

RECORD, Volume 26, No. 1*

Las Vegas Spring Meeting
May 22–24, 2000

Session 90PD

Innovative Benefit Designs—What We Can Learn from Around the World and at Home

Track: Pension

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Summary: This session covers innovations in plan designs and participant options that are happening in a variety of settings. Public plans have introduced deferred retirement option plan provisions. In Canada, they have introduced flexible pension plans, pension value plans, and other innovations. Internationally, plans have also been evolving to reflect the ever-changing employee and employer environment. In addition, many of the features of defined-contribution plans have been introduced into defined-benefit plans and vice versa.

Mr. Charles E. Chittenden: I'm from Buck Consultants and will discuss Deferred Retirement Option Plans (DROPs). With me today on the panel are Laura Samaroo and Chet Stanley Dash, both FSAs from Watson Wyatt. Chet will talk about international benefit design innovations and Laura will introduce us to Canadian pension plan design.

The State Pension Review Board has a list of governmental systems within Texas that have adopted DROPs, at www.ers.state.tx.us/prb/txdrops1.html.

We're going to go in the following order. I'm going to kick things off with a discussion of DROPs. Chet is going to talk about international benefit design, and then Laura is going to talk about Canada.

DEFERRED RETIREMENT OPTION PLANS (DROPS)

The whole point of this session is to help us learn to think outside the box about new benefit designs and how we might apply innovative solutions that we have seen in one context possibly in another context. How many of you work with a client that has a DROP, show of hands? OK, there are more hands down than hands up, probably because these plans exist in a governmental plan context. The only ones I know are governmental. We'll talk a little about whether they could exist in private context.

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Note: The tables and charts referred to in the text can be found in the document 90pdlv charts.

A DROP is a plan design now common among governmental plans that, in its simplest form, allows participants who are eligible to retire to say, "I'm not going to retire now, but I'm going to DROP." Then there's a period of some years, usually two or three years or sometimes five years, where the participant no longer accrues any pension benefit but the pension that he or she had earned at the time and decided to DROP is credited to a side notational account all within the defined-benefit (DB) plan. There is an accumulation of pension payments, plus sometimes interest and cost-of-living-adjustments (COLAs). Sometimes employee or employer contributions accumulate while he or she is in the DROP. At the end of the DROP period, he or she really retires. His or her pension is the pension as it was before he or she went into DROP, payable monthly, but he or she also receives, as a lump sum, the accumulation of the monthly pension payments that he or she has forgone while in DROP. That's a "big picture" summary of what DROPs are.

Agenda

We'll talk about:

- where DROPs originated and their history
- common DROP plan designs and variations
- why they were adopted
- compliance issues
- cost considerations

Unfortunately, I think there has been some misinformation about the cost of these plans. For many of the systems that have put them into effect, it has been assumed that they were cost-neutral but generally they haven't been. So there's an issue for actuaries to try to clarify the situation with respect to funding.

DROPs originated in East Baton Rouge Parish in Louisiana in 1982. The reason for adopting that DROP in East Baton Rouge Parish was to encourage employees to stay a little longer. Parish management was afraid that the parish was going to lose too many people, so it approved a DROP to encourage employees to stay until the end of the DROP period.

The East Baton Rouge plan was adopted eight years before Louisiana passed enabling legislation to allow for DROPs. That's an interesting historical fact. But Louisiana did, in fact, put in statewide enabling legislation in 1990, and I believe most public systems in Louisiana have DROPs. DROPs have spread throughout the South, and are especially popular with police and fire plans. Texas is very big for DROPs. There are 37 systems in the state of Texas that have adopted DROPs. The list available at www.ers.state.tx.us gives you some idea of what the parameters are of those plans, how long the DROP periods are, and whether the DROP is a "forward" or "backward" DROP. We'll explain those terms shortly.

As I mentioned, DROPs are very popular among police and fire employees. Public safety officials generally retire earlier than other employees, and the DROP is popular because many of them are going to other jobs when they "retire." A DROP

is a way that they can have a lump sum that will help them start their new business or whatever they are doing.

Chart 1 compares retirement with no DROP to retirement with a DROP. In the "no-DROP" situation, an employee becomes eligible to retire. On average, as you know, employees don't all retire when they become first eligible. There's a period of X years in Chart 1 when this person was eligible to retire, but didn't. He or she waited X years and then retired. His or her pension will, of course, reflect those X years for pay and service to the extent the formula credits those years. That's the usual situation with no DROP. With DROP, the benefits start, in an accounting sense, when the employee elects to enter the DROP. And his or her pension, say \$1,000 a month, gets credited to a notational account and accumulates there with interest. He or she doesn't receive any pension money. He or she doesn't pay taxes on any pension money. The plan doesn't get credit for the notational account credits for minimum distribution purposes. After X years the employee actually retires and begins to receive his or her pension of \$1,000 a month—an amount that ignores his or her X years of service. He or she doesn't get credit for his or her service or pay during those X years. But the employee gets his or her pension as it was before that time and a lump-sum payment equal to the accumulation in his or her notational DROP account. So DROP, as it is usually designed, adds a little defined contribution (DC) flavoring to a DB plan. And it's most popular, not surprisingly, in jurisdictions where there hasn't been much of a DC plan.

Let's talk about some common variations in plan design, because there are about as many variations in plan design as there are DROP plans.

Eligibility Requirements

Most jurisdictions require that you be eligible for a full pension before you can DROP. But remember, in governmental plans full pensions can come early, especially for police and fire employees. And some DROPs allow people who are eligible for early retirement to be in a DROP program.

The Length of the DROP Period

Two years is just about as low as I've seen it, but it's common to go two, three, or five years. I haven't seen many that are four years. The Houston Firefighters plan has a seven-year DROP period, and you can come back at any time or stop DROP-ping at any time. The firefighters were petitioning to increase the seven years to plus infinity so participants could DROP for as long as they wanted.

Contributions

Many of these systems require employee contributions. Often when an employee joins a DROP, he or she stops making contributions and gets a raise in his or her take-home pay. Sometimes the employee contributions continue and are credited to the notational account. The employer can continue to fund until the person actually retires, or the employer can stop funding at the time that the employee enters DROP. This issue relates to the issue of cost neutrality, as we'll discuss later. What do we mean by cost neutrality and when do the contributions stop? In some

cases, the contributions don't just stop; rather, they are credited to the employee's account in addition to the pension amount. So there are variations in the amount credited to DROP because you can count contributions or not in addition to investment return. Most systems credit you with investment return. How you do that is another question we'll talk about.

COLAs

Commonly in governmental systems, once you retire you get annual COLAs, often guaranteed. If that's the case, some jurisdictions include that COLA amount in what you accumulate while you're in DROP.

Investment Return

Some systems allow the employees to direct investments and to select from cash, bonds, or stocks, much as in a Section 401(k) plan, to determine the investment return. There are some concerns about how close you can come to making the DROP account work like a DC plan. The concerns relate to Section 415 limits.

Separation from Service After DROP

This is a tricky issue that involves the Age Discrimination in Employment Act of 1967 (ADEA). Some jurisdictions are trying to require employees to terminate at the end of the DROP period, but doing so may violate rules on mandatory retirement. One system has allowed employees to return to active status after DROP, but if they do they forfeit their investment return in their DROP accounts. This approach will probably be tested in the courts. DROPs that attempt to mandate or strongly encourage separation from service after the DROP period should be reviewed by legal counsel knowledgeable in ADEA issues.

BackDROPs or Backwards DROPs

Now, there is also something called a "backDROP" or a "retroactive DROP" or a "reverse DROP," and it is really a different animal because employees don't make an election to go into DROP. Employees just wait until they are ready to retire. Then they see what their benefit would be if they had DROPPed two, three, or five years ago. They look at what the lump-sum and monthly payments would be under each scenario and choose the one they like best. So it's a mixture of lump sum and annuity—but there's no election ahead of time. This form of DROP might be adaptable to a private sector employer.

What Does an Employee Get Out of DROP?

From an employee's point of view, the purpose of the DROP is the opportunity to accumulate a substantial lump sum. Many times governmental employees have not had any attractive DC plan, so this is a chance near the end of one's career to accumulate, painlessly, a sizable lump sum. Table 1 shows the lump sums that would accumulate for an employee who has earned a pension of \$2,000 per month. I assumed there would be no increases in the amount and no credits to the notational account other than the \$2,000 per month. I just accumulated at 8%, 10%, and 12%, which is what those notational balances would amount to at the end of a DROP period of 2, 3, 4, or 5 years. And you can see, for somebody who

has a retirement benefit of \$2,000 a month, a DROP can accumulate to a very substantial lump-sum payment.

What's in It for the Employer?

What was the purpose of DROPs from the employer's point of view? How were they sold to the employer? A common selling point is that a DROP will help staffing and succession planning because, when an employee enters DROP, you have x years to figure out who is going to do his or her job when he or she leaves. So it's similar to a long two weeks notice, and the employer has the opportunity to plan. Also, as I mentioned, DROPs are touted as a way to promote longevity. Employees who would have retired may instead decide to DROP; thereby extending their service for another two to five years. And it's a very popular program among employees, so the employers get the advantage of that popularity in recruitment and retention of employees.

Now that selling point—that it helps with staffing and succession planning—is, more sizzle than steak. If an employer doesn't know how long the DROP period is or if the employee is allowed to return to work after the DROP period, the employer really hasn't gained anything. Or if the DROP period is plus infinity, the employer doesn't really have any notion of when you are leaving.

Compliance Issues

There are some compliance issues to be aware of, but they are all capable of being overcome, at least in the public sector. The definitely determinable benefit rules prohibit having the board decide on the interest rate credit on an ad hoc basis. The plan has to say how to determine the rate of return, possibly by reference to an index or average rate of return, because this is a DB plan. The benefits have to be payable at retirement and there's an issue about whether the commitment to retire is irrevocable or not and whether retirement is mandatory. Those are areas where the DROP can run afoul of the ADEA, so I would encourage you to work with an attorney on that part of the plan design. Incidental benefit rules require that minimum distributions be made, but, since they are not required before actual retirement and since those who DROP receive a large lump sum as soon as they separate from service, DROPs have little problem with these rules.

Section 415 Limits

This issue can be important to DROPs. If you try to make your DROP look too much like a DC plan and you actually credit interest that is earned in the pension fund, then your DROP will be considered as a DC plan. The trouble with that is that the annual additions will include the forgone pension amounts, and those are generally bigger than 25% of pay. So you can run afoul of the DC 415 limits, even though it's really a DB plan. For that reason the interest credited is usually some fixed rate or an index or a five-year rolling average of the fund's investment return. And the plan commits to pay that rate, even though there isn't any money anywhere actually earning that rate, except by coincidence. So we can say it's clearly a DB plan and keep it out of the clutches of DC 415 limits.

Distribution Requirements

There are no distributions until after actual retirement—the DROP credits are not distributions. The lump-sum distribution is available for rollover. There is a taxation issue, especially for police and fire. Many of these payments are getting made before age 59 to 60, so the lump-sum portion is not part of a monthly stream of payments and therefore can be subject to the 10% Premature Distribution Tax. If the payment is made after age 55, however, it is exempt from the 10% tax because it is made after separation from service. We have a question.

From the Floor: Is the DROP payment subject to the Qualified Joint and Survivor Annuity (QJSA) requirements?

Mr. Chittenden: Well, this is a governmental plan.

From the Floor: Because it's government and it's not...

Mr. Chittenden: Yes, the only ones I've seen have been governmental plans so they don't really have, unless state law so provides, QJSA rules. It's an issue if you had one that got qualified in the private sector somehow. And there are many obstacles to that. The QJSA rules are one obstacle. A private sector employer would have to ensure that his plan offered a QJSA that was at least as valuable as the DROP. Has anybody seen one in the private sector?

Mr. Thomas Naffe Rice: Generally in our DROP plans, the participant elects at the entry into DROP his or her benefit option. At that time you take into account the QJSA and other options. Once he or she makes that election that's what he or she receives. That also determines what he or she gets in the DROP account.

Mr. Chittenden: So the employee elects his or her form of pension when he or she enters DROP. Is that what you're saying?

Mr. Rice: That's a requirement to go into the DROP.

Mr. Chittenden: Yes, but in the private sector we have the rule that you have to make your election of the form 30 to 90 days before you retire.

Mr. Rice: Right. We also have QJSA requirements that we passed ourselves similar to the Federal requirements.

Mr. Chittenden: OK. Thank you. I wanted to focus on cost considerations because, as they are typically designed, DROPs are not cost-neutral. The cost may be difficult to measure exactly, but it's there. And as you'll see, some systems have become aware of that. As actuaries, we have to be careful of what we say about cost neutrality. I'm afraid that what happens sometimes at conferences for public plan sponsors is that an actuary will make a presentation about DROPs and someone will ask whether DROPs can be designed to be cost-neutral. The actuary says that they can and the trustee goes home and reports that the actuary said that DROPs are cost-neutral and they are off to the races. So we have to be clear

about cost issues because, as they are typically designed, we'll see they are not cost-neutral. Generally, however, a cost-neutral version can be designed that still may be attractive.

Mr. Rick A. Roeder: In some cases, the fact that DROPs are not cost-neutral is clear. Many systems have caps on the benefit as a percentage of pay, say 70%. The DROP may be less of a new benefit option than it is a way around the cap. For a person who has hit his or her cap, the DROP clearly increases benefits. Some of the city systems such as Southdale, Michigan or Fresno, California are in this situation. In those systems it's clearly not cost-neutral since they're getting in essence a free benefit because they would have been capped out.

Mr. Chittenden: In other words, the monthly benefit would have been capped out, but, by taking some of it as a lump sum, they effectively get around those limits.

To talk about the cost of DROPs, I first want to look at typical DROP design. I'm just going to look at a forward DROP and one that affects retirement-eligible employees only. It freezes the pension when you go into the DROP, eliminates the employee contributions, and pays a pension equal to your monthly pension before you went into DROP and a lump sum equal to the accumulation of your forgone pension payments.

Because this is a straightforward DROP, we can ask, why would such a DROP cost anything? Suppose you have an employee who is age 52 and he DROPs and is going to retire at age 55. People who say DROPs are cost-neutral will correctly point out that every dime that this person is going to get out of DROP is one that he or she could have gotten out of the plan if there had been no DROP. If the person had just retired at 52 he or she would get all those payments from the pension plan; therefore the DROP doesn't cost anything. Well, as actuaries you know that pension costs are averages, so the DROP increases the cost because we're taking somebody who would have retired at 55 and making him, from the pension plan point of view, into somebody who retired at 52. So if the employee would have retired at 52, we can agree that there's no additional cost. But if he's a fellow who was going to leave at 55 and now that the plan offers DROP he has decided to DROP at 52 and actually leaves at 55, then he's going to cost the plan money because he's getting those extra years of pension benefits.

If we cannot pay the full accumulated lump sum plus the frozen pension without raising the contribution rate to the plan, what can we do? Can we do something that looks similar, but reduces the amount of the lump sum? I picked on the lump sum because it's sort of an arbitrary number. It's a big arbitrary lump-sum number popular with employees. We could do something to the lump sum to make the DROP cost-neutral. In Table 2' I did a calculation for two-, three-, and four-year DROPs with various ages at election. I just figured out the percentage of the lump sum that I could pay and still have the total present value of benefits be the same. This is cost-neutral from the point of view of total present value of benefits. It may or may not be cost-neutral from the point of view of what the contribution rate is

because that depends on the period over which contributions are made. If you cut off the employer contributions at the time that the person goes into DROP, then you may need to reduce these percentages further. But if you continue contributions to the end, you may be able to raise these percentages. But just from a present value point of view these are the percentages that would make the plan cost-neutral.

For example, for a person who DROPs at age 55 and actually retires at 58, 3 years later, you pay 74% of the lump sum that would accumulate. Well, would that be attractive? I think so. Again, this is a \$2,000 a month pension and what would the accumulations be, based on two, three or four years? I think for somebody who is retiring on \$2,000 a month, these lump sums are still going to be attractive numbers. So I think it's possible to design a truly cost-neutral DROP that will still have some appeal. Yes?

From the Floor: A question in this cost-neutral design. It seems to me you are assuming that the employee is going to retire at a set age whether there is a DROP or not.

Mr. Chittenden: No, you'll see that in Table 3.

From the Floor: OK.

Mr. Chittenden: You're 75% correct, I think. You have to make some assumption about that. You're right. In other words, there are some employees who are going to DROP that don't hurt you a bit on cost, and there are others who do add cost because they would have retired at the end of the DROP period. You have to make some assumptions. These are the assumptions that I made. Interest and mortality are unsurprising assumptions. The assumption for pay raises should reflect what people are getting at the time that they can enter DROP (near the end of their careers), so it tends to be a lower salary scale than you would have for the whole group. And you have to make some assumption about the service for DROP participants—an assumption that will be influenced by plan design. And then the last assumption is, how many of them are going to be people who increase your costs, i.e., people who enter DROP x years before they planned to retire anyway? I worked with a client to try to pin down an assumption. We surveyed some employees and arrived at an assumption that three-quarters of eligible DROP employees would add cost. We felt this to be a conservative assumption, and one that might be liberalized as experience emerged. It's a critical assumption that you have to make.

From the Floor: This is also assuming that the only costs you're looking at are the pension costs and, if a fourth of your people are now staying three years longer, aren't there substantial replacement costs that you're not incurring?

Mr. Chittenden: Yes. My estimate of cost is for the board that has control over the pension. All they really have control over is the funding rate. And that's the definition of cost-neutral. But, you're right. DROP doesn't occur in a vacuum;

there are other costs. But the trouble I have with those arguments about the other costs is that I've heard people argue them both ways. Because we're retaining the employee longer, we're saving money because we don't have to recruit and train new employees. We're taking advantage of the experienced employee's expertise, and we have a more stable work force. On the other hand, people will say if we could get rid of these employees we could replace them with lower-cost employees—lower because of lower pay and lower because of less expensive health and welfare benefits, at least when we assume we're replacing older employees with younger employees. I've heard that argument in both directions and I usually don't have the facts I would need to decide which direction is more persuasive, so I just concentrate on the argument that I do know how to make. It's also usually the only issue that the pension board cares about.

In summary, DROP is a popular plan provision. It's spreading among public sector plans, and there may be some things that private sector plans can do that are similar. In some cases, however, private sector plans are doing the reverse. In the private sector where you often have a 401(k) plan that pays lump sums and a pension that pays only annuities, some retirement plans allow retiring employees to roll a portion or all of their 401(k) plan into their pension plan. Employees can then take advantage of the pension plan's annuity provisions and get bigger annuities by applying their lump sums. Or they buy a joint and 100% form instead of a life-only annuity. So I think it's the-grass-is-always-greener syndrome. If you have a lump sum and a pension, you want to forgo the lump sum and increase the pension. And, if you have just a pension, you want to DROP long enough to accumulate a lump sum. So DROP is almost the opposite of what's going on in the private sector. Anyway I believe it would be possible to satisfy the compliance and cost issues and provide a truly cost-neutral DROP that would be attractive to the employees.

Mr. Bradford E. Klinck: What happens if the employee signs up for a five-year DROP and then after a year there's a downsizing or the employee decides that he or she no longer wants to continue to work? Are there interest penalties, for instance, if the employee changes his or her mind?

Mr. Chittenden: Well, in all those cases the answer is going to vary system by system, so it's hard to give a definitive answer. But the systems that I'm familiar with certainly allow you to change your mind and leave during the DROP. And in most cases you would get the accumulation that you had to that time and without penalty. If you say you're going to stay five years but you only stay three, it's not as much as it would have been otherwise. I think that's the common approach. It's trickier when people say, "I've done my five years in DROP as promised, but now I don't want to leave." Now, you have a mandatory retirement issue. Let me tell you this one, which is even trickier. When the Houston Firefighters put their DROP in, it was so wildly popular because they had very high rates of return that they were earning on their money. Firefighters who had been disabled found out about it. And a miracle occurred—they recovered. These people had been disabled for years and had doctors saying they could never come back to work. After hearing of DROP lump sums in the hundreds of thousands of dollars, they changed

their tune and said that they were fine. They wanted to come back and get into the DROP. The union said that those miracles were further proof of the value of DROPs because DROP is ending disability abuse. DROPs are really substituting DROP abuse for disability abuse. Also, suppose there's no job for one of these miracle recoveries? How do you continue the employee's disability pension if there's no job for him or her? Can you disregard his or her claim of recovery?

Ms. Christine I. Hofbeck: When I look at the cost-neutral DROP design it looks like a person who's age 53 is forgoing a \$2,000 a month pension, let's say for 4 years. After 4 years he or she gets \$83,000 in a lump sum. A person who's age 65 forgoes the same \$2,000 a month and after 4 years he or she only gets \$70,000. Is that an age discrimination issue?

Mr. Chittenden: My intention was not to say please put in a DROP that has these percentages in it. That was not what I was trying to say. I was just saying to make it truly cost-neutral this is how the percentages work out. What I would recommend, if you have a three-year DROP, for example, is to pick a number from the three-year column. Maybe it's 73% or something based on your average retirement age. Then always use that number. My purpose was to show you what my assumptions led me to in terms of percentages, not to say that's what you should do. And certainly age discrimination is something that we have to be sensitive to, so thank you for pointing out this issue.

Mr. Stanley A. Dash, Jr.: You're all aware, no doubt, of the current debate over what to do with the U.S. Social Security system. While this debate rages on, much of the rest of the world has already privatized or is in the process of privatizing their public retirement plans or programs. Many governments such as Chile, China, Australia, and Poland are apparently discovering, or at least coming to the opinion, that individual ownership and private capital investment provide a better and more secure retirement than traditional pay-as-you-go pension systems, such as the one that we have here in the U.S. Now, you're all aware, of course, that America has a baby-boom bulge of retirees coming up, but inadequate pension plans and longer life spans are far more serious problems for the rest of the world.

A study that just came out last month by the International Labor Organization found that 90% of the global work force lacks pension plans capable of providing adequate retirement income. Interestingly, the director of the Social Security department of that organization said that the U.S. approach to security supplemented by employer-supported pensions and individual savings is a model that other nations should follow. Now, some of you may find that quite surprising considering what's been going on in the U.S. for the last couple of years. You've all heard about this famous public opinion poll a few years ago that noted that most young Americans believe more in UFOs than they believe that they will get their Social Security benefit. Not too long ago our government's own actuaries reported that the Social Security trust fund is likely to go broke probably sometime in the next 30 years unless something is done fairly soon. Even if the Social Security financial difficulties can be fixed, it's been well-reported in the press, that the U.S. system remains a pretty bad deal for young workers today. In some studies they

show that many of the workers get a real return of about 1% or less on their required payroll taxes that they pay. For many it's actually a zero return or even negative. If the U.S. system's pending financial crises forces reforms such as an increase in taxes or a reduction in benefits or something of that nature, it'll leave you an even worse investment for today's young workers. It almost makes me happy to be an older worker.

The U.S. Social Security system faces an unfunded obligation of approximately \$9 trillion. Filling this gap would require a benefit cut of about 25% or a tax increase of about the same magnitude. Either option would have, obviously, a serious effect on U.S. workers and their retiree standard of living since at the current time and at current U.S. Social Security levels it's been estimated that the median household in the U.S. faces a savings shortfall of about 16% a year. So anything we do to increase taxes or reduce benefits for these people is obviously not going to be welcome. In the U.S., most retiring workers depend on three sources of wealth for their retirement income: government-provided old-age benefits from Social Security, company-provided pensions, and private savings. Some will be fortunate enough to have inherited wealth and others might win the lottery or even hit the Vegas jackpot, but most of us are going to have to rely on these three pillars. It turns out most other countries also have basically the same three pillars: a public pension scheme, an occupational pension scheme, and, in many cases, an individual pension scheme.

Over the past two decades it's been the U.S. that has actually led the world in innovative benefit design, at least in respect to the last two pillars I was talking about. As we all know, there's concern about the first pillar, the U.S. Social Security system. In the U.S. things such as cash-balance plans, pension equity plans, hybrid pension plans, IRAs, Simplified Employee Pension Plans, Keoghs, 401(k) plans, and the number of variations on DC plan approaches have not only kept things interesting here but they've also given the rest of the world, and us, rather unique planning opportunities for benefit delivery. In particular the U.S. love affair with various DC programs has, to a certain extent, helped accelerate the growing worldwide trend toward DC arrangements. Now, we didn't invent DB or DC plans. As a matter of fact, they've been around in the U.K. for well over 100 years now, but we've introduced some new flavors to the old vanilla ice cream. When it comes to the first pillar, however, the U.S. Social Security system and some other major social security systems around the world are being encouraged to look to reforms that some other countries have already taken in the face of their own pension crises.

Now, the pension crisis, as you know, is sometimes referred to as the population time bomb. That involves a major population demographic shift globally. The pension research counsel has said that the world's population over 60 is expected to double between 1990 and 2030. By 2030 they expect 30% of the developed world to be older than 60. The UN says that the number of old people is increasing sharply—65- to 84-year-olds are going to go from 400 million to 1.3 billion by 2050. The number of people over 85 will go from 26 million to about 175 million. And those over 100 are going to go from about 135,000 to almost 2.2 million.

That's a 16-fold increase, which is an enormous increase. Now, you may also see a study in the U.S. where most people, about 60% of the people, said that they really didn't want to live to be 100. Well, I've worked hard in my company, I'm going to have 24 years of service by the time I retire at age 60 and I'm looking forward to 40 years of receiving that pension, I can tell you right now.

Now, this shift in demographics is really due to two major items: declining fertility and increasing longevity. People are living longer and we're having fewer babies than we used to. In the longer term, up until 2050 it's expected that there's going to be especially dramatic age population growth for Asia, Africa, and Latin America. Regions that will be most affected as far as pension systems are concerned include Europe, North America, Asia, and Latin America especially when you're looking at the number of workers compared to the number of people presumably who are going to be retired. Chart 2 gives you just a quick idea of what that growth is going to be between 1990 and 2050. Some of these numbers are just astounding. What are the international effects of this? There will be a tremendous strain on extended families and other traditional support. Many public programs are expected to become insolvent unless something is done. There are huge projected increases in unfunded liabilities. Naturally, governments are going to have to, in many cases, go and cut back the limits on Social Security, which will result in cost shifting from the government to the private sector, especially those that are somehow integrated with the public programs. There's tremendous concern about benefit cost escalation and also about what effect this is going to have on international competitiveness for these countries. And there's increased demand by many countries and people in those countries for flexibility, portability, and DC plans.

Most public pension systems throughout the world are pay-as-you-go systems providing DBs. Now, there's a special concern about the declining dependency ratio of workers to retirees. Currently it's somewhere in the neighborhood of 3.5 to a little bit over 5 for most countries, but, for many countries it's expected to go down to something like 2.5 and in Europe it might even be down to 1 in about 30 years, so that's a tremendous burden on social programs.

Essentially, this means that the current levels of contributions and benefits are just not sustainable. There have been tremendous calls for reforms. You can have what they call substantive system changes and privatization of the program, or you can simply decrease expenses or benefits, which is what we've been doing here in the U.S. over the recent past. Or you can increase contributions on payroll taxes, which we've already done here in the U.S, for example, by letting the wage base go up or increasing the retirement age from 65 to 67 for certain people.

One country that actually took the bull by the horns because they were really in trouble was Chile. Chile had created a state system in 1925 and by 1970 it was on the brink of bankruptcy. In 1981 they replaced the insolvent pay-as-you-go system with a fully funded system of IRAs managed by the private sector, so basically it was a DC program. Now, at this point about 95% of the Chilean workers were in the system; basically it calls for the employer to deposit 10% of

the first \$22,300 of the employees' annual wage into an individual's own savings account via monthly contributions into a thing called a pension savings account (PSA). They get passbooks on a quarterly basis that will track how their funds are accumulating and how their investment performance is doing. The worker can contribute an additional 10% on a tax-deductible basis as voluntary savings to either accelerate retirement or to increase these eventual pension benefits.

The worker gets to choose a pension fund administrator (AFP) who can take care of the money. Now, the workers there are free to switch from one AFP to another, and when they leave employment their amounts are transportable or they can keep them in the AFP that they are currently in. Now, in the case of Chile it was a remarkable turnaround for them. At the end of 1998 there was \$30 billion in the new Chilean system. And this is a country with only 14 million people and a gross domestic product of \$70 billion. The savings rate went from 10% in 1986 to almost 29% in 1996. The average worker on his or her PSA has earned 12% annually after inflation, so there is a 12% real return on the money in those accounts. It's just been phenomenal. Chilean workers now receive benefits that are higher relative to per capita income than U.S. workers under our system, both at age 65 and at early retirement ages. So it's been a tremendous success story as far as Chile is concerned.

Many other countries have actually followed suit. Kazakhstan, one of the old Soviet satellites, had a Soviet-style structure of benefits until June 1997. It was an expensive pay-as-you-go system characterized by early retirement, special privileges, high replacement rates, high payroll taxes, and a declining revenue base; 25.5% of the contributions were immediately paid out to current pensioners. Now, this worked OK when the multiple of workers to pensioners was reasonable, but in 1997 the dependency ratio had gotten down to 1.6 and only 25% of the country's population was formally employed, so it really became unsustainable at that point. In 1998 they passed a new law that had two major entities. One is a state accumulation pension fund, which operates as a pay-as-you-go program and provides the government's guaranteed minimum pension. I think 10% is contributed to that fund by the employees. There's a second fund called the accumulative pension program, which 15% goes into and individuals can also make voluntary contributions to for themselves or a third person. As I said before, this is greatly influenced by the Chilean model. The other countries following Chile's lead include Hungary, Poland, Romania, and a couple other countries in Latin America. It's just been a tremendous success, and a number of other countries are really interested in going and following the Chilean model.

Now that's a public system. Other changes made in a couple of countries, notably Australia and Hong Kong, have encouraged effectively mandatory second-tier systems. Australia has had far-reaching changes in the last 18 years. In the early 1980s they had a program that basically only covered approximately 30% of the private sector and 65% of the public sector. What was covered wasn't large enough. The plans in Australia are called superannuation plans. The government wasn't satisfied with that type of coverage so they passed a law in 1981 that mandated employers to deposit some percentage of employees pay into an

approved superannuation fund of their choice. They started out at 3%; it's now at 7% and it's going to go up to 9% by 2002. It applies to all employees excluding some workers who are earning less than Australian \$450 a month on the grounds of the excessive administrative cost associated with that. They're fully vested. They must be kept in the system until some minimum age. Currently it's 55, but it's increasing to age 60 by 2025. These amounts are fully funded in individual accounts. Now, the employee coverage in Australia as a result of this has grown from that 30% that I mentioned earlier up to about 90% in 1998. Another reason that that has happened is because if an Australian employer fails to contribute amounts sufficient to cover this required minimum they are subject to a penalty that's more than the cost of funding the program, so obviously that encourages people to fund the program. Australia is also wrestling with collection of revenue and taxes. They have a unique approach where they actually tax contributions going into the fund at 15% and investment earnings on funds with certain adjustments you can make to the investment earnings also at 15%.

Hong Kong is another system where the second pillar is being encouraged by the government. The coverage under the prior scheme was basically inadequate. It didn't cover enough people. Singapore has a central provident fund that has just been a wonderful success story. The people in Hong Kong were all demanding that they have a similar system. In the Far East the general way of funding programs is what's called a provident fund—it's kind of like a DC-accumulation-type fund. Ultimately the government was hoping to not have to put this in because there really wasn't any way to incent people to put in programs. Finally what they decided to do was to just make it mandatory by putting in this thing called the Mandatory Provident Fund (MPF). After much study they came to the conclusion that an MPF was the way to go. The employer and the employees both contribute 5% of earnings to the DC fund. The benefits are fully vested, portable, and preserved in the MPF system.

Let me quickly talk about the pensions in Europe. There's a crisis going on in Europe. There are not many changes going on as far as public pensions are concerned. There's some tinkering going on, but they have a real problem on their hands in Europe. They have a demographic crisis; they expect 30–40% of their population to be over age 60 by the year 2030. The dependency ratio is rapidly coming down. It's about 4.8 on average in 1990; they expect it to be somewhere in the neighborhood of 2.6 in 2030. One of the problems is the early retirement programs have been reducing active employment rather severely in some of the countries in Europe. You can see the last four in Chart 3—Italy, Germany, France and Belgium. When it comes to people retiring early, in Western Europe the average in 1990 was 59 versus 62 in the U.S. But in 1950 the early retirement age in Western Europe was 66—the same as it was back then in the U.S. As you can see, early retirement is an encroaching problem in Europe'. It's a particular problem as you can see from Chart 3 for Italy, Germany, France, and Belgium. France and Germany have other problems, not the least of which are lower economic growth and high unemployment. They also have many programs that are not funded. They are mostly financed by book reserve. Most of the mandatory pension systems in Europe are pay-as-you-go programs. To a large

extent they're DB programs. And many of them are in serious trouble. Merrill Lynch did a report in October 1999' where they said, "When it comes to Europe, if the European governments do not take any action and pension benefits are not slashed, pension contributions would effectively have to double in 40 years from 13.76% of average salaries to 25.86% in 2030. If, on the other hand, the governments raised the age of retirement from 65 to 69, phasing that in over 40 years, pension contributions would only need to rise from 13.76% in 1990 to about 17.7% in 2030." Most of that is due to this problem with the drop in the dependency ratio. One of the problems in Europe is that the programs are so radically different. Some of them have what they call a flat-rate pension irrespective of the individual's earnings. Others have that plus a supplementary pension. That there's a tremendous diversity in Europe is' another problem that's coming up here.

There are some major imbalances in effect in Europe. When it comes to amounts of pension assets the U.K. dominates by far, followed by the Netherlands and Switzerland. You have to be careful with the numbers from Germany because the main funding method in Germany is in fact book reserves. The' dependency ratios were quite nice in 1998. But over the next couple of decades it's going to get tremendously worse. These dependency ratios average at 4.8 years, but they're going down to 2.6 by 2030. By 2030 some of the countries will have a dependency ratio of one to one. The trends for Europe are basically a cutback in state pension provisions, a switch to DC arrangements, changes in legislation and taxation, and an increase in funded arrangements. This was part of a survey that Watson Wyatt did in which they asked human resources executives what they thought was going to happen to Europe over the next couple of decades. The two largest answers, voiced by 27% of the executives, were cutbacks in state pension provisions and a switch to DC arrangements. Changes in legislation and taxation were at 21%. Increasing funded arrangements was at 14%. Growth of personal individual retirement provision, if I remember correctly, was at about 10%. Also, there's' going to have to be increased coordination of the tax systems, pension fund management across boundaries, pooling of pension fund assets, and eventual establishment of tax-qualified Pan-European pension funds.

Actually, the U.K. is not in that bad of shape so I'm going to skip them for now. The only thing that I'm going to mention about the U.K. is that they have a recent green paper consultation where they were thinking of replacing their two-tiered public system called SERPS where they have a very modest flat benefit for all employees and then an earnings-related pension that's also reasonably modest. A private plan opt-out from SERPS is possible. Also, to encourage more coverage for people they were thinking about putting what they call a DC stakeholders pension in for certain earners who may not be covered under an occupational plan. They were also thinking about phasing retirement options.

Now, the country that most people are interested in keeping an eye on is Japan. The reason that Japan is of major interest here is because it's become the first country in the world to have an average population age as high as 40. It leads the world in having the largest and most quickly growing concentration of people over

65. It was at 16% in 1998; it's expected to be 27% in 2025. They're going to be the first to confront the economic and social consequences of a very sharp increase in age population. Japan is interesting because many of the people there are very good savers but they themselves are very concerned. Now, 50% of them are extremely concerned about their own savings; they don't think they're going to have enough. And another 44% on top of that are somewhat concerned about their savings. This is a country of tremendous savers. And they are particularly concerned about what's going to happen to them. The projected public program is expected to be insolvent by 2020. The unfunded liabilities are estimated to be about \$3.5 trillion. Now, one of the things that Japan has recently implemented, and I think they are trying to steal some of our thunder, is a 401(k)-style plan. It has just come out, and there are certain eligibility tax breaks and things of that nature. It's going to be quite interesting. Different amounts can be contributed depending upon whether or not there is a corporate plan. They don't want to discourage the current occupational plans that are in effect in Japan, so the government is not going to allow the employee contributions to be tax-deductible if there already is a corporate plan.

Mr. Klinck: I would like to make several comments and suggestions. In the retirement age discussion when you were discussing what's happening in Europe there was a paper put out by the Employee Benefits Research Institute last year on retirement across Europe versus the U.S. It pointed out that the Social Security taxation rates and other taxation rates and penalties mean that an employee who continues to work beyond early retirement age in certain countries that you've mentioned such as Belgium actually face an effective tax rate of up to 150% for working. So that's a significant reason that early retirement takes place in those countries because of other social reasons. In terms of the discussion about Chile, the most recent reports say that some of what had happened earlier is a little bit misleading. Although the real rate of return through 1997 was in excess of 12%, in the last 3 years it's been zero because administrative costs are up to 17% with everyone switching amongst the plans. Up to 25% of personnel are actually not participating under the plan because they know they'll do better by getting the government guarantee so you have to watch out for that.

Mr. Dash: Yes.

Mr. Klinck: It's just something to be wary of. And with regard to Hong Kong and Australia especially, there's a fear that in moving toward the DC model that they've eliminated DB pensions and the need for actuaries as well. So from all of us sitting here it's interesting to look out there but we also have to recognize that there are going to be implications regardless of what takes place, and those may impact us directly.

Mr. Dash: A lot of people have been talking about the expenses in Chile, and they're looking for ways to see if they can reduce those expenses and make that program even better for the people in Chile.

Ms. Laura Ellen Samaroo: I'm actually not going to talk about the Social Security system in Canada but more about private pension plans and innovative plan designs in Canada. As with the U.S., traditionally there have been DB and DC plans, and, in more recent years, we're coming up with more innovative plan designs that are in the middle of this spectrum, such as hybrid-type plans. Since I've been at this conference, I've attended two sessions on cash-balance plans. There is no such thing as a cash-balance plan in Canada. But we do have other plans that are hybrids of DB and DC plans, which I think may be of interest to you.

Are there any other Canadian actuaries in the room? Three. Anyone here ever been to Canada? Almost everyone. It's a nice place to live. The reason I'm saying this is because, in a few minutes time, you'll see the kind of tax and regulatory regime that we have to deal with and you'll say, "Well, it must be a nice place to live, because otherwise why would anyone want to live there?"

When we, as actuaries, are designing pension plans, we look at business issues. I want to walk you through some of the issues that we look at when designing a plan. Unfortunately the only way you're going to understand why Canadian plan designs are the way they are is to understand our tax system. So, to begin with, I'm going to tell you more than you ever wanted to know about the Canadian tax system. And then I'll explain how we've come up with these innovative designs that help to maximize the tax efficiency of the plans. I'll only talk about one, the flexible pension plan.

In Canada, we have business issues that we look at when we are designing a plan, and many of them are the same as what you face. But suffice it to say that Canadians are taxed to death and, when it comes to pension plans, regulated to death. In British Columbia, where I'm from, the highest marginal tax rate is 51%, and you hit that when you're earning about \$63,000 Canadian. Taxes are a big issue, so we're most interested in tax deferring as much taxable income as we possibly can. Now, when it comes to DB and DC pension plans, there are limits on how much can be paid or contributed in benefits. Within a DB plan, for example a 2% final average plan, as soon as your earnings hit \$86,111 you cap out. That's Canadian dollars, which isn't much money. Over and above that limit, you cannot receive anything from a registered pension plan (qualified plan). Therefore, supplemental plans are very common. However, today I'm just talking about registered plan designs.

We also have a concept in Canada called Registered Retirement Savings Plans (RRSPs), which are personal IRAs to which people can make tax-sheltered contributions, whether or not they have a registered pension plan. However, RRSPs are very limited as well. We have a mobile work force, the same issues that you deal with, particularly in some sectors. And that's driving some of the trends toward changing pension plan designs. Also, the cost of administering pension plans, particularly DB plans, has become onerous; you all face these same issues in the U.S. Of course, the cost to administer plans and deal with actuarial valuations and so forth in DB plans are more onerous for small plans. And in Canada, we tend

to have smaller companies and smaller plans. So companies feel these costs a bit more than some of the larger companies down here.

Again, I mention the high personal tax rates. Wherever we can find ways to tax-shelter money, people are eager to do so. The Canadian tax system was reformed in 1990. The concept was that every Canadian should have an equal opportunity to save for retirement. RRSPs (similar to an IRA) allow individuals to make a contribution and get a tax deduction, and it will grow with investment earning on a tax-deferred basis. As a base, starting in 1990, everybody received 18% of their earnings as a potential RRSP contribution. I will refer to this amount as room for an RRSP contribution. To take that concept a step further, those people who have a company-sponsored pension plan already have an advantage in that their company is saving for them. So their RRSP room is actually reduced by their pension adjustment (PA). Anybody who is in a registered pension plan will receive a PA, and their RRSP contribution room will be 18% of earnings less their PA. This concept of PA is very important because it's driving the plan design of most DB plans in Canada.

A PA is meant to be the deemed value of what you're earning in a pension plan in a year. It's easy to figure out what your PA would be in a DC plan. It's just the contributions that have gone into your account during the year. That's the value that you're getting on a tax-sheltered basis, so your RRSP room is reduced by that amount. With a DB plan, we have to put a value on how much you are earning in a year, which is something that actuaries but few others understand. The government in particular obviously doesn't understand what the value of a DB is, because it came up with a ridiculous formula to try to make things simple.

Let's say that you're in a 2% DB final average earnings plan. Your benefit accrual during a year is 2% of your earnings. Revenue Canada has said the value of what you earn in the year, no matter how old you are, no matter what other bells and whistles are in your plan besides this 2% formula, is valued at 9 times your benefit accrual minus an arbitrary offset of \$600. The offset used to be \$1,000; now it's \$600. This formula applies to everybody in a DB plan.

How did they come up with that formula? Well, first of all it was based on a fairly typical government pension plan. Government plans tend to be very generous. They tend to have full indexing, joint and survivor benefits, bridge benefits, things like that. So every plan in Canada now, regardless of whether they have indexing and joint and survivor normal form, all use a factor of nine. And it also assumed that most people would stay with a company until about age 62 or so. So they used those averages to come up with a factor of nine which must be applied across the board. The result is that we're putting a higher deemed value on most DBs that people are accruing during the year than it's actually worth in most cases.

Let me just explain Chart 4 for a minute. We have a 2% DB plan. If you weren't in a pension plan at all, you would get 18% of your earnings that you could put into an RRSP, which is \$9,000. Now, if you are in this 2% DB plan, regardless of your age or any of the other plan provisions, we take 9 times your benefit accrual minus

\$600. Your PA is that horizontal line there, which is \$8,400. If a plan member were to terminate at let's say age 20 and transfer an amount out, he or she would not get even \$1,000 out of the plan. So we're deeming the value to be over \$8,000 and really, depending on when that person is going to leave, it's not worth nearly that much.

Now, ever since these PAs have been introduced, people in the pension industry have been complaining about them. Back in 1998 the government introduced a new concept called a pension adjustment reversal. Just to make things even more complicated! When you terminate and you transfer an amount out of a plan, if it's less than the accumulative value of your PAs, then you'll have the difference reinstated into your RRSP contribution room. It's a partial solution, but really this is an after-the-fact solution. After you've lost your job, you probably don't have any money to contribute to your retirement and now you have all this room opened up. So it's not a great solution.

Ever since these tax rules were introduced, plan sponsors and actuaries have been struggling with them and trying to come up with better solutions to have more tax-efficient plans. The key issue is that when you're in a DB plan you don't have any other tax-sheltered savings room.

Two things have happened. First of all, a lot of plans have converted to DC plans, maybe not just for the reasons that I'm talking about, but the PA rules are a big driver for many companies converting to DC plans. Secondly, there have been developments of a lot of new hybrid-type plans; one of which I'm going to talk about in a minute.

Chart 5 shows what happens when you convert to a DC plan. You can see still that we still have a line equal to 18% of earnings—the room that you would have if you weren't in any pension plan at all. You only have about \$600 worth of RRSP contribution room in that DB plan. If we are converting to a DC plan with a 5% contribution, then the PA would be only \$2,500 in this case. There's much more room to contribute to your personal RRSP, which is a pretty desirable outcome. The other way we can fix this situation if we want to stay with a DB plan is to try to increase the value of that DB plan without changing your PA (see Chart 6).

You already have this small amount of RRSP room, but you don't want to diminish that any more than you need to. How can we actually enhance the value of the plan? Well, the company can enrich the benefits, which is expensive. What I'm going to tell you about is a concept called a Flexible Pension Plan where you can actually, on a cost-neutral basis, allow employees to make contributions to the plan to enhance the value without changing their PA.

Chart 7 shows how it works. Imagine that this box represents the value of a pension. Along the bottom you have your benefit accrual, which is let's say 2% of your earnings. In this case 2% of \$50,000 is \$1,000. That's how much benefit you're accruing during the year. The height of the box represents the actuarial factor at age 65. Let's just say we have a normal form with a five-year guarantee

and no indexing. And let's say the factor is ten. Overall the value of 1 year of accrual is \$10,000. Now the PA formula, if you remember, is based on the benefit accrual but not based on the height of that box. So indexing and the normal form of pension do not affect the PA. What we want to do is to make the pension more valuable by increasing the height of the box without making the box any longer. We do that by allowing employees to make flexible, voluntary contributions. And those contributions will go into an account; they can direct those contributions amongst different investment options if you want to set it up that way. At the end of the day, the accumulated contributions will be used to buy what we call ancillary benefits (benefits that don't affect your pension adjustment), so they don't affect your RRSP room.

What can you apply contributions toward and not affect this PA? Well, if you have a plan that is based on your final five average earnings, you can change that averaging period and have it based on your final three earnings, for example. Or if you have retirement age 65 with a reduction before that, you can make it more generous and actually have unreduced retirement at age 60. You can include a bridge benefit. You can make the normal form more generous, or you can provide some form of indexing. None of these enhancements will affect the benefit accrual, so they don't affect your RRSP room.

Chart 8 shows how these flex contributions can be spent to enhance the pension. I call this the ancillary benefit silos. For each one of these benefits that I just talked about, Revenue Canada has a maximum that they will allow you to have. For example, you can index a pension plan up to the rate of inflation or 4%. So basically if your plan provides 50% CPI indexing and you want to allow people to buy the other 50%, they can just fill that silo up to the maximum of what can possibly be purchased. And so by doing that, people are able to tax-shelter their contributions and have a more valuable benefit.

A quick example—We have a 30-year-old earning \$50,000 a year with a 2% final average earnings plan. If you just plug the numbers into that PA formula they get a PA of \$8,400, which means that this particular person only has \$600 that he or she can contribute to his or her RRSP every year. If we didn't have a flex plan, that's all he or she could save on a tax-deferred basis. But if we introduce a flexible pension plan, it opens up room within the pension plan to contribute. You can see what happens. In this example the person would contribute 9% of his or her income a year into his or her flex account. In Chart 9 the black line represents the flex account accumulating with interest; I'm assuming a 7% rate of return here. The bars represent the actuarial value at each of the different ages of the ancillary benefits. You can see that at age 45, if this person were to terminate he or she would have \$112,000 in an account that can be spent in any number of different ways on these ancillary benefits. So, he or she could buy three-year final average earnings, subsidized early retirement, and a part of a bridge benefit to use up all of his or her money or some other combination. Once that's been done, you can always commute these benefits and transfer them out to an RRSP. So really it's just a way to get more tax-sheltered savings.

Chart 10 shows what happens if he or she continues making these contributions until age 55 and then leaves. He or she can use this money to transfer to an RRSP or to buy enhancements or transfer it out to an RRSP. One of the technicalities of this type of plan is the use-it-or-lose-it rule. Revenue Canada says that you can accumulate monies in a flex account so long as you don't end up with more than you could possibly spend on all of the ancillary benefits. It's interesting to note that the cost, i.e., the value of all of these benefits, starts to decline once you reach, in this case, age 55. If you actually work until 65, there's no more enhancement you can buy toward an early retirement subsidy because you're already receiving an unreduced retirement benefit. There's no bridge benefit you can buy, etc. So at age 65, the value of what you can possibly spend your money on is less, but your account continues to grow. If you end up in this kind of situation with an account value that's greater than what you can purchase in ancillary benefits, you lose the difference. When we implement these types of plans, it is important to monitor the accounts. We do personalized projections or sometimes come up with an electronic modeler for employees to do forecasting to see how much they want to contribute so that they don't run into this type of problem.

To summarize, the flexible pension plan is one type of plan design which enables employees to make tax-deductible contributions over and above their RRSP contributions. Flex accounts are used to enhance the value of their pension. There is no cost to the employer at all. Somebody who doesn't want to participate in the flex account still gets the same benefit as they would have otherwise that may be employer-funded. Employees like it because there's flexibility. It gives them a DC plan within a DB plan, so they do get some investment options. The one pitfall is that it has to be monitored very carefully because, of course, nobody wants to run into this use-it-or-lose-it situation. And at the end of the day, it accomplishes the objective of leaving that PA in the same place while increasing the actual value of the pension.

So that's a whirlwind summary of one type of Canadian plan. Are there any questions?

From the Floor: I have one question on these ancillary benefits. Is this something where you have to buy the whole chunk or can you buy whatever degree of early retirement subsidy that you want?

Ms. Samaroo: You can buy whatever will use up all of your money. Instead of indexing of 4% a year, you could buy 1.32% per year—whatever we cost out to exactly use up all your money.