RECORD OF SOCIETY OF ACTUARIES
1979 VOL. 5 NO. 4

THE IMPACT OF INFLATION ON PENSION PLANS

Moderator: DONALD S. GRUBBS, JR. Panelists: PRESTON C. BASSETT, RAYMOND E. COLE, WILLIAM A. DREHER

1. Inflation outlook

2. Implications of continuing high inflation (on benefit adequacy, retirement patterns, plan investments)

3. Legislative reaction, e.g. Williams/Javits proposal to mandate cost-of-living increases

4. Salary scale, interest, and cost-of-living assumptions relationships

MR. DONALD S. GRUBBS, JR.: Inflation is one of the most challenging problems facing private pensions today.

The first part of that challenge is the effect upon those whose needs the pension plan was designed to help meet - the retirees. Has anyone ever adopted a pension plan which stated that each year after retirement the amount of pension would be automatically reduced by an unknown amount ranging from 3% to 13%? Of course not. Yet this is the practical effect of inflation on most private pension plans. Workers who retired 12 years ago on what they thought was an adequate retirement income have seen their pensions cut in half by inflation. This gradual reduction to poverty is a problem which must be solved.

Some allege that the situation is not too bad. The portion of retirement income derived from Social Security is adjusted for cost-of-living increases. The need for income, they argue, decreases as people get older, so cost-of-living increases are not needed in private pension plans. A profession which endeavors to substitute facts for appearances and demonstrations for impressions needs to carefully examine this contention.

Some who make the decrease argument confuse the question of replacement ratios with the question of changing needs after retirement.

The replacement ratio, the ratio of the initial amount of pension to the level of pre-retirement income, should consider the difference in taxes before and after retirement, the elimination of work-related expenses such as commuting to work, and other changes in expense which occur at the point of retirement. But this is irrelevant to the question of changing needs as the retired worker moves from 65 to 75 to 85.

Suppose there were no inflation. Would the need for income of a retired worker remain constant, increase, or decrease as he moves into his 70's and 80's?

Some expenses might decrease; some people become less active as they grow older, make fewer trips, play less golf. Other expenses might increase; on the average there will be increases in medical expenses not covered by Medicare, and some people require a housekeeper or nursing care when they become no longer able to care for themselves. Many expenses, such as food, utilities, and property taxes, might remain approximately constant. In the aggregate, do the needs for income increase, decrease, or remain level? I know no data to answer this question, although research currently being conducted can be expected to give us some answers next year. In the absence of such data, my impression is that the needs of the average retiree remain approximately constant during the retirement years. If that is correct, he will be gradually reduced to poverty unless his entire retirement income keeps pace with inflation.

Another aspect of inflation is its effect upon the terminated vested worker. The individual who works 10 years each for 4 employers will need as much income as the individual who works 40 years for one employer. But inflation erodes the value of terminated vested pensions, effectively defeating the purpose of vesting.

The other challenge of inflation is the challenge of cost. Most pension plans today are final average pay plans, which automatically adjust for inflation before retirement. Many hourly workers are covered under plans which provide a fixed number of dollars per year of service, but these are usually upgraded every few years so that they also keep pace with inflation of wages. Directly or indirectly, this has substantial cost.

Actuaries have found salary increases in recent years substantially exceeding their actuarial assumptions, creating actuarial losses, with little or no offsetting gains from excess investment earnings.

To solve the problem of inflation for retirees by post-retirement increases adds substantial additional cost. To guarantee pensions which are fully indexed for cost-of-living would entail open-ended costs, and most employers are unwilling to write a blank check. Therefore, employers that have indexed pensions have generally limited the amount of increase, but it is still expensive. The amount of additional cost varies with the plan's distribution by sex and by its average retirement age, as well as by the amount of increases. An increase of 4% per year after age 65 would increase plan costs by approximately one-third; thus an unindexed plan which now costs 9% of pay would have its cost increased to 12% of pay if it provided 4% annual increases after age 65.

Well, that is the dilemma. Plans are caught between inadequate benefits and unacceptable costs. If private pension plans fail to solve the needs of retirees, the nation will turn to other sources for the solution. The needs of people must be filled.

MR. WILLIAM A. DREHER: As our planet becomes more crowded, our natural resources depleted, and the fates of nations linked more closely, it becomes clear that two seemingly contrary values, cooperation and competition, have become essential to the health and prosperity of our economic and social system. Classical economics and the American historical

tradition say that competition alone will assure economic growth and provide adequate controls on human behavior and the utilization of resources. Competition is still vital to our future prosperity. Through competition,we will find new technologies and spark the imagination that will create new products, markets, and jobs. Through competition, our system will eliminate the less efficient, badly-managed, and unnecessary businesses. Through competition, capital will be allocated to those businesses that can best and most profitably meet industrial and consumer needs. Through competition, the competent worker will find preference over the inefficient worker. However, raw competition has side effects we can no longer accept. In its unbounded form, resources are exhausted, the environment is polluted, and the weak are not just put aside, but trampled. In a world system that is increasingly interdependent, restraint and cooperation must exist side-by-side with the competitive spirit. Without these qualities, we all become victims.

This analysis also applies to the American retirement system. All around there are danger signs indicating that we are on a collision course with disaster. I do not predict that disaster, far from it. Mankind does not have the lemming's instinct. We have a marvelous talent for survival. Our British friends speak of "muddling through", but by whatever name, this quality asserts itself in times of stress and produces adjustments that accommodate new realities and accept harsh facts. My message is not one of doom but an attempt to identify several correctable weaknesses of our retirement income system. We must acknowledge that the system has practical limits and that certain essential interrelated attributes of the system must be preserved, because the failure of any one will throw others out of balance and undermine the entire system. Labor and management both have the power to kill our American pension system, and a continuation of various unfavorable trends will assure that result. Through cooperation and moderation, destructive extremes can be avoided, and the system's goals will be achieved. By knowing the facts and understanding the interrelationships, we will recognize that cooperation is not just altruism, but a higher form of the instinct for self-preservation.

My presumption in addressing and in working with clients on the impact of inflation is that certain equilibrium assumptions about the operation of our economy and capital markets are almost essential in designing plans and in constructing their funding programs and investment programs. If you cannot reasonably endorse these principles, with obviously appropriate tacking to the safe side, then there are so many fundamental failures bound to occur within the whole of our market system that the effort that we are seeking to achieve collapses for those much more endemic and broader reasons.

The main thrust of my argument is:

1. The future of our retirement income system is tied to the prosperity of our economy. (Since one-third of U. S. corporate profits come from foreign operations, the American economy cannot flourish if the world economy falters.)

2. If corporate profits are too low or unstable, economic growth will suffer, pension fund investment returns will fail to reach reasonable levels, pension costs will escalate, and pension benefits will not satisfy legitimate income replacement goals.

3. The other keys to success are: inflation, which helps no one, must be controlled; economic growth, in terms of output per man-hour, must result in a satisfactory growth of real wages paid to workers.

4. Pension benefits that exceed the retired worker's pre-retirement disposable income and the purchasing power of that income are wasteful and harmful.

5. The vitality of our Social Security program, the cornerstone of our national retirement income system, is also dependent upon achieving a reasonable balance among these central economic and financial aggregates.

6. Our clients and the public are relying on the actuarial profession for judgments about the future, in order to develop estimates of current pension costs and measure current pension plan liabilities. The actuarial profession must recognize that conservatism is not an unmitigated virtue and seek a balance between caution and a realistic anticipation of the future events affecting each pension plan's costs.

Sometimes it appears that our profession does not appreciate its role in this dialogue between the public and other participants in the process of providing economic security either to insurance policyholders or pension plan participants. It is very often true that the actuary should be the most gloomy person in the room, but the proper definition of the role of the actuary in this dialogue is that he should be the unpopular person in the room. He should be the person who is not going with the euphoria when the environment looks very positive and people are willing to extrapolate into the indefinite future that short-term experience. He should be the person looking beyond short-term adversity to a recognition of the cyclical forces and equilibrium forces which are a constant element in an economic and market system.

Pension plans depend upon investment performance to complete the pension promise. This is vividly displayed by Table 1, which shows the annual percent of payroll contribution that will be required to fund a pension equal to 50% of an employee's final five-year average salary. The absolute percentages (which assume that the employee is a male hired at age 30 and retired at age 65) are of less importance than comparative costs based upon different assumptions about the growth of salaries and the return on the pension plan's assets.

TABLE 1 - Estimated Annual Pension Costs

Assumed			Annual
Rate of Inflation	Salary Increases	Investment Return	Contribution as % of Payroll
2.5%	6.5%	4%	13.04%
2.5	6.5	5	10.06
2.5	6.5	6	7.74
2.5	6.5	7	5.93
2.5	6.5	8	4.53
4.0	7.5	6	9.11
4.0	7.5	7	7.05
4.0	7.5	8	5.43
4.0	7.5	9	4.17
4.0	7.5	10	3.19
5.5	8.5	8	6.44
5.5	8.5	9	4.99
5.5	8.5	10	3.84
5.5	8.5	11	2.96
5.5	8.5	12	2.27

Table 1 suggests several conclusions:

1. Pension costs are dramatically affected by the plan's investment return. Almost independently of the salary increase, a 4% improvement in the investment return will reduce long-term pension costs by two-thirds.

2. Assuming a constant investment return, higher salary increases produce higher pension costs. Each 1% increase in salary adds about 1% to the annual pension contributions in Table 1.

3. Apparently, inflation has a favorable impact on pension costs. When the differential between the investment return and the salary increase is held constant, a higher rate of inflation produces a lower annual pension contribution.

Table 1 assumes a uniform dollar amount of pension without any improvement in benefits after retirement. To preserve its purchasing power, a pension should be increased annually by the change in the cost-of-living index. To fund these escalating benefits over the employee's working lifetime would require significant additional annual contributions, as indicated by Table 2.

TABLE 2 - Estimated Annual Pension Costs
(Pension increased by changes in cost-of-living.)

Assumed			Annual	Increase in Annual Cost vs. Table 1	
Rate of Inflation	Salary Increases	Investment Return	Contribution as % of Payroll	As % of Payroll	As % of Table 1 Costs
2.5%	6.5%	4%	16.05%	3.01%	23.1%
2.5	6.5	5	12.27	2.21	22.0
2.5	6.5	6	9.36	1.62	20.9
2.5	6.5	7	7.10	1.17	19.7
2.5	6.5	8	5.39	.86	19.0
4.0	7.5	6	12.45	3.34	36.7
4.0	7.5	7	9.49	2.44	34.6
4.0	7.5	8	7.21	1.78	32.8
4.0	7.5	9	5.47	1.30	31.2
4.0	7.5	10	4.14	.95	29.8
5.5	8.5	8	9.63	3.19	49.5
5.5	8.5	9	7.33	2.34	46.9
5.5	8.5	10	5.56	1.72	44.8
5.5	8.5	11	4.21	1.25	42.2
5.5	8.5	12	3.18	.91	40.1

When pensions are adjusted for inflation, the impact on pension costs is dramatic. With inflation at 2 1/2%, the pension cost rises by about 20%. At 4% inflation, a constant-purchasing-power pension costs about one-third more than a level-dollar pension. If inflation reaches 5 1/2%, the pension cost increase is 40% to 50%. The real truth is that inflation helps no one. It destroys the purchasing power of the worker's pension, reduces the employer's ability to fund a cost-of-living supplement to the pension, and makes it increasingly difficult to maintain a satisfactory real return on the pension fund assets.

As pension plan coverage has expanded and benefit formulae have been improved, through collective bargaining or the unilateral action of employers, the annual contributions to private pension funds and to plans for state and local government employees have grown enormously, as shown by Table 3.

TABLE 3 - Contributions to Funded Pension Plans
(In $ billions)

	Private Insured	Private Non-insured	State and Local Government	Total
1950	$ 0.9	$ 1.2	$ 0.9	$ 3.0
1960	1.6	4.0	2.9	8.5
1970	3.9	10.8	7.9	22.6
1976 (Estimated)	13.0	24.0	15.0	52.0

Sources: 1. American Council of Life Insurance, Pension Facts 1976

2. Peat, Marwick, Mitchell & Co.

Pension plan contributions have become a primary source of new capital for American industry. As a result, pension funds are major lenders to American businesses and the owners of their common stock. Pension funds already own 10% of this country's financial assets and are a major source of new capital for American business. Pension funds now own over 35% of all outstanding corporate bonds and about one-sixth of the market value of all U. S. common stocks. These common stock holdings have grown from 6% only ten years ago. Substantial further growth seems certain. Forecasts of the ultimate level of pension fund stock ownership are hazardous, but an estimate of 25% would not seem too high.

Corporate stocks and bonds, of course, are not the only types of pension fund investment. Pension fund investment managers have been making increasing use of government securities. We may also expect pension fund managers to look for investment opportunity in mortgages, real estate, and foreign securities. Nevertheless, it is abundantly clear that pension funds are a principal owner and, therefore, beneficiary of our American economic system. If those investments fail to produce a reasonable return, our national retirement system is in danger.

Let me put the conclusion in more human terms. If pension fund investments do not produce a satisfactory real rate of return, that is, an amount in excess of inflation, and adequately compensate the owners of common stock and other more risky assets, it is not just some impersonal institution that will be damaged. More importantly, the millions of pensioners who have looked forward to a retirement with dignity and a reasonable standard-of-living will suffer, and that will hurt each of us. Death and taxes are certainties, but retirement is only slightly less certain. (Over 90% of the men who enter the labor force eventually reach retirement. The percentages for women are lower, because many leave the labor force before earning vested pension rights and do not return.)

Clearly, pension plan sponsors and beneficiaries have a major stake in the success of American business, both for the new contribution dollars coming out of current revenues and to assure a reasonable investment return on the accumulating pension assets.

The extent and implications of pension fund ownership of corporate securities have been noted by other observers and students of the private pension system:

Brooks, John. Conflicts of Interest: Corporate Pension Fund Asset Management. New York: Twentieth Century Fund, 1975.

Drucker, Peter E. The Unseen Revolution. New York: Harper & Row, 1976.

Harbrecht, Paul P., S. J. Pension Funds and Economic Power. New York: Twentieth Century Fund, 1959.

Some of these observers, most recently Drucker, have suggested that the natural consequence of pension fund stock and bond ownership is to encourage worker participation on boards of directors. This line of reasoning is short-sighted. It draws on parallels to the European scene, for example, Germany. However, German pension plans are typically funded on a book reserve basis, and the pension fund's destiny is tied to the success of the sponsoring employer. This is not so in the United States, where pension fund ownership of the sponsoring company's securities is usually small, or even prohibited by a pension fund's investment guidelines.

Furthermore, the link between the pensioner and the fund's assets is deferred and indirect. The assets accumulate over many years before the worker begins to receive his pension. Inadequate investment results will require higher employer contributions, not a reduction of the worker's pension. Also, fluctuations in short-term investment results are of some consequence to the employer, whose pattern of annual contributions may be unfavorably affected, but of small significance to the worker, whose pension continues as long as the plan remains in existence.

Finally, the American worker has the protection of ERISA, which guarantees the security of accrued pension rights and, through the fiduciary standards of ERISA, assures the American worker that the plan sponsor and other parties involved in the operation of the plan must conduct their affairs in the sole interest of plan participants. A high standard of fiduciary performance will provide more meaningful protection to the pension plan participant than any direct participation by trade unions and other representatives of workers at the board level.

Pension costs are only one component of total labor costs, and compensation for personal services is only one component of the gross national product. An analysis of key economic and financial aggregates, in both nominal and real terms, sheds light on the interrelationships between economic growth, returns on various classes of assets, and increases in average compensation. Exhibit 1 displays a set of those statistics for the 29 years from 1948 through 1976. The economic and capital market indicators shown in Exhibit 1 are:

1. the Consumer Price Index (CPI),

2. the total return on the Standard & Poor's 500 Stock Index, including dividends (S&P),

3. the total return on the Salomon Brothers High-Grade Corporate Bond Index (Sal. Bros.),

4. Moody's Average Yield on newly-issued AA Corporate Bonds (Moody's AA),

5. the Gross National Product (GNP),

6. compensation for personal services, and

7. U. S. population growth.

The average annual increase in those indicators and the correlation between their annual rates of change are shown in Table 4.

TABLE 4 - Selected Economic and Financial Aggregates: Annual Rates

	Average Annual Increase (1948-1976)	Correlation Coefficient						
		CPI	S&P	Sal. Bros.	Moody's AA	GNP	Compensation	Population
CPI	3.19%	1.00	-.42	-.04	.68	.55	.59	-.70
S&P	11.51		1.00	.13	-.28	-.26	-.40	.28
Sal. Bros.	3.40			1.00	.39	-.03	-.18	-.23
Moody's AA	5.12				1.00	.25	.24	-.94
GNP	7.08					1.00	.93	-.37
Compensation	7.42						1.00	-.37
Population	1.38							1.00

A perfect positive correlation is indicated by a factor of 1.00. A perfect negative correlation is -1.00. The absence of correlation would be indicated by a factor of .00.

Many observations are suggested by Exhibit 1 and Table 4, including:

1. Stock returns tend to decline as the CPI increases.

2. Purchases of newly-issued bonds are fairly successful in protecting purchasing power, relative to the current level of inflation, but a rising pattern of inflation gives no protection even for the bond investor.

3. Compensation growth is closely correlated with increases in GNP.

The annual data in Exhibit 1 were converted into five-year moving averages to dampen the annual fluctuations (see Exhibit 2). A new set of correlation coefficients was computed, as indicated in Table 5.

TABLE 5 - Selected Economic and Financial Aggregates: Five-Year Moving Averages

	Correlation Coefficient						
	CPI	S&P	Sal. Bros.	Moody's AA	GNP	Compen-sation	Popu-lation
CPI	1.00	-.71	.51	.90	.81	.75	-.90
S&P		1.00	-.43	-.86	-.51	-.44	.82
Sal. Bros.			1.00	.57	.33	.14	-.46
Moody's AA				1.00	.66	.58	-.96
GNP					1.00	.95	-.79
Compensation						1.00	-.74
Population							1.00

The indications from Exhibit 1 and Table 4 are reinforced and strengthened by Exhibit 2 and Table 5. For the five years, 1948-52, the rate of inflation averaged 2.6% and the total return on the S&P was 19.4%. For the latest five years, 1972-76, these two averages were 7.2% and 4.9%. The negative correlation between the CPI and the S&P increases to -.71. Compensation growth remains positively correlated with the GNP and CPI, as do the yields on newly-issued bonds. Population growth has a high negative correlation with GNP growth.

The nominal data in Exhibits 1 and 2 were translated into real terms, using the CPI as the proxy for changes in purchasing power, the GNP deflator, etc. Those data are represented in Exhibits 3 and 4. The average annual increase in real terms and the correlations between these real economic and financial aggregates are shown below in Tables 6 and 7. The changes in some of the correlation coefficients are quite remarkable. Using five-year moving averages, the S&P has a -.51 correlation with GNP growth. In real terms, the correlation switches to +.58. Similarly, the relationship between stock returns and bond returns switches from -.43 in nominal terms to +.20 in real terms. The same reversal is shown in the relationship between the S&P returns and increases in personal compensation: -.44 in nominal terms and +.55 in real terms.

TABLE 6 - Selected Economic and Financial Aggregates: Annual Rates (Net of change in CPI)

	Average Annual Increase (1948-1976)	Correlation Coefficient					
		S&P	Sal. Bros.	Moody's AA	GNP	Compen-sation	Popu-lation
S&P	8.06%	1.00	.31	.39	.12	-.04	.37
Sal. Bros.	.21		1.00	.66	.11	-.05	.08
Moody's AA	1.88			1.00	.08	.01	.06
GNP	3.77				1.00	.90	.25
Compensation	4.10					1.00	.26
Population	1.38						1.00

TABLE 7 - Selected Economic and Financial Aggregates: Five-Year Moving Averages (Net of change in CPI)

	Correlation Coefficient					
	S&P	Sal. Bros.	Moody's AA	GNP	Compen-sation	Popu-lation
S&P	1.00	.20	-.07	.58	.55	.89
Sal. Bros.		1.00	.41	.09	-.13	.29
Moody's AA			1.00	.03	-.05	.02
GNP				1.00	.93	.48
Compensation					1.00	.43
Population						1.00

Certain conclusions become quickly evident:

1. Without sufficient increases in real GNP, both labor and capital will suffer.

2. Increases in population (and, by extension, rising sales of goods and services to consumers in other countries) have a favorable impact on final demand and GNP growth.

3. Rising rates of inflation have an adverse impact on stock returns, bond returns, and the real incomes of workers.

We should know that inflation is our enemy and work to control it. No one can hide from inflation. The countries that have tried to index their economies have failed. Limited successes in indexing wages and the returns on debt securities are defeated by the destructive impact of inflation on business profits, the retired, and others on fixed incomes.

As shown by Table 8 below, our population is aging and the numbers and political strength of retired workers will inevitably increase. They will not stand for business, fiscal, and monetary policies that fail to control inflation and its ravages.

TABLE 8 - Projected Population, Beneficiaries, and Workers in Covered Employment

Projected Number (In Millions)

	Total Population	OASDI Beneficiaries	Covered Workers	Beneficiaries Per Hundred Population	Beneficiaries Per Hundred Covered Workers
1977	225.9	33.50	107.0	14.8	31.3
2000	264.6	47.76	135.4	18.0	35.3
2025	295.2	71.88	143.0	24.3	50.3
2050	311.5	74.48	150.9	23.9	49.4

Source: 1977 Annual Report, Board of Trustees of the OASDI Trust Funds

It is best that we act now in intelligent cooperation to moderate some of the forces that have created the inflationary pressures. If we do not, our American retirement income system will suffer, and pension plan participants will use their economic and political power to correct the situation.

Most private retirement plans begin with modest benefits and typically go through a series of amendments to add new types of benefits and improve existing formulae, either through collective bargaining or the unilateral action of the sponsoring employer. The dominant force influencing the structure and benefit levels of private retirement plans has been inflation. Plans that began with benefits based upon career average pay are now tied to earnings in the last few years of employment. The importance of maintaining the pension's purchasing power has encouraged the adoption of automatic cost-of-living increase features or the use of ad hoc plan amendments that update the pensions for employees currently retired.

The growing significance of the Social Security system and the recognition that pension planning should consider both private and public sources have encouraged many employers to adopt plans that are integrated with Social Security benefits through the "offset" technique. Even in plans that are not tied to final salary or coordinated directly with Social Security, inflation has been the primary motivator for increases in benefit credits.

The success of the American private pension system, as it moves toward the goal of maintaining in retirement the worker's purchasing power in the years near retirement, has been recorded in periodic surveys published by the Bankers Trust Company and other organizations.

A discussion of private retirement plans and Social Security should not overlook several significant sources of retirement income:

1. Profit sharing and thrift plans are becoming more popular, and they can provide a significant supplement to the retirement income from a pension plan and Social Security.

2. More women are entering the labor force. (54% of the women in the working ages are now employed, and this percentage is expected to continue to grow.) As a result, a working woman's Social Security benefit may exceed the benefit she is entitled to as a wife. Also, her own pension rights will supplement the family income.

3. Finally, personal savings provide a significant capital base that can be used to supplement retirement income and compensate for losses in purchasing power following retirement.

We can fairly conclude then that, on average, our national retirement system is achieving, to a high degree, its rational and legitimate goals. However, that average is composed of many extremes, including benefits that are still inadequate, both for employees retired in the past and for employees currently participating in plans with inadequate benefit formulae.

It is also true that many workers are covered by redundant benefit formulae. The newspapers have contained many examples of unreasonable benefits for state and local government employees, some of whom receive, either through unsound administrative practices or unduly generous benefit formulae, gross retirement incomes that exceed pre-retirement pay. State and local government plans are not the only offenders. Pension benefits bargained in major industries, including aluminum, steel, and automobiles, violate sound principles of pension planning.

Some of these collective bargaining settlements have recognized the principle of limiting retirement income, including Social Security benefits, to a percentage of final pay. However, these "caps" are largely meaningless since the percentages do not adequately allow for changes in tax rates after retirement, fail to take into account the elimination of various work-related expenses, and ignore the wife's Social Security benefit. The bellwether industries have a responsibility to limit pension demands. Otherwise, their example will encourage other unions to make immoderate demands, putting even greater pressure on the entire private retirement system.

The avoidance of excessive pension settlements does not automatically mean that total labor costs will grow more slowly. Total labor costs should grow in proportion to increases in real GNP, provided that there be a reasonable split of increases in real GNP between rewards to labor and to capital. Placing practical limits on increases in pension benefits could encourage a different distribution of collective bargaining settlements between increases in cash wages and contributions for deferred benefits, with more dollars allocated to increased take-home pay and fewer dollars going into deferred benefit plans. One desirable consequence of such a shift would be to increase disposable income and, presumably, final demand for goods and services, with resulting beneficial impacts on the real growth of our economy.

As shown in Tables 1 and 2, pension costs are profoundly affected by the rate of inflation, salary increases, and investment returns. Estimating these forces and their impact on pension costs and plan liabilities is a responsibility of the actuarial profession. Actuaries, by training and inclination, are usually conservative. This is a desirable quality, since it avoids undue optimism about the future and leads to more rapid funding of a plan's obligations. However, when this cautious attitude is taken to extremes, several undesirable consequences emerge:

1. The understandable concern of security analysts and stockholders about the size of unfunded plan liabilities is exaggerated.

2. The apparent security of the employee's pension rights is reduced, and unnecessary fear about the future outcome is stimulated.

3. Annual pension contributions are larger than necessary, with an attendant impact on corporate profits and retained earnings.

Unfavorable investment performance and the high rate of inflation in recent years counsel caution in the actuary's estimates. However, common sense and a realistic assessment of future events affecting plan costs and liabilities should temper the actuary's natural tendency toward conservative pension cost measurements.

The statistical evidence I previously discussed lends support for a technique for evaluating the actuarial assumptions which takes the rate of inflation and adds to it estimates for the real changes which will occur in the ingredients which affect the pension fund's costs. That technique is discussed in the actuarial literature. It hopefully should encourage us to not be trapped in the assumption which so many people seem compelled to make, namely that the recent past is the best predictor of the long-term future. For those of you, however, who still believe that we need some blend of understanding of the past and realistic projection of the future, let me offer a note of comfort. We have all been seeing five and ten year returns on market indices which show inadequate equity risk premiums and negative returns on investment in real terms. As of September 30, we have just concluded five years during which time the CPI increased at a rate of 8%, government bond nominal returns were 7.4%, corporate bond nominal returns were 9.8%, and the S&P nominal return was 16.8%. This should not be the basis for setting long-term assumptions for pension funds, but we may begin to see, for the wrong reasons, some greater confidence in the prospects for the equity markets.

We must make sure we do not become prisoners of our own view of the world. To assist in that effort, my firm annually conducts a survey of the views of financial economists looking at the short, intermediate, and the long range prospects. This type of survey took on importance for actuaries this spring when the Canadian Institute had a very excellent program focusing on these same questions. The results of our survey of U. S. economists this spring suggested a long-term (25 year) outlook for the CPI of 5.3%, with real returns on bonds of 2.3% and real returns on stocks of 5.7%, in an environment in which the GNP was growing 3 1/2% and an output per unit of labor was growing about 2.1%. The actuaries in my firm decided that this was an intriguing body of knowledge, and stimulated by the good example of the Canadians, we conducted

an Adelphi survey amongst our group, asking of ourselves questions dealing with the economic variables which would be of significance for an actuary in choosing pension plan actuarial assumptions. This was an intramural survey, and there was far from singularity of views, but the average opinion as to the 25 year outlook for the CPI was 5.1%, with real returns on bonds of 2.2%, real returns on stocks of 4.7% for a total of 9.8% in nominal terms, and an assumption that Social Security wages would increase at a rate of 6.3% for a real increase of 1.2%.

Another reference point for the actuary in judging the way in which he ought to incorporate forecasts about these uncertainties in the advice given to clients is to relate to one's peers. The actuarial profession has allowed its conservative instincts to distort its perception of future realities. Charts 1 and 2 are based upon data gathered by my firm from a sample of actuarial reports for plans that use Peat, Marwick, Mitchell & Co. as auditors, but not as actuaries. They display the salary assumption from age 35 to age 65 and the investment return assumption for 177 pension plans with benefits based on final pay. The average annual salary increase is about 4 1/4% and the average investment return assumption is slightly less than 6%. With few exceptions, the actuarial assumptions are individually unrealistic, understating both the salary increase and the investment return which is likely to occur if the future rate of inflation is, as most observers would agree, going to average between 3% and 6% per year.

It is true that the combination of two individually inadequate assumptions may produce a reasonable pension cost. Understated actuarial assumptions are often excused for various reasons:

1. Employers think that higher salary assumptions will encourage labor unions to increase their demands.

2. Employers fear that higher investment return assumptions will disturb security analysts and weaken the perceived "quality" of their earnings.

3. The employer wants to fund pension plan improvements in advance of their legal adoption, and the understatement of several actuarial assumptions can disguise this intent.

4. Unduly conservative actuarial assumptions increase tax deductions.

Our profession has to take a much closer view of these matters and has to recognize that, as clients are of necessity becoming more interested and involved in the process of choosing the actuarial assumptions, as pension plan disclosures become more frequent and more broadly displayed, and as fundamental questions of public policy relating to the survival of the private pension system are raised, we have an important responsibility both to stay closer to realism and to see this realism translated into the actuarial bases which our clients report to their various publics.

If actuaries advise clients to select assumptions that individually reflect their best judgment of the future inflation rate and its impact upon the economy, which is encouraged by the American Academy of

Actuaries, both employers and pension plan participants will have a better understanding of the plan's funding policy and the quality of its benefit security. If clients have a better understanding of a plan's actuarial basis, a more balanced recognition of the dangers of either underfunding or overfunding the pension plan will result. These additional dimensions of client awareness will encourage the actuary to offer advice that is less defensive and more directed toward the future, rather than looking over the shoulder into history.

If the actuary is unwilling to estimate future investment returns realistically, not only will annual costs be higher, but the impact of emerging investment performance will be unnecessarily deferred.

I conclude with this summary:

1. The survival of our American retirement income system depends upon the health of our whole economy. For workers to be satisfied and for the Social Security system to remain in balance, average real wages must grow more rapidly than they have in recent years.

2. For the owners of corporate securities to be satisfied (and pension plans are major owners of these securities) and to avoid punitive corporate pension costs, total returns to investors must exceed the rate of inflation and must provide a total return to the equity holder that exceeds by 3% to 5% the returns on fixed income securities.

3. Inflation is the enemy of us all. It erodes corporate profits, debases the currency, evaporates the purchasing power of disposable incomes, and puts us all on an exhausting treadmill.

4. The after-tax retirement income for career employees, including private plan benefits and those coming from Social Security and other public sources, should not exceed, in terms of purchasing power, 100% of the employee's average after-tax compensation in the years near retirement.

5. The actuarial profession should show leadership in educating the public about relationships between economic and capital market variables and their impact on the design, funding, and investment of pension plans. Publicly disclosed data about pension plan actuarial bases suggest that we are failing in that duty.

6. Implicit actuarial assumptions strike both plan sponsors and plan participants as unreasonable. The resulting confusion undermines the public image and credibility of the actuarial profession.

7. An increasing emphasis on pension plan disclosure, which will be accelerated in the near future when the Financial Accounting Standards Board releases its conclusions on the accounting principles for defined benefit pension plans, makes it imperative for our profession to follow its own standards and urge clients to use actuarial assumptions that explicitly recognize inflation.

EXHIBIT 1: SELECTED ECONOMIC AND FINANCIAL AGGREGATES: ANNUAL RATES

	CPI	S&P	Sal. Bros.	Moody's AA	GNP	Compen-sation	Popu-lation
1948	2.70	5.51	4.14	2.90	11.30	9.44	1.73
1949	-1.81	18.79	3.31	2.75	-0.42	-0.07	1.74
1950	5.77	31.74	2.11	2.69	10.93	9.55	1.67
1951	5.87	24.02	-2.69	2.91	15.37	16.93	1.71
1952	0.90	18.35	3.52	3.04	5.15	8.12	1.73
1953	0.59	-0.97	3.41	3.31	5.44	7.10	1.67
1954	-0.47	52.62	5.39	3.06	0.05	-0.57	1.77
1955	0.38	31.54	0.48	3.16	9.01	7.92	1.78
1956	2.86	6.55	-6.81	3.45	5.36	8.27	1.79
1957	3.01	-10.79	8.61	4.03	5.25	5.34	1.82
1958	1.76	43.37	-2.22	3.94	1.38	0.66	1.69
1959	1.50	11.98	-0.97	4.51	8.38	8.29	1.69
1960	1.48	0.46	9.07	4.56	4.01	5.47	1.60
1961	0.68	6.89	4.82	4.48	3.42	2.95	1.67
1962	1.22	-8.73	7.94	4.47	7.74	7.08	1.55
1963	1.66	22.78	2.19	4.39	5.48	5.48	1.45
1964	1.24	16.51	4.77	4.49	6.89	7.32	1.40
1965	1.93	12.45	-0.46	4.57	8.24	7.74	1.26
1966	3.37	-10.05	0.19	5.23	9.43	10.79	1.16
1967	3.04	23.99	-4.95	5.66	5.75	7.42	1.09
1968	4.74	11.08	2.57	6.38	9.07	10.15	1.00
1969	6.09	-8.43	-8.09	7.20	7.71	9.93	0.98
1970	5.48	3.95	18.37	8.31	5.01	6.62	1.09
1971	3.36	14.32	11.01	7.78	8.25	6.75	1.06
1972	3.42	18.97	7.26	7.48	10.13	9.96	0.87
1973	8.77	-14.67	1.14	7.66	11.54	11.55	0.75
1974	12.20	-26.45	-3.06	8.84	8.18	9.79	0.71
1975	7.01	37.14	14.64	9.17	7.30	6.05	0.78
1976	4.81	23.97	18.65	8.75	11.56	10.72	0.74
1948-1976	3.19	11.51	3.40	5.12	7.08	7.42	1.38

EXHIBIT 2: SELECTED ECONOMIC AND FINANCIAL AGGREGATES: FIVE YEAR MOVING AVERAGES

	CPI	S&P	Sal. Bros.	Moody's AA	GNP	Compen-sation	Popu-lation
1948-1952	2.64	19.37	2.05	2.86	8.32	8.66	1.72
1949-1953	2.22	17.86	1.91	2.94	7.16	8.19	1.70
1950-1954	2.50	23.92	2.31	3.00	7.26	8.08	1.71
1951-1955	1.43	23.88	1.98	3.10	6.89	7.76	1.73
1952-1956	0.85	20.18	1.10	3.20	4.96	6.11	1.75
1953-1957	1.26	13.57	2.08	3.40	4.98	5.56	1.77
1954-1958	1.50	22.30	0.94	3.53	4.16	4.26	1.77
1955-1959	1.90	14.95	-0.31	3.82	5.84	6.05	1.75
1956-1960	2.12	8.92	1.34	4.10	4.85	5.57	1.72
1957-1961	1.68	12.79	3.76	4.30	4.46	4.51	1.69
1958-1962	1.33	13.31	3.63	4.39	4.95	4.85	1.64
1959-1963	1.31	9.85	4.55	4.48	5.79	5.84	1.59
1960-1964	1.26	10.73	5.73	4.48	5.50	5.65	1.53
1961-1965	1.35	13.25	3.82	4.48	6.34	6.10	1.47
1962-1966	1.88	5.72	2.88	4.63	7.55	7.67	1.36
1963-1967	2.25	12.40	0.30	4.87	7.15	7.74	1.27
1964-1968	2.86	10.17	0.37	5.26	7.87	8.68	1.18
1965-1969	3.83	4.99	-2.22	5.80	8.03	9.20	1.10
1966-1970	4.54	3.35	1.23	6.55	7.38	8.97	1.07
1967-1971	4.54	8.43	3.32	7.06	7.15	8.16	1.05
1968-1972	4.61	7.54	5.85	7.43	8.02	8.67	1.00
1969-1973	5.41	2.01	5.55	7.69	8.51	8.94	0.95
1970-1974	6.59	-2.36	6.68	8.01	8.60	8.92	0.89
1971-1975	6.90	3.20	6.00	8.18	9.07	8.80	0.83
1972-1976	7.20	4.89	7.42	8.38	9.73	9.60	0.77

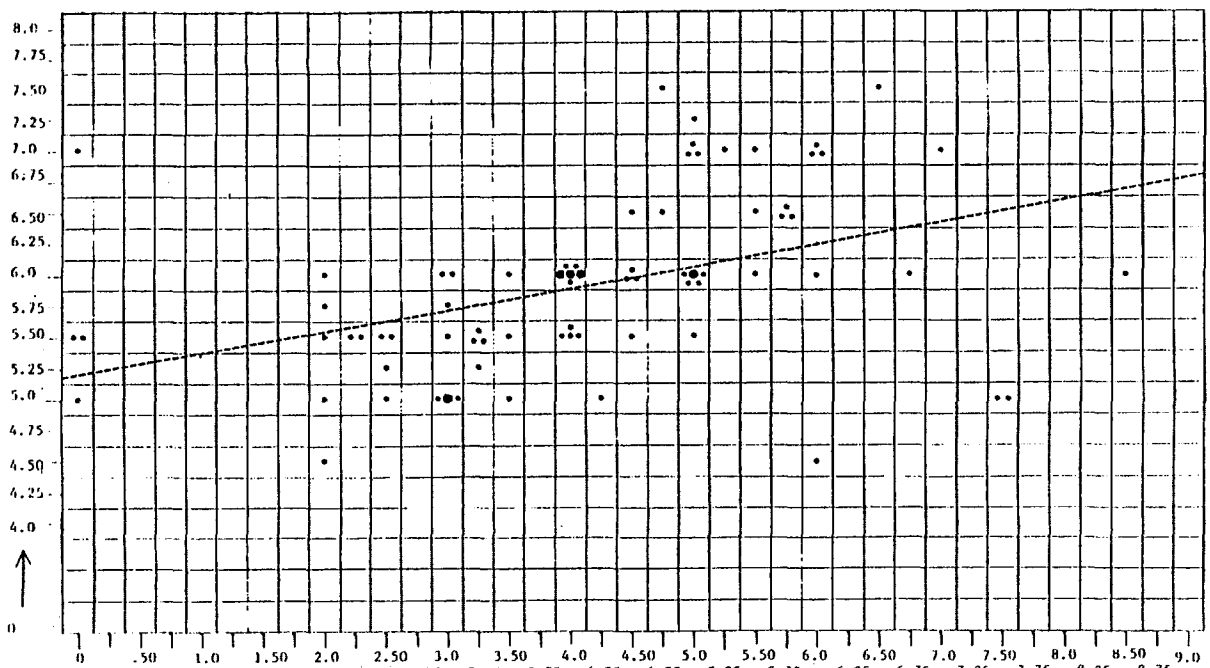
EXHIBIT 3: SELECTED ECONOMIC AND FINANCIAL AGGREGATES: ANNUAL RATES (NET OF CHANGES IN CONSUMER PRICE INDEX)

	S&P	Sal. Bros.	Moody's AA	GNP	Compen-sation	Popu-lation
1948	2.74	1.40	0.20	8.38	6.57	1.73
1949	20.97	5.21	4.64	1.41	1.77	1.74
1950	24.55	-3.46	-2.92	4.87	3.57	1.67
1951	17.14	-8.08	-2.79	8.98	10.44	1.71
1952	17.30	2.60	2.12	4.21	7.16	1.73
1953	- 1.55	2.81	2.71	4.83	6.48	1.67
1954	53.34	5.88	3.55	0.53	-0.10	1.77
1955	31.04	0.10	2.77	8.60	7.51	1.78
1956	3.59	-9.41	0.57	2.43	5.26	1.79
1957	-13.40	5.44	0.99	2.18	2.26	1.82
1958	40.89	-3.91	2.14	-0.38	-1.08	1.69
1959	10.32	-2.43	2.97	6.78	6.69	1.69
1960	-1.00	7.48	3.04	2.49	3.94	1.60
1961	26.03	4.11	3.77	2.72	2.25	1.67
1962	-9.83	6.64	3.21	6.44	5.79	1.55
1963	20.77	0.53	2.68	3.76	3.75	1.45
1964	15.09	3.49	3.21	5.59	6.01	1.40
1965	10.32	-2.35	2.58	6.19	5.70	1.26
1966	-12.98	-3.07	1.80	5.87	7.18	1.16
1967	20.33	-7.76	2.54	2.63	4.25	1.09
1968	6.06	- 2.07	1.57	4.13	5.17	1.00
1969	-13.69	-13.37	1.04	1.53	3.61	0.98
1970	- 1.46	12.22	2.68	-0.44	1.07	1.09
1971	10.60	7.41	4.28	4.73	3.28	1.06
1972	15.04	3.71	3.92	5.48	6.33	0.87
1973	-21.55	- 7.02	-1.03	2.55	2.55	0.75
1974	-34.45	-13.60	-2.99	-3.58	-2.15	0.71
1975	28.15	7.13	2.02	0.26	-0.90	0.78
1976	18.28	13.20	3.76	6.44	5.64	0.74
1948-1976	8.06	0.21	1.88	3.77	4.10	1.38

EXHIBIT 4: SELECTED ECONOMIC AND FINANCIAL AGGREGATES: FIVE-YEAR MOVING AVERAGES (NET OF CHANGES IN CONSUMER PRICE INDEX)

	S&P	Sal. Bros.	Moody's AA	GNP	Compen-sation	Popu-lation
1948-1952	16.29	-0.58	0.21	5.53	5.86	1.72
1949-1953	15.30	-0.31	0.71	4.83	5.84	1.70
1950-1954	20.90	-0.18	0.49	4.65	5.45	1.71
1951-1955	22.14	0.55	1.64	5.38	6.24	1.73
1952-1956	19.17	0.26	2.34	4.08	5.22	1.75
1953-1957	12.16	0.80	2.11	3.67	4.24	1.77
1954-1958	20.49	-0.55	2.00	2.62	2.72	1.77
1955-1959	12.81	-2.16	1.88	3.87	4.08	1.75
1956-1960	6.66	-0.76	1.94	2.67	3.38	1.72
1957-1961	10.93	2.04	2.58	2.73	2.78	1.69
1958-1962	11.83	2.27	3.02	3.57	3.48	1.64
1959-1963	8.43	3.20	3.13	4.42	4.47	1.59
1960-1964	9.35	4.42	3.18	4.19	4.34	1.53
1961-1965	11.74	2.44	3.09	4.93	4.69	1.47
1962-1966	3.77	0.98	2.70	5.56	5.68	1.36
1963-1967	9.93	-1.90	2.56	4.80	5.37	1.27
1964-1968	7.11	-2.41	2.34	4.87	5.66	1.18
1965-1969	1.12	-5.82	1.91	4.05	5.18	1.10
1966-1970	-1.13	-3.17	1.93	2.72	4.24	1.07
1967-1971	3.72	-1.16	2.42	2.50	3.47	1.05
1968-1972	2.79	1.18	2.69	3.26	3.88	1.00
1969-1973	-3.22	0.14	2.16	2.94	3.35	0.95
1970-1974	-8.40	0.08	1.33	1.88	2.18	0.89
1971-1975	-3.46	-0.84	1.20	2.03	1.78	0.83
1972-1976	-2.16	0.21	1.10	2.36	2.24	0.77

CHART 1



Type A

Average Final Salary Formula or Career Formula with Projected Benefit Cost Method

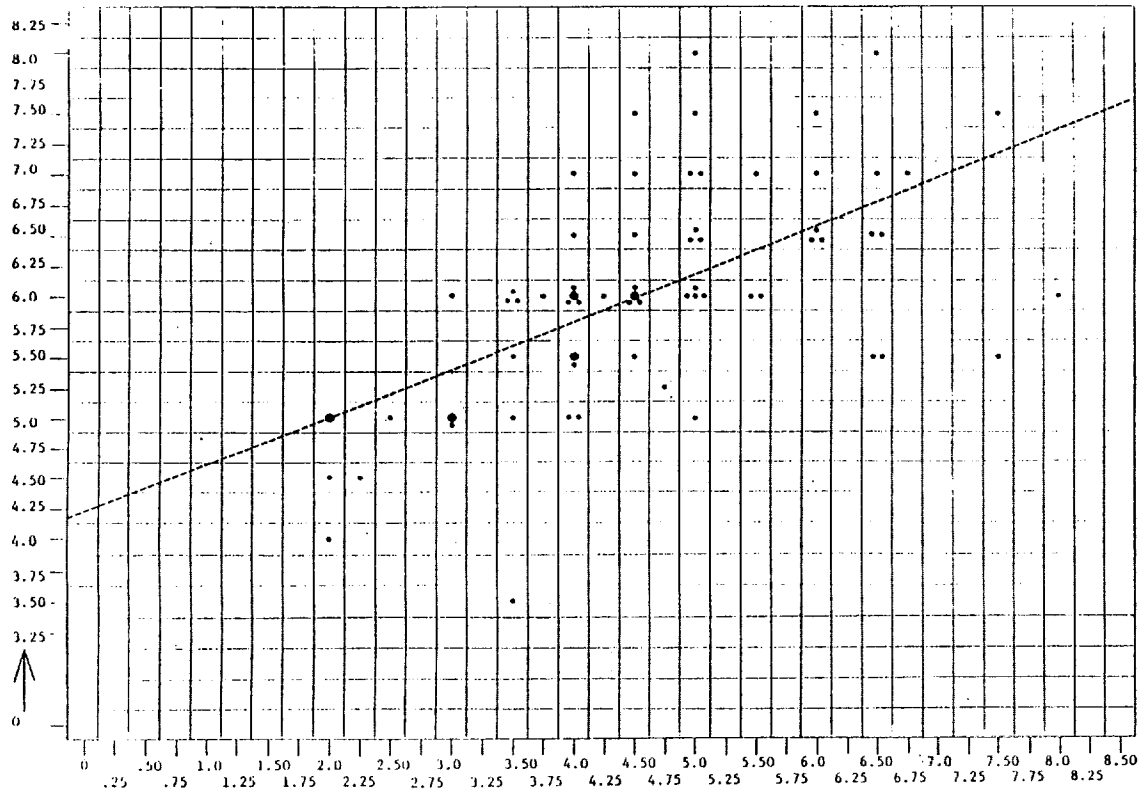
Slope	=0.18
Vertical Intercept	=5.17
Correlation Coefficient	=0.43
Mean Difference	=1.81
Standard Deviation	=0.59

Arithmetic Averages:

Investment Return	=5.90
Salary Scale	=4.10

● = ••••••
95 Examples

CHART 2



Type A Offset

Average Final Salary Formula or Career Formula with Projected Benefit Cost Method Offset to Social Security Benefit

Slope	=0.40
Vertical Intercept	=4.17
Correlation Coefficient	=0.63
Mean Difference	=1.51
Standard Deviation	=0.66

Arithmetic Averages:

Investment Return	=5.92
Salary Scale	=4.41

●- - - - -

85 Examples

MR. PRESTON C. BASSETT: The topic has been divided into four subsections and I would like to make a few comments on each of these.

The first subsection is the Inflation Outlook. I feel rather incompetent to make any worthwhile comments. We have reached the stage in our economy now where I am very uncomfortable in making any kind of forecast. I used to feel that interest would fall within a range of maybe 2% or 3% and inflation within the same kind of range. I lack that confidence today. For many of our clients, we started a program of giving forecasts with different kinds of assumptions and showing what the cost would be under different kinds of economic conditions. This has been a more comfortable atmosphere in which to work. Maybe you say I am passing the buck, but at least I hope our clients do not have as many surprises as they have had previously.

Our inflation forecasts should reflect what experts feel will be the long-term inflation outlook. Rather than make these decisions myself, I prefer to use the judgment of better qualified economists and use their best guess for my economic inflation forecast. Currently, these forecasts appear to run in the range of 8% to 12% inflation for the coming year, and most seem to project a gradual decline to a much lower level of inflation in the long-term. I hope this is more than optimistic thinking. Thus, a reasonable economic assumption might be for a 10% rate of inflation next year declining by 1 or 2 percentage points to reach a plateau of 3% to 4% long-term. I will comment again on this under the subsection 4, Actuarial Assumptions.

The second major heading is the Implications of Continuing High Inflation (on Benefits Adequacy, Retirement Patterns, Plan Investments). In regard to benefit adequacy, the picture, in the short-term at least, is very grim for most private pension recipients. It is true that many major corporations have provided ad hoc increases approaching the impact of inflation on private pensions. However, for retirees and those close to retirement, past periodic increases give little assurance to their concerns about the future. The problem faced by the retiree under a private pension plan in maintaining his standard-of-living has yet to be solved to his satisfaction. Unless private industry formulates some solutions to this problem, we are going to see Social Security or some other system develop to take care of their needs.

I have heard that there has been a decline in the number of people seeking early retirement. This may be due to the fear of continuing high inflation. There is no better security in an inflationary economy than hanging on to a good paying job. Thus, workers in the face of continuing high inflation may decide to continue working for as long as they are able to do so. This brings me to the observation that deferring retirement to a later age than has been customary in the past may be the way to solve the problem of providing indexed pensions for the retired population. If the normal retirement age and the actual retirement age under private pension plans were moved ahead three to five years, there would be enough cost savings to be able to provide limited cost-of-living increases to those who retire at these later ages.

This could best be developed by first increasing the normal retirement age for Social Security benefits on a gradual basis starting some years in the

future. By eventually moving the normal retirement age to 68 or 70, the major financial problems facing Social Security probably could be solved as well. There are many sound social and economic reasons for increasing the normal retirement age to an age higher than 65. However, the political problems will be difficult to overcome. A real trade-off for private pensions could be made between a higher retirement age and some protection against cost-of-living increases.

Under the heading of implications of continuing high inflation on plan investments I would like to comment on a statement I heard recently. The statement went something like this: "Assets are invested to provide pensions for plan participants. The rate of return on invested assets varies with the rate of inflation. When the rate of inflation increases, the rate of return on assets increases. Thus, during times of high inflation, plan sponsors, corporations, earn extra income on pension funds. These excess earnings are used to reduce the employer's contribution. Rather than reduce company contributions, these 'windfall' gains should be used to increase the pensions paid to retired participants, thus, providing protection against inflation." A statement like this has tremendous appeal to those who are looking to criticize the private pension system and to politicians. We should be prepared to explain why this does not always work in quite the manner as laid out in this theory. Many of you will remember that variable equity annuities became quite popular in the late 50's and 60's. Under these programs excess interest earnings over a stated assumed rate were used to increase the benefits for the plan participants. In the early years, this worked exceedingly well as far as plan participants were concerned, since the rate of return greatly exceeded the rate of inflation, and benefits became significantly greater than those originally contemplated. However, with the reverse of the economic conditions, when inflation rates shot up and investment returns fell down, the plan participants became exceedingly unhappy. They became so unhappy that almost all of these variable equity annuities have now been replaced in one form or another by fixed pensions. Therefore, in order to use excess interest earnings to increase employees pensions, it is first necessary that there be excess interest earnings and these excess interest earnings occur within a reasonable time frame of when inflation occurs. This has not been the case during the past twenty-five years or so. Over a twenty-five year period it might have worked, if corporations had been able to accumulate their excess investment income during the late 50's and 60's in a side fund to be available later to pay for increased benefits when inflation became a more important factor. However, government rules regarding the funding of pension plans do not allow a corporation to accumulate these excess funds. These excess funds must be used to reduce future contributions. Some of our rules and regulations would have to be changed for this proposal to work.

Another consideration is that the excess investment income would have to provide for cost-of-living increases for retirees and also have to provide for the increasing benefits of the active employees. The assets are for all participants. In the past several years losses due to salary increases have greatly exceeded the excess earnings on investments. If a plan is less than fully funded, which is generally the situation today, there will not be sufficient excess investment income to provide for the salary losses.

It appears that the proposed theory will only work if (1) there is reasonably close correlation between the investment income and the rate of inflation, (2) the plan is fully funded, (3) the laws and regulations are changed to provide for the accumulation of excess funds, and (4) the retirees and active participants would be content with decreases in benefits as well as increases in the event that rates decline.

The third major subsection under our topic today is the Legislative Reaction. Senate Bill 209 proposes that the Secretary of Labor conduct a study of the feasibility of requiring private pension plans to provide cost-of-living adjustments to benefits payable under such plans. This proposal may be similar to other proposals in that they very frequently lead to legislation. The issue here will be emotional in nature and very difficult to keep under control. The cost of providing unlimited cost-of-living adjustments to pensioners is substantial and may be so great as to actually kill legislative proposals. On the other hand, the law can be formed in such a way as to make the increases in cost fairly gradual. Thus, we should provide as much guidance as we can to the government in this area. Additional research should be prepared giving facts in regard to the impact of such provisions on pension plans and the economy in general.

There are some possible approaches that private industry could take. You may recall that a recent Harris Survey indicated that employees would be willing to contribute to private pension plans. Thus, a trade-off could be to provide some form of limited cost-of-living protection for retirees in exchange for having employees contribute to the pension plan. Hopefully, these employee contributions would be tax deductible under any new legislation.

Another proposal that should be studied and which was alluded to earlier, is to provide cost-of-living increases only after some higher retirement age. For example, a plan could provide that the benefits will be increased by changes in the cost-of-living up to say 4% per year, but such increases would only start at ages 68 or 70. The cost impact of this type of a program should not be enormous. We should develop costs for various alternatives that may be suggested by Congress and others.

The final topic is Salary Scales, Interest,and Cost-of-Living Assumptions Relationships. I am sure all of you like myself are concerned about the sniping and even critical comments we hear in the press and elsewhere about the actuary's assumptions being unrealistic. Time after time we see statements that the salary scale assumptions or the economic assumptions are completely out of date. Actuaries are using salary scales as low as 4% when salaries are rising closer to 8% or 10%. Similarly we see criticism about the assumptions we make in regard to investment income. Our answer has been, and I believe correctly so, that the resulting costs are still proper in that we do not look so much at the current inflation rate or salary scales as we do the long-term rate which we expect to predominate over the next 20, 30, 40, or 50 years. Also, we comment that the salary scales and interest assumptions often act in opposite directions and thus offset one another, so that in aggregate the assumptions are reasonable. Unfortunately, such statements do not silence our critics, and they make our profession look foolish. We should do certain things in our profession, so we look better. It is cosmetic but important.

I propose that all of us seriously consider using what I will call select and ultimate economic assumptions; that is, use assumptions that vary each year in the future to some ultimate year. Thus, we might use a 10% inflation rate for 1980, 8% for 1981, etc., decreasing to an ultimate rate of say, 4%. Using this as the inflation rate we can then develop consistent salary scales and investment return assumptions. I recognize that this would cause complications in our calculations and increase the fees that we charge clients, but perhaps some methods could be adopted to keep the extra work to a minimum. It should have a favorable impact on our clients and the rest of the public as well.

MR. RAYMOND E. COLE: There are four items on the agenda. My basic methodology will be to first lay down some fundamental concepts and then come back to those four items as I conclude. I would not have to go back too far in time to call this panel to a close right now and say we or the plan sponsor have solved the problem of inflation as it impacts pension plans. In fact, that did happen over the last 20 years, or the first 15 of those last 20 years, when plans went from career average pay to final average pay. That was deemed to be a sufficient solution for those times. Therefore, one way I could have prefaced my remarks, or at least 10 years ago I could have prefaced my remarks, would have been to say that the problem does not exist. On the other hand, I could start out in a different tone and say that since inflation destroys an economy, it is simple to conclude what inflation will do to a pension plan, which is one economic element of an entire economic system. We really need to deal between these two extremes. We need to know how much inflation we are talking about and what kind of pension plan. Is the plan funded? Does it have a cost-of-living adjustment built into it? What is the basic benefit structure?

I would like to address a couple of the issues that I have raised, define what is inflation, so we are speaking from a common base, and discuss the cause of inflation. When we hear of inflation, talk about it, and hear others talking about it, basically we are talking about a general rise in prices, not just an occasional increase in one product or another product. We mean a general increase in a weighted average market basket, an increase in the aggregate cost-of-living. The cause of this increase, based on the Law of Supply and Demand, either has to be a decrease in the supply of quantities in the economy or an increase in the demand. An increase in demand in this case would be the money or other products that could be used to make purchases. It is fairly obvious that in the United States our inflation is not caused by a decrease in supply. It must therefore be caused by an increase in demand. I recommend to you a recent book by Dr. George Reisman, The Government Against The Economy, which lays down in an understandable form some of these basic concepts and concludes that our inflation is caused by an unwarranted increase in the quantity of money caused by the government.

What is inflation's impact on a pension plan? We need to look at it from the perspective of the two parties to the plan. One is the pensioner, and the other is the plan sponsor. If the pensioner is looking forward to an income in fixed dollar amounts, he can anticipate the destruction, partial or total, of his income. If you want to look at it from the sponsor's side, simply in an economic sense, the sponsor is in a very excellent position, at least at first blush. He is making a long-term or generally a long-term commitment, and he is going to be paying off in dollars that

are worth much less than today. So, in effect, he is having a curtailment or a reduction in his basic commitment by reason of the action of inflation. For most of the plans we deal with it is not this simple, because the sponsors have chosen, or the law has dictated, that they will prefund. All of a sudden they are playing the game too. They have something at stake in the economy, and they are exposed to the same destructive force of inflation. Therefore, we have both parties, if we have a prefunded plan at least, that are going to suffer or can suffer from the impact of inflation.

Are there solutions to this problem that would help either one or both parties? Certainly, the answer is yes. The sponsor often has a defined contribution plan in addition to a defined benefit plan, and the assets of the defined contribution plan could be tapped to provide increased annuities or even an increasing annuity to someone in retirement to help solve the problem of diminishing purchasing power. Alternatively, the pensioner could keep working. Granted, the pensioner is giving something up, his retirement years or a second career, but part of the problem is solved. The plan sponsor could decide to not prefund the plan. However, there is not much chance of doing that in today's environment, since only a small portion of a sponsor's total pension obligations can be provided on an unfunded basis, given ERISA. From the pensioner's point of view a solution certainly would be to index benefits, either by a certain percentage each year or based on the cost-of-living or some combination of the two. As I come up with each of these solutions, I am throwing the problem back to the other party and favoring one party as against the other. If we index, we are throwing the entire impact of the inflation on the sponsor. If the worker keeps working, presumably we are throwing the entire impact on the worker and saving the sponsor. In essence what I am trying to do is utilize an existing, outside resource, a profit sharing plan, the worker's capability to continue working, etc., to solve the problem within the pension plan.

We should try to look further for ways to solve the problem that do not look outside the plan. Certainly, one of these would be for the sponsor to invest in assets that would provide a hedge to or stay with inflation. In order for this to be done it takes action. As responsible advisors to sponsors, we should encourage them to try to make investments in assets that will do this. To the extent sponsors think their fiduciary responsibilities, as interpreted by the law and regulations, will not let them do that, we should look for a change in the law, so that a plan could invest in precious metals or find other ways of staying up with inflation and preventing a deterioration in the assets backing the plan.

I could characterize the solutions I have given so far as how we can live with the problem; how we can mitigate the impact of inflation for at least one of the two parties and perhaps for both parties. It puts me in the position of being a roofer and coming out to someone's house who has a leaky roof and saying you can live with this problem--just put a bigger bucket over here, and put a tarp over the stove.

A different way of looking at the problem, and a more fundamentally sound way, is to try to deal with the problem itself and stop inflation. You did not cause inflation, so you cannot stop it, but as people dealing with these topics all the time, we can help by spreading correct ideas. We can

say what inflation is, what its cause is, and indicate its destructive power rather than always trying to patch up the plans with which we deal and living with the problem. For instance, indexing only institutionalizes the problem and really does not solve the problem itself.

I would like to now turn to the outline and indicate to the extent that we do not try to abolish inflation and establish capitalism and its economic guardian, the gold standard, we can look for inflation to continue almost unmitigated until we have some indication from Washington that they are adopting different policies or different ideas. The implications of this for benefit adequacy and plan assets I have already laid down. As long as the Congress and other politicians do not recognize the cause of inflation, we will have attempts at legislating cost-of-living indices in pension plans, price controls, and any number of attempted solutions to deal with the effects of inflation and not with the problem itself. We could expect in the long run, if they will not solve the problem, indexing of some kind as a requirement. As for the assumptions we put into these plans, as we get into the 80's and if these conditions continue, we will probably have to have salary scales that are greater than the expected rate of return on assets.

MR. GRUBBS: Mr. Bassett mentioned that he felt comfortable and somewhat uncertain in setting assumptions. All of us share that discomfort and uncertainty. Yet, we still have to set assumptions. We do have to do valuations and fill in Schedule B. So I am going to poll the panelists with several questions. Our assumption as to the cost-of-living is used in possibly three ways. First, if you have a plan which has cost-of-living indexing, you must make some assumption. Second, if you have a Social Security offset plan, projections of Social Security benefits for the person retiring at 65 are wage-indexed below 62 but cost-of-living-indexed between 62 and 65, requiring a cost-of-living assumption. Third, the cost-of-living assumption is a base for the other assumptions. In the long run, over the next 50 years, how much inflation are we going to have? What is your best estimate?

MR. DREHER: We all spend many years studying mathematics, and then we proceed to go to work and ignore the very primitive training we obtained in the university. We ignore standard deviations. We ignore probability distributions. We are forced for many practical reasons to come up with point estimates. I acknowledge the fact that we cannot avoid making point estimates because of the conventional practices and the laws, but we ought to be aware of the range of possible outcomes. For example, some people say that the long-term inflation rate will be 2% or 3%. My first impression is that is a very optimistic outlook. My second impression is that forecasts a massive deflation which will lead to negative growth of product and consumer prices in order that the long-term average can be as low as that. The more positive outlook is to assume that we do not have to suffer through war or some economic catastrophe and to use 4%, 4 1/2%, or 5% as a base rate of inflation.

MR. COLE: Two hundred percent. That is actually my answer. How did I get to that figure? It cannot continue indefinitely. Something will happen to the system; either it will collapse or someone will wake up. During the 80's we will see inflation rates in the teens, and if you compound that for a period of ten years or so, you can easily get up to 200%.

At some point in the future, at least as we approach the turn of the century and certainly by 2020, we should have the return of a sound economic system to the United States so that inflation would not exist any longer.

MR. GRUBBS: Do you mean that in doing my actuarial valuation I should make an assumption of 10% or 0%, or what assumption should I make?

MR. COLE: The remarks I just made would fit well with the approach advanced by Mr. Bassett. If you thought that things were going to change fundamentally somewhere down the road, a select and ultimate approach would be very satisfactory, realistic, and reassuring.

MR. BASSETT: I would first like to comment on the select and ultimate approach again. Usually when you see quotations in the press, they are talking about the top 500 or the top 150 companies in the United States. I suggest that probably all those companies are now having their actuarial valuations done using computer programs, and it would be worth the extra cost to put it on a select and ultimate basis.

What assumption do I use for my valuation today? I am a practical person; I do not want to look foolish. I think maybe 200% is as good an answer as any we can give, but that is not acceptable. Ten percent is not acceptable; it is too high. Zero percent inflation is not acceptable; it is too low. It is not that I say so; it is what the people feel. I will split the difference and take 5%.

MR. GRUBBS: Another assumption is the salary scale, which has three elements. The first is the rate of inflation, the cost-of-living. The second is the excess of average earnings over the cost-of-living. What is the growth in average earnings? The third is what we call the merit element, excesses, usually as a result of promotion or longevity, which result in a person increasing relative to the average. Let us look just at the difference between average earnings and cost-of-living. We use that in two ways. First, in projecting Social Security under an offset plan, you must project the increase in the average earnings, which is the sum of the cost-of-living increase plus any excess of the increase in average earnings over the cost-of-living increase. Second, in the salary scale, it is one of the building blocks on top of which we put the merit increase. The question is how much, if any, do you think that average earnings will increase above whatever cost-of-living increases we have in the long-term future?

MR. COLE: Recently the actual experience of plans I have dealt with is that the salaries are increasing less than the rate of inflation, at least for the average worker. I do not see any fundamental changes in the ideas and policies from Washington, so I would expect that increases in salary would run less than the increases in cost-of-living for some period of time.

MR. DREHER: We are proving once again that there are many roads to the same destination. I am impressed by analyzing historical data on the growth of the economy in terms of output per unit of labor. In real terms, the analysis done by the Social Security Administration

is a persuasive input to this judgment. Currently, the intermediate assumptions are approximately 1 3/4% in real terms. So, something in that range is sensible. An assumption of 1%, which was used in some widely publicized material which was discussed among actuaries and the public a few years ago, results in breakdown conditions in the Social Security system. Two and one half percent ties into the long past data, but we are using up the universe too fast to sustain that level of growth. Therefore, a range of 1 1/2% to 2% is a practical conclusion.

MR. GRUBBS: We now come to the interest assumption. To what extent, in the long-term, do you think that total investment return will exceed the cost-of-living, no matter where cost-of-living is? You may subdivide your answer between fixed dollar investments and equities.

MR. DREHER: All sorts of data demonstrate that market cycles produce imbalances between categories of assets in terms of total return in both nominal and real amounts. I am much drawn to the point which Mr. Bassett notes in his remarks; using select and ultimate assumptions should be a practice which is extended. This is not merely cosmetic. It is true that it will impact the credibility of the result, but cosmetic implies that nothing has changed. If we deal with these uncertainties with our eyes open, in some material ways the outcome will be changed. To the extent that actuaries have used the average of what everyone else used, they have failed to confront the tough part of our professional responsibility. The motto of the Society is that quotation from Ruskin about substituting facts for appearances and demonstrations for impressions. In my life, the appearances and the impressions seem to become more important as time goes by, because they are the things which influence others to act.

With respect to investment returns, there will be a rough matching between inflation and the total return on short-term, high quality instruments. Diversified portfolios of bonds will have real returns after expenses in the range of 1 1/2%, if there is a heavy government component, and 2 1/2%, if there is a heavy corporate component. The capital markets cannot survive unless equity investors are compensated for volatility, and long-term relationships of total return in excess of the consumer price index of 7% or so have to be borne out. Otherwise, there is going to be a complete change in our capital structure. That may occur, in which event, we would not have the opportunity to buy those common stocks. That would introduce more of an equity component in bond holdings, and I am unsure what its composite effect would be on pension fund returns. If you balance these factors, the actuarial assumption, net of costs, in assuming a majority or two-thirds equity component, ought to be in the range of 4% to 5% above the underlying inflation assumption.

MR. COLE: The best prospect for someone to stay at least even with inflation would be in the money market, something that is very short-term. Fixed income securities that are long-term in nature suffer fairly significantly as we have higher and higher interest rates fed by inflation. Correspondingly, equities are not faring well. If we are going to look into the past to predict the future, we ought to look at the very recent past when we have had significant inflation. We should try to have as conservative assumptions as possible given

the environment in which we are working. It is important to try to cast the resulting set of assumptions (and select and ultimate would be an excellent way to do that) in the direction we believe things will be going.

MR. BASSETT: I do agree with the statements that Mr. Dreher has made. I endorse them as to where interest rates and investment income are going. The studies that have been made indicate that the rate of return on riskless money has just barely kept up with inflation. It is discouraging and leads you to think that you cannot make any money by investing, unless you take a risk. That is what history has proven to us. There will be a rate of return for the acceptance of risk. If you want a riskless investment, you will just be able to keep up with inflation.

MR. GRUBBS: At this time, we are going to take questions and comments from the floor.

MR. SANFORD B. HERMAN: Have there been any studies as to how the inflation rate would affect retired employees as opposed to the general public? Obviously, inflation affects different people at different times. In looking at the current inflation, it is running at 13% to 15%. Looking at corporate profit reports over the last couple of quarters, it appears, at least for most of the larger corporations, that increases in profits are well exceeding these rates. One possible alternative would be to increase the funding on pensions in relationship to this excess of return versus inflation.

MR. GRUBBS: The consumer price index is based upon urban workers and the market basket of items that they buy. Some people have suggested that because pensioners use more of some items and less of others than urban workers, a consumer price index based on their market basket would be different. I know of no study on this matter. The Bureau of Labor Statistics has raised the question of whether they should develop a separate consumer price index for retirees. It would take an act of Congress to authorize them to do so, and if they were to do so, it would take them a couple years of lead time to develop it. I am not aware of any currently available data that is statistically valid right now on that.

MR. COLE: I do not know of any study that would look at the cost-of-living increase for retirees. In regard to the second point, one of the effects of inflation is to increase the nominal rate of profits of corporations, and that increases their taxes. I emphasize nominal when I say nominal rate of profits, because accounting principles do not provide for depreciation on the increased costs of the capital goods the corporation must replenish. You will therefore have an increase in nominal profits, but if you could really get behind the scenes and put in an adequate provision for depreciation, profits would probably be down. Some realization of that fact is one reason why the stock market is not taking off. There are increases in nominal profits, but when you consider what the corporation will actually have to spend to replace their goods, the profits are down.

MR. GREGG L. SKALINDER: I would like to comment briefly on paying for the cost of inflation. Pension plans, by and large, are able to respond pretty well to inflation through final average formulas, increases for

those already retired, and upgrading of dollar per year of service types of plans. It seems that one of the things that is not often discussed is the public policy of how to pay for this. There are many choices. For example, in the final average environment you can achieve much of that same end, but with a deferral of the recognition of the cost, by going to an updated career average scheme. A plan sponsor has a fairly broad choice as to the incidence of paying for the cost of inflation. Likewise, retiree increases can be built into the plan, which gives rise to the 30% and 35% current cost increases, or the cost can be deferred through the adoption of ad hoc increases. One of the things that needs public discussion is the proper way of paying for the cost of inflation. The government has taken a position that you cannot pay, or you should not pay, in advance for the effects of inflation on dollar per year of service plans. In fact, there is no alternative there. One might argue that you should project future increases in a dollar per year of service benefit and start funding for those in advance, or at least have that option. What would be an appropriate way, and what should the government do? Should they require advance recognition of the cost of inflation?

MR. DREHER: Mr. Skalinder has a useful point. If you look at the implications of high rates of inflation and negative returns on assets, factor in an assumption that the whole system does not blow up on us, and recognize that ERISA taps the corporate balance sheet and provides certain overriding federal guarantees to pensioners, there should be a conscious policy of underfunding in periods of high rates of inflation and perceived inadequate returns on assets. If you presume the viability of the system and of the employer, there is no inevitable virtue in having level-percentage-of-pay costs. It might be better to keep that capital in the business and pay more in later. This line of reasoning suggests that the application of the actuary's judgment would be to produce lower levels of funding under the type of environment which Mr. Cole has been describing.

MR. GRUBBS: I am a traditionalist and still prefer the level premium approach.

MR. COLE: The law and regulations are laced with the concept of discrimination, and that is being increasingly applied to areas in which it had not previously been applied. With respect to pension plans, since the higher paid people in the corporation usually have a pay-related system and the hourly workers have one that is a flat dollar multiplier, you can account for inflation in some way in the salary plan for the higher paid people, but you cannot account for inflation for the lower paid people, the antithesis of the discriminatory aspects of the law. I would hope that the government would soon allow some provision for recognition of the future inflation in flat dollar plans.

MR. STEPHEN L. WHITE: Mr. Cole attributes inflation to the Law of Supply and Demand. He sees an imbalance between the supply of goods and the demand for goods, the money supply. Since he believes the growth in supply of goods is adequate, his solution is a drastic restriction of the money supply, even an eventual return to the gold standard. There are two weaknesses in this analysis. First, since we expect the supply of goods to grow faster than new gold is being discovered, the gold standard would replace inflation with deflation. Second, the growth in supply of goods depends on the money supply. With severe restriction of the money supply, the supply of goods may not be adequate.