

Innovations in Retirement Financing

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Part III

Innovations for Managing Retirement Wealth

Chapter 7

Taking the Subsidy Out of Early Retirement: Converting to Hybrid Pensions

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The fraction of the U.S. labor force covered by an employer-provided pension plan has remained stable during the past three decades. However, the outlines of the pension universe have been transformed significantly. Since the passage of the Employee Retirement Income Security Act (ERISA) in 1974, there has been a strong and ongoing trend away from the use of defined benefit plans as more and more firms have chosen to offer defined contribution plans, especially 401(k) plans (PBGC 1999). This movement toward greater utilization of defined contribution pensions has occurred primarily among smaller employers.¹

In the past decade, another significant development has emerged, with the conversion of traditional final-pay defined benefit plans to cash balance and pension equity plans. This recent change is occurring mainly among larger employers, although a number of smaller employers have also made the shift. Among larger employers, the adoption of hybrid plans has been particularly prevalent in the financial services, utilities, and telecommunications industries. Among smaller or intermediate sized employers, the adoption of these new plans has often occurred in the health services industry. Each of these industrial sectors has undergone some restructuring in recent years, and hybrid plans may be a response to the dynamic business environment in which employers have found themselves.

The ongoing growth of defined contribution plans has been the focus of research studies for over a decade, as analysts have attempted to explain the reasons for the shift and its impact on workers and firms (Clark and McDermed 1990; Gustman and Steinmeier 1992; Ippolito 1997). By contrast, the conversion of traditional defined benefit plans to hybrid plans has only recently become the focus of scholarly research (Brown et al. 2000; Clark and Munzenmaier, 2000). The void in research has to some extent

been filled by reporting in the popular press that has relied extensively on selected interviews with senior workers in large companies who have been adversely affected by the adoption of hybrid plans. The present analysis extends the debate by offering new evidence on the impact of plan conversions on workers who stay with their employers under hybrid plans. We examine the full extent of the conversion process including changes in supplementary defined contribution plans and the use of transition benefits to moderate the effect of the conversion on senior workers.

Three results from the shift to hybrid pension plan have been identified by Brown et al. (2000). First, they showed that the shift to hybrid pensions would benefit the vast majority of affected workers, if they were to quit their jobs under the new plans prior to the early retirement eligibility age. Second, they found that the conversion to the hybrid plans generally meant the elimination of early retirement subsidies characterizing the prior plan designs. Third, they demonstrated that the majority of benefit reductions that would occur in the shift to hybrid plans would be concentrated among portions of the covered populations that remained with their employers beyond retirement age eligibility. This prior study did not document the extent to which the elimination of early retirement subsidies was the reason for benefit reductions occurring in the shift to hybrid plans. The present analysis focuses on the elimination of these early retirement subsidies in the shift to hybrid plans, to measure whether this explains the benefit reductions that sometimes occur during plan redesign.

Our assessment of plan conversions is divided into three parts. We begin with a description of a unique sample of 77 plan sponsors that converted a traditional defined benefit plan to a hybrid plan after 1985. We evaluate whether the replacement of the traditional pension with a hybrid plan increased or decreased company retirement costs, whether changes were made in related retirement benefits, and whether transition benefits were provided to some or all existing workers at the time of the conversion. We then assess the characteristics of workers who can expect to have increased retirement benefits after the plan conversion and the characteristics of those workers who expect to be adversely affected by the change. Next, we disentangle the impact of plan conversions per se on retirement income, from changes that would have occurred if the traditional plan had been maintained but all early retirement incentives were eliminated. Finally, we close by placing our results in the context of evolving retirement policy and practice. Our conclusions support previous findings that younger workers with limited job experience gain disproportionately from plan conversions, because traditional pensions tend to benefit disproportionately workers toward the end of their careers. Younger workers are less likely to remain with their current employer until retirement, and so will typically get little benefit from traditional plans. Hybrid plans, on the other hand, usually provide larger benefit accruals to younger workers than the plans they replace.

Senior workers with considerable job tenure at the time of the conversion often receive lower benefit accruals under the new hybrid plans than they would have under their prior plans unless special transition rules are applied. We also conclude that most of the reduction in benefits for workers adversely affected by the shift to a hybrid plan is due to the elimination of subsidized early retirement benefits, not to the plan conversion itself.

Understanding Conversions to Cash Balance Plans

The effect of converting traditional defined benefit plans into cash balance or pension equity plans is examined using a sample of 77 employers who converted their pension plan between 1985 and 2000. The sponsors of all of these plans are clients of Watson Wyatt Worldwide, a major benefits consulting firm, and the sample is composed of all the plans for which Brown et al. (2000) were able to access sufficient plan information to compute retirement benefits under the prior traditional plan and the new hybrid plan.² Among the plan conversions considered are 46 employers who established cash balance plans and 31 firms that adopted pension equity plans. The number of active participants in these plans ranges from 100 to over 100,000. The distribution of plans by number of active participants is shown in Table 1. Although the sample includes plan conversions during a 15-year period, most of the changes have occurred since 1997; 31 of the plan conversions were made between 1985 and 1996, and 46 conversions were made between 1997 and 2000.

Benefits in the prior traditional DB plans were determined using an average earnings formula, with 87 percent of the plans employing some measure of final average earnings, and 13 percent using a career average formula. Among the final average plans, 70 percent based benefits on the final five years of earnings. Only 16 percent of these plans were not integrated with social security, with half of the sample using an excess integration formula and one-third using a benefit offset method. This sample of traditional plans that were converted to hybrid plans tended to have a higher percentage of plans using final average salary in the benefit formula and a higher percentage of firms integrated with social security than was true more generally.³ The preretirement earnings replacement rate for workers hired at age 30, who remained in these plans until age 65, ranged between 25 and 50 percent for 88 percent of the plans in the sample. All but two of the prior plans included subsidized early retirement benefits.

After the conversion process, new formulas in both the cash balance and the pension equity plans provided specified credits to a benefit account for each worker. Less than half of the new cash balance plans (20 out of 46) provided for a uniform percentage of base pay to be credited to an employee's account, varying from 2 to 10 percent of pay each year. Slightly over half of the plans (26) varied the amount credited by age and/or years of

TABLE 1. Distribution of Sample Plans by Size and Type of Plan

<i>Number of Active Plan Participants</i>	<i>Cash Balance Plans</i>	<i>Pension Equity Plans</i>	<i>Total Plans</i>
100-499	4	3	7
500-999	10	3	13
1,000-2,499	6	10	16
2,500-4,999	10	6	16
5,000-9,999	8	1	9
10,000-19,999	3	6	9
20,000 and over	5	2	7
Total	46	31	77

Source: Authors' calculations; see text.

service. Thirteen of the plans increase the pension credit for earnings above a designated level that is a percentage of the social security wage base. Most of the plans credit an annual return on the account balance equal to the rate on some specified Treasury bill or bond ranging from three month to 30-year bonds, while seven plans specified some other rate or tied the annual return to the consumer price index. Among the 31 pension equity plans, 4 specified a fixed percentage of earnings to be credited annually to each individual's account ranging from 7 to 12 percent; 27 plans had differential annual credits to participants' accounts that varied by age and or years of service. In 18 plans, individuals received a higher pension credit above a designated level of earnings which was a specified percentage of the social security wage base or average social security covered compensation.

Benefit formulas in the traditional final pay DB plans produced a sharp increase in the value of retirement benefits with continued service at older ages. Subsidized early retirement provisions in those plans provided a sharp increase in present value of pension benefits once the worker had reached the age of early retirement. Together these characteristics of the traditional defined benefit plans provided greater benefits to long service workers who remained with the company until the age of eligibility for early retirement. Pension equity plans and cash balance plans more closely approximate career average defined benefit plans without early retirement options than do defined contribution plans. These plans provide for a more uniform increase in benefits with continued employment and do not have the significant spike in pension benefits that is embedded in final average pay plans with early retirement provisions.

Elimination of Early Retirement Subsidies

Economists have been studying the retirement incentives embedded in our retirement systems for over two decades (Quinn 1977; Burkhauser 1979;

Gordon and Blinder 1980; Fields and Mitchell, 1984; and Kotlikoff and Wise, 1985). One plan feature that has garnered substantial attention is the pattern of accruing benefits for workers who work beyond the normal retirement age in these plans (typically age 65). Often failure to retire and begin to take benefits by this age results in a negative accrual of benefits for additional years of work, primarily because plans may limit the number of years of covered service allowed and because there are no adjustments in the actuarial value of accrued benefits beyond normal retirement age.⁴ Failure to take a benefit in this situation simply results in the ultimate monthly or annual annuity being paid over a shorter period of time, thus reducing the total lifetime benefit paid. This provides an economic incentive for workers to retire at the normal retirement age, and most empirical studies report a spike in the probability of retirement at this age.

A second plan feature that received considerable attention is the effect of early retirement subsidies on work and retirement decisions. To clarify how these subsidies affect lifetime benefits, consider the accrual pattern of benefits shown in Figure 1 for a worker hired at age 30 at a starting salary of \$40,000 per year who is participating in one of the benefit plans in our sample. For example, the solid line in the figure shows that the present value of pension benefits for this worker grows in value from zero at the point of hire, to the equivalent of roughly one and a half years of annual pay at age 54.⁵ By working from age 54 to 55, the value of the benefit for this worker suddenly jumps from one and a half times pay to slightly more than three times pay. This occurs because the plan provides an immediate benefit at age 55 with less than a full actuarial reduction relative to the benefit that would be provided at normal retirement. If the worker does not continue to work under the plan until reaching age 55, he or she would not qualify for this special subsidy and would receive benefits under the regular benefit formula.

The dashed line in Figure 1, which shows the pattern of accrued benefits that would be provided if early retirement were not subsidized, may be compared to the subsidy curve. The value of the subsidy is roughly one and a half years of pay at 55; it holds relatively steady until age 59, and then it declines steadily beyond that. At the normal retirement age of 65, the subsidy has been completely exhausted. The existence of the subsidy at age 55 provides a significant step up in pension wealth and thus increases the incentive to retire. The gradual “wearing away” of the subsidy acts as a significant disincentive to continued employment for workers subject to this benefit formula. In this case, it acts as a discount of one-third of a worker’s pay for work between age 62 and 63 or 63 and 64, and as much as 40 percent of pay for work between age 64 and 65. This pattern evidently provides a significant economic incentive to retire after a worker has satisfied the requirements for early retirement, and it generates a substantial increase in the probability of retirement at the early retirement age. Thus, traditional

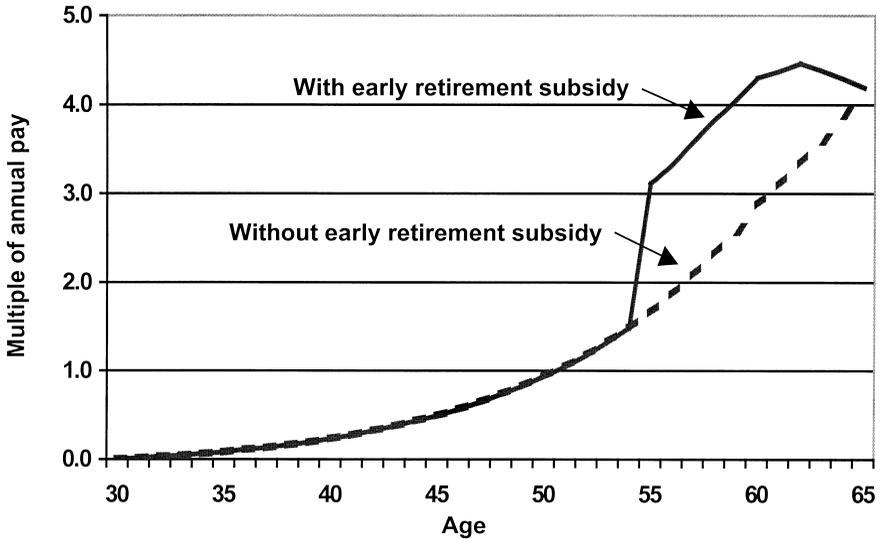


Figure 1. Value of accrued pension benefit (present value) as a multiple of annual pay: new hire at age 30 with a starting pay of \$40,000. Source: Authors' calculations from data provided by Watson Wyatt Worldwide.

defined benefit plans encourage early retirement of workers many of whom are probably still in the productive portions of their working lives.

Table 2 arrays the plans in our sample according to the rate at which their early retirement subsidies wear away, computed as a percentage of pay by age of retiree. In this case, we are looking at a worker with 25 years of service at age 55. We assumed this worker's starting salary was \$40,000 per year in current terms and that it would grow over time at the rate of average wages in the economy. Between age 55 and 60, 38 percent of plans reduced the value of workers' earnings by 0 to 20 percent per year through the erosion in the value of the early retirement subsidies. Between age 60 and 62, more plans reduce the value of early retirement and the size of the annual wear away is increased. Nearly three-quarters of the plans reduced their early retirement subsidies for workers in this age range. Between the age of 62 and 65, 96 percent of the plans reduced their early retirement subsidies and 39 percent did so at a rate that reduced the economic value of the wage earned for added years worked by at least 25 percent. One plan offset the wage earned by 50 percent per year from age 62 to 65. Some of these plans had very significant penalties for continued employment of workers with substantial service.

Figure 2 shows how the accrual pattern under the pension plan represented in Figure 1 changed when the traditional DB plan was converted to a

TABLE 2. Percent of Plans with Alternative Annual Wear Away Rates of Early Retirement Subsidies

<i>Wearaway Rate as % of Annual Earnings</i>	<i>(Percent of Plans)</i>		
	<i>55–60</i>	<i>60–62</i>	<i>62–65</i>
0.0–4.9%	14.3	13.0	9.1
5.0–9.9	6.5	7.8	18.2
10.0–14.9	15.6	15.6	7.8
15.0–19.9	1.3	32.5	11.7
20.0–24.9	0.0	1.3	10.4
25.0–29.9	0.0	1.3	7.8
30.0–34.9	0.0	0.0	9.1
35.0–39.9	0.0	0.0	14.3
40.0–50.0	0.0	1.3	7.8

Source: Authors' calculations (see text), assuming worker has 25 years of service at age 55, starting salary of \$40,000, and average nominal wage growth.

cash balance plan. The solid line in the figure shows the accrual pattern under the old plan, and the dashed line shows the accrual pattern under the new cash balance plan that replaced it. This particular worker would clearly be better off under the new plan if he or she terminated employment prior to age 55, since the early retirement subsidy in the old plan was eliminated in the shift to the new plan. Even at the normal retirement age of 65 the new plan's benefits are not as generous as the old plan's. Nevertheless, continued employment beyond the normal retirement age will ultimately make the new plan more valuable.

Very different incentives apply to workers who terminate their employment prior to immediate pension eligibility, as is evident from Figure 2. The hybrid plan provides a stronger incentive for workers to stay with their employer at earlier ages, while it also imposes less penalty if they leave prior to reaching early retirement eligibility. Very different incentives also apply for continued employment beyond both the early retirement age, and the normal retirement age for long-career workers. The new plan does not subsidize early retirement, nor does it penalize continued work.

A significant element of the story behind the shift from traditional defined benefit plans to a hybrid plan type is the elimination of early retirement subsidies that had existed in the former. Of the 77 cases under study here, 75 had early retirement subsidies in their traditional plans. We have estimated the magnitude of these subsidies by estimating what share of plan costs was attributable to the subsidies paid for early retirement benefits. In developing these cost estimates, we employ the projected unit credit cost method that the Financial Accounting Standards Board (FASB) requires private plan sponsors to use in developing accounting measures of their plans' expenses and liabilities.⁶

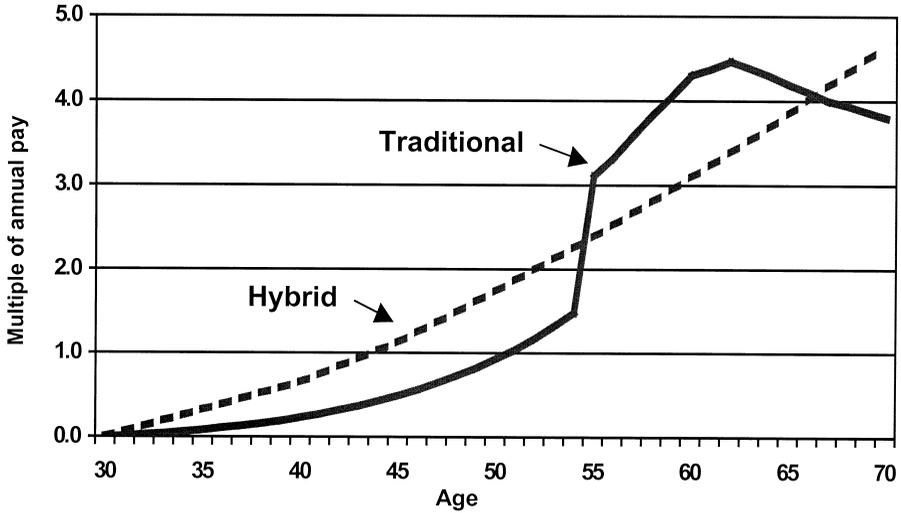


Figure 2. Value of accrued pension benefit (present value) as a multiple of annual pay: new hire at age 30 with a starting pay of \$40,000 under a traditional and a hybrid pension plan. Source: Authors' calculations from data provided by Watson Wyatt Worldwide.

For purposes of comparison the cost analyses are based on a simulated workforce that we created and then applied to all firms, rather than on the characteristics of each individual firm's labor force.⁷ We generated a synthetic workforce of 10,000 workers randomly selected from a combined pool of roughly 165,000 workers, taken from over a dozen of Watson Wyatt's larger clients. For each of the workers, we had information on date of birth, date of hire, and pay level. We used turnover assumptions consistent with those that would generally prevail in large firms offering a defined benefit plan. We did not employ plan-specific turnover experience, although higher turnover rates are applied to the health and hospital plans consistent with observed behaviors.⁸

For the plans under study, the distribution of early retirement subsidies as a percentage of total plan costs is shown in Figure 3. The plans are ranked by the estimated total cost of the original plan. Early retirement subsidies tended to be somewhat larger, on average, in plans with higher costs than in those with lower costs. For example, among the 20 plans with the lowest costs, the average share of the total costs attributable to the early retirement subsidies was 10 percent of the total plan costs, whereas among the highest cost 20 plans, the early retirement subsidy accounted for 19 percent of total plan cost. However, some of the low cost plans had early retirement sub-

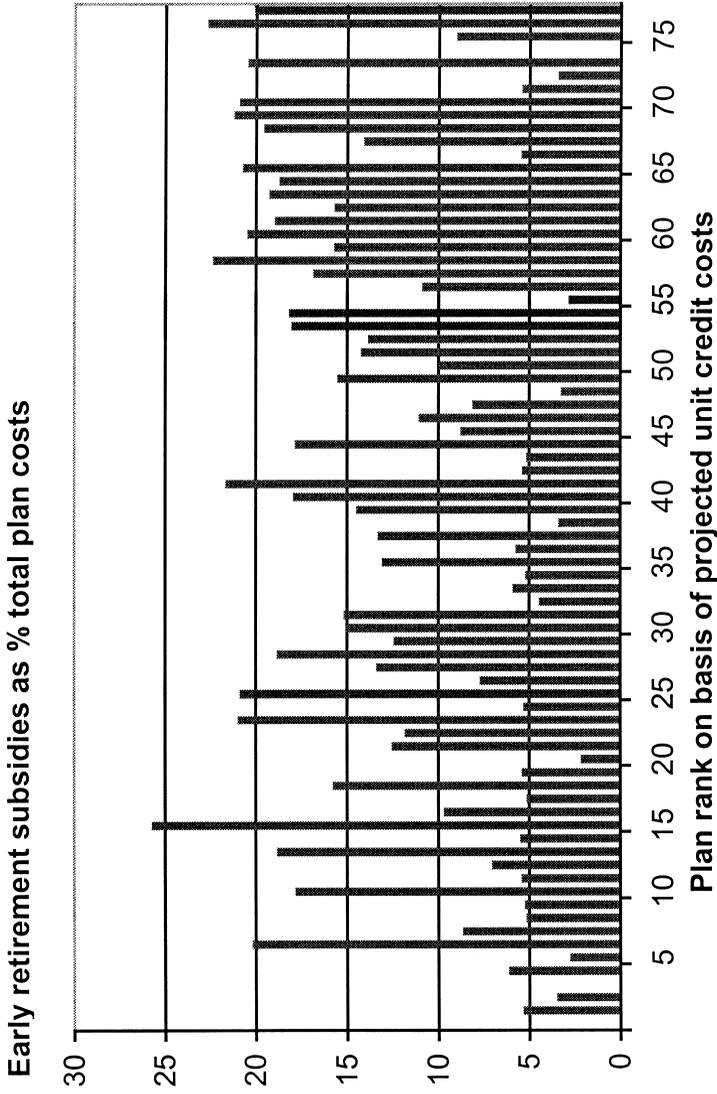


Figure 3. Ranking of projected unit pension costs attributable to early retirement subsidies. Source: Authors' calculations.

sidies as large as plans at the upper end of the cost distribution, and some of the highest cost plans had relatively minimal early retirement subsidies. To link back to the earlier discussion, the cost of the early retirement subsidies in the original pension plan described in Figures 1 and 2 was about 19 percent of the total plan costs in that case. Within our sample, that plan was among the more generous in subsidizing early retirement, but it was definitely not the most generous.

As the above discussion suggests, the elimination of early retirement subsidies offers a pension sponsor the opportunity to reduce the cost of the retirement plan without making any other changes. Technically, an employer can eliminate the early retirement subsidies in its pension plan with certain limited grandfather provisions. For example, assume that a plan with significant early retirement subsidies for a worker at age 55 with 30 years of service was amended on July 1, 2000 to require full actuarial reductions for retirements prior to the plan normal retirement age of 65. This full actuarial reduction could be implemented immediately, upon adoption of the amendment, for anyone who terminated employment after July 1, 2000, who had not reached age 55 and lacked 30 years of service. For a participant who had reached age 55 and completed 30 years of service prior to July 1, 2000, the benefit could not be reduced below the earned accrued benefit if the worker retired immediately before the plan amendment took effect.

If the participant in this case had not met the early retirement subsidy criterion prior to the effective date of the amendment, but subsequently did meet it, then the amount of the subsidy earned under the prior formula would be preserved. In this case, the worker's benefit would be the larger of the benefit earned up to the point of transition, including the early retirement subsidy, or the benefit under the plan as modified at the date of retirement. Thus, the worker's accrued benefit would not be reduced by the amendment, but he or she would not accrue additional benefits until subsequent service and pay raises led to an accrued benefit under the new formula that exceeded the grandfathered benefit under the old formula. Because this worker's accrued benefits already reflect the value of the early retirement subsidies, elimination of early retirement subsidies from the plan would not result in any significant employer cost savings. Virtually all the potential cost savings from eliminating early retirement subsidies reflected in Figure 3 would therefore drive from the elimination of subsidies for workers not yet eligible for early retirement at the point of transition.

The grandfather requirements for early retirement subsidies result in a "wearaway" situation for plan sponsors who eliminate such plan subsidies. This phenomenon has created a significant amount of adverse publicity in the conversion to hybrid plans, because some workers receiving a grandfathered portion of the early retirement subsidy in prior plans could go for

several years without earning added benefits under the new plan. But as Table 2 and the discussion around it shows, there is a significant amount of wearaway *already* built into traditional defined benefit plans with early retirement subsidies. It is quite likely that some workers who believe they were adversely affected by the wearaway phenomenon in the transition to a hybrid plan are actually not suffering wearaway as rapidly under their new plan as they would have under their original one, had they stayed under it. Also, in the case reflected there, workers covered under the plan who terminate employment prior to age 55 would typically be better off under the new plan than the old one.

It is clear from Figure 2 that some of the cost savings resulting from the reduction in benefits to people reaching early retirement age are redistributed to workers who leave prior to that age. What is not clear is whether the added benefits provided to shorter term workers would be more or less costly than the benefit reductions resulting for people who would have attained early retirement age under the old plan. In this particular case, we estimate that the plan sponsor realized some added costs over and above reinvesting the early retirement subsidies back into the plan in the shift from a traditional plan to a hybrid plan. Of course the standardized workforce and turnover assumptions used in estimating these cost changes may not reflect the actual cost changes realized by any particular employer. In earlier work, Brown et al. (2000) reported that on average the projected unit credit service cost reduction in the shift from traditional hybrid plans was around 10 percent of the original plans' costs. When modifications to the 401(k) plans by these same sponsors were factored in, they estimated that the average service cost reduction employers realized in shifting to their new retirement plans dropped to around one percent.

Next we take a different look at plan cost changes by considering them against the base plans after eliminating their early retirement subsidies. The purpose of this exercise is to see if employers were reducing plan costs beyond the elimination of early retirement subsidies, or whether this was the extent of savings they were realizing and whether they actually put the early retirement subsidy reductions back into the plan. Considering the net change in plan costs due to eliminating early retirement subsidies, we find that 48 percent of the plan sponsors put at least the full value of the savings into their combined defined benefit and defined contribution package. Another 14 percent put some of the value realized back into the plan. Some 35 percent of plans reduced costs somewhat more than what they would have realized by simply eliminating early retirement subsidies, though, as reflected in Figure 3, many plans had relatively small early retirement subsidies. Nearly one-fifth of those sponsors that kept some portion of the savings realized from eliminating early retirement subsidies had total reductions in plan costs of 5 percent or less.

Cumulative Benefit Changes in the Shift to Hybrid Plans

One reason that the shift to hybrid plans has been so controversial is that some redistribution of benefits among plan participants accompanies the conversions. Even a plan conversion that increased pension costs may make some workers worse off under the hybrid plan than they would have been under the prior traditional plan. One way to show the effects of the transition is to calculate benefits for prototypical workers to show how their benefits compare under the old and new environments.

Comparative pension benefits for three hypothetical workers in the plans under analysis appear in Table 3. The first worker, in the top panel, is hired at age 30 with an annual salary of \$40,000 per year in 1999. The second worker, represented in the middle panel of the table, is 40 years of age and 10 years into his career by 1999, earning a salary of \$50,000 per year. The third worker is assumed to be age 50 and 20 years into a career by 1999, earning \$60,000 per year. Higher or lower salaries will change the numbers slightly, but not enough to change the pattern of accruals in the alternative types of plans.⁹

A number of the plans analyzed here were converted from a traditional defined benefit structure to a hybrid plan structure several years ago, with one as long as 15 years ago. Some of the earliest hybrid plans have been modified since they were first adopted, and we did not have all the detail on the time path of these modifications. For purposes of these comparisons, we have estimated the benefits for our hypothetical workers under the defined benefit plan in operation at the time of the initial shift to a hybrid plan, and then we compare the initial benefit to the benefit provided by the current hybrid plan.¹⁰ This means that when we consider the implications of the shift to a hybrid plan adopted 10 years ago for a worker who is 40 years of age with 10 years of service in 1999, we are comparing the accruals of a worker who has already been covered for 10 years under the new plan with one covered under the prior plan for that whole period. This has particular implications for older workers who might have been covered under transition provisions in the shift to a hybrid plan. Often plan sponsors will adopt transition provisions that may cover workers who will reach retirement eligibility in the first five to ten years after the transition to the new plan. For the oldest hybrid plans, the transition provisions are likely to have expired for the older, longer service workers we are considering here. Our choice of calculating comparison benefits in this case would result in smaller benefits under the hybrid transition arrangements than actually were provided for older workers in most cases. In that regard, our estimates of benefit reductions in the shift to hybrid plans for older workers are upper bounds of the likely effects on plan participants at the time of the conversions.

The row labels in Table 3 reflect the ratio of benefits from the hybrid plan relative to benefits that would have been provided to the same worker under

TABLE 3. Accumulated Benefit Provided by Hybrid Pension Plan Relative to Prior Plan Benefit (% of Plans)

<i>Ratio of Hybrid Plan to Hybrid Plan Benefit</i>	<i>Age 40</i>	<i>Age 50</i>	<i>Age 55</i>	<i>Age 60</i>	<i>Age 62</i>	<i>Age 65</i>
<i>New hire at age 30, beginning pay of \$40,000 in 1999</i>						
<50	0.0	1.3	7.8	7.8		
50–99	3.9	10.4	50.7	61.0		
100–149	5.2	31.2	28.6	24.7		
150–199	13.0	26.0	6.5	2.6		
200–249	19.5	18.2	3.9	2.6		
250–299	26.0	5.2	1.3	0.0		
300–349	10.4	2.6	0.0	0.0		
350–399	10.4	3.9	0.0	0.0		
400+	11.7	1.3	1.3	1.3		
<i>Worker at age 40 with 10 years service, pay of \$50,000 in 1999</i>						
<50		1.3	5.2	9.1		10.4
50–99		11.7	58.4	62.3		57.1
100–149		40.3	29.9	23.4		27.3
150–199		28.6	3.9	3.9		3.9
200+		18.2	2.6	1.3		1.3
<i>Worker at age 50 with 20 years service, pay of \$60,000 in 1999</i>						
<0.50			1.3	5.2	13.0	9.1
050–099			9.1	44.2	50.7	50.7
100–149			55.8	48.1	35.1	39.0
150–199			19.5	1.3	1.3	0.0
200+			14.3	1.3	0.0	1.3

Source: Authors' calculations; see text.

the prior pension plan. For example, consider the row labeled 150–199 for the worker hired at age 30 in the top panel of the table. It indicates that 13 percent of the hybrid plans would provide this worker a benefit at age 40 that was 150 to 199 percent of the benefit that would have been provided by the prior plan. The next line shows that 19.5 percent of the hybrid plans would provide a benefit at age 40 that was 200 to 249 percent of the benefit that would have been provided by the prior plan. The evidence indicates overall that the shift to hybrid plans increased benefits for workers who terminate employment at younger ages. Nearly 90 percent of the hybrid plans provide higher benefits for workers leaving prior to age 55 than did the prior plan. Beyond age 55, however, most of the new plans provide smaller benefits than the prior plans would have. It is these benefit reductions for long-career workers reaching the prevalent retirement eligibility ages under traditional pension plans that has created some negative publicity about the shift to hybrid plans.

TABLE 4. Future Pension Accruals as a Percentage of Pay for Workers Shifted into a Hybrid Plan with the Same Cost as the Prior Plan, by Age and Service at Date of Shift

<i>Tenure at Time of Conversion (years)</i>	<i>Age at Time of Conversion to a Hybrid Plan</i>					
	20–29.9	30–39.9	40–49.9	50–54.9	50–59.9	60–65
<i>Future pension accrual rate as % of pay for those winning or held harmless</i>						
0–4.9	1.98	3.26	4.80	6.42	6.43	6.60
5–9.9	2.17	3.24	4.75	6.19	7.02	7.41
10–14.9	2.57	3.37	4.52	5.81	6.70	7.74
15–19.9		3.49	4.51	6.16	6.48	7.75
20–24.9		4.13	4.62	6.01	6.98	7.32
25–29.9			4.95	6.26	5.78	7.61
30+			5.51	5.84	6.29	6.55
<i>Future pension accrual rate as % of pay for losers</i>						
0–4.9	4.27	5.31	6.30	7.76	8.36	9.01
5–9.9	4.80	5.29	6.25	7.71	8.43	9.08
10–14.9		5.33	6.25	7.71	8.47	9.13
15–19.9		5.40	6.24	7.59	8.50	9.14
20–24.9		5.39	6.30	7.60	8.53	9.13
25–29.9			6.68	7.62	8.53	9.14
30+			7.12	7.69	8.54	9.13

Source: Brown et al. (2000).

We acknowledge that the impact of plan conversions is more complex than simply one of cutting retirement benefits. Brown et al. (2000) simulated a “synthetic” workforce of 30,000 workers through the remainder of their careers with three employers who had shifted from a traditional pension to a hybrid plan. These workers were randomly drawn from the same workforces of 15 of Watson Wyatt’s larger actuarial clients, as described earlier. By simulating these workers through the remainder of their careers, the authors compared estimated benefits under the prior and replacement plans. They conclude that replacing a traditional plan with an essentially equivalent projected unit credit cost left about 80 percent of workers at least as well off under the new plan, and many would be better off. Among workers who would be worse off under the new plan, benefits would be reduced on average between 15 and 20 percent relative to their prior plans.

That analysis also found that tagging those who would be worse off under the new plan as “losers” did not adequately reflect how they would continue to benefit under the new plan relative to their counterparts who might be characterized as “winners.” This point is illustrated in Table 4, which shows future pension accruals as a percentage of pay for workers classified as winners and losers in that case study of an actual employer’s shift to a cash

balance plan.¹¹ The top panel reflects accrual rates for workers who would be better off under the cash balance plan than they would be under the prior plan, while the bottom portion represent those who would be worse off. It is interesting to note that for every age and service category, the “losers” accrued pension value at a higher rate than did the “winners.” So some participants were made worse off by the transition, but they will gain more from delayed retirement. In other words the shift resulted in a more equitable allocation of pension accruals and benefits across workers who leave prior to retirement eligibility and those who stay longer. For the most part, these younger workers who end up being losers in the pension shift are the ones who work under the new hybrid plan until they reach the age of early retirement eligibility under the prior traditional pension plan. For these workers, it is the elimination of early retirement subsidies that accounts for much of the benefit reduction in the shift to hybrid plans.

Cutting Benefits Through Curtailment of Early Retirement Subsidies

Are companies changing their plans as a means of reducing retirement benefits to save employment costs, or are they instead implementing a new human resource model that retains older workers in the twenty-first century? Understanding what is motivating the shift to hybrid plans depends in part on whether the plan conversion lowers annual pension benefits and how much of any benefit changes is attributable to the elimination of early retirement subsidies. Therefore we next analyze the overall benefit changes that workers eligible for early retirement subsidies incur in the move to hybrid plans. These changes in benefits are divided into two components: the first is the extent to which the elimination of the early retirement subsidy by itself affects benefits, and the second is the extent to which benefits are adjusted beyond the elimination of the early retirement subsidy.¹²

Suppose that in a traditional pension plan, the worker could expect to accumulate a benefit at age 58 that had a value of three times his pay, at point *A* in Figure 4. Suppose further that the early retirement subsidy made up one third of the value of that accumulated benefit at that age. If the employer simply eliminated the early retirement subsidy, the benefit at age 55 would only be worth twice the worker’s pay, point *B* in Figure 4. Instead, however, this employer might adopt a new hybrid plan that eliminated the early retirement subsidy in the traditional plan, and also adopted further benefit modifications such that this worker’s accrued benefit at age 58 is only one and a half times his pay (point *C*). In this case, the worker would incur a 33.3 percent benefit reduction in moving from the traditional to the hybrid plan, due to the elimination of the early retirement subsidy. She would incur an additional 16.7 percent reduction from further modifications to the prior accrual pattern of the pension. Stated alternatively, two-

Accrued benefit as a multiple of annual pay

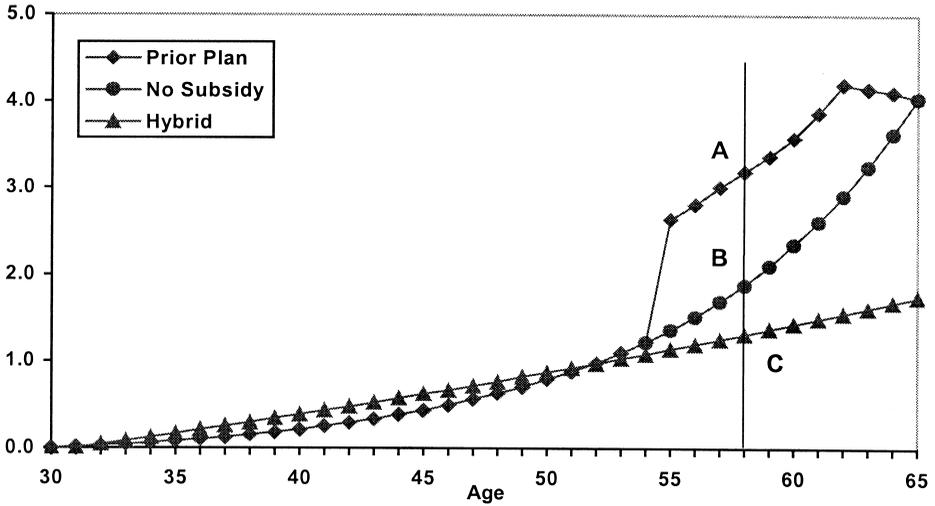


Figure 4. Relative role of the elimination of early retirement subsidies in the total reduction in benefits in the shift to a hybrid pension, scenario 1. Source: Authors' calculations.

thirds of the total benefit reduction in this case would be attributable to the elimination of early retirement subsidies in the transition from the traditional to the hybrid plan. The extent to which benefits were reduced by more than simply the elimination of early retirement subsidies is summarized in Table 5. The three panels summarize the results for the same prototypical workers as appeared in Table 3. Row labels show the percentage benefit reduction due to the shift from traditional to hybrid plan attributable to the elimination of the early retirement subsidy. For example, the top panel in the first column focuses on a worker who retires at age 55 with 25 years of service: in 2.6 percent of all the plans, the elimination of the early retirement subsidy represented between 0.0 and 24.9 percent of the total reduction in benefits for such a worker. For the 30-year-old new-hire at the point of transition to the new plan, only 15.6 percent of all hybrid plans would provide a benefit at age 55 that reduced benefits by more than simply eliminating the early retirement subsidies in the prior plan. In eight of nine cases in Table 5, fewer than half of the new plans cut benefits by more than if plan sponsors had simply eliminated early retirement subsidies, but left the remainder of the benefit formula intact. Even when benefits were cut by more than the early retirement subsidy, the subsidy elimination accounted for most of the benefit reduction.

Some employers did reduce benefits for many early retirees in the shift

TABLE 5. Benefit Reductions Attributable to the Elimination of Early Retirement Subsidies in the Shift to Hybrid Plans: Cases Where Benefits Were Reduced by More Than the Value of the Subsidy

<i>Total Benefit Reduction from Elimination of Early Retirement Subsidy (%)</i>	<i>Percent of plans at age</i>		
	<i>55</i>	<i>60</i>	<i>62</i>
<i>New hire at age 30, beginning salary of \$40,000</i>			
0.0–24.9	2.6	7.8	13.0
25.0–49.9	1.3	7.8	10.4
50.0–74.9	7.8	11.7	15.6
75.0–99.9	3.9	14.3	9.1
Plans where benefit cut exceeds early retirement subsidies (%)	15.6	41.6	48.1
<i>Worker at age 40 with 10 years of service, earning \$50,000 at transition to new plan</i>			
0.0–24.9	2.6	7.8	13.0
25.0–49.9	3.9	9.1	11.7
50.0–74.9	3.9	13.0	16.9
75.0–99.9	6.5	13.0	9.1
Plans where benefit cut exceeds early retirement subsidies (%)	16.9	42.9	50.7
<i>Worker at age 50 with 20 years of service, earning \$60,000 at transition to new plan</i>			
0.0–24.9	2.6	9.1	11.7
25.0–49.9	3.9	6.5	10.4
50.0–74.9	2.6	11.7	14.3
75.0–99.9	13.0	9.1	9.1
Plans where benefit cut exceeds early retirement subsidies (%)	22.1	36.4	45.5

Source: Authors' calculations; see text.

from a traditional plan to the hybrid, but by less than the reduction that would have been imposed by only eliminating the early retirement subsidies in the original plan. Scenario 2 is depicted in Figure 5, where we focus on a worker at age 57. Under the traditional plan, this worker would have earned a benefit worth three and a half years of pay, point *A* in Figure 5. If the plan sponsor had simply eliminated the early retirement subsidy in the plan, the accrued benefit would be worth only two years of pay, point *B* in the figure. But under the new hybrid plan, the benefit was actually worth two and a half years of pay, point *C*. In this case, the value of the early retirement subsidy was one and a half year's pay but the reduction in benefits in the shift to the new plans was only one year's pay. In other words, the elimination of the early retirement subsidy in this case represented 150 percent of the total reduction realized in the shift to the new plan.

The prevalence of this scenario where total benefits were reduced but by

Accrued benefit as a multiple of annual pay

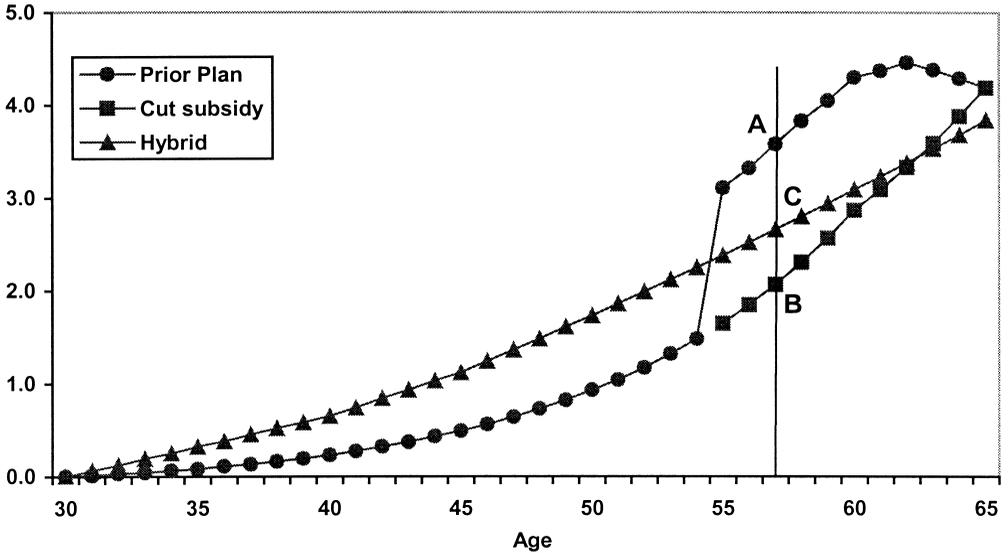


Figure 5. Relative role of the elimination/ of early retirement subsidies in the total reduction in benefits in the shift to a hybrid pension, scenario 2. Source: Authors' calculations from data provided by Watson Wyatt Worldwide.

less than the elimination of early retirement subsidies is summarized in Table 6. Our sample plan sponsors put some of the reduction in benefits realized from eliminating early retirement subsidies in their prior plans back into the new hybrid plan. Thus between 20 and 44 percent of the plans fell into this category, depending on age and service of workers at various early retirement ages. Workers retiring at younger ages appear to be more likely to fall into this category, where some portion of the early retirement subsidy was put back into the new benefit, than those retiring at older ages. In the cases where elimination of the early retirement subsidy was a very large percentage of the total benefit reduction, it is an indication that most of the early subsidy reduction was put back into the plan. For example, when the early retirement subsidy elimination represents 400 percent of the total benefit reduction in the shift to the hybrid plan, it implies that more than three-fourths of the subsidy in the old plan was reinstated in the new plan benefit. The workers represented in Table 6 all would end up getting a smaller benefit under their new plan than under the prior one, but many of the benefit reductions are relatively small, especially in comparison to the early retirement subsidies in the original plans.

In a third scenario, employers eliminated the early retirement incentives

TABLE 6. Benefit Reductions Attributable to the Elimination of Early Retirement Subsidies in the Shift to Hybrid Plans: Cases Where Total Benefits Were Reduced by Less Than the Value of the Subsidy

<i>Total benefit reduction realized from elimination of the early retirement subsidy (%)</i>	<i>Percent of Plans at Age</i>		
	<i>55</i>	<i>60</i>	<i>62</i>
<i>New hire at age 30, beginning salary of \$40,000</i>			
100.0–124.9	7.8	7.8	7.8
125.0–149.9	6.5	2.6	1.3
150.0–199.9	6.5	6.5	2.6
200.0–399.9	11.7	5.2	6.5
400.0+	10.4	2.6	1.3
	42.9	24.7	19.5
<i>Worker at age 40 with 10 years of service, earning \$50,000 at transition to new plan</i>			
100.0–124.9	7.8	9.1	7.8
125.0–149.9	7.8	6.5	2.6
150.0–199.9	9.1	3.9	3.9
200.0–399.9	9.1	3.9	3.9
400.0+	10.4	3.9	2.6
	44.2	27.3	20.8
<i>Worker at age 50 with 20 years of service, earning \$60,000 at transition to new plan</i>			
100.0–124.9	5.2	5.2	3.9
125.0–149.9	2.6	6.5	0.0
150.0–199.9	6.5	0.0	5.2
200.0–399.9	5.2	9.1	5.2
400.0+	6.5	5.2	5.2
	26.0	26.0	19.5

Source: Authors' calculations; see text.

that had been embedded in their prior plans as they set up the replacement hybrid plans, but in the aggregate they ended up increasing benefits. This scenario is reflected in Figure 6. In this case we will focus on a worker at age 61. Under the traditional plan, this worker would have earned a benefit worth two times pay as reflected in the figure. If the sponsor in this case had simply eliminated the early retirement subsidy in the prior plan, the worker's benefit would have dropped to the equivalent of one and a half year's pay as reflected by point B in the figure. But under the new hybrid plan, the benefit was actually worth two and a half year's of pay as reflected by point C. Despite losing his early retirement subsidy at age 55, this worker would actually be better off under the new plan than under the prior one. In shifting to the new plan in this case, the sponsor put back into the plan the full value of the early retirement subsidy that was eliminated in the shift to the new plan plus even more for the hypothetical worker.

Accrued benefit as a multiple of annual pay

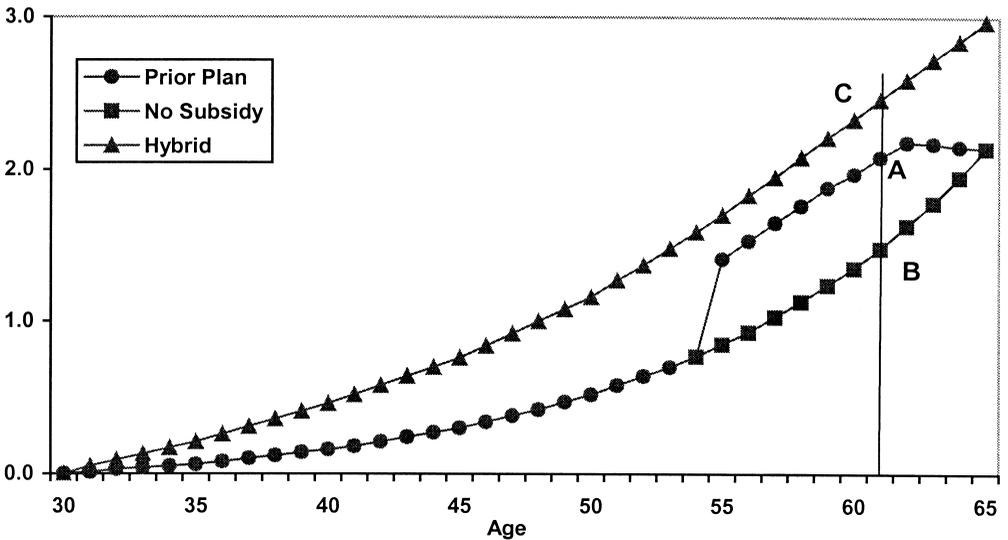


Figure 6. Relative role of the elimination of early retirement subsidies in the total reduction in benefits in the shift to a hybrid pension, scenario 3. Source: Authors' calculations from data provided by Watson Wyatt Worldwide.

The prevalence of this scenario appears in Table 7.¹³ In most of the cases, the majority of the new hybrid plans would end up reducing benefits for the prototypical workers by less than the amount of the reduction that would occur if employers had simply eliminated their early retirement subsidies. For cases where the worker is assumed to retire at age 55, fewer than one-quarter of the plans would reduce benefits by more than the elimination of the early retirement subsidies. For these workers 40 to 50 percent of the plans would actually enhance benefits relative to the old plan, even though they had eliminated the subsidies related to early retirement. The only case in the table where most plans would end up reducing benefits by more than the value of the early retirement subsidy is when the worker was hired at 30, was converted to a hybrid plan at 40, and worked until age 62. In that case, just over half of the plans would pay a benefit reduced by more than the amount of the early retirement subsidy.

The Role of Pensions and National Retirement Policy

Retirement became an important segment of the lives of most Americans in the 20th century, attributable to rising real incomes and shifts in the struc-

TABLE 7. Shares of Benefit Reductions Attributable to the Elimination of Early Retirement Subsidies in the Shift from Traditional Pensions to Hybrid Plans

	<i>Percent of Plans at Age</i>		
	55	60	62
<i>New hire at age 30 at a beginning salary of \$40,000</i>			
Benefit cut exceeds subsidy	15.6	41.6	48.1
Benefit cut less than subsidy	42.9	24.7	19.5
Benefit not cut or increased	41.6	33.8	32.5
<i>Worker at age 40 with 10 years of service earning \$50,000 at transition to new plan</i>			
Benefit cut exceeds subsidy	16.9	42.9	50.7
Benefit cut less than subsidy	44.2	27.3	20.8
Benefit not cut or increased	39.0	29.9	28.6
<i>Worker at age 50 with 20 years of service earning \$60,000 at transition to new plan</i>			
Benefit cut exceeds subsidy	22.1	36.4	45.5
Benefit cut less than subsidy	26.0	26.0	19.5
Benefit not cut or increased	52.0	37.7	35.1

Source: Authors' calculations; see text.

ture of the national economy that altered older persons' employment prospects. Retirement has evolved because of the conscious development of national retirement policies that have undergone substantial change since the establishment of social security. Initially, those policies sought to provide adequate retirement income to a segment of the elderly population facing low income and difficulty finding employment. In addition, retirement was sometimes encouraged to create job opportunities for younger workers. social security was designed to provide retirement income and required "retirement" as a condition of eligibility. Medicare offered national health care for those aged 65 and older. Preferential tax treatment was granted to employer pensions that met certain regulatory standards, and for many years national policy permitted mandatory retirement at age 65.

These policies have come under scrutiny in the last quarter century, with this reconsideration producing the elimination of mandatory retirement, the raising of the normal retirement age under social security, and the elimination of the earnings test for persons older than the normal retirement age. From a societal perspective, we have switched from subsidizing early retirement to encouraging delayed retirement, partly due to a changing perception about what is "fair." For instance, mandatory retirement provisions were eliminated because policymakers decided it was unfair to force productive people out of their jobs simply because of age. Social security's retirement age was raised because policymakers decided the cost of sustaining the original age would be unfair to workers in the face of grow-

ing dependency levels significantly driven by increases in life expectancy of retirees.

Retirement policies have also changed because of the changing dynamics of the labor market. Social security's earnings test was criticized because it discouraged people eligible for benefits from working. In the 1930s, when unemployment was rampant and policymakers thought that an older worker's retirement would create a job opening for a young worker, this policy appeared to make sense. In today's economy, where labor force growth rates are the lowest they have been in a half century and where they are expected to fall even lower in the coming decades, such policies are less persuasive.

Employers today operate in exactly the same environment as that dictating changes to social security policies. In an era of unprecedented tight labor markets, bribing workers to retire more than a decade before they will be eligible for full social security benefits is probably undesirable for many employers. This is a partial explanation for the strong and continued trend toward greater use of defined contribution pensions over time, plans that rarely have subsidized early retirement options. This transition is the result of various regulatory and economic factors, including the higher cost of complying with federal regulation, especially for small firms, along with changes in worker and firm preferences concerning deferred compensation. As a result, many employers terminated their defined benefit plans and established defined contribution plans, while emerging companies were much more likely to select defined contribution plans. Many large companies that have retained their defined benefit plans have also been concerned about the economic incentives in these plans. Key points include the attraction to young workers who have a relatively low probability of remaining with the company until retirement and the inability to retain older workers due to the significant early retirement incentives imbedded in their traditional plans. A growing number of these companies have converted their traditional plans to a type of hybrid plan that provides an individual account balance that appeals to younger workers, and also eliminates the early retirement incentives discouraging continued employment of workers still in their productive prime.¹⁴

Conclusions and Discussion

Interestingly, the almost three decade long shift to defined contribution plans has received relatively little adverse publicity, while the more recent shift to hybrid plans has been the target of considerable hostile reaction by Congress, the press, and labor organizations. It is ironic that the effects of the two types of plan changes are actually quite similar. In both cases, early retirement incentives are eliminated, individual accounts are established, younger short-tenured workers almost always gain, and older more senior

workers who anticipated the early retirement subsidy lose retirement income relative to what they had expected.

Is the move to hybrid pension plans desirable? The answer to this question is in the eye of the beholder. Individuals who expect to remain with a single employer throughout their career and retire from this company typically will prefer a traditional defined benefit plan. In contrast, workers who anticipate that they will change employers several times will prefer retirement plans that include portable individual accounts such as defined contribution plans and cash balance plans. Workers who want to manage their own retirement funds and are willing to bear the investment risk associated with financial decisions will prefer defined contribution plans, while those seeking to avoid this type of risk will want to be covered by a defined benefit or cash balance plan.

The primary advantages of cash balance plans for employees are universal coverage, portability of benefits, and little investment risk. These plans allow employers to appeal to mobile workers and offer guaranteed benefits that do not include subsidized early retirement. Employers who wish to continue to use their pension plans to encourage lower turnover or to provide strong retirement incentives at particular ages will maintain traditional defined benefit plans. Companies seeking to attract younger, more mobile workers along with those seeking to discourage early retirement will tend to offer defined contribution and cash balance plans.

We believe that the shift to hybrid plans is consistent with a number of other elements of national retirement policy described above, and in particular it will bring employer pensions in greater alignment with evolving social security policy. Proponents of social security have often suggested its superiority to employer pensions because of its greater portability. Hybrid plans provide significantly more portability than traditional defined benefit plans. Critics of hybrid plans suggest that such plans are unfair because they do not provide the accelerated growth in benefits late in workers' careers that traditional defined benefit plans provided. However, hybrid plans provide more level accruals over workers' whole careers and provide much higher accruals late in workers' careers than does social security. As policy-makers struggle to encourage workers to extend their careers to make entitlement programs more sustainable, it would be expected that they would be simultaneously interested in encouraging employers to adopt pension plans that supportive of that policy goal.

Notes

We thank Gordon Goodfellow, Tomeka Hill, and Lex Miller for their help with statistical analysis. we also thank Kyle Brown, Dick Joss, Eric Lofgren, Richard Luss, and Janemarie Mulvey for helpful comments. Opinions and conclusions are solely

the authors'. Robert Clark's research was supported by the American Compensation Association and the Shannon J. Schieber Retirement Policy Institute of the Association of Private Pension and Welfare Plans.

1. The PBGC (1999) reports that the proportion of the labor force covered by a defined benefit plan declined from 38 percent in 1980 to 23 percent in 1995. As a result, the proportion of pension participants with primary coverage in a defined benefit plan declined from 83 percent to 50 percent. The number of defined benefit plans with fewer than 1,000 workers dropped from 92,000 in 1980 to 38,000 in 1998, while there was a slight increase in the number of plans with over 1,000 employees. The number of active participants in defined benefit plans of all sizes less than 10,000 participants declined sharply during this period.

2. While the plans studied here are all sponsored by Watson Wyatt clients, Watson Wyatt consultants were not involved in the design of the new plans in all cases. The choice of particular consulting firms by companies seeking to develop hybrid plans may have some influence on the plan characteristics ultimately adopted by the plan sponsor. This conjecture is based on the observation that the benefit consulting firms have different positions concerning the philosophy of retirement plan design that may motivate clients with different plan goals to select one consulting firm over another when they are redesigning their pension plans.

3. This conclusion is based on a comparison with roughly 350 defined benefit pension plans in the Watson Wyatt Comparison™ database for 1999.

4. By law, wage increases for those who continue to work after the normal retirement age must be reflected in higher future benefits. However, companies are allowed to cap years of service and they are not required to provide actuarial adjustments associated with declining life expectancy at older ages (see McGill et al. 1996).

5. Throughout this example, earnings are assumed to grow at 4.0 percent per year. The discount and benefit conversion rates used throughout are 7.0 percent per year. We used the GAM83 mortality rates for males with a 3-year setback.

6. This methodology is outlined in paragraph 40, FASB (1985).

7. As a result our estimates will not precisely replicate actual plan costs or change in costs that these plan sponsors would have incurred and reported on their financial statements, if they had eliminated early retirement subsidies while retaining all other aspects of their prior plans.

8. If these assumptions understate turnover patterns, our estimate of the projected unit credit cost for the traditional pension may be too high, since traditional plan costs fall with high turnover. However, if we understate turnover, estimated cost of hybrid plans might also be too high. In this case the issue is primarily related to the portion of workers that can be expected to vest in the new plan. In the traditional plan, the benefits earned in the early part of the career tend to be so negligible, that understating vesting rates for new hires will have little effect on plan costs. In the hybrid plan, on the other hand, benefits at the date of vesting are typically substantial. Understating vesting in this case could have a significant effect on the cost estimate. We do not have access the actual turnover experience for the individual plans being studied, but we have no reason to believe that our methodology biases the analysis or results.

9. This would occur because of the variations in benefit formulas across pay levels in the plans both before and after the transition to the hybrid plans.

10. In assessing the implications of the shift to hybrid plans we were faced with a choice of moving the transition date across time so all plans were treated as having changed at the same time, or taking them at their current state of evolution from the prior to current system. For purposes of this analysis, we use the plan's actual transition date.

11. To derive this, the authors calculated the present value of benefits that would be paid at termination for each worker whose career we were simulating and compared it to the present value of their accrued benefit at the point the employer shifted to the cash balance plan. The difference between the two is the additional amount that each worker would earn between the point of transition and their actual departure from the company. The authors divided this difference by the present value of future earnings while still with the employer. The result is what actuaries refer to as the aggregate normal cost, reflecting the accrual of future benefits as a constant percentage of pay over the remainder of workers' careers with the employer.

12. In the second case, there are three possibilities. The first is that benefits are cut further than the elimination of the early retirement subsidy. The second is that some portion of the reduction in benefits from eliminating early retirement subsidies is put back into the new benefit formula effecting workers reaching early retirement ages but it is not enough to completely offset the elimination of the subsidy. The third is that benefits are sufficiently enhanced in the new formula that the reduction in early retirement subsidies is completely offset. In this last case, workers reaching early retirement ages will end up getting larger benefits under the new plans even though the incentives encouraging early retirement have been eliminated in the process. We estimate the extent to which all three cases arise.

13. These results are shown in the third row of each panel in the table. The first two rows in each panel are the subtotal results from the prior two tables summarizing the prior two scenarios. In one of the prototypical examples shown there, the majority of new plans would fall into this scenario. In most of the cases, roughly one-third of the plans would fall into this category.

14. Another interesting parallel between changes in national retirement policy and pension plan conversions involves the transitional effects on current workers associated with significant changes in plan type or in plan benefit formulas. Conversions of pensions from defined benefit to cash balance or defined contribution plans tend to have an adverse effect on older workers nearing retirement. As we have discussed, companies can moderate this impact through the use of special transition benefits for these workers. Congress faced the same problem in 1977 when the benefit formula for social security benefits was altered. The change in the social security benefit formula meant that workers faced substantially lower annual benefits under the new rules. In this case, individuals born prior to 1917 were allowed to remain under the old benefit formula, persons born from 1917 to 1921 faced a declining benefit formula, and everyone born after 1921 would receive retirement benefits under the new formula. This change meant that similar workers were treated differently based on their birth year. The transition policy adopted by Congress is similar to that used by many employers in pension conversions and it also produced considerable reaction from the so-called "notch babies." One can only imagine the reaction if the Social Security Administration had been sending out benefits statements in 1977 as it is now required to do.

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