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THE FUTURE OF DEFINED BENEFIT PENSION PLANS

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- Trends in plan terminations and frozen plans
- Attitudes of plan sponsors to defined benefit plans
- Union willingness to abandon defined benefit plans in hard times
- Legislative changes and integration
- Impact of economic factors on the choice between defined benefit and defined contribution plans (compromise with a floor plan?)
- Impact of increasing Pension Benefit Guaranty Corporation premiums
- FASB reporting requirements
- Post-retirement increases

MR. JAMES S. RUBIE, JR.: The topic of this session is "The Future of Defined Benefit Pension Plans." We will ask our panel to engage in an activity which non-actuaries often perceive to be the primary function of the actuary -- to predict the future. This may be an erroneous perception of the actuary by the public, but we shall, nevertheless, expect accurate and specific prognostications from our panel.

Why is the topic on the program in the first place? I submit that defined benefit plans are and have been very important to actuaries. Actuarial valuations have been the bread and butter of actuaries working for consulting firms. They are the reason we have an "Enrolled Actuary" designation today. Defined benefit plans provide more work for actuaries than other types of retirement plans. They require knowledge that actuaries possess that others do not. So they are important to us.

Is there some doubt about the future of defined benefit pension plans? Will the growth that they have enjoyed for the past half century be curtailed and, with it, the need for our services? What will replace them? These are questions we expect the panel to address.

Before hearing from the panel, let me try to dispel any doubts you might have about the pressure defined benefit plans are under. Last summer numerous articles appeared in trade journals and national newspapers reporting on the "tinkering" with actuarial assumptions to reduce contributions and improve companies' earnings. Eventually editorials appeared questioning what was occurring and questioning the validity of such plans themselves. For example, an editorial captioned "Private Pension Plans: Bust or Robust?" appeared in the August 26, 1982 Wall Street Journal. A later headline "Clinging to Defined Benefit Pensions is Poor Policy" stated:

"Defined benefit plans are obsolete holdovers from the forties and fifties. The current economic and demographic factors are vastly different. Unfortunately for shareholders, very few companies have followed the example of A&P in the pension area. The company paid up its defined benefit liability and established a different type of retirement program. Employees have the security of a pension annuity guaranteed by a major insurance carrier and A&P recovered $200 million from the pension fund. Given the opportunity to eliminate a substantial liability it hardly seems prudent for a board of directors to continue a defined benefit plan, the source of the liability -- especially when the liability will continue to grow."

More recently, the Wall Street Journal carried an article on Occidental Petroleum's termination of its and Cities Service's defined benefit plans -- to recoup the overfunding in the plans.

With this bit of background, I would like to commence the panel discussion. First I would like to introduce Dave Kempken. Dave is Manager of Employee Benefits for Bethlehem Steel and will address the issue from the plan sponsor's point of view.

MR. DAVID W. KEMPKEN: Today's environment for benefits, particularly pensions, is one of turmoil, uncertainty and flux. Public policy, which has favored and nurtured the private pension system for the last 50 to 75 years, is being seriously questioned as budget deficits defy control and the policymakers struggle with the imponderable question of whether society can afford all the entitlements and expectations that currently exist. As we approach the elections in 1984, politics will enhance the probability that legislation will be enacted which will either further restrict benefits for the highly paid, require further costly benefit expansion or adversely change the tax treatment of pension plans.

Meanwhile, employers in many segments of the economy, especially the basic "smokestack" industries, are still reeling from the effect of a protracted, devastating recession or depression. Many plan sponsors have made drastic and permanent cuts in their work forces creating a large population of the structurally unemployed in need of retraining, relocation and reemployment.

Against this backdrop of crisis and confusion, I'd like to discuss defined benefit versus defined contribution plans and the factors influencing the choice from the corporate plan sponsor's point of view. Recognizing that the corporate plan sponsor community is not a homogeneous group and points of view certainly depend on whom you ask and when, I propose that we first examine the principal characteristics, strengths and weaknesses of defined benefit and defined contribution plans, briefly review the choices plan sponsors have made over the last 50 years and finally look to what their future choices might be.

Given that the basic objective of any pension plan is (or should be) to provide adequate, secure retirement income and given the fact that costs over the long term are equal to benefits plus or minus investment experience and administrative expenses, defined benefit plans and defined contribution plans are really alternative approaches to the same objective. Defined benefit plans focus on controlling the outflow. Defined contribution plans focus on controlling the inflow. The balancing factor between these two diverse approaches is who is at risk and for what.

Looking at defined benefit plans, the principal characteristics are first, by definition, benefit levels are predetermined by the plan provisions to produce a desired range of retirement income. Second, plan costs are the variable factor and are directly related to benefit levels and financial experience. Since benefits are fixed, the plan assumes the investment risk, and assets are not identified with any individual. And, last, the normal form of benefit is generally some form of life annuity which produces the defined level of retirement income to the retiree for as long as he or she may survive, although generally optional forms of payment are also available.

Switching over to defined contribution plans (in which I'm including profit-sharing and thrift and savings plans), we naturally find that the principal characteristics of these types of plans are quite different, reflecting the different approach to the pension plan objective. Again, by definition, the contributions are fixed by plan provisions to produce the desired level of cost. Second, the benefit levels are the variable factor, depending directly on the amounts contributed and the financial experience of the plan. In most cases, individual accounts for each participant are established and the individual bears the investment risk. Since benefits are determined by the account balances, the normal form of benefit is more commonly a lump sum although conversions to life annuities and other options are also available.

From the corporate plan sponsor's perspective then, what are the relative strengths and weaknesses of these two types of plans?

Looking at strengths first, in my opinion the defined benefit plan is the most efficient way of producing the level of retirement income which is determined to be possible or desirable. Absent arbitrary restrictions, enough flexibility exists to respond to the entire range of compensation without producing excessive benefits for any particular group. It is particularly well suited to provide adequate benefits for employees close to retirement when the plan is introduced or when improvements are made. Although costs can and do fluctuate, actuarial methods and funding requirements provide sufficient flexibility that the timing of the cost and its fluctuation are somewhat controllable. Temporary investment fluctuations can be absorbed by the plan without adversely affecting individual participants. The annuity form of payment also lends itself to ad hoc post-retirement increases or, if the plan sponsor is willing and able to accept the cost, to indexed retirement benefits to offset the effects of inflation on retirement income. Defined benefit plans also tend to provide greater incentives for employees to remain with their existing employers and they also tend to maintain the relationship between retired employees and their former employers which may be a strength or weakness depending on the objective.

The principal weaknesses of defined benefit plans are that they expose the employer and its stockholders to unknown costs and liabilities if the employer cannot terminate the plan or adjust benefits to reflect the employer's ability to pay or to react to unexpected economic developments. If the employer is responsible for financing the benefits, it is difficult to separate and share the authority for investment choices, benefit formulas and plan design with employees, labor organizations or the government. In addition, defined benefit plans tend to provide less flexibility to respond to changes in laws and regulations, particularly those with retrospective application. As an employer's retired employee population grows relative to its active employee population, the administrative requirements of defined benefit plans may also become a significant burden.

With respect to defined contribution plans, the relative strengths are that the employer's costs are fixed and there shouldn't be any additional employer liability beyond making current contributions. Since the employer's liability is limited, it is much easier to share the authority for plan investment, benefit options and the like, making them more compatible with flexible benefit packages. These types of plans tend to be more flexible in responding to changing laws and regulations and they tend to be more adaptable to a highly mobile work force. And while the administrative burden may be heavier during active employment, the administrative burden for retirees may not exist, depending on how optional forms of benefits are handled.

On the weakness side, the individual participant bears the investment risk -- this generally creates winners and losers -- with the winners enjoying perhaps excessive benefits and the losers suffering from insufficient benefits. Benefit adjustments for the older or retired workers are difficult. Relationships with retired employes are also more apt to be severed when account balances are distributed.

Now this is certainly not an in-depth analysis of both types of plans, but I think it is sufficient for our purpose, which is to look at the future. Most actuaries analyze past experience to gain insight for projecting future events and I think doing that here would be a useful exercise.

Looking back we find that the private pension system isn't all that old. The system as we know it today really started early in this century as portions of the industrial work force reached the age where they couldn't work, weren't able to adapt to changes in the work place, and weren't as productive as necessary, and they wanted to retire. Up until this time, the nonworking elderly were taken care of primarily by the family unit or local charity. The industrialization of the work force resulted in these traditional sources being unavailable or incapable of adequately responding to the need. Social pressures required that this need be addressed and society looked to either the government or the employer. Employers responded not only out of a sense of social responsibility and a desire to keep social programs under control, but also because pension plans provided a humane, orderly means of removing older, worn-out, less efficient employees from the work force and also provided a means to respond to younger employees' concerns about job progression and eventual retirement.

At this point in time, the characteristics and strengths of defined benefit plans were well suited to respond to the then-existing need. Employers viewed pensions as gratuitous, a reward for long and faithful service. Benefit amounts and eligibility were often at the employer's prerogative and retirement income was provided in many cases directly by the employer so investment risk and funding considerations weren't overly important. Because of the inability of defined contribution plans to adequately provide for older workers initially, they were not well suited to address the immediate need of providing adequate retirement income. The gratuity theory preempted many of the defined benefit plans' weaknesses in that the employer always had the option of terminating benefits if costs became too high, and, if funded, liability was always limited to the assets in the trust. The work force was not very mobile and, therefore, vesting and portability were not of major concern. Autocratic, as opposed to participative, management was prevalent and employee's choice was not in vogue. Therefore, employer-controlled defined benefit plans were the natural result in most cases, although a number of profit sharing plans such as Sears, Proctor and Gamble, and Eastman Kodak also developed at the same time.

In the early 1920's, favorable tax treatment for pension trusts began to evolve, giving impetus to funding plans through trusts. Employers' latitude on termination of trusts and, to some extent, on benefits, started to become restricted and discrimination standards began to evolve. The favorable tax treatment of pension contributions and trust earnings, combined with broader application of graduated income tax, made noncontributory pension plans very tax efficient and participant requirements emerged in the 1940's which encouraged expansion of plan coverage.

In 1946 in the Inland Steel case, which was later upheld by the Supreme Court in 1948, the National Labor Relations Board held that pensions, at least with respect to active employees, were a mandatory subject for collective bargaining. This led to the rapid expansion of pension coverage for represented employees. In most cases, labor favored defined benefit plans and, while this expanded pension coverage, it also introduced the constraints of collective bargaining agreements on some pension plans and gave additional impetus to the deferred compensation concept of pensions.

The next 20 years were ones of favorable growth and expansion for pension plans. Washington didn't meddle extensively in private pension plans and both defined benefit and defined contribution plans prospered to the degree that more than 75% of the full-time nonagricultural workers between 25 and 64 came under coverage. Although the statistics vary, defined benefit plans were clearly in the majority.

But late in the 1960's the winds of change began to blow. Situations of underfunding, poor administration and misuse of plan assets occurred and received perhaps disproportionate publicity. Legislation emerged in 1974 in the form of the Employee Retirement Income Security Act (ERISA), which marked the beginning of a tumultuous period of legislation and regulation focused on pension plans with particular impact on defined benefit plans. The principal provisions of ERISA focused on participation, vesting and benefit accrual, funding, limitations on benefits and contributions known as the Section 415 limitations, the introduction of individual retirement accounts, plan termination liability and insurance, and fiduciary rules including reporting and disclosure requirements.

With regard to defined benefit plans, ERISA further restricted the plan sponsor's ability to define the benefit. This dilutes some of the strengths of that type of plan, and the plan termination provisions serve to accentuate the major weaknesses, which are unknown costs and liabilities. ERISA also demonstrated that the government can and will change the rules retroactively and the employer is going to be stuck with the costs. On the other side of the coin, the birth of Individual Retirement Accounts (IRA) began to make employee contributions more efficient by exempting them from current taxation. The Revenue Act of 1978 gave a big boost primarily to defined contribution plans funded in whole or in part with employee contributions through 401(k) plans. This act also gave impetus to flexible benefits or flexible compensation by introducting Section 125.

During this same time frame, Congress also realized that the plan termination provisions of ERISA as they applied to multiemployer plans were potentially disastrous for the Pension Benefit Guaranty Corporation (PBGC). They postponed the effective date of coverage for those plans several times and ultimately "fixed" the problem with the Multiemployer Pension Plan Amendment Act (MEPPAA) of 1980. Whether you agree with that act or not, it repeated the message that Congress can and will change the rules retroactively with little regard for the consequences to the plan sponsor.

Moving forward with our legislative review, we come to the Economic Recovery Tax Act of 1981 (ERTA) which, among other things, opened IRA's up to employees already covered by an employer's qualified pension plan. This change was intended to foster the third leg of the stool, i.e., personal savings, and to help the capital formation problem. Next came the Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA) which substantially limited the ability to provide benefits to the highly compensated by sharply reducing the 415 limitations and temporarily freezing them. TEFRA also added a significant administrative burden with its tax withholding requirements. Secondly, and perhaps more significantly, TEFRA came out of the tax writing committees, drew pension plans into the budget deficit quagmire, and signaled a possible shift in the tax incentives for employer pension plans.

Two other nonlegislative developments also occurred in the 1970's and early 1980's which I believe are pertinent. During the 1970's investment alternatives such as the guaranteed investment contract (GIC) emerged. These tended to address the major weaknesses of defined contribution plans by minimizing the investment risk for the individual. The other development was the Financial Accounting Standards Board (FASB) in the area of employers' accounting for pensions and other post-retirement benefits which could have a substantial effect on plan sponsors by requiring that defined benefit "pension liabilities", whatever that might mean, be reflected on the balance sheet.

Now let's look at what the future legislative scene might hold for defined benefit pension plans. Perhaps that could be summarized by a quote attributable to Bill Lieber, pension counsel for the Joint Committee on Taxation, as follows: "I think the pension community needs to know that there's an attack going on. When legislative or regulatory proposals could negatively affect defined benefit plans, more and more often, the response in Washington is 'so what'. The shift in attitude has developed over the last year."

That is certainly an ominous sign with respect to future legislation. What will come of it remains to be seen. It appears likely that we will see some type of single employer PBGC legislation which will not only significantly increase the premium to $6 or higher, but will also "close some loopholes" which means that plan termination may be more difficult, continued funding of either guaranteed or vested benefits, either directly or through a PBGC interest in future profits, will be required and that funding waivers would be recoupable by the plan in addition to the 30% of net worth liability.

It also appears that some type of unisex legislation may pass which would ban the use of sex-based factors in determining pension benefits. Depending on how this is done and what degree of retroactivity there is, the government's estimates of the annual cost increases for plan sponsors run from a low of $85 million a year to a high of $1.7 billion. Given the government's propensity to underestimate, we can probably count on the actual cost being somewhat higher and an administrative nightmare as well. Next, we have the so-called women's pension issues which encompasses things like reducing the minimum age for participation to 21, shorter vesting periods, credit for maternity and paternity leave for all purposes including benefit accrual, requiring spousal consent on joint and survivor options, requiring plans with annuities as the normal form of benefit to provide a survivor's annuity to the spouse of any plan participant credited with at least ten years of service for vesting purposes who dies before the annuity starting date, and making not only accrued but projected benefits subject to domestic proceedings. Not only are these provisions (which redefine the defined benefit) expensive, they will be administrative catastrophes.

By now you may be thinking that it's time to start looking for a tombstone for defined benefit pension plans. I don't think it's quite that bad but maybe they need a respirator or, most of all, to be left alone. The basic objectives of the entire pension system is to provide an adequate and secure retirement income for the majority of Americans. I believe that the private system has helped accomplish that objective to date, has helped alleviate pressure on the Social Security program, and I don't believe that there is any question that Social Security can't do it alone. The private pension system has also been a key source of capital formation which is essential to a healthy economy, without which any retirement income is not possible. As America continues to gray, adequate retirement income is going to be a hot issue and the private system will be an integral part of resolving that issue.

Let's look at the other factors that affect current plan sponsors' choices between defined benefit and defined contribution plans. Recognizing these factors may vary depending on whether you are starting from scratch or have existing programs in place. Most large corporate sponsors have plans already in place, and I'd like to look at the factors from that perspective.

1. Financial condition of the employer -- is it strong or weak? What are its financial resources?
2. What kind of industry or industries is it in? What's the outlook for the industry? What are competitors providing?
3. Is the employer centralized or decentralized, single location or multi-location, domestic or international?
4. What kinds of plans does it currently have? How well funded are those plans? How do they interrelate? What type of non-pension benefits are provided? Is the employer interested in flex benefits?
5. What are the employer's objectives? Does it want to provide only retirement income or does it want to provide access to money during employment?
6. What type of administrative or technical capabilities does the employer have in-house or is it willing to purchase? How would the plan administrative systems fit with other systems such as payroll?
7. How can the plan be communicated?
8. Are there any problems with stockholder approval of certain types of plans?

The next group of factors deals with the employees and covers the following:

1. What are the characteristics of the active employee work force? Age, sex, length of service, marital status. How prevalent are two-income families? When do employees retire and what are they expecting? Are they willing to contribute? How much?
2. What are the characteristics of the retired work force -- how many relative to active work force, how old are they, what type of relationship do they have with the company, what is their level of benefits, etc.?
3. How much of the work force is represented and by whom? Where collective bargaining is involved, the views, interest, strength, degree of sophistication of the unions can be significant factors. Are the unions pushing for

control of plan assets? How bargaining is done (plant by plant, company wide or across the industry) also affects the choices.

4. How mobile is the work force? Is it skilled or unskilled, highly technical or nontechnical, sales or production oriented? Is there a lot of competition for employees? Does the employer have any problems attracting and retaining employees?
5. What is the structure of the employees' cash compensation and how is it paid? What other types of deferred compensation might be involved? What is the range of compensation? Is flexible compensation in place or on the horizon?
6. How sophisticated are the employees? Can they make benefit choices and investment decisions? If lump sum benefits are available, will they be able to provide for themselves for the rest of their lives? What types of investment opportunities are available?

CONCLUSIONS

Historically defined benefit pension plans were the most tax efficient and secure method of providing a given level of retirement income. Plan sponsors were willing to accept the responsibility of providing defined benefits provided they had the authority to define the benefits, invest the assets and terminate the plans if it became economically infeasible to continue them. Those plans served the participants, the plan sponsor and nation well in terms of providing reasonably secure benefits to a large number of employees. These plans also played a major role in capital formation in an investment efficient manner. Investors had sufficient information about those plans to make informed decisions with respect to plan sponsors.

In the last ten years and in the next year or two defined benefit plans will have become much less attractive to plan sponsors. The government has redefined the defined benefits the way it or the most influential lobby group thought it should have been designed; a lot of actuarial assumptions are now viewed as potentially discriminatory situations that need to be corrected; it also eliminated most of the safety valves sponsors had with respect to cost and liability through plan termination provisions, anti-cutback rules, restrictions on actuarial assumption changes on optional forms of settlement, etc. A small group of zealous FASB staffers, with very little apparent external support, seem bent on radically affecting the plan sponsor's balance sheet with little concern for the unknown consequences. The administrative burden associated with defined benefit plans is also becoming a major problem. Labor wants a piece of the action on plan asset investments but expects the plan sponsor to accept the downside risk.

Meanwhile, defined contribution plans are becoming more attractive. Costs and liabilities are easily controlled. Employee contributions now can be as tax-efficient as employer contributions. Investment options are available that minimize the individual investment risk. Defined contribution plans are much more amenable to addressing the vesting, portability, asset control, women's issues and discrimination-type problems. As management styles change and become more participative, flexible compensation arrangements will be more prevalent and defined contribution plans are much more amenable to that type of arrangement.

So the pendulum seems to be swinging in favor of defined contribution plans. Plan sponsors will weigh all of these factors as they decide between the defined benefit and defined contribution plans. But don't expect to see a mass exodus from defined benefit plans. Based on my own personal experience in bargaining with several major unions in industry-wide negotiations, it's clear to me that labor is not ready to abandon defined benefit plans, with its PBGC protection, in favor of defined contribution plans. Also, many plan sponsors and many participants aren't ready to give them up. Despite the problems of defined benefit plans, the major objective is still to provide adequate, secure retirement income. Post-retirement inflation and asset management of the payouts from defined contribution plans will continue to be problems.

I do expect to see a greater balance between defined benefit and defined contribution plans. Plan sponsors will probably deemphasize their existing defined benefit plans by not improving them, reducing future accruals by changing to career average plans, or by reducing benefit formulas. Profit-sharing and 401(k) Cash or Deferred Arrangements (CODA) will be the growth areas but they will supplement -- not replace -- most existing defined benefit plans. Social Security will be providing a smaller proportion of the total retirement income than it has in the past, and the third leg of the stool, employee savings, will provide a larger share, primarily due to IRA's and CODA's.

I think that the next few years are going to be exciting and challenging for everyone associated with both types of pension plans. The actuaries, the accountants, the plan sponsors, labor, the lawyers, the government and everybody else are going to have to work together to find innovative ways to provide for the elderly within the limited available resources.

MR. RUBIE: Our next panelist is Jeremy Gold. Jeremy is a consultant with Buck and he is going to address the issue from the standpoint of future design and its impact on the employee.

MR. JEREMY GOLD: There are handouts (Appendix A). I very much agree with Dave that we are looking at a shift in balance, rather than a drastic or dramatic change. We have traditionally looked to the three legged stool as the way to provide retirement income. Among these legs, we find that Social Security is retreating as a source of retirement income. I think it's also reasonable to say that pension plans have probably peaked, at least for the time being, in their contribution to the total retirement income picture. That leaves employee savings. Particularly important are employee savings of the kind we find in profit sharing and thrift plans, the kind that is prompted or primed by employer money. So we are going to see more defined contribution plans in the mix.

I'd like to look at the design of defined contribution plans, get a sense of how their benefits compare to those we're familiar with in the defined benefit area. In doing so, I am taking as a standard of defined benefit the final average plan for salaried (or the the updated flat dollar plan for hourly) employees because, in general, these two types accomplish the same thing. They produce a percentage of final pay at retirement which is proportional to the number of years of service.

When I ask how benefits from a defined contribution plan compare to benefits from a defined benefit plan, I'm asking what percentage of final pay can I expect to provide from the accumulated balance in the contribution plan? To answer this question I make some assumptions. I assume no withdrawals, and I assume contributions, total employer and employee, of K% annually. For a rough estimate at least, I assume salary scale and interest rate are the same. I also assume that I can buy a retirement annuity for A dollars that will provide one dollar a year. Now I look at N years of participation. When I do, I find that the account balance at any time is equal to NK% of the latest year's pay. And so the retirement annuity is simply (NK/A)% of the final year's pay. And just to make the model much simpler for me, if I assume that K and A are equal, in other words, if I assume 9% annual contributions and an annuity factor of 9, or 10% contributions with an annuity of 10, I come out to something really very simple. It turns out that the retirement income I can provide at normal retirement is simply N% of final pay, or 1% of pay for every year of service. And that gives me a kind of final average model to which I can compare when looking at a defined contribution plan.

The final average plan or the very simple model I've built will provide twice as much benefit at normal retirement for a 40 year employee as it will for a 20 year employee and twice as much for the 20 year as for a 10 year employee. Career average, incidentally, will produce less than twice as much for the 40 year employee as the 20 year employee.

I suspect that you might want to argue with me about some of these assumptions. You might want to argue particularly about the idea that salary scale and interest are equal. When we look at defined benefit plans, we like to think that the interest rate will exceed the salary scale. I guess we've been taught that if it doesn't, there's not much reason to fund. So let's change my model a little. Let's assume that interest rates do exceed salary scale. That introduces a slight bend into the relationship I just described.

Unlike the final average plan, and even more unlike the career average plan, my defined contribution model plan with interest in excess of salary scale produces more than twice as much for the 40 year employee as for the 20 year employee. That gives me a sense of the bend, the difference in shape and it's not very substantial. However, I think my model with equal interest and salary scale is still relatively reasonable, particularly when you consider that I assume no withdrawals and withdrawals from defined contribution plans are fairly common. I also think that employees choose less risky assets, on average, than do pension plan sponsors and thus should expect commensurately lower returns.

The next question that I'd like to direct your attention to is the relationship between the amount of retirement income and the other benefits that we provide from pension plans. I'm not going to go through it in detail, but on the last page of the handout I've taken a look at the provisions for benefits on early exit from defined contribution plans and compared those to early exit benefits from defined benefit plans. Defined contribution plans provide substantially greater benefits on early exit. By way of example, an employee who works from 25 to 45 and leaves a defined benefit plan will get only a very small fraction of the benefit he would have received at 65. Someone doing the same thing in a defined contribution plan, working from 25 to 45 and leaving, will have half the benefit he would have had had he worked until 65. I think that's pretty substantial. That means that all these early exits cost more when they're provided through a defined contribution plan if we're aiming at the same level of retirement income.

I think that's rather a long way of agreeing with Dave's statement that the defined benefit plan is a very efficient method of producing retirement income. But in a mobile workforce, the portability that's inherent in defined contribution plans is part of the trade off. The employee who can move from job to job and still be producing benefits that relate to final pay at final employer has a portable plan and that is provide by defined contribution plans.

Why would employers be switching from defined benefit to defined contribution plans? Dave gave many of the financial reasons. I think the employers also appreciate the fact that they do have a more mobile work force and they are responding to it. In addition, they recognize that employees like defined contribution plans because they're tangible, because they're flexible, because the funds are accessible for other purposes than retirement. But I don't think that's sufficient to make employers walk away from defined benefits and into defined contributions and pay the extra cost. I think employers have a simpler reason for wanting to do so and that is that the defined contribution plan can introduce employee money. Substantial portions of the defined contribution game involve employee money. It's that potential to shift risk and cost to the employee that leads employers to look to use defined contribution to replace some or all of their defined benefits.

I think it's essential that, as consultants, we are aware where we are leading people, employers and employees, in this move from defined benefit to defined contribution plans. Here's an example of how I might look at this problem. Let's look at an employer providing all retirement income from a defined benefit plan and for a full career let's say we're talking a replacement ratio of about 60% of pay including maybe half of Social Security. I think one of the things we might do in an effort to rebalance the three legs of the retirement stool is to cut that pension back to about 40%, but not in order to put the money into the employer's pocket. Instead, I suggest that we use the cost of the cut 20% as a way to prime or encourage employee savings. When we do that, we do it with a 401(k) plan because I think the defined contribution plan of the future, and very quickly the present, is the 401(k) plan. It's the tax effective way to get employee savings. If we use a matching 401(k) plan, we are trying to get at least as much employee money in as employer money. Very often, in fact, we're trying to get $2 of employee money for every dollar of employer money.

If we do that, if we're successful, we have 40% in the pension, we have 20% to prime, and if we can get one or two times the prime in from employees we're in the 80% to 100% replacement range. Even if we allow for withdrawals we have provided the employees with the opportunity of a higher pension target. We've tax sheltered their savings, we've helped them contribute to the total picture and the result they get is a higher target for retirement income. The employer has approximately the same, maybe a slightly lower cost, but is able to transfer risk to the employee and walk away from som· of those things that employers are trying to walk away from, the blank check and so on.

Well, how far should this process go? I've indicated that roughly one-third might be the distance to go in rebalancing. There are employers (and they do attract attention) who are terminating their defined benefit plans. Jim referred to A&P as having done so. I think they were motivated by the desire to transfer risk to the employee and by the opportunity to get their hands on the capital that exists in surplus (at least by PBGC measures) within the defined benefit plan.

I think some employers will be motivated to do this by being in difficult financial straits. I don't think as a matter of plan design that this is a very good way to run a benefits program. In terms of capital formation, I think there are probably better ways to get capital into an organization than to take it back from a pension plan and pay tax on it (if you're in a tax paying situation). So although the A&P's are visible, I don't think they are the major trend in retirement income today. About 8 or 10 major companies have terminated their defined benefit plans. I think there will be some more in the next few years, and I think much of our consulting starts today with the employer asking "What if I terminate my defined benefit plan?" But I think where we're going to end up is with a reassessment of the balance in the three legged stool rather than with a rush to replace defined benefit plans with defined contribution plans.

MR. RUBIE: Our next panelist is Geoffrey Calvert. I'm sure Geoff is familiar to many of you. In 1946 he founded the statistical division of the World Bank. He went on the create the actuarial practice for Alexander and Alexander. He's been the author of many papers. Today he is going to talk to us about what I would call the macrotrends that are going to influence defined benefit plans in the future. Also, he's going to talk about the excess interest issue in Canada.

MR. GEOFFREY N. CALVERT: It is instructive to look back over a third of a century of pension evolution, to the time when pensions first became bargainable in the United States. No sooner had that happened when Ford, General Motors, and U.S. Steel set three distinctive patterns for defined benefit bargained pension plans, with benefits respectively of $100 per month less the Social Security benefit; $1.50 per month per year of service (up to a maximum of 30 years) which was independent of Social Security; and 1% of the final 15-year average pay, integrated with Social Security.

The Ford plan quickly became a casualty. The $1.50 at General Motors soon became $1.75, then $2.25 with the 30-year limit removed, and in the early 1960's, this pattern was shattered by Chrysler's "blockbuster" settlement of $4.25 per month per year of service. This shocked everybody. I remember, too, seeing with alarm and apprehension a photo of a United Auto Workers meeting hall with a banner stretching across the end of the hall reading "$200 A MONTH PENSIONS." How could anyone be so unrealistic? What would that do to the economy? Of course, all those standards have long since been swept away.

Meantime, wage levels had risen steadily, so that the final average earnings based U.S. Steel plan showed more durability, though it, too, heavily changed as the years passed. And with all of this, the Social Security system was repeatedly liberalized, many new benefits added, and its tax base enlarged. The critical step leading more than any other to its subsequent series of financial crises, was the faulty indexing of its benefits to the Consumer Price Index (CPI).

Through the 1950's and 1960's, two kinds of plans were being steadily displaced. These were the money-purchase or defined contribution plan, felt to provide benefits insufficient for those nearest to retirement and unpredictable in any event, and the career-average form of defined benefit plan, which required constant updating to keep it from becoming obsolete in the context of rising productivity, wage levels, and inflation.

But along with this growing emphasis on final average plans for salaried employees, and fixed dollars-per-month-per-year-of-service plans for bargaining employees, we also saw the rise of another kind of plan especially among the smaller start-up companies. This was the profit sharing plan or combined thrift and profit sharing plan, sometimes reinforced with a past service only pension plan to give it a good start. Not only was this an echo of the money purchase principle, it threw in two new principles: (i) an incentive to give the employee an interest in the success of the employer company, and (ii) a great uncertainty as to the ultimate amount of the retirement income to be provided, with corresponding reduction in the commitment of the employer to face heavy fixed costs regardless of the profitability of his business.

There were of course the hybrids, such as the career average plan with final average minimums, and defined benefit plans with defined contribution or other minimums, some designed to limit the employer's financial commitment, some to protect the low-paid or short-service employee, and some to overcome the problems arising from mergers or takeovers.

Quite apart from these evolutionary changes in the basic benefit formulas, there were other kinds of revisions going on:

- Retirement ages became more flexible, and earlier;
- Vesting was progressively liberalized;
- Survivor benefits gained ground;
- Disability benefits were incorporated in many plans;
- Accounting standards for pension costs and unfunded liabilities were established;
- Pension plans became more extensively regulated, with emphasis on funding standards, and disclosure;
- The solvency of pension funds in the event of a plan shutdown became a subject of legislation in the United States and Ontario;
- Expectations of life were quietly being extended, adding to ultimate pension costs;
- Compulsory retirement was largely eliminated;
- The demographic surge-then-trough has sent a tidal wave of young people into the work force, to be followed by a greatly shrunken cohort, suggesting future reversals in attitudes toward retirement itself; and
- Recent heavy inflation, possibly temporarily very high interest rates, sharp recession, consequent negative total investment returns in many plans in 1981, heavy layoffs, and uncertainties as to the long-term economic outlook in the face of unparalleled government deficits have thrown major uncertainties in the pathway of actuaries trying to advise clients and determine valuation bases.

What was once thought to be a defined benefit, with retirement age, vesting rights, funding options, and any ancillary benefits all defined along with it, has turned out to be nothing more than a stepping stone in a long series of changed benefits and requirements. What the employer thought he was becoming committed to turned out to be only a first step. What was thought at the outset to be nailed down has broken away first in one direction, then in another, so that the very term "defined benefit" has turned out to be a misnomer. In the few cases where no recognition of changed circumstances has been given expression in a pension plan, what should have been lifetime security has turned out, in an *inflationary environment*, to be only a "tobaggan slide to oblivion" as one retired insurance actuary put it. The truly defined benefit has been a bitter disappointment and a cause of resentment.

What does all this breaking away of defined benefit plans from their original moorings tell us about their future?

Firstly, that pension plans have to be able to respond to changes in the environment in which they operate. Changes in the economy (inflation, the rise and fall of whole industries, labor mobility), demographic changes (changing birth and death rates, increasing longevity, attitudes to retirement, migration) and social changes (single parent families, surge of women into the paid work force, economic independence of women) must all be able to be accomodated. Benefits cannot be defined permanently. All plans are in transition.

Secondly, the regulatory atmosphere has tended to add more heavily to the burdens of employers who have embarked on defined benefit plans than on those with defined contribution plans. Automatic full funding, lack of commitment as to the amount of monthly benefit, ease of handling matters of vesting and reporting make the defined contribution plan an attractive alternative when looked at from this viewpoint.

Attempts to regulate pension plans are generally aimed at the various ways that defined benefit plans can fail to do their job. Inadequate funding, frequent job changes, ignorance of the plan's provisions, forced retirement, inflation, early death of the pensioner leaving destitute survivors -- each of these leads to hardship and hence to legislative response. The employer who sets out to provide lifetime security in a rapidly changing environment, promising defined benefits, may be undertaking much more than he bargained for.

FUNDAMENTAL CHANGES AHEAD

Take, for example, the possible impact of advances in genetic engineering, which have brought more than 2,000 diseases within range of potential treatments never before available. Extravagant predictions of longer life expectancies abound. Even in 1974 a survey by Rand Corporation of 82 gerontologists predicted a 20-year extension to lifespans by the 1990's. Soon after that, it was shown actuarially that if death rates at any age were cut to the level of those then applying to persons of one-half that age, the length of life after age 65 would increase by 386%. Discounting the extra pension years at 6%, the pension cost would be 87% greater. If the "natural limit of life" (presently about 110 years) remains unchanged, far more people will reach or even exceed it. It may be drastically extended. We do not know, but we do sense the probability of changes within the next few decades.

Either the defined benefit plan will probably cost more than is presently envisaged, or the retirement age will have to be advanced to keep in step with longevity growth. No one really knows what the costs of a defined benefit plan will turn out to be.

As another example of fundamental changes ahead, consider the impact of the computer and the robot, which seem destined to displace not only blue collar but also white collar workers right out of the factory, the office, and the warehouse.

In the information society which lies ahead, our whole approach to work will have changed. Robots and fully automated factories will need less and less human workers. Much office and service work will have been eliminated by the microchip. There are now about 27 million workers in manufacturing in the United States. This could shrink to 3 million by the year 2010, with similar reductions in white collar work. No one understands or grasps the extent of what is coming, according to Professor Raj Reddy of Carnegie-Mellon University. And according to Shrimpie Kato, director of planning for Fujitsu, "In the future, all assembly work will be done by robots. Warehouses will be totally automated; there will be no need for humans in factories."

In this vast transformation that lies ahead, frequent retraining will be needed to keep abreast of the newly emerging technology, but there is little assurance that in the long run there will be full-time employment for all those displaced. In the real world of wealth creation, robots and computers can lift burdens off our backs and bring the impossible within reach. But what will we all be doing with our time? What will happen to the concept of "retirement"? And what will be the future of defined benefit pension plans? Will they be relevant? Will the need for them have evaporated in the presence of some kind of social dividend based on the productivity of computers, robots, and automated factories? Is it wise today to make benefit commitments reaching two generations into the future when all we know for sure is that there will have been sweeping and radical changes in the work environment long before those commitments will have matured?

Now let us look in a third direction. Government intervention in the pension field seems always to be advancing from one stage to the next. Right now in Canada we face a whole series of proposed reforms which would, among other things:

- Require vesting after two years, with increased employer participation. (Can you imagine the hundreds or thousands of millions of tiny fragments of deferred defined pensions which would all have to be carefully accounted for, accumulated, and valued?)
- Open the way for portability of pensions and reserves.
- Make joint-and-survivor benefits the norm.
- Divide pension credits on marital breakdown.
- Require survivor benefits on death before retirement.
- Compel membership where a plan exists.
- Require full annual disclosure to employees and their spouses, including details of funding, contribution, and benefits.
- Require the use of unisex mortality tables.
- Increase protection in case of plan termination.

- Prohibit termination of survivor benefits on remarriage.
- Require payment of pensions from age 65 even though the employee has not retired.
- Require pensions to be adjusted for inflation by the "excess interest" method.

It would be out of place here to comment on these proposed measures in detail, but I would like to make a few observations about the last mentioned of these proposed reforms, because this "excess interest" method of adjusting pensions has beguiled not only the Canadian Association of Pension Supervisory Authorities, but also the Select Committee of the Ontario legislature, the Canadian Life and Health Insurance Association, and even some good actuaries. Notwithstanding this, I believe that this method will not stand up to close analysis, principally because:

- The relation between interest and inflation is in no way as simple as is assumed by those who proposed this method, nor is the correlation at all satisfactory.
- The whole thrust of the method is wrongly directed; it would pour vast sums of money toward those who need it least and do nothing for those who need it most, adding greatly to costs where pensions are already liberal, and not at all where there are no pensions.
- It would discourage the continuation of existing plans, cause benefit cutbacks, and slow down the adjustment of already accrued pensions for inflation which would otherwise occur.
- It would subvert the investment of pension fund assets, weaken the economy, aggravate the inflation, interefere with the process of capital formation in the most productive way, and while increasing benefits it would attack the source from which they must be provided.
- It is unable to deal with benefits purchased from insurance companies or with the huge problem of earning "excess interest" on unfunded liabilities.
- It runs afoul of the recognition of changes in market values in a pension fund, would cause severe internal administrative problems, and is technically unworkable in multiemployer plans.
- It is based on the illusion that in some magic way a rise in the interest rate available on new investments will increase the asset value of the whole fund invested over many past years, so that the "interest rate level produces the funds required." It does not.

This method is misconceived and fatally flawed. It attempts to substitute a means for an end, which is not very logical, but even in this it fails. It is a dead duck.

I have commented on this particular proposed item of badly misguided government intervention in the pension field both because it has gathered quite some momentum among would-be reformers, and because it would:

- raise pension costs enormously;
- discourage employers from establishing or continuing defined benefit plans in particular;
- cause a wave of cutbacks in these plans; and
- cause the conversion of many defined benefit plans to defined contribution plans.

Much more could be said about each of these proposed reforms, and about the legitimate aims of pension regulation, but in focusing briefly on the future of defined benefit plans, perhaps we can sum up our observations like this:

- The thrust of regulatory changes is generally to "harden" and to make more onerous and costly the commitment of an employer entering voluntarily into the establishment of a defined benefit plan;
- There is much less tendency for this to occur in the case of defined contribution plans;
- The outlook for demographic changes, such as the possibility of substantial increases in longevity, similarly points to a need for great caution in entering into commitments to provide defined benefits;
- The technological revolution which certainly lies ahead does not seem likely to provide the kind of environment for work and retirement which is generally compatible with the concept of defined benefit pension plans.

Since what we have been calling defined benefit plans have made their way into the forefront of the pension movement because they seem better able to satisfy the needs and yearnings of employees, it may seem unfortunate to sense a change in their outlook for the worse. But in our search for flexibility, for mobility, for portability of the assets, for freedom to retire or not retire as we choose, for individualism in determining our life-style and form of benefit, or for investment in or withdrawal from the highly computerized economy of the future with many employer casualties, perhaps the accumulation of our own individual, portable pension reserve, as offered by the defined contribution plan and the suggested Registered Pension Account, will in the end provide us with a greater sense of security.

MR. RUBIE: I think you probably have a few people thinking about broader issues now, rather than focusing on the more technical aspects with which we normally deal. I have a question for Jeremy and Dave. I heard them say they did not see a real negative future for defined benefit plans, but perhaps a rebalancing of the three legs of the retirement income stool. In light of the more negative impact of these broader issues, how would you respond to that now?

MR. KEMPKEN: I think a lot of major employers are locked into their existing plans and that an immediate switch just isn't feasible. In terms of future changes, I think more money will be spent in the defined contribution area, but I don't see that the existing plans are going to disappear.

MR. GOLD: I see a great variability in the retirement income that can be provided by a defined contribution plan. I don't think that most participants can rely on defined contributions without an anchor, and I think the defined benefit plan provides that anchor.

MR. RUBIE: Geoff, many of the people here are from the United States and are not familiar with the excess interest method. Can you briefly describe how that method works?

MR. CALVERT: The idea is based on the concept that interest comprises two elements: (a) a basic rate of return for the use of money, and (b) an additional amount to cancel out the effects of inflation while the money is being used. For example, if the basic rate is 3 1/2% but you are actually able to earn 12%, then the 8 1/2% excess over the 3 1/2% base rate is an amount which exists in order to restore the purchasing power back to what it would have been if there were no inflation. Therefore, that belongs to the pensioners (or the employees who expect to have their pensions in time) to restore the purchasing value of the reserves for their pensions. Their pensions and the accrued benefits would be continually adjusted. The interest actually earned has been given the name the "guide ." The guide rate would be the top figure, the base rate would be the bottom figure, and the difference is the excess interest which, under the theory, belongs to the employees or the pensioners to protect them against inflation. That, of course, would work out if the excess interest did, in fact, offset inflation and if you had the reserves in existence which are necessary to generate the excess interest. If you have unfunded liabilities, you don't have the basis for creating that excess interest and if the government is trying to bring down inflation by raising the interest rate, perhaps these figures are moving in opposite directions. We've seen exactly this situation -- very high real rates of return with the interest rates achieved being far above what would be necessary to offset the shrinking inflation. Sometimes it works the other way. The correlation is not good.

MR. WILLIAM AITKEN: I wonder if Mr. Calvert could comment a bit on post-retirement increases for money purchase plans. What are the interests he sees there?

MR. CALVERT: That is one place in which the proponents of the excess interest method blank out. They say if you buy an annuity with the proceeds of the accumulation on a money purchase plan, it's an already purchased annuity and hence it's out of your control. The insurance company has given you this type of income and nothing further can be done. However, they do encourage the use of increasing annuities and, of course, there's no mystery about those. I assume in a trusteed pension plan there would be a reserve for your pension that could earn excess interest that could lead to adjustments in your pension, but if the defined contribution plan builds up a reserve which is used to purchase an annuity at retirement, that's where the system cuts off.

MR. GOLD: In the United States, several major employers have tried something along that line. It's currently referred to as an "escalator annuity." Viewing the defined contribution plan as most major employers did during the 1970's, it is somewhat supplementary (as a capital accumulation rather than as a source of retirement income). Several employers offered their employees a chance to take some of that accumulated capital and use it to purchase in increasing annuity supplement to their retirement plan. There are not a great number of employers doing this and it's a little hard to say whether it is a trend. The employers who have done it get reasonably good participation by employees and seem to be pleased with the results.

APPENDIX A

ASSUME:

1) NO WITHDRAWALS
2) CONTRIBUTIONS TOTAL K% OF PAY ANNUALLY
3) SALARY INCREASE RATE (S) EQUALS INVESTMENT RETURN (I)
4) NORMAL RETIREMENT ANNUITY - $1 ANNUAL BENEFIT COSTS $A
5) N YEARS OF PARTICIPATION

RESULT:

1) PLAN BALANCE EQUALS NK% OF FINAL PAY
2) ANNUAL ANNUITY AT NORMAL RETIREMENT (NK/A)% OF FINAL PAY
3) IF K=A (SAY 9% ANNUAL CONTRIBUTIONS AND AN ANNUITY FACTOR OF 9), THEN ANNUAL ANNUITY EQUALS

N% OF FINAL PAY

OR 1% PER YEAR OF PARTICIPATION

VARIATION:

1) IF I > S, THEN PLAN BALANCE WILL GROW TO APPROXIMATELY:

$$\left(1 + \frac{I-S}{2}\right)^{N} \text{ (NK\% OF FINAL PAY)}$$

2) WHICH MEANS THAT 40 YEAR EMPLOYEE GETS A BENEFIT MORE THAN TWICE THAT FOR A 20 YEAR EMPLOYEE WHO GETS MORE THAN TWICE THE BENEFIT FOR THE 10 YEAR EMPLOYEE

APPENDIX A

3) NOTE THAT FOR A FINAL PAY PLAN A 40 YEAR EMPLOYEE GETS A BENEFIT TWICE THAT FOR A 20 YEAR EMPLOYEE WHO GETS TWICE THE BENEFIT FOR A 10 YEAR EMPLOYEE;

FOR A CAREER PAY PLAN, A 40 YEAR EMPLOYEE GETS A BENEFIT LESS THAN TWICE THAT FOR A 20 YEAR EMPLOYEE WHO GETS LESS THAN TWICE THE BENEFIT FOR THE 10 YEAR EMPLOYEE.

4) IF ONE ASSUMES THAT THE LINEAR RELATIONSHIP BETWEEN SERVICE AND BENEFITS INHERENT IN A FINAL AVERAGE PLAN IS "RIGHT", THEN THE CAREER AVERAGE PLAN DOES TOO LITTLE FOR THE LONG-SERVICE EMPLOYEE AND THE DEFINED CONTRIBUTION PLAN DOES TOO MUCH.

5) THIS VARIATION ASSUMES THAT i EXCEEDS s. GENERALLY i WILL EXCEED s BY FAIRLY SMALL AMOUNTS, IF AT ALL, AND THUS THE DEFINED CONTRIBUTION PLAN IS RELATIVELY LINEAR.

IF WE SET $i = 0$ IN THE ABOVE FORMULA WE GET THE CAREER AVERAGE PLAN WITHOUT UPDATES. SINCE $(-s/2)$ IS PROBABLY OF GREATER ABSOLUTE VALUE THAN $(i-s)/2$, THE CAREER AVERAGE PLAN SEEMS TO BEND BACKWARDS FURTHER THAN THE DEFINED CONTRIBUTION PLAN BENDS FORWARD.

Comparison of Early Exit Values from Pension and Defined Contribution

Assume: Hire age = 25
i = s = 6%
Final pay = $10,000
A_{65} = 9

	Defined Contribution	Pension	Ratio
	9% contribution	1% x final pay x service	
Normal retirement benefit	$4,000 annually	$4,000 annually	1.0
Vested termination at age 45	$2,000 payable annually at age 65	$624 payable annually at age 65	3.2
Death at age 45	$5,600 lump sum	$0	∞
Early retirement at age 55	$3,000 payable annually at age 65 or equivalent at 55	$1,675 payable annually at age 65 or early immediate at 55	1.8*
Death at age 55	$15,000 lump sum	Spouse benefit if married and covered	**

*Divided by degree of subsidy in pension early immediate factor - an unreduced benefit might result in ratio of about 1.0

**Greater than 1.0