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## CASH-BALANCE PLANS AND AGE-WEIGHTED PROFIT-SHARING PLANS (BASIC)

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This session is a primer on the hottest ideas in the defined-benefit (DB) and defined-contribution (DC) arenas.

- Nondiscrimination issues
- IRS issues
- Communication to participants

MS. SUSAN M. SMITH: This session covers cash-balance plans and age-weighted profit-sharing plans.

### CASH-BALANCE PLANS

First we're going to talk about cash-balance plans, their historical development, the basic building blocks used to create cash-balance plans, their primary attractions, both from an employer and employee standpoint, some of the legal concerns, and the funding issues that need to be addressed.

#### Historical Development

Cash-balance plans aren't really all that new. Back when we had insurance annuities that were purchased, many of them were expressed in the form of an account balance, in addition to telling people about the annuity that had been purchased. This was really one of the earliest forms. They didn't really achieve a lot of popularity until about 1985, when the Bank of America was credited with putting in the first cash-balance plan. Today there are well over 100 plans in all kinds of businesses – banking, education, hospitals, insurance, manufacturing, and service industries. What we'll see is that these kinds of plans offer different things to different groups and enable a company to take a group of plans and meld them together when they were very diverse to begin with. So they have a lot of different features that may be advantageous in given situations, and they really fit a wide spectrum of employees, businesses, and needs.

#### DB versus DC Plans and Cash-Balance Plans

What are some of the features of a cash-balance plan compared with a standard defined-benefit plan and a defined-contribution plan? We have the cost effectiveness that's inherent in the defined-benefit plan in that companies can accrue benefits and earn rates of return on their assets that are higher than what they might be granting to the employees' cash balances. The company might not get all of the return as it would in a traditional defined-benefit plan, but it gets at least the excess over what is guaranteed. There's financial flexibility that's inherent in defined-benefit plans. You have a *minimum contribution requirement* and a *maximum contribution requirement*. You don't have that in the defined-contribution world. *Employee security* means there's a promise to pay benefits, not just a promise to pay whatever benefits can be provided through whatever rates of return are earned, as exists under a traditional defined-contribution plan. You also, under a defined-benefit plan, have the only opportunity to provide additional benefits. If you have hired people relatively late in

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their career and you're all under a defined-contribution plan, you can't have past service make-ups. You can't have grandfathered benefits. You can do those under the defined-benefit scheme with a cash-balance plan.

But you also have gained some of the more prominent advantages of a defined-contribution plan in that you have much greater visibility of the value of the benefits being earned each year by the participants. If you tell someone who's 25 years old that he or she just earned \$100 a month payable from age 65 the person would say, "Pshaw." Well, if you told this person how much it was really worth, you'd agree he or she should say, "Pshaw." But if you tell an employee that he or she earned \$1,000 that year and the \$1,000 is going to grow at some rate of return . . . , you'd hear, "Hey, that's mine." So there's a lot of visibility there. And there's also increased understanding. They know an account can grow at interest which is untaxed until the amounts are withdrawn.

You have some of the same cost control of the defined-contribution plan through the actual determination of the interest rate to be credited. With a defined-benefit plan, when pay goes up, you have that increased pay on the average earnings times all service. Most of these plans operate as a career-pay plan with indexed benefits. So when pay goes up, it only affects the accrual for that year and future years.

### Cash-Balance Plan Formulas

The first cash-balance plans defined contributions as a percentage of pay. As we'll see in a moment, there really were two types. One said that you'll earn a benefit that's X percent of pay, maybe a half a percent of pay in this year and that benefit would be indexed. So that was kind of an indexed career-pay benefit. The other one promised an accrual that was related back to an annuity benefit. Both of those had the characteristics of indexed career-pay-type benefits. They tended to accrue value uniformly throughout someone's career. As a result, in designing what you want to provide, if you had a given replacement ratio under your defined-benefit plan that you wanted to maintain, you will have higher costs to produce that same retirement benefit in the cash-balance arena.

So if you want to maintain costs at current levels, what do you have to do? You have to deliberalize the ultimate retirement benefit. I'm using the term retirement here because, remember, there are death benefits. There are termination benefits also. Let's just look for a minute at what we call Generation 1 versus Generation 2 cash-balance plans.

#### Generation 1: Benefit Based

$$\begin{aligned}\text{Annual Benefit} &= 1/2\% \text{ Pay indexed } 7\%/ \text{year} \\ PV AB &= AB(1.07)^{ES} \times \ddot{a}_y^{(12)} \left[ \frac{1}{1.07} \right]^{ES} \\ &= AB \times \text{constant, at any age}\end{aligned}$$

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### Generation 2: Contribution Based

$$\text{Annual Accrual} = PV = 1\% \text{ Pay}$$

$$\text{Annual Benefit} = PV (1+i)^{FS} / \ddot{a}_y^{(12)}$$

Value accrues uniformly over career front-loaded values vs. traditional DB plan. Employees like it; however, costs are greater or the benefits are smaller.

What we call Generation 1 is the one that defined accruals as benefits. It's benefit-based. The employees would be told that they would get an annual benefit equal to one-half percent of pay, and let's just say it was indexed at 7% a year. What is the value of that accrual? It's the accrued benefit – and this can be determined with either or both the accrual in one year or with the total accruals to date and then multiplied by an accumulation factor at the given 7% for future service to the normal retirement age. These lump-sum factors would either be those with no future indexing or they could be ones that had indexing postretirement. By far it's most common not to provide indexing after 65, if that's your normal retirement age.

But then, what is the present value? If we use a discount rate of 7%, and it was very common in these type of plans to have the accumulation rate equal to the discount rate, we find it's the value at age 65 discounted at 7% to the current age. At this point, you then find that at any point in time and at any age, the value is the accrued benefit times a constant. Let's say that your rate was 16-2/3% because you had indexing postretirement. That translates into taking the monthly benefit that the employee has accrued times 200 (16-2/3% x 12). If you were not indexing postretirement, you might use a rate like 120 (10% x 12). This makes it easy to communicate, and it also means that this accrual of value is uniform throughout the employee's career. The second generation was called a contribution-based plan. The reason it's different is simply because it chose to talk about the accrual in dollars first and then translated accrual into an accrued benefit using some mechanism and some interest rate that is specified in the plan.

Both of these methods, however, accrue value uniformly. They are what we'll call front-loaded. The values being accrued at relatively young ages are much greater than the values of benefits accrued under the traditional defined-benefit plan, given that you have the same goal towards retirement income at the end of the line. Employees like it. Costs, however, are greater if you're going to provide the same retirement benefits. Alternatively, you have to have smaller retirement benefits. I can't emphasize this too much, because the numbers are not small.

However, Generation 1 and Generation 2 have led to today's Generation 3 designs. To try to avoid the heavy front loading and to get the costs down while maintaining the ultimate retirement replacement ratio for those individuals who have stayed with you for a career, companies have chosen to adopt graded contributions. We'll talk more about these later. Generation 3 formulas also have integrated benefits to more closely duplicate the kinds of benefits being provided under the traditional defined-benefit plan. In some cases, but it's not as frequent as it used to be in defined-benefit plans, there are early retirement subsidies. If you retire early, the factor used

to convert your lump sum or your cash value into an annuity is smaller than it might otherwise have been on an (actuarially) equivalent basis. And most importantly, as I mentioned earlier, in the defined-benefit arena you can provide special transition benefits for those employees who are close to retirement or for other special circumstances. You can't do that if you go to a defined-contribution plan unless you keep your defined-benefit plan around to provide those grandfathered benefits.

### **Basic Building Blocks**

What are our basic building blocks in the cash-balance plan? We have annual contributions – the dollar value of what is being contributed on each employee's behalf. We have an interest rate which is the rate of return that's guaranteed on the account balance. That's what makes this a defined-benefit rather than a defined-contribution plan – the employer is on the hook for the real rate of return, not the employee. We also have the kinds of distributions that can be made, or are generally made, from these kinds of programs.

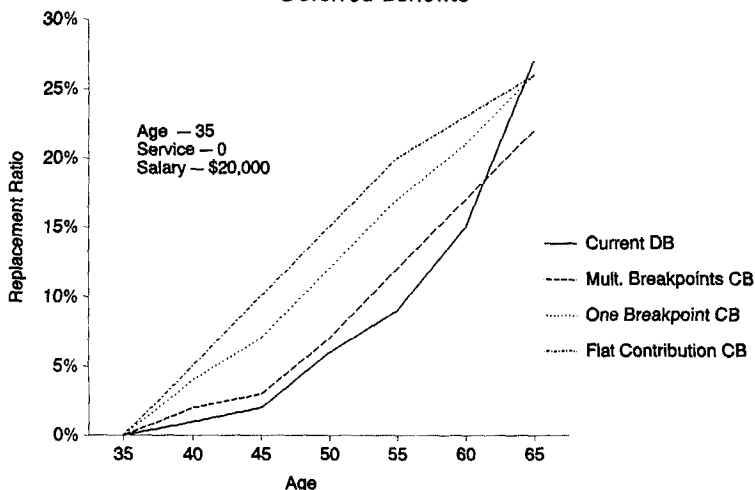
Let's look at some formulas that are graded, based on age or service. The first uses age: 4% of pay up to age 40, 6% of pay for age 40 through 54, and 8% of pay over age 54. If you felt, for example, that you needed 6% of pay every single year to duplicate the current defined-benefit formula at retirement, this sort of a formula, depending on your demographics, might actually keep the cost the same and replicate that same formula for those people who remain for a career. The other thing this tends to do is provide a slightly higher retirement benefit than a flat cash value accrual would for people hired later on in their careers. If you choose not to look at it on the basis of age, you could look at it on the basis of service and do the same sort of thing. Alternatively you could use a combination of age and service. These are just examples. It's fun to play, though, when you go to price it. And it's also fun to look at the replacement ratios for people who come in at 45 versus 35 versus 25. You kind of have to do these modelings to understand how the design you're coming up with compares to the current defined-benefit plan. And then you price it and find out whether or not it is affordable.

### **Values of Accruals**

We've talked a little bit about this. Chart 1 shows the differences that I'm talking about. The lower black line is illustrative of the rate of accrual at various ages represented as a replacement ratio of the traditional defined-benefit plan. The value of the benefit accrued for someone who's 25 or 35 is relatively small. And it begins to increase greatly toward the end of the career. That's why defined-benefit plans cost less than traditional cash-balance plans, even though they're producing the same benefit at retirement. The dotted line shows the value of the cash-balance accruals – this is a flat accrual over the career. If someone leaves at age 35, the value of what they would receive under the cash-balance plan with a flat accrual is larger than the value under the traditional defined-benefit plan. These intermediate lines show the value of accruals under cash-balance formulas with only one break point and that can be one break point and multiple break points.

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CHART 1  
Comparison of Alternatives  
Deferred Benefits



The more break points, the closer you can get to replicating the value of the accruals under the traditional defined-benefit plan at a cost of a more complex benefit formula and communications to employees. But if you think of employees as only looking at what they're entitled to right at the age that they are now, it may or may not be more complicated, because they're really only looking at what they have at this time.

FROM THE FLOOR: What about the accrual rules, 133% and all that kind of stuff? Does that relate to the contribution? It doesn't look like the 4%/6%/8% formula will pass the test.

MS. SMITH: The answer is no. The test is applied to the underlying accrued benefit for that accrual.

FROM THE FLOOR: You went from 4% accrual on your example to an 8% accrual. To me, I'm not familiar with cash-balance plans, but that exceeds the 133% rule.

MS. SMITH: But that's how much is being contributed each year for an individual. Let's look at an individual who's 25 years old and receiving 4% of pay. How much does that translate into when expressed as an annuity benefit?

It's a large benefit, relatively speaking. Twenty years later you provide the person 8% of pay. When you convert this accrual to an annuity benefit, the question is whether this benefit is 133% larger than that accrued at earlier ages. What we're saying is the accrual rules are based on the accrued (annuity) benefit that is being accrued each year, not the addition to the cash-balance account value. If you provide a flat 6% of pay accrued all along, when an individual leaves before retirement, they've walked away with a lot more in value than you ever would have given them under a traditional defined-benefit plan. That's where the cost is. If you're going to reproduce the

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same retirement benefit at 65 and you're paying lump-sum values on any of these lines for people who leave before 65, it will cost you more. And if you're not comfortable with reducing the replacement ratio at 65 to offset for this, you have to use some kind of a benefit formula or cash-balance accrual that gets the values at earlier ages down closer to where you were on your traditional defined-benefit plan.

FROM THE FLOOR: On your accrued benefit rules, again, you're converting it to a defined benefit and measuring it, but at the point in time when you go from a 4% to a 6% contribution, that's a 50% increase.

MS. SMITH: But not necessarily a 50% increase in the annuity benefit provided.

FROM THE FLOOR: But you really only have a one-year difference in the discount factor.

MS. SMITH: In the annuity factor, that's right. But it works.

FROM THE FLOOR: Fifty percent divided by  $(1 + i)$  for one year meets the 33%?

MS. SMITH: No, it's accumulated all the way to age 65 and divided by the annuity factor. It will work, but you do have to be careful about the jumps. And you have to look at the age at which the break takes place. That may be another reason why you'd want to use service for the breaks as opposed to ages, because then you can illustrate that it happens at all different ages along a spectrum. I've tried it myself and it does work.

### Glossary

I've been using some terms here. Just to be sure we're on the same wave length, let's define a few. When we're talking about the *account*, that's the dollar value that the individual has credited to him or her in the cash-balance plan. The *contribution credit* is the percent of pay accrual or whatever it is – the addition to the account value in dollars each year. The *interest credit* is the promised rate of return times the beginning of the year dollar value of the account. The *index rate* is the rate that's guaranteed. And the *divisor* is whatever it is that you are using at the normal retirement age to convert the cash-balance account value into an annuity.

FROM THE FLOOR: Is the interest rate that's guaranteed by the company, typically a fixed rate or can that be a variable rate?

MS. SMITH: That's a good question. Let's discuss interest credits.

### Interest Credits

We can either have a fixed or a variable rate. You could use a flat 6%. You could decide to let it vary in accordance with some outside set of investments or some outside rate such as the PBGC Immediate Rate or you could pick 30-year Treasury bonds. I think the important thing is to remember that if you pick a fixed rate and then you decide to change it to something that is variable, you have a change in your plan and you have some grandfathering that you may have to give with respect to those pieces of the cash-balance account that have been accrued to date. I've advised my clients to pick an index rate that we think we'd like and then look at it

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relative to some outside index. Then only make a change if that outside index gets more than 1% away from where we think we want to be. That protects the company in case rates go way down. The company's not going to be stuck if its guaranteeing 9% and all of a sudden interest rates are down at 4%, because at that point the guaranteed rate would start coming down.

You also will find that you can, as I said, put minimums and maximums on this variability. You could choose to let it vary only once a year, which is generally what most companies do, because you're only calculating the accruals once a year. I think generally you could even pick a period over which the rate didn't vary and then, if you've stated it up front, let it vary thereafter according to some rule.

And again, you also could decide that you're going to come in with a very low guaranteed rate, 3% or 4%, with the understanding that every year the company has the right to change the index rate for that year through a plan amendment. Now that gets you into all kinds of fun and games because this is now a plan amendment. It is not a part of the accrued benefit, which is why some companies do it. But you really have a lot of different things to consider and walk around every time you turn around under these scenarios. But it does let these companies that have a guaranteed rate at 3% or 4% make a change every now and then.

Another thing to consider in that environment would be the accounting rules. If you bring the index up in the neighborhood of 6% or 7% every year, I think after a short period of time, the auditors are going to ask you to value that plan assuming that it's always 6% or 7%, just like a career-pay plan that's always updated.

FROM THE FLOOR: How many of us can use a 6% or a 5% rate of return?

MS. SMITH: The question is, "Are companies tending to use 6% or 9% or somewhere in that range of index rates?" In my experience, I think yes, but there are some plans out there developed earlier that are still using 3% or 4% with the opportunity to increase the rate left to the company each year.

FROM THE FLOOR: Have you seen any companies using a rule that relates the guaranteed rate to inflation or some real rate of return?

MS. SMITH: Not in my experience. Again, you want to keep it simple. You want to make sure that the employee can look at that outside index and understand why it's changing. It isn't thought to be subjective on the part of the company. Determination of the index rate has to be based on a fixed rule that's in the plan.

In picking the interest rate credit, you also need to keep in mind what other kinds of plans you might have out there that employees are participating in. Most employers have a 401(k) or some other kind of a savings plan these days. If employees know that a dollar invested there will earn at least 6%, you have to do some fast communicating to tell them you're only guaranteeing 4%; because they're going to think, "Oh, big deal. You're giving me this new plan with only a 4% guaranteed rate. Heck, I can earn more in my 401(k) plan." So you need to think about what's out there that's going to be communicated each year with regard to other investment opportunities that employees have under plans sponsored by the employer. Maybe

there's a history of something that went before this plan, in which case you'd need to take that into account in deciding what the guaranteed rate will be. And of course, there's always cost control, and that's why I like having at least some minimums and maximums, even though they may not come into play that often.

### **Distribution Options**

One of the other things we talked about was distribution options. It's interesting because while we've talked about cash-balance plans as behaving like a defined-contribution plan, that would lead you to think they would have to give lump sums. Believe it or not, many companies have adopted a cash-balance plan only for the increased understanding and visibility of the value of the benefits that they're providing to employees. When push comes to shove, there are no lump sums payable under the cash-balance plan. I think the thinking here is, "If you terminate before retirement, I don't care. I don't want to give you cash unless I can do it under the minimum \$3,500 cashout rules. And if you stay around until retirement, I think you'll understand why I'm not letting you take it in the form of cash." So there are companies that not only have given annuities under the cash-balance plan, but have gone to cash-balance plans primarily to achieve a greater understanding and appreciation of the benefit program.

I would say the majority of companies are offering lump sums. But it's interesting, lump sums don't have to be provided on every annuity benefit available under the plan. You could design a cash-balance plan with grandfathered benefits where the grandfathered benefits are payable only in the form of an annuity. That's all they ever were payable under yesterday. You don't have to add the cash value feature to those accrued benefits. Then you can say, "Here's your cash-balance accrued benefit. You can take that in the form of an annuity. If it isn't as large as your grandfathered accrued benefit, we'll give you the greater of that benefit and the grandfathered annuity benefit. Or you can take the cash value in lieu of any annuity benefits under the plan in a lump sum." That puts some employees in a quandary, but it also helps to achieve cost savings. For example, you can continue to permit employees in that situation, who are close to retirement, to have the early retirement subsidies and maybe the temporary supplements that were inherent in the old plan. But if they want to take cash and run, they can do that but only with respect to the cash-balance annuity.

FROM THE FLOOR: What's the tax treatment on that lump-sum distribution then?

MS. SMITH: The same as any other lump-sum distribution.

FROM THE FLOOR: It's not a partial distribution?

MS. SMITH: You're taking everything.

FROM THE FLOOR: How about the grandfathered benefits?

MS. SMITH: If you take the grandfathered benefits in the form of an annuity, you may not have a cash lump sum. You have a choice between the larger of a number of annuity benefits paid in the form of an annuity or the cash value of your cash-balance annuity. That's the only one you can take as a lump sum in this example. I



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don't believe you have to offer the same payment forms on every annuity benefit. This does make the employee choose, so you need to be sure you're providing good communications. But employees can maintain a temporary supplement; they can maintain subsidized early retirement benefits, but only if they take this accrued benefit in the form of an annuity. If they take the lump sum, that's a full and complete distribution of their benefits under the plan.

FROM THE FLOOR: Have you arranged any way for employees to take partial or periodic discretionary withdrawals?

MS. SMITH: Not in my experience. It's either an annuity or it's a single lump sum.

FROM THE FLOOR: Does that mean you can't or you don't?

MS. SMITH: I think you could. I mean, it's a form of payment that's permitted.

FROM THE FLOOR: So it wouldn't have to be only those two choices?

MS. SMITH: I don't think so, but I may be wrong. It seems to me you could permit that cash balance to be paid out in a series of installments. I don't know how you'd handle the minimum distribution rules as the PBGC rates changed, however.

FROM THE FLOOR: Why is it you say you didn't know why you would? I see tremendous disadvantages to providing only two choices.

MS. SMITH: I don't. I would pay the individual the lump sum and let him or her roll it over into an IRA where the person can control the distribution. I wouldn't want to be bothered with it as a plan sponsor. So I don't think you've cut off any avenues for the types of distribution. It's just that I don't think you want to monkey around with that sort of thing because of all the rules on distributions.

I'm just saying what happens is when you pay a lump sum is clear cut. I don't know what would happen if you tried to pay the cash-balance account over a series of installments and the PBGC rates changed.

FROM THE FLOOR: So then your answer is to roll it over into an IRA.

MS. SMITH: Yes. I don't have a problem telling someone that there are a limited number of choices because the individual who takes the lump sum can go and get an annuity under an IRA. They can go and get installment payouts under an IRA. They can leave it there until they're 70-1/2.

FROM THE FLOOR: If an individual has the ability to take a lump sum and if they're going to get a lump sum of their accrued benefit, don't you have to worry about making sure that they receive at least the minimum lump sum based on the PBGC rates?

MS. SMITH: Yes, and we'll see in a minute what that can do.

In terms of how you're going to distribute benefits, again you're going to look at the cost. If you're going to permit lump sums, what kinds of rates are you going to use? What about security for your employees? Are you going to be paternalistic and not provide cash that they could turn around and spend? And what have your employees been led to expect? I think as everyone is communicating savings plans more to employees and employees understand the value of lump sums, they may find they want to take their cash-balance annuity in a lump sum, as well as their savings plan balance, and manage both of them together. On the other hand, they might want to say, "I'm going to take my savings plan as a lump sum and I'll manage that, but I want to leave this defined-benefit plan annuity as a safety net, so that it plus Social Security could provide me at least an adequate retirement income." I'm not sure how that's going to work out, but my guess is there's going to be a generational difference. Changes may evolve as employees understand more and more what can be done with lump sums and are more comfortable with investing them.

### **Primary Attractions**

What are the primary attractions of a cash-balance plan? Certainly employees understand, "It's mine," and they also have a greater understanding of the value of the promise to pay the benefit, whether it's payable in the form of a lump sum or not. From an employer's point of view, they can generally achieve lower cost than under the traditional defined-contribution plan, because of the interest rate differential between what they can earn on their investments and what they guarantee. If you have a company that's saying, "I want to go defined contribution," there are going to be a lot of reasons why they can't go there all at once. For example, if you have a defined-benefit plan with a surplus, what happens if you go to a defined-contribution plan right away and terminate that defined-benefit plan? You pay a lot of that surplus to the government. Furthermore, if you have enough of a surplus that your cash contribution requirements are zero and you go over to a defined-contribution plan, guess what? You get the entire increase in contributions all at once. You go from zero to 5% of pay or whatever your formula is. That's a big hurdle on the cash flow side which no one's really excited about incurring these days. Furthermore, under the defined-benefit cash-balance scenario, you get a range of contributions. You can accumulate up to your maximum tax deductible limit in good years and use those credits against cash flow in years when it's not so easy to get hold of the cash. You can't do that in a defined-contribution plan.

These kinds of things give greater flexibility to the employer and that's one attraction. Another reason employers like this type of plan is because you can take a number of different defined-benefit plans, or even a defined-contribution plan and a defined-benefit plan, from an acquisition and put them together in a cash-balance scenario and appease more people than if you just went defined contribution or if you just went defined benefit into the future. And you may also be able to achieve, as I talked about earlier, some savings. You can get rid of heavily subsidized early retirement benefits. You can get rid of temporary supplements. You can make this benefit much more difficult to compare with benefits under a union plan.

Again, one of the problems with defined-benefit plans is nobody understands the value of the promise to say, "I'm going to give you a benefit of \$10 per month for each year of service." They do understand the fact that you've just credited them with \$1,500 in their cash-balance account this year. And so they say to the union, "I

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have money in my account." And the union says, "Well, I have another \$150 a year." They can't easily equate the two.

### **Employee Statements**

A cash-balance plan gives you an opportunity to produce an employee statement with two columns. One is the cash-balance plan. The other is the 401(k) plan. You can add them together so you have something that compares like an apple and an apple instead of an apple and an orange. Here's your account balance to begin with. Here's your contribution credit for the year – the interest credit on the beginning of the year account balance, and your ending value. You can also show the value of the annuity that this balance would provide at age 65. If you have grandfathered benefits, you could show employees the accrued benefit under each formula that applies to them.

### **Interest Arbitrage**

Why would employees accept a lower rate of return than what the company might expect to earn? This is one of the advantages of using a cash-balance approach to provide a given set of accruals versus using a defined-contribution plan. If you look at the statistics on how employees generally invest their dollars – what types of investments they select – you'll find that by and large they're risk averse. They're all in guaranteed or fixed-income funds that will earn less than what equities have earned over time.

To illustrate, let's say equities are earning 9% and the fixed-income rate is 6%. If on average, 85% of employees invest, or if 85% of an employee's account is invested in fixed-income securities and 15% is in equities, they're earning about 6.5% per year.

On the other hand, the employer has this pool of assets it is building up in the defined-benefit plan over time. It can afford to take more risk and ride out the vagaries of the market. So, their asset allocation might be 35% in fixed income, let's say, and 65% in equity. They're going to earn 8% per year in the same situation. That difference says the employer can guarantee 6.5% to its employees and be directly comparable to what, by and large, the employees are earning in their savings plan account. But the employer could invest more heavily in equities and earn 8%. So it will cost the employer less in the cash-balance defined-benefit arena than if it wanted to produce exactly the same retirement benefit through a defined-contribution plan. This arbitrage, over time, can be quite significant.

Why is the employee going to be satisfied with only 6.5% when they know the employer's earning 8%? The employees don't always know the employer is earning 8%. The other response is, the employee's 6% is guaranteed. The employer is taking all the investment risk. If you think that's not a satisfactory response, then you have to use other arguments. It may be the employer can afford to go "DC" only via a cash-balance plan, or benefits would have to be reduced if the employer went all the way over to a defined-contribution plan.

There has to be a rationale, but I don't think most employees are looking for a 9% or 10% guaranteed rate. Look at what's happened to PBGC rates. These are publicly known rates. If you pick that as the peg, that's what it is.

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Another attraction is funding flexibility. Just like other defined-benefit plans, you have minimums and maximums. You can accumulate funding credits. And any surplus assets can be used to reduce the contributions.

FROM THE FLOOR: Where does this funding flexibility come from?

MS. SMITH: The funding flexibility comes from the difference between a minimum contribution requirement calculated according to the IRS rules and a maximum tax deductible limit calculated under IRS rules.

FROM THE FLOOR: Is it the interest rate guarantee that allows this to be treated like a defined-benefit plan guaranteed?

MS. SMITH: Yes.

FROM THE FLOOR: Are there rules with respect to how that index rate has to be established? If you establish a guaranteed rate at the beginning of the year, how much flexibility does the employer have to change it at the end of the year?

MS. SMITH: You either pick a rate that you're going to live with, a fixed rate that's in the plan, or you can pick an outside index that will be used to determine the index rate, usually for a year at a time, measured in advance of the year. You just have to decide from an administrative point of view, from a cost point of view, from a communication point of view, what makes the most sense in your given situation. But if you choose a fixed rate and then you decide to change it, you have to understand you have some grandfathering problems in terms of accrued benefits to date that you can't ignore.

FROM THE FLOOR: Do the surplus assets have to be used to reduce the contribution at the year-end, or in the next year?

MS. SMITH: The minimum funding rules and the maximum deduction rules will determine what happens with regard to whether you have a contribution or not. If the surplus is enough to cover your normal cost and the interest, you won't have a contribution.

FROM THE FLOOR: Do you have to use it?

MS. SMITH: It's the minimum funding rules. You don't have a choice in the traditional defined-benefit plan. Don't think of this surplus as a surplus on the asset side. It's not a credit balance. Credit balances are where you've made contributions in the past in excess of minimum funding requirements. You have a choice each year whether you make a contribution or not. That's not the same as a surplus.

FROM THE FLOOR: Do you have to use the surplus immediately to reduce your contributions?

MS. SMITH: The surplus in a cash-balance defined-benefit plan is treated no differently than it is in a traditional defined-benefit plan. You look at your actuarial accrued

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liability versus your asset value and calculate the full funding limits using the two rules. If you come out with a zero, you can't make a contribution.

FROM THE FLOOR: Yeah, I'm a little bit confused about the previous questions regarding setting the guaranteed rate. One of the options you said could be to use the actual return on investments, as long as that was written into the plan. The reason I'm confused is it seems that that transfers all the investment choices back to the employees. Is that still acceptable?

MS. SMITH: I think the problem is in being able to do that and say that there truly is a guarantee that's known in advance. I've never seen anybody do that. I agree that it doesn't look like there's any guarantee over time. It's a "heads I win/tails you lose" situation. But if you know you're going to earn 8%, you could guarantee 8%, if you wanted to. You also could say, "We will give you what the trust earns, but we won't give you less than 6%."

The minimum interest rate guarantee clearly makes it a defined-benefit and not a defined-contribution plan. And this would avoid the problem of employees thinking that they were earning less than what the trust earned. But this situation also means the employer doesn't have any arbitrage on the rates of return. It has downside risk and no upside potential.

FROM THE FLOOR: If I understand you, the sum of the account balances for all the employees is not necessarily the same as the actuarial liability. Is that true?

MS. SMITH: That is exactly true. And that's one of the things you need to take into consideration when you determine how you're going to price these liabilities and the normal costs. And it gives some people a little bit of a headache, because they have a problem with that.

### Transition Issues

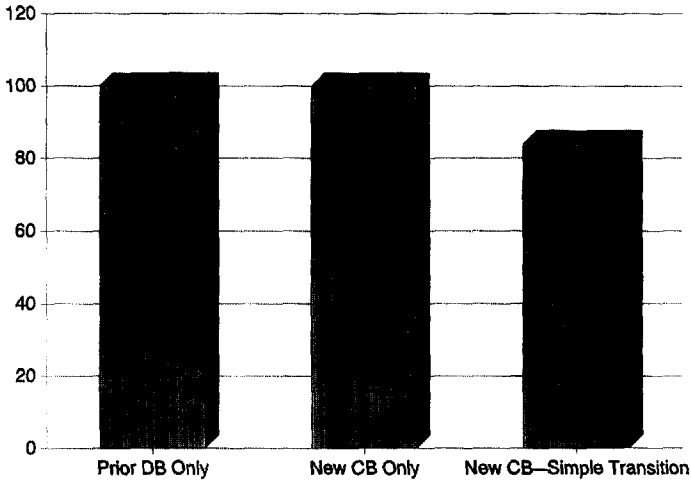
Let's talk about transition issues. Chart 2 shows an employee that's covered by a defined-benefit plan only. This is the benefit, expressed as a percentage of pay, that he has accrued based on his past service and his current average earnings under what was a final-pay plan. This is the benefit that he could expect to earn in the future and we're setting this as our target replacement ratio. Under a cash-balance plan for a full career, the same individual at this same point in his or her career will have accrued a higher proportion of their total benefit, assuming the same replacement ratio exists at the end.

So you can see this person with the front loading formula has gone further faster than the defined-benefit person has. If we switch the defined-benefit person to cash balance for future service accruals, he or she will end up with a total benefit that is roughly 82% of what they otherwise would have expected had the defined-benefit plan been continued. That's why you have grandfathering problems.

Depending on the way that you've structured the interest credits, 4%/6%/8% or a flat 6%, these problems will occur at different ages. In other words, if the credits are staggered, you don't have as much to make up for the older generation as you would if you had a flat rate. So you may find with a staggered formula, you have

grandfathering that goes down to a higher age, maybe 55, as opposed to the age that would be required with a flat accrual rate to maintain expectations.

CHART 2  
Transition Issues  
Impact on Current Employee in Mid-Career



However, if you convert the prior defined-benefit accrued benefit into a cash value account, it is thereafter indexed. So it won't be quite as bad as it would have been if you'd left it as a frozen accrued benefit.

So the kinds of questions you have to ask in looking at transition benefits are, how much do I want to protect retirement expectations? How much do I want to avoid windfalls to people who quit? What can I afford? This does require a lot of modelling on the benefit design to see what kinds of benefits you want to deliver and then a lot of pricing to try to see how much the design will cost. We generally go at it by looking at outside limits and then, as we get to a point where we can see the type of formula that makes sense, we can refine the numbers we're looking at. This is better than pricing "umpty-ump" scenarios and getting totally confused.

Again, one needs to look at the total cost and whether you want windfalls, and if so, where you're willing to give them. Simplicity in terms of both administration and communication should be a goal. What are your employees going to think about this? What's the story you're going to tell them in terms of why you're doing this and why you've developed this formula? And you also have to be careful about nondiscrimination rules.

As I mentioned earlier, you can integrate these benefits just like a defined-contribution plan. You could have a contribution of 5% of pay up to the Social Security wage base and 8% of pay over the Social Security wage base. You could even decide that you wanted an integrated, staggered benefit formula, 4-6% for the first 10 years of

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employment. Then 5-7% for the next 10. And if you have 20 or more years of service, it's 5-8%, 6-8%, 6-9% or something like that.

**FROM THE FLOOR:** Can these now be integrated at the wage base as opposed to covered compensation?

**MS. SMITH:** You're not going to meet 401(l) rules with an integrated cash-balance plan, so you're going to have to test using the 401(a)(4) rules. And generally you can do anything you want. You can use the wage base. You don't have to bother with covered compensation. So in our experience, it's not a hard thing to integrate, but the client has to agree to perform annual testing. There is a safe harbor, but as you read through the safe harbor rules as they relate to cash-balance plans, most employers find they don't want to follow every single rule that's in there.

Earlier we talked about trying to maintain the old retirement benefit replacement ratio. But you found if you did so, you had to have multiple breaks in your formula to more closely approximate the accrual pattern of your traditional defined-benefit plan and keep costs down. If you didn't want as many breaks, then you will add cost, because the value is always higher. But suppose you said, "Beyond a certain level, I am going to reduce the benefits. Below that level, the value is always above where the benefits were before, so no grandfathering is needed." Here, you can adopt a supplemental executive retirement plan (SERP) (nonqualified) for those few individuals that are over that level. You have a trade-off here in that you have increased your costs somewhat, but for a smaller group of individuals than if all cash-balance accruals preserved value. Then you have to see where the crossover can occur to keep your costs neutral. It might occur at levels of pay that are too low to be able to make up benefits with SERPs. This is a problem, but it is something to keep in mind. It depends on your demographics. It depends on what you can afford to spend.

### **Early Retirement Subsidies**

I mentioned briefly, that you can provide early retirement subsidies under cash-balance plans. Most companies aren't doing that, but you can. It's a function of what you can pay for, what the expectations are, and what you feel as an employer you want to do. These are usually provided by giving a "bonus" to the account value or reducing the divisor. Again, you need to be careful of the minimums on lump sum distributions. These lump sum minimums affect the most people the greatest amount at the lower ages. When employees reach age 55 or so, and you can use just the immediate PBGC rate as opposed to the layered PBGC rates, you find that the PBGC rates no longer control most of the time. The greater of the cash value of the account and the minimum on lump sum on the cash-balance accrued benefit is what you must pay.

### **Summary**

The key points here are the cash-balance plans aren't that new. They are still evolving. People are creative and they're coming up with new things everyday. We've talked about the basic building blocks that have to be looked at, the interest credits, the annual accruals, the distribution methods. We've also talked about transition issues and I'll guarantee that in most of the situations when you're taking an existing defined-benefit plan and making the conversion to cash balance, you're going to spend a lot of time on transition issues to be comfortable that people are not

going to have a problem with the new formula. There is financial appeal and there certainly is a lot of employee appeal. That's why cash-balance formulas are being used so frequently. A lot of major companies have adopted these plans now.

### **Legal Issues**

Be careful of tax reform. Watch the accrued benefit rules. Also, watch the minimum lump sum rules. There are safe harbor rules under tax reform, as I mentioned earlier. It is tested just like any other defined-benefit plan. There is a safe harbor for interest rates. The interest credit must be 7.5-8.5%, if I remember correctly. Most companies are going to have no trouble passing the test, however. The transition and grandfathering rules do provide a bit of headache in terms of the design. If you're not taking the safe harbor, you have to be sure that your population doesn't result in not passing the nondiscrimination tests.

### **Accrued Benefits**

This can be another sticky issue depending on what you choose to do in your design. We always thought about accruing \$10 per month per year of service. You know what your accrued benefit is right there. Let's discuss one of these situations where the company has decided the interest credit, the index rate is 3%, but every year it's probably going to up that to 5%, 6%, or 7% depending on what is comfortable. At this point, when Joe or Mary leaves and they have a cash balance of \$1,000, it only has a vested guaranteed rate of return of 3%. They will no longer share in any of those amended increases for any year, because they're terminated with vested rights in their accrued benefit which doesn't include them. Those are future plan amendments. They don't have to be given to terminated vested participants. That just means that you have to administer these plans in a way that you keep track of what's going on and you understand that these terminated vesteds went out at the time when the guaranteed rate was 3% and they're stuck at that level. You can increase them at that rate only. It can be done, but it's more complicated. You also have to, in your valuation process, identify the bump in the liability attributable to that one-year change in the guarantee. That gets messy and very confusing. So for simplicity's sake, most companies, I think, don't choose this method. They'll go in with a rate. It may float. When you're doing your valuations you use the rate in effect for the most recent year, assuming it is always in effect thereafter. And you use that rate in your testing, too.

**FROM THE FLOOR:** So is the plan definition of the accrued benefit based on the anticipated account value at the time of retirement?

**MS. SMITH:** It can be worded that way to keep things simple. There's another way you could word it. If you had a guaranteed rate that was 6% or 7% but you had some limits that might cause the rate to fluctuate, you could freeze your term vesteds at the 6% or 7% rate and never let it fluctuate for them. But your definition of accrued benefit has to say the rate is frozen for them. Otherwise, the definition has to say that the accrued benefit is an amount at the time someone terminates increased or decreased, depending on the actual rates that are credited thereafter until that individual starts his or her benefit. If you don't define it that way, you can't substitute the actual rate for the rate that was in effect implicitly in the accrued benefit at termination. You do have to be careful how you write the accrued benefit definition in the plan.



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**FROM THE FLOOR:** Could you have a declared rate that is a smaller rate after someone terminates? For example, we say the declared rate is 7% while you're active, and once you terminate it's only going to be 3% thereafter.

**MS. SMITH:** I think you can only because I think you can give them no increase after they've terminated -- retired or terminated with vested rights. But, again, keep it simple. One way of accomplishing this is to have the guaranteed rate at 3% or 4% and let them go out with the 3% or 4%. Then they don't share in the higher rates that are amended into the plan each year. That's a simple way of doing it. You're asking if the plan could state the guaranteed rate was 6% a year and after someone left, take them down to 4%. I think you have to be very careful how you define the accrued benefit, because the benefits that have already been accrued have locked into them, perhaps, a 6% per year index. That's why I think the only way you can do it is to define it at the lower rate. Then they're not eligible for the annual increase that you give via a plan amendment. Otherwise, it's probably protected.

### Lump-Sum Calculations

PBGC factors versus plan factors. Account balance versus accrued benefit. Let's look at some in Table 1. Here are three individuals, a 35-year-old, a 45-year-old, and a 55-year-old. You have an existing defined-benefit plan. Their pay is \$20,000, \$25,000, and \$30,000, respectively, and they have 5, 15, and 25 years of service. Arbitrarily, these are their accrued benefits under the current traditional defined-benefit plan. You're going to a cash-balance plan. These are the conversion factors based on whatever you've said in the plan you're going to use to calculate the initial cash balance. There is an assumption here that these accrued benefits are going to be converted into cash-balance account values, but they don't have to be. They could be left as frozen benefits. But then you have to understand you've lost all indexing on that benefit that's been accrued to the date of change. So your future service accruals or your grandfathering for these older people in that circumstance have to do a lot more work than they would if you permitted these benefits to be converted to cash values and thereafter indexed. (Alternatively, you could index the frozen accrued benefit by some relationship to pay, but then you have portions of the benefit accrued that may not be payable in a lump sum.)

**TABLE 1**  
Lump-Sum Calculations

Age	CE	CPS	DB AB	Initial CB Conv. Factor	Initial Cash Account	Initial CV AB 7%*	Minimum Lump Sum
35	20k	5	\$500	1.2%	\$600	\$500	500 x 2.0 = 1,000
45	25k	15	1,875	2.8	5,250	2,032	2,032 x 3.0 = 6,096
55	30k	25	3,750	4.2	15,750	3,750	3,750 x 4.0 = 15,000

\* Initial Cash Account  $\times (1.07)^{FS} \div 10$

Let's look at our 35-year-old. We convert the \$500 accrued benefit to a cash balance and it's \$600. That's great. We also have to be able to identify the cash balance accrued benefit for this individual. And the way you find that out is to accumulate the initial cash balance at the rate of indexation that you have in your plan for that year and divide by an annuity factor. I picked 10. It can be whatever you

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want. Generally it's an annuity rate based on the index rate, but I don't think it has to be. It does under the safe harbor rules, but it may not have to be. So you pick an annuity rate. This gives you a benefit. In this case it gave us \$457. You probably should put a minimum on it equal to the accrued benefit the individual had under the old formula at the time of the conversion.

Now if we were 45 and went through this exercise, we find out that we calculate \$2,032 as the initial cash-balance accrued benefit, and not the \$1,875 that the individual had under the previous formula. With grandfathering, I would say this individual has the greater annuity of this \$2,032 accrued benefit, or a cash – lump sum – value paid on the \$2,032 accrued benefit.

At age 55, we have the pattern where there's \$3,750 accrued. We convert it. And by the way, I just picked these rates out of the air, so I don't know if they're realistic or not. The initial cash-balance account value was \$15,750 and that translated into a cash-balance accrued benefit that was only \$3,098. So again, we put the minimum on and you do get screwy results. They will generally trend, though, better than mine did. You won't have ups and downs. It depends on the difference between the accumulation and division using a flat interest rate versus how old the individual is at the time.

Now let's look at the minimums on lump sums. Let's just say the layered PBGC rate at 35 is 2.0, whereas our flat rate was 1.2 at the current age. Here we find that the minimum lump sum amount is \$1,000, whereas this individual's initial cash value is \$600. This is where you can get added cost. One thing to keep in mind is as employees get older, these differences disappear because you go to less discounting at the lower layered interest rates. These comparisons will be better if the PBGC turns around sometime this year and changes its interest rates to get them up to a more current level. It also updates its mortality table, which is the reason why its interest rates are so low. At that point in time you're going to see a jump of 1 or 200 basis points on the PBGC interest rates. And that could make the minimum lump-sum rules much less onerous.

Furthermore, if you are one of those companies that chooses not to permit individuals to take their cash-balance accrued benefit in the form of a lump sum, you don't have these problems. You communicate the values but you provide the benefits only in the form of an annuity.

**FROM THE FLOOR:** This seems to imply that you might be paying out a lump sum that is of less than what you've shown on the most recent statement?

**MS. SMITH:** I don't think I have that here. You always say, "I'm going to pay you your cash value or the minimum lump sum amount, if it's larger." And again, when you're making this calculation, to the extent you get over \$25,000 you can then, if your plan so permits, use 120% of the PBGC interest rates with a minimum of \$25,000 on the distribution. All of those factors help you to say, "I don't really have a problem with these minimums at older ages."

One other thing to consider doing to get around paying these higher lump sums, is to say, "You may have a lump sum if you terminate with vested rights, but I'm not

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going to pay it to you until you reach age 55." Remember to consider the fact that you have to keep these people in your valuations until they reach 55. So the company has the balance on which to earn interest and the employees have to apply at age 55 to take their cash value. But at that point in time, the minimum on lump sums is less likely to be greater than the cash-value account balance. That's simply because you don't have the tremendously long discount periods at 4%, 5% and 6% versus the flat 7%, or whatever the plan's rate is.

### Funding

How do you fund these plans? Very carefully. You do have to use explicit individually realistic assumptions and you may have a new assumption. What is the index rate to be credited on cash-balance accounts in future years? That's an assumption when you have a variable index rate in the plan. You'll have to pick a rate that you feel you can live with. You'll have gains and losses. It's not different than what you used to have to decide if you were valuing a floor offset plan. You had to decide then not only what the rate of return was, but also what the rate of the company's contributions would be. You also have to be careful when you have lump sums and early retirement subsidies that you have retirement decrements so that you've valued the cost of these subsidies. You also might assume 80% will take cash and 20% will take an annuity in pricing withdrawal benefits before retirement eligibility. Keep in mind, however, that you can't look at lump sum values that are based on interest rates that are less than your valuation discount rate for current liability purposes. Generally, you will have a pay related plan and it will usually be career pay. You could use entry age for funding purposes, which helps to smooth out contributions. You will have a difference between the accrued benefit current liability values and your actual liability because of the pay and the spread.

FROM THE FLOOR: Could I ask a question about the prior table? In the age-35 case, there are three separate values used and I'd like to hear a little more about the three. You have the 1.2 which is, say, for converting the accrued benefit to the initial cash value. Then you had the value that produced the \$457 benefit out of the \$600 cash value and then you had 2.0 used for determining the lump sum minimum. Could you talk a little more about those three and their characteristics?

MS. SMITH: This initial 1.2 value is a function of a mortality rate and a discount rate. Oftentimes I think you'll find it's based on the same underlying interest rate as your index rate. It doesn't have to be. It may or may not reflect the value of any subsidized early retirement factors applicable to that accrued benefit. It is through the conversion process where you can reduce or eliminate any subsidies for early retirement with respect to the cash-balance accrued benefit. The deferral age is 65 for the annuity. Even though this person walks away with \$1,000, which is considerably greater than the \$600, it may be worth less than the present value of the accrued benefit if the person commences payment at 55, is eligible for a temporary supplement and has a heavy subsidy on early retirement. Therefore, you may have reduced only the ultimate cost of providing the same normal retirement benefit. And that again is why it's very important that you have a good valuation system that's going to help you understand how the value of these benefits accrue. You will want to try different retirement decrements, different rates of return and different withdrawal decrements.

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FROM THE FLOOR: Suppose the plan did have a subsidy for people who've attained age 55. When they attain age 55, do you then have to bring the value of that subsidy into the initial cash-balance account?

MS. SMITH: Looking at the example, let's suppose that a person who terminates at age 55 doesn't get just \$3,750 multiplied by an actuarial equivalent reduction factor. Let's say he or she gets \$3,750 multiplied by an actuarial equivalent reduction factor. Does the rate used to convert the \$3,750 accrued benefit to the initial cash balance have to take into consideration that value? I don't think it has to. I think you are still able, in an ongoing plan situation, to provide this individual with a lump sum that does not give them the value of the subsidy.

FROM THE FLOOR: Then once a person has earned the subsidy, isn't that considered part of his accrued benefit? I mean, once the person has reached and met the age and service criteria.

MS. SMITH: You haven't taken it away from him as an annuity. You have a frozen grandfathered benefit here equal to the accrued benefit under the old formula payable under all of its terms and conditions. But the new cash-balance accrued benefit is payable in the form of a lump sum that may not include the value of any subsidized early retirement benefits inherent in the old formula.

FROM THE FLOOR: And what if the person's subsidy could be provided under the cash-balance plan?

MS. SMITH: Then you'd have to calculate it so that it was reflected. The conversion to the cash-balance accrued benefit generally will not want to produce a cash-balance accrued benefit that is smaller than the frozen accrued benefit. But the new benefit does not have to have all the rights, features, and so on that are tied into the preservation of that frozen accrued benefit. That's why you need to think about an ongoing grandfathered, defined benefit that will take care of certain people's expectations. So it isn't simple in the transition issue. A brand new employee, someone at age 35, always hears, "You have \$600 in your account." For older employees, you'll need to spend some time counseling them and giving them some individual statements. They're easily done on a personal computer.

FROM THE FLOOR: How would you define "normal" retirement benefit under one of these plans?

MS. SMITH: The accrued benefit under the old plan, the one that must be frozen, is the amount that had been accrued payable from normal retirement under whatever forms of payment were provided and using the conversion factors that were associated with it. This is not the same as the new cash-balance accrued benefit.

FROM THE FLOOR: With a brand new cash-balance plan, how would you define the "normal" retirement benefit?

MS. SMITH: You will not know exactly how much that is. You would say the benefit is the cash balance that you have at any time that has an accrued benefit that

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is associated with it. That accrued benefit is calculated by accumulating the balance to age 65 and dividing by an annuity factor.

FROM THE FLOOR: *So it's not necessarily a percent of salary?*

MS. SMITH: Some cash-balance plans do define the accrued benefit directly and index it. Others define a contribution and convert it into the accrued benefit. So it depends on which route you've chosen to take. But you must always be able to determine the accrued benefit. That's one of the things that became clear in reading the safe harbor rules.

FROM THE FLOOR: Do I understand that when you're projecting the cash value to determine the accrued benefit related to it that you use the current credited interest rate for the accumulation and divisor?

MS. SMITH: I believe that's correct, at least under the safe harbor rules as they currently stand.

FROM THE FLOOR: You say that because of the safe harbor rules. Is that what everyone must do?

MS. SMITH: We're inferring this from the safe harbor rules. That's correct. We don't know whether this will be required in final IRS rules.

I must say that all of this is conjecture in terms of everything that we've seen in print and our understanding after discussions. There could be a rule that'll come out tomorrow that'll make me a liar. I never can predict what's coming out of the government these days, but this is my understanding. If you're trying to design a cash-balance plan right now, it's probably prudent to at least make your client aware of these issues and let them choose where they wish to take the risk. But we think a plan like this probably will be fine under whatever final rules do come out. You could choose not to provide any lump sums now until you know how some of these things work out. You can always add a payment form. It's hard to take one away.

### **Actuarial Methods**

We talked a little bit about projected unit credit versus entry age. Generally, use one of these for funding purposes.

FROM THE FLOOR: Are they using unit credit valuation methods?

MS. SMITH: I don't think on a pay-related formula. It's difficult, especially if the formula is integrated. And you're going to have to use projected unit credit for FAS 87 valuations so you might as well just do one valuation. You want to be careful that you don't underfund, which I think you would end up doing under the unit credit method.

FROM THE FLOOR: Could you go back just a little bit to the use of the projected unit credit funding on a cash-balance fund?

MS. SMITH: I think you have a number of alternatives in how you choose to accrue the benefit over time. Are you going to project a benefit out at your decrement age and then turn around and slice it by service as you might do for a career-pay plan? Or are you going to try to look at it in terms of what's been accrued in that time frame based on final pay instead of current pay? There are a number of ways to do it, but many times the liability will turn out to be smaller than the sum of the cash-balance amounts. And you just want to be sure you're not missing something.

#### **AGE-WEIGHTED PROFIT-SHARING PLANS**

I'm going to skip very quickly to age-weighted profit-sharing plans. If you keep in mind my earlier slide which illustrated the rates at which benefits accrue, most defined-contribution plans accrue at flat rates. In other words, say each year's contribution is 5% of pay. It's the same value for each person with the same pay, regardless of age. It doesn't provide the same annuity benefits, depending on what age you are when that amount is contributed, but it is the same value. That can tend to produce higher costs (because of greater termination and preretirement death benefits), for a given retirement income replacement ratio than if you were using a traditional defined-benefit plan.

So let's talk for a minute about the background, the allocation process, the primary attractions, and some of the problems you might incur. And I have to give credit, because I have not really worked in this area, to Dick Schreitmueller for the charts which appeared in his article, "Age-Weighted Profit-Sharing Plans," in the December 1991 *Pension Section News*.

We've all seen traditional defined-contribution plans. Then we had companies trying to more closely mimic the buildup of value that was inherent in a traditional defined-benefit plan. They went to target benefit plans where they calculated benefits using some funding method, some ultimate benefit formula, and put money in that met that target if the employee was now age 35 and had so many years of service.

Here we are now with age-weighted profit-sharing plans. The reason they're becoming so popular is the new 401(a)(4) nondiscrimination rules make it easier to prove nondiscrimination. It's become very attractive for smaller corporations, where the owners are mostly older, because it will permit much greater dollar contributions to be made to a defined-contribution account than the old traditional defined-contribution plan formulas would.

To simplify the administration of these plans, you should probably anticipate the requirements of 401(a)(4) testing. That means, according to Dick's suggestion, that you start with a life annuity at age 65 discounted to each employee's current age. What you're going to use this for is a weighting factor for each employee. And you're going to make your initial allocations; you're going to run a general test, and then look at what's happened for each person and cut them back as needed for either top heavy rules or Section 415 limits. Most larger plans don't have to be concerned with top heavy rules. But you will find that you end up with 415 limit problems, either percents of pay limitations or dollar limits. Then you make these adjustments, reallocating what has to be taken from those individuals where the amounts have exceeded the 415 limits and then rerun the general test. That reallocation generally gives more to lower paid individuals with shorter service.

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The primary attraction of these plans is no annual valuations. But you do have to do a lot of testing. Dick maintains you can set this up on a PC and it just runs. I haven't done this, so I'd really want to make sure I was comfortable with it. You certainly have no unfunded liabilities. You certainly don't pay PBGC premiums. Your preretirement benefits and costs, as we determined with the age-weighted formula, can be close to those of the defined-benefit plan accrual. Why? Because you have multiple break points. You have a break point every year. So you have to be more closely replicating the accrual pattern of the traditional defined-benefit plan. That lowers costs, all other things being equal, and still produces the same replacement ratio for retirement. The reason it does, is you're giving smaller benefits to people who die or who terminate before retiring. That's the big difference. Said another way, you give larger benefits to people who are older and have longer service or who are older if it's just based on age.

When should it not be advised? If you have owners who are making the decisions about what plans they want to sponsor and some of them are quite young and some of them are quite old, you may have difficulty in selling an age-weighted profit-sharing plan. If you choose to integrate, then you have some added complexity. It's doable, but you might want to start simple. And sometimes you'll have highly compensated employees who are nonkey employees and they can cause problems.

Let's just see how a typical age-weighted profit-sharing plan accrual might work (see Table 2). We have a five employee population with pay ranging from \$200,000 all they way down to a 55-year-old earning \$50,000. These are the discounted annuity factors from age 65. You use them to determine the present value of an accrual for each person equal to 1% of their pay, and you get these amounts. And these dollars become your weighting factor. And the company says, "We're going to use in a formula that produces a \$51,000 total contribution which then gets allocated to these five individuals in proportion to these weighting factors."

TABLE 2  
Example 1 – Initial Allocation

Age	Salary (A)	Discounted Annuity Factors (B)	PV of 1% of DB Accrual (C)	Allocation of 15% Contribution (D)
35	\$200,000	0.9366	\$1,873	\$19,082
25	20,000	0.4544	91	926
35	30,000	0.9366	281	2,862
45	40,000	1.9304	772	7,866
55	50,000	3.9786	1,989	20,264
Total	\$340,000		\$5,007	\$51,000

This is what you would try to do for these people, but let's look now at Table 3 where \$20,000 is contributed for this \$50,000 a year person. You can't do that. Forty percent of pay is too great. So you have to cut this person back to 25% of pay as in Table 4. But this is just going through the general test and proving the obvious: on the basis of the way it was designed, you're always going to get a

constant percentage. That's why Dick Schreitmueller suggests that you start out with these annuity factors, the discounted present value of a dollar. But that's the general test and that's fine. You can't contribute it for this individual because it's too high.

TABLE 3  
Example 1 - Initial Allocation, General Test

Age	Salary (A)	Initial Allocation of DC Contribution		Accumulation Factor (D)	Conversion to Annual DB Accrual	
		Amount (B)	% of Pay (C)		Amount (E)	% of Pay (F)
35	\$200,000	\$19,082	9.54%	1.0677	\$20,373	10.19%
25	20,000	926	4.63	2.2005	2,037	10.19
35	30,000	2,862	9.54	1.0677	3,056	10.19
45	40,000	7,866	19.66	0.5180	4,075	10.19
55	50,000	20,264	40.53	0.2513	5,093	10.19
Total	\$340,000	\$51,000				

TABLE 4  
Example 1 - Final Allocation Including Section 415 Limit

Age	Salary (A)	Discounted Annuity Factors (B)	PV of 1% DB Benefit (C)	Final Allocation of DC Contribution		Accumulation Factor (F)
				Amount (D)	% of Pay (E)	
35	\$200,000	0.9366	\$1,873	\$23,902	11.95%	1.0677
25	20,000	0.4544	91	1,160	5.80	2.2005
35	30,000	0.9366	281	3,585	11.95	1.0677
45	40,000	1.9304	772	9,853	24.63	0.5180
Subtotal	\$290,000		\$3,017	\$38,500		
55	\$50,000	3.9786	\$1,989	\$12,500	25.00%	0.2513
Total	\$340,000		\$5,007	\$51,000		

So we decrease the contribution to the \$50,000 person to get down to the level that we can provide and reallocate the excess amount in proportion to these weighting factors for the remaining four employees (see Table 5). So these individuals are now getting more than they would have in the first place. Now there's no problem in passing the tests, at least not in this case.



## CASH-BALANCE PLANS

TABLE 5  
Example 2 – Allocation

Age	Salary	PV of 1% DB Accrual	Initial Allocation	415 Maximum	Allocation Based on Key EE	Allocation including Top-Heavy
	(A)	(B)	(C)	(D)	(E)	(F)
55	\$200,000	\$7,957	\$36,591	\$30,000	\$30,000	\$30,000
25	20,000	91	418	5,000	343	600
35	30,000	281	1,292	7,500	1,059	1,059
45	40,000	772	3,551	10,000	2,911	2,911
55	50,000	1,989	9,148	12,500	7,500	7,500
Total	\$340,000	\$11,091	\$51,000		\$41,813	\$42,071

In Dick Schreitmueller's article, he had one other situation he went through. It was a little bit more complicated and he was trying to talk about key employees. Here he had to cut back on the contribution to the key employee. I won't pretend to go into all of those. If you have questions on that, call Dick. Until you've worked with these, I don't think you fully understand them.

