

Today's pension plans: how much do they pay?

Benefit formulas in medium and large firms gave 30-year employees retiring on Jan. 1, 1984, at age 65 average monthly pensions of \$385 for those who earned \$15,000 during 1983

DONALD G. SCHMITT

Under pension plans of medium and large firms, employees retiring on January 1, 1984, at age 65 after 30 years of service would have received monthly pensions averaging from \$385 for those earning \$15,000 in 1983 to \$886 for those earning \$40,000. The corresponding range for employees retiring after 20 years of service was \$263 to \$623. Social Security benefits, however, would significantly raise these levels of retirement income.

These data were calculated from benefit formulas of 832 pension plans in the 1984 Bureau of Labor Statistics survey of employee benefit plans.¹ The annual study covers the United States (excluding Alaska and Hawaii) and private industry establishments employing at least 50, 100, or 250 workers, depending on the industry. The 1984 survey sample consisted of 1,499 establishments, designed to statistically represent 21 million employees in 45,000 establishments.²

BLS field representatives obtained from survey respondents the written descriptions of pension plans that, under the Employee Retirement Income Security Act (ERISA), plan administrators are required to provide to covered employees. These descriptions include the formulas used in calculating employee benefits. Using the benefit formula for current service,³ BLS calculated pensions that would have been paid to employees retiring on January 1, 1984, under each plan

by making alternative assumptions regarding the retirees' length of service and earnings history. (See appendix.)

According to the 1984 survey, 82 percent of the active workers in medium and large firms were covered by private retirement pension plans financed wholly or in part by their employers. The plans include defined benefit plans, money purchase plans, and career contribution plans.⁴ The money purchase and career contribution plans, each accounting for only 2 percent of the total pension plan participants, were excluded from this analysis. Approximately 16.5 million workers participated in plans used in the calculation of the basic retirement benefits discussed here. Supplemental pension plans, available to a small number of workers in addition to their basic plan, also were excluded.

Finally, capital accumulation plans are not represented in this analysis. The number of these plans—which include profit-sharing, savings and thrift, and various stock plans—has increased in recent years.⁵ Except for profit-sharing, these plans are relatively new, and it is difficult to determine their impact on retirement income. Moreover, many allow employees to obtain some portion of the benefits prior to retirement.

Pension levels

Table 1 shows averages of monthly private pension payments calculated from the benefit formulas of plans surveyed in 1984. Because the formulas take account of length of service and, commonly, preretirement earnings as well, an-

Donald G. Schmitt is an economist in the Office of Wages and Industrial Relations, Bureau of Labor Statistics.

Table 1. Average monthly private pension payments at normal retirement,¹ by final year's earnings and length of service, medium and large firms, 1984

Final year's earnings	Years of service						
	10	15	20	25	30	35	40
All participants							
\$15,000	\$137	\$201	\$263	\$325	\$385	\$438	\$486
\$20,000	165	240	314	386	456	516	571
\$25,000	202	295	384	472	555	625	687
\$30,000	242	355	462	565	662	743	814
\$35,000	283	416	542	661	772	863	942
\$40,000	326	479	623	760	886	988	1,075
Professional, administrative participants							
\$15,000	\$133	\$194	\$254	\$312	\$367	\$416	\$458
\$20,000	170	246	321	393	462	520	571
\$25,000	218	316	410	501	586	657	718
\$30,000	269	393	510	621	723	807	878
\$35,000	323	473	613	747	866	963	1,044
\$40,000	378	554	720	875	1,014	1,126	1,216
Technical, clerical participants							
\$15,000	\$131	\$192	\$251	\$308	\$363	\$410	\$451
\$20,000	169	247	323	396	465	523	573
\$25,000	218	319	417	510	596	668	729
\$30,000	271	398	519	634	738	822	895
\$35,000	325	480	625	762	883	982	1,065
\$40,000	381	564	734	892	1,033	1,147	1,241
Production participants							
\$15,000	\$142	\$209	\$275	\$341	\$406	\$464	\$519
\$20,000	160	233	305	377	449	511	570
\$25,000	185	270	353	436	517	586	649
\$30,000	212	311	406	499	589	666	736
\$35,000	240	353	460	563	664	747	823
\$40,000	269	394	513	629	739	831	912

¹The maximum pension available, not reduced for early retirement or joint-and-survivor annuity, was calculated under each pension plan using the earnings and service assumptions shown. Workers are assumed to have retired at age 65 with a total working career of 40 years.

Computations exclude 4 percent of participants in money purchase plans or plans with benefits based on career contributions.

nuities under each plan were determined for 42 combinations of service and earnings. In all cases, the data apply to workers retiring on January 1, 1984, at age 65.

Average benefits varied widely among the age-service combinations. The range for all pension plan participants was from \$137 monthly for retirees with 10 years of service and earning \$15,000 in 1983 to \$1,075 for retirees with 40 years of service and final earnings of \$40,000.⁶

Nevertheless, patterns did appear in the findings. Average payments increased, for example, with each rise in service and earnings. The amount of increase, however, grew smaller as the length of service increased, particularly for service beyond 30 years. This decreasing return for extra years of service mainly reflects provisions that limit the number of years credited in the payment calculation. One-third of all pension plan participants were covered by such provisions.⁷ Also contributing to this result are formulas that provide a lower benefit rate after specified years of service, for example, 1.5 percent of earnings per year of service up to 20 years, and 1 percent thereafter.

At each service period examined, benefits increased with the assumptions of higher final earnings. Moreover, at the all-participant level, for a given increase in earnings, the

dollar amount of the pension rise was greater at higher earnings levels. Thus, for employees retiring after 30 years of service, the average pension increased by \$71 a month when earnings rose from \$15,000 to \$20,000 and by \$114 when earnings moved from \$35,000 to \$40,000. In relative terms, when worker earnings increased from \$15,000 to \$20,000 (33 percent), benefits went up by 18 percent; the considerably smaller percentage growth in earnings from \$35,000 to \$40,000 (14 percent) was accompanied by a 15-percent increase in pensions.

The relationship between benefit levels and earnings reflects the influence of a number of pension plan features. Benefits as a percent of preretirement earnings (replacement rates) are raised for retirees at the lower end of the earnings distribution when pension plans guarantee minimum benefit levels. Benefit replacement rates are also raised for low-wage earners when plans contain dollar-amount benefit formulas that provide annuities independent of prior earnings. Conversely, provision for maximum benefit levels reduces the return to retirement plan participants with relatively high earnings.⁸ High-wage earners do have an advantage when so-called step-rate excess formulas are in effect; these formulas calculate benefits as a percent of prior earnings and specify a higher percentage return on that part of earnings above a specified level than below that level.⁹

Levels of private pension benefits also varied by occupational group. At equal levels of pay and years of service, white-collar groups (professional-administrative and technical-clerical) tended to receive higher benefits than blue-collar or production workers. This held true in all cases except at the lowest earnings level (\$15,000), where production workers had slightly larger benefits. As earnings increased from \$15,000 to \$40,000, however, the average gain in benefit amounts was much smaller for production workers. Half of the production workers had pension formulas specifying dollar amounts of benefits, usually independent of prior earnings. Conversely, most of the white-collar workers had earnings-based pension formulas, which calculate annuities as percentages of preretirement earnings.¹⁰

Assuming equal levels of earnings and service, technical-clerical workers commonly were eligible for greater benefits than professional-administrative workers. The latter employees, however, actually average higher salaries and thus tend to receive larger pension benefits at retirement.

Pension benefits varied widely within, as well as among, service-earnings groupings. Table 2 shows the distribution of participants by amount of benefits at selected service and earnings levels. As can be seen, retirees with 30 years of service and \$30,000 in final earnings could receive annuities ranging from less than \$100 monthly to \$1,200 or more. This spread in benefits reflects the wide variety of benefit formulas in private pension plans. The dispersion widens as earnings increase, because the benefits of workers with earnings-based formulas rise, while benefits remain constant

Table 2. Percent of participants in private pension plans by expected annuity at normal retirement, selected combinations of final year's earnings and length of service, medium and large firms, 1984

Monthly pension ¹	20 years of service				25 years of service				30 years of service			
	\$15,000	\$20,000	\$25,000	\$30,000	\$15,000	\$20,000	\$25,000	\$30,000	\$15,000	\$20,000	\$25,000	\$30,000
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Less than \$100	3.0	1.1	.8	.5	1.5	.8	.6	—	1.2	.8	.6	—
\$100—\$149	7.3	4.9	3.1	2.5	3.6	1.8	1.1	(1.2)	2.6	.8	.6	(.6)
\$150—\$199	15.1	7.7	4.8	4.5	8.4	4.6	2.7	2.7	4.7	2.2	1.4	1.5
\$200—\$249	23.0	11.9	9.1	4.5	12.4	7.4	4.8	3.7	9.2	7.5	4.8	3.9
\$250—\$299	15.6	17.0	4.9	5.2	20.5	9.8	7.3	4.5	11.9	4.0	3.4	2.8
\$300—\$349	15.6	21.9	13.0	8.1	12.4	12.7	4.6	4.3	15.9	7.7	4.6	4.5
\$350—\$399	13.9	21.1	22.3	10.1	16.8	14.2	8.2	6.1	13.3	11.5	6.2	3.7
\$400—\$449	2.4	6.1	15.6	11.3	5.4	15.6	12.1	4.2	7.7	12.8	3.6	2.5
\$450—\$499	2.2	3.5	11.2	9.5	12.9	20.2	16.4	11.9	13.4	11.8	11.1	6.7
\$500—\$549	.6	1.4	5.4	16.9	2.1	4.3	14.4	8.6	8.0	14.8	8.3	5.8
\$550—\$599	(1.3)	1.2	3.7	7.6	1.0	2.1	10.2	7.1	6.6	14.3	15.8	11.1
\$600—\$649	—	1.5	1.8	6.5	1.2	2.7	6.5	11.9	1.5	4.3	10.9	2.9
\$650—\$699	—	.5	2.1	5.4	.6	1.3	3.9	8.4	.8	1.2	8.7	8.2
\$700—\$749	—	(.2)	.3	2.3	.3	.8	1.6	6.5	1.5	2.4	5.5	3.6
\$750—\$799	—	—	1.1	1.9	.5	1.0	2.1	6.5	.5	1.7	6.4	16.2
\$800—\$849	—	—	(.8)	.6	(.4)	(.7)	1.4	4.7	(1.0)	.4	3.1	4.9
\$850—\$899	—	—	—	.8	—	—	.9	2.9	—	.4	.8	5.4
\$900—\$949	—	—	—	.6	—	—	.3	1.2	—	.4	1.2	2.4
\$950—\$999	—	—	—	.6	—	—	.8	1.2	—	.5	.8	6.3
\$1,000—\$1,049	—	—	—	(.6)	—	—	(.1)	.6	—	(.4)	1.2	2.0
\$1,050—\$1,099	—	—	—	—	—	—	—	.8	—	—	.3	1.1
\$1,100—\$1,149	—	—	—	—	—	—	—	.3	—	—	.2	1.2
\$1,150—\$1,199	—	—	—	—	—	—	—	.5	—	—	.5	.6
\$1,200 or more	—	—	—	—	—	—	—	.4	—	—	.1	2.1

¹The maximum pension available, not reduced for early retirement or joint-and-survivor annuity, was calculated under each pension plan using the earnings and service assumptions shown. Workers are assumed to have retired at age 65 with a total working career of 40 years.

Computations exclude 4 percent of participants in money purchase plans or plans with benefits based on career contributions.

NOTE: To avoid showing small proportions scattered at or near the extremes of the distributions, the percentages of employees in these intervals have been accumulated and are shown in the interval above or below the extreme interval containing at least .5 percent. The percentages representing these employees are shown in parentheses. Because of rounding, sums of individual items may not equal 100.

when formulas provide flat dollar annuities per year of service independent of earnings. Dispersion also widens as service increases, but to a lesser extent. This is because nearly all pension plans incorporate length of service in the benefit formula.

Replacement rates

Pension benefits are frequently evaluated through the use of replacement rates, that is, expressing the annuities as percentages of preretirement earnings. This facilitates examination of the degree to which pensions permit maintenance of preretirement standards of living. Because consumption patterns, tax liabilities, and rates of personal savings change upon retirement, living standards are typically maintained at less than a 100-percent replacement rate. The final report of the President's Commission on Pension Policy includes an estimate that, for single persons retiring in 1980, 79 percent of gross preretirement income was needed to maintain living standards at a \$6,500 level of preretirement income; a 51-percent rate was needed at a \$50,000 income level. The corresponding ratios for married couples were 86 and 55 percent.¹¹

Estimates of replacement rates required to maintain living standards vary, depending in part on the precise definition given to the replacement rate concept. Are the annuities and preretirement earnings measured before or after taxes? Is the preretirement earnings base the final year's earnings? Is it some average of earnings in years immediately preceding

retirement (such as the 3 years of highest earnings in the last 10)? Or is it an average of earnings over the entire working career?¹² In this analysis, pension benefits are measured before taxes and preretirement earnings are defined as gross earnings in the final full year of employment. Consequently, replacement rates reported here are lower than if other definitions of earnings were employed, because earnings typically peak in the final year of work.¹³

Table 3 presents the monthly pension payments shown in table 1 (annualized) as percentages of earnings in the final year of work. These replacement rates rise substantially as service increases from 10 to 40 years. At the \$30,000 level of earnings, for example, the average replacement rate for all pension plan participants increases from 18.5 percent at 20 years of service to 26.5 percent at 30 years and 32.6 percent at 40 years.

Replacement rates for the overall group, however, tend to decrease as earnings levels increase within each service category. This results primarily from plans for production workers. While white-collar workers experience slight increases in average replacement rates as earnings rise above \$20,000, production workers experience a marked decline. As indicated earlier, the explanation for this difference lies in the relatively greater incidence of earnings-based benefit formulas among white-collar workers.¹⁴

As shown in table 4, earnings-based formulas tend to yield higher replacement rates as final earnings rise. Dollar-amount formulas (commonly providing benefits independent

Table 3. Average replacement rates¹ of private pensions at normal retirement, by final year's earnings and length of service, medium and large firms, 1984

Final year's earnings	Years of service						
	10	15	20	25	30	35	40
All participants							
\$15,000	11.0	16.1	21.0	26.0	30.8	35.0	38.9
\$20,000	9.9	14.4	18.8	23.2	27.4	31.0	34.3
\$25,000	9.7	14.2	18.4	22.7	26.6	30.0	33.0
\$30,000	9.7	14.2	18.5	22.6	26.5	29.7	32.6
\$35,000	9.7	14.3	18.6	22.7	26.5	29.6	32.3
\$40,000	9.8	14.4	18.7	22.8	26.6	29.6	32.3
Professional, administrative participants							
\$15,000	10.6	15.5	20.3	25.0	29.4	33.3	36.6
\$20,000	10.2	14.8	19.3	23.6	27.7	31.2	34.3
\$25,000	10.5	15.2	19.7	24.0	28.1	31.5	34.5
\$30,000	10.8	15.7	20.4	24.8	28.9	32.3	35.1
\$35,000	11.0	16.2	21.0	25.6	29.7	33.0	35.8
\$40,000	11.3	16.6	21.6	26.3	30.4	33.8	36.5
Technical, clerical participants							
\$15,000	10.5	15.4	20.1	24.6	29.0	32.8	36.1
\$20,000	10.1	14.8	19.4	23.8	27.9	31.4	34.4
\$25,000	10.5	15.3	20.0	24.5	28.6	32.1	35.0
\$30,000	10.8	15.9	20.8	25.4	29.5	32.9	35.8
\$35,000	11.1	16.5	21.4	26.1	30.3	33.7	36.5
\$40,000	11.4	16.9	22.0	26.8	31.0	34.4	37.2
Production participants							
\$15,000	11.4	16.7	22.0	27.3	32.5	37.1	41.5
\$20,000	9.6	14.0	18.3	22.6	26.9	30.7	34.2
\$25,000	8.9	13.0	16.9	21.0	24.8	28.1	31.2
\$30,000	8.5	12.4	16.2	20.0	23.6	26.6	29.4
\$35,000	8.2	12.1	15.8	19.3	22.8	25.6	28.2
\$40,000	8.1	11.8	15.4	18.9	22.2	24.9	27.4

¹Retirement annuity as a percent of earnings in the final year of work. The maximum pension available, not reduced for early retirement or joint-and-survivor annuity, was calculated under each pension plan using the earnings and service assumptions shown. This benefit level was then expressed as a percent of earnings in the last year of employment. Workers are assumed to have retired at age 65 with a total working career of 40 years.

Computations exclude 4 percent of participants in money purchase plans or plans with benefits based on career contributions.

NOTE: Data exclude Social Security payments, which are included in the replacement rates of tables 5 and 6.

of earnings) produce the opposite result. In fact, dollar-amount formulas produced the highest replacement rates for final earnings of \$15,000—the lowest level used in this analysis.

Earnings-based private pensions commonly are integrated with Social Security benefits. This explains the tendency for greater replacement rates at higher earnings levels under these private formulas. The Social Security benefit formula yields pensions that, as a percent of preretirement earnings, are greater for retirees with relatively low earnings histories, and it takes account only of earnings up to the Social Security taxable wage base—\$37,800 in 1984. Integrated private pension plans counter this by providing higher replacement rates as earnings rise. Dollar-amount pension formulas, however, are rarely integrated with Social Security benefits.¹⁵

Social Security as a component

Private pension plans do not operate independently. They supply retirement income as part of a "three-legged stool," which also includes Social Security and individual sav-

ings.¹⁶ Replacement rates, consequently, become more meaningful when Social Security benefits are added to the computation.

The Office of the Actuary, Social Security Administration, determined the benefit amounts that would be applicable for workers with the earnings histories used in this study. These Social Security benefits were added to the private pension benefits presented in table 1, and new replacement rates were determined using the combination of these two sources of retirement income.

Table 5 shows average replacement rates of combined private pension and Social Security retirement income for a single worker (one who is not receiving spousal benefits under Social Security). The inclusion of Social Security retirement benefits raises the rates significantly from those in table 3. Except at the higher earnings and service levels, Social Security benefits provide the major share of total retirement income.

Inclusion of Social Security benefits also changes the relationship between the size of the replacement rate and the preretirement earnings level. Private pension plans, on average, yield slightly higher replacement rates for white-collar workers, when earnings rise above \$20,000 (table 3). After adding Social Security benefits to the replacement rate calculation, however, the highest replacement rates are at

Table 4. Average replacement rates¹ of private pensions at normal retirement, by type of benefit formula² and final year's earnings and length of service, medium and large firms, 1984

Final year's earnings	Years of service						
	10	15	20	25	30	35	40
Terminal earnings							
\$15,000	8.9	13.4	18.0	22.6	26.9	30.5	33.5
\$20,000	9.3	14.1	19.0	23.7	28.1	31.8	34.9
\$25,000	10.0	15.2	20.4	25.3	30.0	33.8	36.9
\$30,000	10.5	16.0	21.4	26.7	31.5	35.4	38.5
\$35,000	11.0	16.7	22.3	27.7	32.6	36.5	39.6
\$40,000	11.4	17.3	23.0	28.4	33.5	37.4	40.6
Career earnings							
\$15,000	9.7	12.2	14.1	15.4	16.8	17.8	18.5
\$20,000	10.0	12.6	14.5	16.0	17.3	18.3	19.0
\$25,000	10.2	13.0	15.0	16.6	18.0	19.1	19.8
\$30,000	10.4	13.3	15.4	17.2	18.6	19.7	20.4
\$35,000	10.6	13.6	15.8	17.6	19.1	20.2	21.0
\$40,000	10.8	14.0	16.2	18.0	19.5	20.7	21.5
Dollar amount							
\$15,000	11.6	17.4	23.2	29.0	34.7	39.8	44.8
\$20,000	8.9	13.3	17.8	22.2	26.6	30.5	34.3
\$25,000	7.4	11.1	14.9	18.5	22.3	25.5	28.7
\$30,000	6.5	9.7	12.9	16.1	19.3	22.1	24.9
\$35,000	5.8	8.6	11.5	14.3	17.2	19.7	22.2
\$40,000	5.2	7.8	10.4	13.0	15.5	17.8	20.0

¹Retirement annuity as a percent of earnings in the final year of work. The maximum pension available, not reduced for early retirement or joint-and-survivor annuity, was calculated under each pension plan using the earnings and service assumptions shown. This benefit level was then expressed as a percent of earnings in the last year of employment. Workers are assumed to have retired at age 65 with a total working career of 40 years.

Computations exclude 4 percent of participants in money purchase plans or plans with benefits based on career contributions.

²Terminal earnings formulas calculate annuities as percents of earnings in the final years of work—for example, the 5 highest consecutive years of earnings in the last 10. Career earnings formulas are similar, but take account of earnings throughout an employee's career. Under dollar-amount formulas, workers' years of service are multiplied by a dollar amount to calculate benefit payments.

Table 5. Average replacement rates¹ of private pensions and Social Security retirement income (without spousal benefit) combined, by final year's earnings and length of service, medium and large firms, 1984

Final year's earnings	Years of service						
	10	15	20	25	30	35	40
All participants							
\$15,000	53.9	59.0	64.0	69.0	73.8	78.0	81.8
\$20,000	49.0	53.5	58.0	62.3	66.5	70.1	73.4
\$25,000	42.4	46.8	51.1	55.3	59.3	62.7	65.7
\$30,000	37.5	42.0	46.3	52.6	54.3	57.5	60.4
\$35,000	33.8	38.4	42.7	46.8	50.6	53.7	56.4
\$40,000	30.9	35.5	39.8	43.9	47.7	50.7	53.3
Professional, administrative participants							
\$15,000	53.6	58.5	63.3	67.9	72.3	76.2	79.6
\$20,000	49.3	53.9	58.4	62.7	66.8	70.3	73.4
\$25,000	43.2	47.9	52.4	56.7	60.8	64.2	67.2
\$30,000	38.6	43.5	48.2	52.6	56.7	60.1	62.9
\$35,000	35.2	40.3	45.1	49.7	53.8	57.1	59.9
\$40,000	32.4	37.7	42.7	47.3	51.5	54.9	57.6
Technical, clerical participants							
\$15,000	53.4	58.3	63.0	67.6	72.0	75.8	79.0
\$20,000	49.3	54.0	58.5	63.0	67.0	70.5	73.5
\$25,000	43.2	48.0	52.7	57.2	61.3	64.8	67.7
\$30,000	38.6	43.7	48.6	53.2	57.3	60.7	63.6
\$35,000	35.2	40.6	45.5	50.2	54.4	57.8	60.6
\$40,000	32.5	38.0	43.1	47.8	52.1	55.5	58.3
Production participants							
\$15,000	54.3	59.7	65.0	70.2	75.4	80.1	84.5
\$20,000	48.7	53.1	57.4	61.7	66.1	69.8	73.3
\$25,000	41.6	45.6	49.6	53.6	57.5	60.8	63.8
\$30,000	36.3	40.2	44.0	47.8	51.4	54.4	57.2
\$35,000	32.3	36.2	39.9	43.4	46.9	49.7	52.3
\$40,000	29.2	32.9	36.5	40.0	43.3	46.0	48.4

¹Retirement annuity as a percent of earnings in the final year of work. The maximum pension available, not reduced for early retirement or joint-and-survivor annuity, was calculated under each pension plan using the earnings and service assumptions shown. This benefit level was then expressed as a percent of earnings in the last year of employment. Workers are assumed to have retired at age 65 with a total working career of 40 years.

Computations exclude 4 percent of participants in money purchase plans or plans with benefits based on career contributions.

Table 6. Average replacement rates¹ of private pensions and Social Security retirement income (with spousal benefit) combined, by final year's earnings and length of service, medium and large firms, 1984

Final year's earnings	Years of service						
	10	15	20	25	30	35	40
All participants							
\$15,000	75.4	80.4	85.4	90.3	95.1	99.4	103.2
\$20,000	68.6	73.1	77.5	81.8	86.0	89.6	92.9
\$25,000	58.7	63.1	67.4	71.6	75.6	79.0	81.9
\$30,000	51.4	55.9	60.2	64.3	68.2	71.4	74.2
\$35,000	45.8	50.4	54.3	58.4	62.6	65.7	68.4
\$40,000	41.4	46.0	50.3	54.4	58.2	61.3	63.9
Professional, administrative participants							
\$15,000	75.0	79.8	84.6	89.3	93.7	97.6	101.0
\$20,000	68.9	73.4	77.9	82.3	86.4	89.9	92.9
\$25,000	59.4	64.1	68.6	73.0	77.0	80.5	83.4
\$30,000	52.4	57.4	62.1	66.5	70.6	74.0	76.8
\$35,000	47.2	52.4	57.2	61.7	65.8	69.2	71.9
\$40,000	43.0	48.2	53.2	57.9	62.0	65.4	68.1
Technical, clerical participants							
\$15,000	74.8	79.7	84.4	89.0	93.4	97.1	100.4
\$20,000	68.8	73.5	78.1	82.4	86.6	90.1	93.1
\$25,000	59.4	64.3	69.0	73.4	77.6	81.0	84.0
\$30,000	52.5	57.6	62.4	67.0	71.2	74.6	77.5
\$35,000	47.3	52.6	57.6	62.3	66.4	69.8	72.7
\$40,000	43.1	48.6	53.6	58.4	62.6	66.0	68.9
Production participants							
\$15,000	75.7	81.0	86.3	91.6	96.8	101.4	105.8
\$20,000	68.3	72.7	77.0	81.3	85.6	89.3	92.9
\$25,000	57.8	61.9	65.9	69.9	73.8	77.1	80.1
\$30,000	50.2	54.1	57.9	61.6	65.2	68.3	71.1
\$35,000	44.4	48.2	51.9	55.4	58.9	61.7	64.4
\$40,000	39.7	43.4	47.0	50.5	53.8	56.5	59.0

¹Retirement annuity as a percent of earnings in the final year of work. The maximum pension available, not reduced for early retirement or joint-and-survivor annuity, was calculated under each pension plan using the earnings and service assumptions shown. This benefit level was then expressed as a percent of earnings in the last year of employment. Workers are assumed to have retired at age 65 with a total working career of 40 years.

Computations exclude 4 percent of participants in money purchase plans or plans with benefits based on career contributions.

the lower earnings levels. As already noted, the Social Security benefit formula provides higher replacement rates to lower wage earners.

If the retired worker has a husband or wife age 65 or over who is not eligible for a Social Security benefit on his or her own account, an additional benefit from Social Security equal to 50 percent of the worker's benefit is payable to the spouse. Adding this benefit to the worker's private pension

and Social Security payments results in the average replacement rates presented in table 6. Here, except in the high income and short service examples, the data typically show replacement rates of 60 percent or more. Indeed, workers with relatively low earnings and long service may have all or nearly all of their preretirement income replaced by combined private pension and Social Security benefits when the latter includes an additional amount for the spouse. □

FOOTNOTES

¹Industrial coverage includes mining; construction; manufacturing; transportation, communications, electric, gas, and sanitary services; wholesale trade; retail trade; finance, insurance, and real estate; and selected services. Major findings of the 1984 survey are reported in *Employee Benefits in Medium and Large Firms, 1984*, Bulletin 2237 (Bureau of Labor Statistics, 1985). For information on the background and conduct of the survey, see Robert Frumkin and William Wiatrowski, "Bureau of Labor Statistics takes a new look at employee benefits," *Monthly Labor Review*, August 1982, pp. 41-45.

²Excluded from the survey were executives (those whose decisions have direct and substantial effects on an organization's policymaking), part-time, temporary, and seasonal workers, and operating employees in constant travel status, such as airline flight crews and long-distance truck-drivers.

³When pension formulas are revised, the new formula may apply only to "current" service, that is, service from the date of the revision. Prior service may still be covered under the previous benefit formula.

⁴Defined benefit plans contain a formula for calculating retirement benefits (for example, a specified percent of earnings or flat dollar amount for each year of service) and obligate the employer to contribute to a fund whatever amounts are necessary to provide the benefits so determined. Benefits under career contribution plans are directly related to contributions made by the employer or both the employer and employee. Money purchase plans do not specify benefit levels; instead, they obligate the employer to contribute money to a pension fund according to a formula (such as a specified percent of earnings).

⁵See "The World of Pensions Ten Years After ERISA," *EBRI Issue Brief* (Employee Benefit Research Institute, September 1984), p. 9.

⁶As described in the technical appendix, based on year-to-year changes in national average wage levels, earnings histories were developed leading to the specified pay levels in 1983.

⁷*Employee Benefits in Medium and Large Firms, 1984*, p. 11.

⁸Fewer than 1 percent of the participants had plans with floors providing a specified minimum monthly benefit. Twelve percent had ceilings limiting the maximum size of the benefit. These maximums are independent of ceilings imposed by tax laws, which are substantially higher than those specified in the private pension plans examined.

⁹Step-rate excess formulas provide a way of integrating private and Social Security benefits. See Donald Bell and Diane Hill, "How social security payments affect private pensions," *Monthly Labor Review*, May 1984, pp. 15-20.

¹⁰According to the Bureau's 1984 employee benefits study, 92 percent of professional-administrative participants, 86 percent of technical-clerical participants, and 46 percent of production participants were covered by earnings-based pension formulas. See *Employee Benefits in Medium and Large Firms, 1984*, table 39.

¹¹*Coming of Age: Toward a National Retirement Income Policy* (President's Commission on Pension Policy, February 26, 1981), pp. 42-43. Earlier estimates are in Peter Henle, "Recent trends in retirement benefits

related to earnings," *Monthly Labor Review*, June 1972, p. 18; and Jane L. Ross, *Maintenance of Preretirement Standards of Living After Retirement*, Technical Analysis Paper No. 10 (Office of the Assistant Secretary of Planning and Evaluation, Department of Health, Education, and Welfare, 1976).

¹²These alternatives parallel the varying definitions of earnings found in earnings-based pension benefit formulas. See *Employee Benefits in Medium and Large Firms, 1984*, tables 39 and 41.

¹³For recent discussions of the replacement rate concept, see Michael J. Boskin and John B. Shoven, *Concepts and Measures of Earnings Replacement During Retirement*, Working Paper No. 1360 (Cambridge, MA., National Bureau of Economic Research, 1984); and Congressional Research Service, *Designing a Retirement System for Federal Workers Covered by Social Security*, 98th Cong., 2d sess., Committee Print 98-17 (Committee on Post Office and Civil Service, House of Representatives, 1985), pp. 305-15.

¹⁴See footnote 10.

¹⁵See Bell and Hill, "How social security payments affect private pensions."

¹⁶See *Coming of Age*, pp. 12-14.

APPENDIX: Analyzing pension plans

This study of pension benefit levels follows one of a number of alternative approaches to examining private pension plan provisions. A common approach is to review individual plan provisions, such as vesting requirements, early and normal retirement ages, benefit formulas, and pre- and post-retirement survivor options.¹ This approach provides a wealth of detail about plan provisions but does not permit summarization on an overall plan basis.

Such summarization is possible through examination of amounts employers spend on funding their pension liabilities, either in terms of dollars per employee per year, cents per hour worked, or percent of total compensation outlays.² Employer cost levels, however, are commonly influenced not only by plan provisions, but also by such characteristics of the covered work force as age, length of service, and earnings history and the actuarial assumptions used in financing individual plans.³

The approach used here looks at the level of benefits available under plans in effect in 1984. It focuses on the pensions payable to workers retiring on January 1, 1984, under the latest (current service) benefit formulas of their pension plans at that time.

Aside from the pension formula itself, retirement benefits may be affected by possible coordination of private benefits with Social Security payments, limits on years of credited service, and minimums and maximums on benefits. These were taken into account in calculating retirees' pensions for this analysis. Also, many plans had more than one pension formula, and specified use of the formula providing the highest benefit for each worker's circumstances. When multiple formulas were found, each alternative within a plan was examined and, for each combination of years of service and earnings considered for study, the formula selected was the one yielding the highest pension.

Nevertheless, the study did not take account of all factors affecting a retiree's pension. For example, it did not consider benefit reductions to finance continuation of payments to a surviving spouse (joint-and-survivor annuity). Similarly, the possibility of post-retirement pension increases—either on an ad hoc basis or through an automatic cost of living adjustment formula—was ignored.

After determination of the pension benefits under individual plans, overall averages were computed. In computing these averages, individual plans were weighted by the number of active workers participating in each plan.⁴

Benefits under a given pension plan are influenced by retirement age, length of service with the firm, and earnings history. It is, therefore, necessary to specify values for these variables to determine retirement benefits. One approach is to assume average conditions prevailing throughout the economy—average retirement age, average seniority, average earnings. This approach, however, ignores the fact that benefit formulas in individual pension plans are influenced by the characteristics of the workers that they cover.⁵

Consequently, in the approach followed here, age 65 was chosen as the assumed retirement age because all workers are entitled to their fully accrued benefit at that age under the Employee Retirement Income Security Act. (Sixty-three percent of the participants in the pension plans studied, however, were under plans which allowed for full retirement with an unreduced pension before age 65.)

Instead of using a single assumption regarding the employee's length of service and earnings history, the multiple assumptions shown on the tables were used. The earnings levels specified represent the employee's gross earnings in the final year of work (1983). Earnings levels in each year from 1944 to 1983 were then developed from these final earnings using year-to-year changes in Social Security data

on national average wage levels.⁶

The same final earnings levels and earnings histories were used for all three occupational groups studied—professional-administrative, technical-clerical, and production workers. Nevertheless, some of the final earnings levels presented would not have wide applicability in each occupational group. For example, it is unlikely that many technical-clerical workers in medium and large firms had final earnings as high as \$40,000, nor is it likely that many professional-administrative workers had final earnings as low as \$15,000 in 1983. Because pension benefit formulas are often designed for a specific group of workers with a known range of earnings, some distortion in benefits at

unlikely earnings levels is possible. Thus, when examining the results of this analysis, the focus should be on the benefits provided at earnings levels applicable to a particular occupational group.

Social Security benefits are important not only as a source of retirement income but also as a factor affecting benefits under many private pension plans. For example, a common approach to integrating private and public annuities is to reduce private pensions by a percentage of Social Security benefits.⁷ To estimate benefits under the Social Security system, it was assumed that an employee worked in covered employment for a total of 40 years.⁸

—FOOTNOTES—

¹ See, for example, *Employee Benefits in Medium and Large Firms, 1984*.

² Such data were developed in the Bureau's survey of employer expenditures for employee compensation, which has been discontinued. See, for example, *Employee Compensation in the Private Nonfarm Economy, 1977*, Summary 80-5 (Bureau of Labor Statistics, 1980).

³ Differences in labor force characteristics and actuarial assumptions may be accounted for by estimating what it would cost to provide surveyed pension plans to a standardized work force, using uniform actuarial assumptions. For an illustration of this approach, see *Total Compensation Comparability: Background, Method, Preliminary Results* (Compensation Group, United States Office of Personnel Management, 1981).

⁴ Sample weights assigned to each surveyed establishment were also applied to provide representation of all establishments covered by the survey, not only those providing data. The resulting averages are measures of benefits payable under assumptions discussed in the remainder of this appendix. They are not, however, measures of average benefits actually

being received by retirees. For such measures, see Linda Drazga Maxfield and Virginia P. Reno, "Distribution of Income Sources of Recent Retirees: Findings From the New Beneficiary Survey," *Social Security Bulletin*, January 1985, pp. 7-13. Also see *Findings From the Survey of Private Pension Benefit Amounts* (Office of Pension and Welfare Benefit Programs, U.S. Department of Labor, 1985).

⁵ Furthermore, average earnings of all workers are considerably less than the average for full-time employees nearing the retirement age. See Alicia H. Munnell, *The Economics of Private Pensions* (Washington, Brookings Institution, 1982), pp. 25-27.

⁶ See *Social Security Bulletin, Annual Statistical Supplement, 1983*, p. 28.

⁷ See Bell and Hill, "How social security payments affect private pensions."

⁸ Actually, for retirees in 1984, the measuring period used to determine Social Security benefits would be the same for individuals with 25 years of service or more. See Robert Myers, *Social Security* (Homewood, Ill., Richard D. Irwin, Inc., 1981), pp. 54-55.