Contributions to savings and thrift plans

New data show that average annual contributions made by employers and employees can vary quite widely, depending upon individual plan specifications and employees' level of earnings

Michael Bucci

Participants in employer-sponsored savings and thrift plans who earned $25,000 during 1989 could make annual contributions ranging from less than $100 to more than $6,500 depending upon their plan's administrative restrictions and the employee's chosen rate of contribution. These disparities in allowable contributions exist among all occupational groups, but are even more evident at higher compensation levels.

These findings are from analysis of individual savings and thrift plan provisions studied in the Bureau of Labor Statistics' 1989 Employee Benefits Survey. The survey furnishes data on employee benefit provisions in medium and large establishments in private industries located within the continental United States. The 1989 survey sample represents 109,000 establishments and contains benefit data that pertain to 32 million full-time employees.

Two types of retirement plans were evident in the survey—defined benefit pension plans, which include specific formulas that are used to determine an employee's benefit upon retirement, and defined contribution plans which do not attempt to provide a fixed benefit. Instead, defined contribution plans specify the level of the employer's annual contribution to the employee's individual account. Savings and thrift plans were the most common type of defined contribution plans in the 1989 Employee Benefits Survey, with 30 percent of full-time workers participating in a savings plan that was at least partially financed by their employer.[1] As with most other defined contribution plans, savings and thrift plans are designed to permit the accumulation of funds that may be used for retirement or other future purposes. Final accrual is dependent upon a number of variables, including total plan contributions, investment earnings, and length of participation in the plan.

Savings and thrift plans require a contribution from both the employer and the employee.[2] However, because the employer is not obligated to provide a certain level of benefits, the risk from investments is borne solely by the employee. The result of investment gains or losses is reflected in the final benefit available to the employee.

Presently, the Employee Benefits Survey provides a variety of data regarding the provisions of savings and thrift plans. Included are information on maximum allowable employee contributions, permissibility of pretax employee contributions, employer matching percentages, available investment opportunities, and vesting schedules.[3] The new data on savings and thrift plans presented in this article attempt to determine the average allowable annual contributions to these plans and the actual lump-sum benefit that would be available to an employee upon retirement.

Overview of plans

Perhaps the most important reason establishments form savings and thrift plans is to provide an additional or alternative source of retirement income for workers. Many Americans are leaving the labor force before attaining age 65. At the same time, average life expectancies con-

Michael Bucci is an economist in the Division of Occupational Pay and Employee Benefit Levels, Bureau of Labor Statistics.

Table 1. **Average contributions to savings and thrift plans by annual earnings and allowable contribution levels, all full-time participants, medium and large establishments in private industry, 1989**

Annual earnings	Employees' contribution			Employers' contribution			Combined contribution		
	Minimum	Midpoint of range	Maximum	Minimum	Midpoint of range	Maximum	Minimum	Midpoint of range	Maximum
All participants									
$15,000	$188	$1,126	$2,064	$124	$468	$494	$312	$1,594	$2,559
20,000	249	1,498	2,746	165	622	657	414	2,120	3,403
25,000	310	1,869	3,429	205	774	816	516	2,644	4,246
35,000	433	2,610	4,787	286	1,075	1,134	719	3,686	5,921
45,000	555	3,336	6,116	365	1,375	1,450	921	4,711	7,567
55,000	678	4,004	7,330	445	1,674	1,765	1,124	5,678	9,096
Professional-administrative									
$15,000	192	1,131	2,071	131	493	522	323	1,625	2,593
20,000	256	1,508	2,761	174	656	694	430	2,165	3,456
25,000	319	1,885	3,451	217	818	866	537	2,704	4,318
35,000	446	2,636	4,826	303	1,143	1,210	750	3,779	6,037
45,000	573	3,376	6,178	389	1,466	1,553	963	4,843	7,731
55,000	701	4,070	7,440	474	1,789	1,896	1,175	5,860	9,336
Technical-clerical									
$15,000	191	1,131	2,071	130	478	504	322	1,609	2,575
20,000	253	1,506	2,760	173	635	669	427	2,142	3,429
25,000	316	1,882	3,449	216	790	830	533	2,673	4,279
35,000	442	2,630	4,818	302	1,097	1,152	744	3,727	5,970
45,000	567	3,364	6,161	387	1,403	1,474	955	4,768	7,636
55,000	692	4,041	7,389	472	1,709	1,796	1,165	5,750	9,185
Production-service									
$15,000	181	1,115	2,049	110	432	455	291	1,547	2,505
20,000	238	1,478	2,717	147	572	603	385	2,051	3,321
25,000	295	1,840	3,385	182	710	748	478	2,551	4,134
35,000	410	2,563	4,716	251	980	1,031	662	3,543	5,748
45,000	525	3,266	6,007	320	1,245	1,311	845	4,512	7,318
55,000	639	3,896	7,154	389	1,511	1,589	1,029	5,408	8,744

tinue to increase.[4] These two factors have increased the need for sources of income that will sustain individuals after retirement. Savings and thrift plans permit the deferral of employee income and the receipt of matching employer contributions, allowing employees to supplement the more traditional sources of retirement income—defined benefit pensions and Social Security payments.[5] Data from the Employee Benefits Survey show the increasing importance of this type of capital accumulation plan: in 1988, 25 percent of full-time employees in medium and large private establishments participated in a savings and thrift plan, compared with 30 percent a year later.

The provisions of individual savings and thrift plans can be quite disparate. However, all savings and thrift plans follow the same procedural guidelines: they require a basic employee contribution, with minimum and maximum amounts that each employee may contribute annually, frequently subject to employer restrictions. These restrictions are often stated as percentages of annual earnings. For instance, an employee may be permitted to contribute an amount equal to between 2 percent and 15 percent of his or her annual earnings.

Savings and thrift plans also have ceilings on the employer's contribution to each employee's account. Typically, the employers limit the amount of the employees' contribution they will match and then determine the level at which the match will be made. Even if the employee contributes at the maximum allowable level of, say, 15 percent of earnings, plan guidelines may restrict the employer from matching any amount over the first 6 percent of earnings. The percentage at which the employee contribution is matched also varies among plans. In some cases, this percentage is a flat amount, such as 50 cents on the dollar, in other cases, it may depend on company profits, employee years of service, or levels of employee contributions.

Employee and employer contributions are then invested. Restrictions on investments vary

among plans. In most cases, the employee is offered a variety of choices, including company stock, equity funds, fixed interest bearing securities, money market funds, real estate, and certificates of deposit. However, employers may require that all or some contributions be invested in a specific area, such as company stock. In other instances, the employees may be allowed to choose among a number of investment options with regard to their own contributions, but are given no option on employer contributions.

While savings and thrift plans share the same basic structure, each separate plan is subject to its own constraints. For example, a plan's administrators can place their own restrictions on allowable contributions. Also, it is difficult to predict the actual dollar value of an employee's contribution without knowing that employee's level of earnings. For reasons such as these, it is impossible to estimate the current accruals and total benefits available at retirement from an employee's savings and thrift plan without making certain assumptions. (Such assumptions and a full description of the model used to derive these data, are described in the appendix.)

Table 2. **Percent of full-time participants in savings and thrift plans by employee contributions, earnings, and selected allowable contribution levels, medium and large establishments in private industry, 1989**

Range of contribution	Minimum allowable contributions					
	$15,000	$20,000	$25,000	$35,000	$45,000	$55,000
Less than $500	100	97	77	76	76	6
$500–$999	(1)	3	23	21	21	71
1,000–1,499	—	(1)	(1)	3	2	21
1,500–1,999	—	—	—	(1)	(1)	2
2,000–2,499	—	—	—	—	—	(1)
2,500–2,999	—	—	—	—	—	(1)
3,000–3,499	—	—	—	—	—	(1)
	Maximum allowable contributions					
	$15,000	$20,000	$25,000	$35,000	$45,000	$55,000
Less than $500	1	1	—	—	—	—
$500–$999	5	1	1	1	1	1
1,000–1,499	5	5	1	1	(1)	1
1,500–1,999	31	5	4	1	(1)	(1)
2,000–2,499	41	28	5	4	1	1
2,500–2,999	10	6	14	4	4	1
3,000–3,499	6	43	17	1	—	4
3,500–3,999	1	5	19	14	4	—
4,000–4,499	—	6	26	14	1	4
4,500–4,999	—	1	5	5	14	1
5,000–5,499	—	—	5	17	4	—
5,500–5,999	—	—	1	26	4	13
6,000–6,499	—	—	1	4	2	1
6,500–6,999	—	—	—	2	18	14
7,000–7,499	—	—	—	5	23	14
7,500–7,999	—	—	—	1	5	1
8,000–8,499	—	—	—	(1)	3	13
8,500–8,999	—	—	—	(1)	1	17
9,000–9,499	—	—	—	—	4	15
9,500–9,999	—	—	—	—	1	3
10,000 or more	—	—	—	—	1	7

[1] Less than 0.5 percent.

[2] There were no minimum allowable contributions after the $3,000–$3,499 range.

NOTE: Dash indicates no contributions exist at that range due to plan specifications and income revels.

Average annual contributions

Table 1 shows calculations of the average contributions made by employees and employers to savings and thrift plans in 1989. The vast majority of plans within the survey required employees to contribute at least 1 percent of annual earnings to be eligible to participate in the plan. A small number of plans set minimum requirements at some other fixed percentage of earnings or at a stated dollar level. The average minimum allowable employee contribution levels ranged from $188 for workers earning $15,000 to $678 for those earning $55,000. These figures represent approximately 1.2 percent of annual earnings at both income levels.

Table 1 also depicts average midpoint and maximum levels of employee contributions allowed during the 1989 plan year. Employee midpoint contribution levels were determined for each plan by selecting the contribution rate that represented the average of the minimum and maximum contribution rate permitted by the plan. For example, a plan that permits annual employee contributions of from 1 percent to 15 percent of earnings would have a midpoint of 8 percent of earnings.

Maximum allowable employee contributions also are usually expressed as a percentage of pay. On average, these contribution levels vary quite widely depending upon the employee's annual earnings. Table 1 shows that employees who earned $15,000 in 1989 could make an average maximum contribution of $2,064 or 13.76 percent of earnings. Employees earning $55,000 in 1989 were allowed average maximum contributions of $7,330, or 13.33 percent.[6]

Employer contributions to savings and thrift plans are usually less than those of employees. However, as table 1 shows, the discrepancies between employer and employee levels increase as the employee's level of contributions increases. This stems from the provisions built into individual plans. For instance, if a plan allows employees to contribute from 1 percent to 15 percent of earnings while providing for a dollar-for-dollar employer match on the first 6 percent of earnings, employer and employee contributions would be equal if the employee chose to contribute from 1 to 6 percent of earnings. However, when employ-

Table 3. **Percent of full-time participants in savings and thrift plans by employer contributions, final year earnings, and selected allowable contribution levels, medium and large establishments in private industry, 1989**

Range of contributions	Minumum allowable contributions						Maximum allowable contributions					
	$15,000	$20,000	$25,000	$35,000	$45,000	$55,000	$15,000	$20,000	$25,000	$35,000	$45,000	$55,000
Less than $500	99	97	93	91	88	62	64	26	18	9	8	4
$500–$999	1	3	6	6	9	31	33	58	54	27	18	15
1,000–1,499	(1)	(1)	1	2	2	4	3	15	17	44	39	14
1,500–1,999	(1)	(1)	(1)	(1)	(1)	2	(1)	1	10	9	15	35
2,000–2,499	—	(1)	(1)	—	(1)	(1)	(1)	(1)	1	9	8	14
2,500–2,999	—	—	—	(1)	—	(1)	—	—	(1)	1	9	5
3,000–3,499	—	—	—	(1)	(1)	—	—	—	(1)	(1)	1	8
3,500–3,999	—	—	—	—	—	—	—	—	—	—	1	2
4,000–4,499	—	—	—	—	—	(1)	—	—	—	(1)	—	1
4,500–4,999	—	—	—	—	(1)	—	—	—	—	(1)	(1)	—
5,000 or more	—	—	—	—	—	(1)	—	—	—	—	(1)	(1)

[1] Less than 0.5 percent.

NOTE: Dash indicates no contribution at that range due to plan specification and income levels.

ees choose to contribute the maximum amount, their contributions would be 2½ times greater than those of the employer, providing total contributions did not exceed Internal Revenue Code limitations. If the employer's matching rate was only 50 cents on the dollar, the ratio of employee-to-employer contributions would be even greater at all three levels of contributions.

There is little variation of allowable contributions across the three different occupational groups studied—professional and administrative, technical and clerical, and production and service.[7] This is caused in part by the model's use of equivalent earnings levels for all types of workers.[8] Because all employees in a single establishment are typically covered by identical plan provisions, it follows that minimum, midpoint, and maximum contribution levels would be the same for employees at equal compensation levels. The slight variations that do exist result from differences in individual plan provisions. In 1989, 3 percent of production-service participants took part in plans that had restrictions on minimum and maximum contributions stated as dollar values rather than as percentages of annual earnings. This compared with only 1 percent of professional-administrative and technical-clerical employees who participated in such plans.[9] These dollar-value restrictions tend to correspond to percentages of salary that are lower than the average rates expressed in other plans.

Variations among plans

As mentioned previously, the individual constraints placed upon savings and thrift plans by administrators can vary quite widely. For example, table 2 depicts the final-year distribution of allowable employee contributions given the restraints of individual plans. Also, table 3 shows the distribution of employers' matching contributions.

In general, minimum contribution levels tend to be similar among plans. However, the minimum contributions of employers cover a wider range than do the minimum contributions made by employees. This stems from the matching rates that are built into individual plans. Under some savings and thrift plans, employers may match employee contributions at rates that exceed basic dollar-for-dollar ratios. For instance, a plan may specify that the first 1 percent of employee earnings will be matched at the rate of $2 for every $1, with additional employee contributions up to 6 percent of earnings being matched at a flat dollar-for-dollar rate. When this is the case, employees who contribute only the minimum allowable amount will actually have their annual contributions exceeded by those of their employer.

Of the three variables that affect final distribution, interest rate differentials play the greatest role.

Because the provisions of savings and thrift plans do not change across earnings levels, the deviations in distributions that are seen from one level of earnings to the next are actually just factors of the increases in earnings. This can be seen in table 1. The average minimum and maximum allowable contributions for employees at the $45,000 earnings level are three times greater than those of employees at the $15,000 earnings level. It follows, then, that variations in plan provisions are best revealed through analysis of the distribution of allowable contributions at a single earnings level.

It is clear from the wide range of values in table 2 that permissible employee contributions at the $55,000 earnings level vary quite markedly among plans. Depending on administrative restrictions, allowable employee minimum contributions can range from less than $500 (6 percent of participants) to between $3,000 and $3,500 (0.33 percent of participants). As allowable contributions increase, the range of values also increases. When employees utilized their maximum allowable contribution, 7 percent of participants were permitted to contribute in excess of $10,000 annually, provided that restrictions in the Internal Revenue Code were not surpassed.

As noted, the range of minimum-matching employer contributions exceeds that of employee minimum contributions. However, this is not the case for maximum allowable contributions. There are a number of reasons for this. First, while employees may be allowed to contribute up to 25 percent of annual salary to their savings and thrift plan (54 percent of participants could allocate 15 percent or more of salary in 1989), 83 percent of all employees received employer-matching contributions on just 6 percent or less of their annual compensation.[10] In addition, nearly half of all participants were in plans where employer-matching percentages were 75 percent or less. These two factors combine to create a concentration of employer contributions at the lower end of the distribution table.

Lump sums at retirement

Defined contribution plans require that employers specify annual contribution levels to an employee's plan account, but such plans do not specify ultimate payouts. The final lump-sum benefit available to employees upon separation from the plan is dependent upon three variables: years of employee participation; annual contributions, often related to employee earnings; and investment earnings. Each variable plays a separate and distinct role in the final determination of the benefit amount. Table 4 depicts the projected average lump-sum benefits available upon retirement to full-time participants who contribute the midpoint of allowable amounts to their savings and thrift plans each year and receive the corresponding employer contribu-

Table 4. **Average lump-sum benefit available at retirement to full-time participants in savings and thrift plans by years of plan participation, selected final annual earnings levels, and selected rates of interest, medium and large establishments in private industry, 1989**

Interest rates and annual earnings[1]	Years of participation						
	10	15	20	25	30	35	40
6 percent							
$15,000	$10,663	$15,594	$20,338	$25,108	$30,385	$36,301	$42,620
20,000	14,223	20,812	27,150	33,513	40,564	48,454	56,917
25,000	17,783	26,018	33,948	41,919	50,727	60,605	71,220
35,000	24,633	36,045	47,045	58,083	70,314	84,012	98,711
45,000	30,641	44,833	58,508	72,244	87,464	104,516	122,836
55,000	36,668	53,658	70,027	86,475	104,700	125,125	147,055
10 percent							
$15,000	13,159	21,146	30,395	41,598	56,531	76,672	102,519
20,000	17,552	28,224	40,581	55,526	75,480	102,342	136,955
25,000	21,946	35,283	50,744	69,465	94,396	128,022	171,443
35,000	30,399	48,883	70,330	96,254	130,872	177,503	237,627
45,000	37,814	60,800	87,463	119,725	162,803	220,853	295,790
55,000	45,252	72,770	104,684	143,317	194,898	264,428	354,127
12 percent							
$15,000	14,635	24,744	37,554	54,543	79,337	115,922	167,260
20,000	19,520	33,027	50,142	72,807	105,937	154,731	223,479
25,000	24,407	41,287	62,703	91,092	132,488	193,566	279,811
35,000	33,808	57,203	86,909	126,220	183,702	268,405	387,821
45,000	42,055	71,147	108,078	157,022	228,530	333,975	482,815
55,000	50,327	85,155	129,360	187,944	273,590	399,886	578,042

[1] Earnings levels are for 1989. Earnings levels for previous years of service were produced by using yearly percentage changes in salary levels based upon Social Security Administration national wage data for each preceding year.

NOTE: Data assume that employee contributes to plan at the midpoint level and receives the corresponding employer-matching contribution.

Table 5. **Average sources of funds in a savings and thrift plan account for an individual with final year earnings of $35,000, by selected interest rates, medium and large establishments in private industry, 1989**

Interest rate	Years of participation						
	10	15	20	25	30	35	40
6 percent							
Lump sum	$24,663	$36,045	$47,045	$58,083	$70,314	$84,012	$98,711
Employee percentage	63	56	50	45	40	35	31
Employer percentage	11	9	8	8	7	6	5
Accrued interest	26	35	42	47	53	59	64
8 percent							
Lump sum	27,353	41,904	57,306	74,283	94,953	120,361	150,274
Employee percentage	57	48	41	35	29	25	21
Employer percentage	10	8	7	6	5	4	3
Accrued interest	33	44	52	59	66	71	76
15 percent							
Lump sum	39,699	72,791	120,754	193,247	314,335	517,891	845,053
Employee percentage	39	28	19	13	9	6	4
Employer percentage	7	5	3	2	1	1	1
Accrued interest	54	67	78	85	90	93	95

NOTE: Data assume that employee contributes to the plan at the midpoint level and receives the corresponding employer-matching contribution.

tion. The data show, for example that participants who made identical final-year contributions to the same employer-sponsored savings and thrift plan and who retired in 1989 with terminal earnings of $25,000 could receive final lump-sum payments ranging from $17,783 to $279,811 depending upon each employees' length-of-plan participation and interest rate assumptions shown in table 4.[11]

The length of plan participation and level of compensation both affect an employee's retirement benefit. Employees who contribute equal percentages of salary each year will find different amounts in their individual accounts upon retiring if their salary levels are different. The same is true if differences exist in years of plan participation. However, the smaller the degree of difference between these two factors, the smaller the difference in actual accrual. Consider two employees who work for the same company. Employee A has 25 years of plan participation and retires with final earnings of $20,000. Employee B retires with final earnings of $25,000 and 20 years of plan participation. Both employees make the midpoint allowable contribution and receive the same employer-matching contribution. If both employees receive a 6-percent return on their investments during the entire course of plan participation, Employee A will receive a lump-sum distribution of $33,513, while Employee B will receive a total of $33,948. In effect, Employee B's additional earnings have been offset by Employee A's additional length of plan participation.

Now consider the case of two other employees who participate in the same savings and thrift plan. Employee C retires with terminal earnings of $15,000 and just 10 years of plan participation. Employee D has participated in the company's plan for 40 years and retires with a final salary of $55,000. Once again, both employees contributed at the midpoint allowable level, received equal employer-matching contributions, and received a 6-percent rate of return on investments. The lump sum available to Employee C is $10,663, while Employee D receives a distribution of $147,055. In this instance, it is plain to see the magnitude of difference that can result from such wide ranges in salary levels and plan participation length.

The length of plan participation and level of compensation affect an employee's retirement benefit.

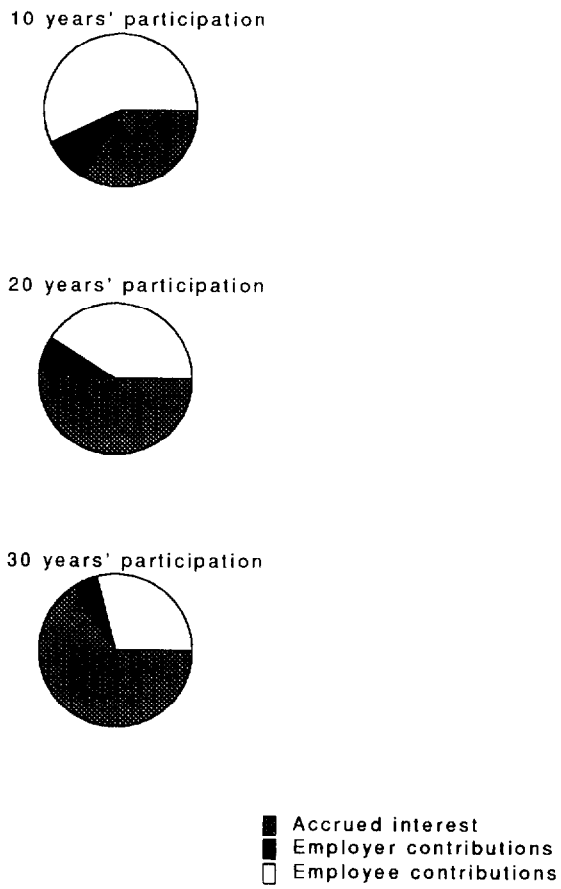
Of the three variables that affect the amount of the employee's final distribution, interest rate differentials play the greatest role. The data in tables 4 and 5 give an indication of the actual effect of different interest rates on equivalent contributions. Table 5 shows that a 2-percentage point increase in the rate of interest can result in large additions to an employee's individual account. Larger differentials lead to even greater accrual. For example, an employee with 30 years of plan participation who retires with an annual salary of $35,000 would receive a final benefit of $70,314 if the return on all investments were 6 percent. The same employee would receive $94,953 if the rate of return had been 8 percent. This final accrual continues to increase at an even greater rate with corresponding increases in the interest rate.

If this same employee had benefited from a 15-percent rate of return on investments, his or her total distribution upon retirement would have grown to $314,335.

Another way to measure the tremendous effect of the interest rate variable upon the final distribution is to look at the origin of the funds that make up the employee's final lump-sum benefit. In doing this, it is necessary to determine the percentage of funds that are the direct result of employee contributions, employer-matching contributions, and accrued interest. Table 5 and Chart 1 do just this. Both depict the origin of funds in the account of an employee who retires with terminal earnings of $35,000. Results similar to those displayed here are found at each level of earnings.

At the lower interest rate and participation levels, employee and employer contributions make up the greatest percentage of the total benefit. Even at the lowest level of participation in the model, however, accrued interest already accounts for 26 percent of the total distribution received by the employee. As length of plan participation and interest rates increase, the role of accrued interest in the final distribution becomes even more noticeable. In fact, at the extreme levels of plan participation and interest rates, accrued interest comprises virtually the entire account balance (95 percent of the funds available after 40 years of participation at an interest rate of 15 percent). This occurs despite the fact that employee and employer contributions remain as a constant percentage of compensation throughout all years of plan participation. □

Chart 1. **Sources of retirement funds under savings and thrift plans**



NOTE: Assuming 8 percent annual interest rate and $35,000 final year annual earnings

Footnotes

[1] According to data from the Employee Benefits Survey, 48 percent of full-time employees in medium and large establishments in private industry participated in an employer-sponsored defined contribution plan in 1989. After savings and thrift plans, the next most common type of defined contribution plan found in the 1989 survey was profit-sharing (16 percent of employees), followed by money purchase pension (5 percent) and stock ownership (3 percent). Complete data on defined contribution plan incidence and provisions can be found in *Employee Benefits in Medium and Large Firms, 1989*, Bulletin 2363 (Bureau of Labor Statistics, 1990).

[2] Defined contribution plans that do not provide for employer contributions are excluded from the scope of the Employee Benefits Survey.

[3] Vesting refers to the years of plan participation required before an employee's benefits become nonforfeitable.

[4] U.S. Department of Health and Human Services data show that the average life expectancy at birth for Americans of both sexes has increased from 70.9 years in 1970 to 75.0 years in 1987. See *Health, United States, 1989* (Hyattsville, MD, National Center for Health Statistics, Public Health Service, 1990), p. 106.

[5] Savings and thrift plans may also contain withdrawal and loan provisions that allow participants to use these accumulated funds for other purposes prior to retirement. Seventy-one percent of participants in 1989 were permitted to withdraw all or a portion of employer contributions provided that plan provisions for such a withdrawal were met. Thirty-six percent of employees in medium and large establishments were allowed to borrow from their accounts.

[6] The reason for the variance in allowable maximum percentages contributed is the Internal Revenue Code's restrictions on tax-deferred contributions. If a plan allows only tax-deferred dollars to be designated to the employee's account and that employee is highly paid, he or she may be restricted by the Internal Revenue Code from contributing the full maximum allowable percentage provided for by the

plan. For this reason, actual maximum contributions that are made to the plan may be less than the plan's allowable maximum contributory rate. (See appendix.)

[7] The Employee Benefits Survey collects data for three broad occupational groups. *Professional-administrative* employees include those workers who require a knowledge of the theories, concepts, principles, and practices of a broad field of science, learning, administration, or management acquired through a college-level education or equivalent experience. *Technical-clerical* employees include office and sales clerical, technical support, protective services, and other such workers who do not require an indepth knowledge of a professional or administrative field of work. *Production-service* occupations include skilled, semiskilled, and unskilled trades; craft and production occupations; manual labor; custodial occupations; and operatives.

[8] Some of the earnings levels presented may not be typical for the three different occupational groups. When using these data, one should concentrate on the earnings levels that are most appropriate for each occupational group.

[9] *Employee Benefits in Medium and Large Firms, 1989.*

[10] *Ibid.*

[11] The earnings levels used throughout this model for previous years of service were derived from yearly percentage changes in Social Security data on national average wage levels.

APPENDIX: The savings and thrift model

To create the savings and thrift model from which this study draws its data, a formula was developed to take into account a number of different variables. First, final salary levels and years of plan participation were chosen. [1] Earnings levels for previous years of service were produced by using yearly percentage changes in salary levels based upon the Social Security Administration's national wage data for each preceding year.

The next step was to determine allowable levels of employee contributions. By applying the six different terminal earnings levels to the specific provisions of each individual plan, it was possible to determine the employee's minimum and maximum allowable contribution for each year of plan participation. The employee's midpoint contribution was then reached by simply averaging these minimum and maximum dollar values.

Allowable levels of employer contributions were derived in much the same fashion. For this variable, specific plan restrictions on maximum employer-matching levels were coordinated with the allowable levels of employee contributions. In plans with a fixed matching rate, this fixed rate was applied to the minimum, midpoint, and maximum employee contribution. When matching rates varied according to profits, years of service, or levels of employee contributions, different variations were used:

- If matching rates varied from a minimum percentage to a maximum percentage according to profit levels (for example, from 25 cents on the dollar to an even dollar-for-dollar match depending on dividends paid to shareholders), the model applied the average of these two rates in each plan year.
- When the matching percentage varied depending upon years of service (for instance, employees with less than 5 years of service received 50 cents on the dollar while those with greater than 5 years of service received even dollar-for-dollar matches), the maximum matching rate was used for each year of plan participation. This was done because most plans employ the maximum matching percentage at a relatively low service level.
- Finally, if the variation was dependent upon levels of employee contributions (for example, employee contributions up to 2 percent of earnings receive a dollar-for-dollar match while contributions over 2 percent of earnings are matched at only 50 cents on the dollar), the maximum matching rate was applied to the minimum employee contribution. All additional employee contributions were considered to be matched at the minimum employer rate.

Internal Revenue Code restrictions also apply to savings and thrift plans. Under the law, the maximum total annual allotment that may be made to an employee's account is the lesser of $30,000 or 25 percent of compensation. In addition, there is a limit on the amount of tax-deferred income that may be placed in a savings and thrift plan each year. In 1989, that limit was $7,626. Each of these limits was built into the model.[2] In the occurrences in which plans provided for a combination of before- and after-tax contributions, it was assumed that the employee maximized his or her level of tax-deferred savings. If permissible, any additional employee contributions were assumed to be made in after-tax dollars. When total contributions would have exceeded the $30,000, or 25 percent restriction, it was assumed that employees would use the maximum employer contribution and would then make up the difference up to the Internal Revenue Code limit.

The interest rate variables have been determined by taking into account the range of investments that are covered in the scope of the survey. These types of investments include equity funds, money market funds, fixed-interest bearing securities, government securities, guaranteed investment contracts, and a small assortment of other options.

The range of interest rates used in this study is based on historical data relating to these different investment schemes. For example, since 1950, the composite value of stocks traded on the New York Stock Exchange has increased at an annual rate of 7.28 percent. The average annual increase in the 1950's was 14 percent; during the period 1980–88, the exchange increased at the yearly rate of 11.53 percent. In turn, Moody's Aaa corporate bond rates in the period 1929–88 ranged from a low of 2.53 percent in 1946 to a high of 14.17 percent in 1981. U.S. Treasury securities, both short- and long-term, have experienced similar swings in interest rate levels. Because the vast majority of the savings and thrift plans in question invest their funds in one or more of these securities, the interest rate variables being used appear to be reasonable.[3]

Footnotes to the Appendix

[1] In these two areas, this study uses the standard levels used in the Bureau of Labor Statistics' defined benefit pension and life insurance models. For a more detailed description of these two models, see Donald G. Schmitt, "Today's pension plans: how much do they pay?" *Monthly Labor Review*, December 1985, pp. 19–25, and Adam Z. Bellet, "Employer-sponsored life insurance: a new look," *Monthly Labor Review*, October 1989, pp. 25–28.

[2] The Internal Revenue Code limit on tax-deferred contributions has been adjusted several times. However, for the purposes of this study, a limit of $7,000 was used for all years prior to 1988. In 1988, the limit was raised to $7,313. In 1989, the limit was adjusted again to $7,626.

[3] While the Employee Benefits Survey does not collect data on the actual investment choices of plan participants, it is interesting to note the results of a 1988 survey conducted by Charles D. Spencer and Associates. The survey, which included more than 400 employers who sponsor profit-sharing plans, savings and thrift plans, 401 (k) plans, and Employee Stock Ownership Plans, indicated that most employees shy away from investments that are perceived as carrying a high risk. When given a choice of investments, an overwhelming majority of employees chose guaranteed investment contracts. This was true for employees of all incomes, including highest paid employees.

A note on communications

The *Monthly Labor Review* welcomes communications that supplement, challenge, or expand on research published in its pages. To be considered for publication, communications should be factual and analytical, not polemical in tone. Communications should be addressed to the Editor-in-Chief, *Monthly Labor Review*, Bureau of Labor Statistics, U.S. Department of Labor, Washington, DC 20212