with different asset mixes, but I do know that there are some consultants who I think have done a similar type of thing. Looking at correlations of returns and average returns over various time periods, and using some kind of optimizer effectively, they have tried to construct something like an efficient frontier which, for a set definition of risk, (i.e., standard deviation of return), will generate a recommended asset mix. Is that really a very different approach from what you are talking about, or is it similar?

MR. MILLS: I am glad you brought that up, because it highlights one of the key weaknesses of the whole scenario process - that people start believing in them.

The thing that worries me most about our scenarios is that inevitably some totally different scenario will evolve. For example, we might have high interest rates with low inflation, but most of the historical scenarios do not include high interest rates with low inflation. Scenarios usually have the two moving in sync.

I strongly do not like the correlation approach because I don't think correlations hold up over short time frames, like 5 years. If you are going to do your asset mix for 20 years, you might as well go 100% equities. But if you are worried about risk in the short term, I don't trust the correlations because we have had that - high interest rate, low inflation and they were not in anybody's scenarios.

We use the scenario approach to impose a certain level of discipline and to prevent glaring inconsistencies in our assumptions. However, we do not really believe that we truly optimize.