SOME COMPARISONS OF THE VALUE OF A WORKER'S SOCIAL SECURITY TAXES AND BENEFITS

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Introduction

From the very beginning of the social security program, people have raised the question of whether a worker can expect to receive as much in social security benefits as he or she pays in social security payroll taxes. More recently, this "money's worth" question has been asked, in terms of the estimated cost to replace or duplicate social security benefits, for employees of certain governmental and tax-exempt groups who have the option to become covered or to withdraw from coverage. The increases in social security taxes enacted in December 1977 have focused more attention on this subject. Some may argue that such questions of individual equity for a given worker are not relevant to a broadly based social insurance program, designed to give the nation as a whole its money's worth by combining elements of social adequacy and individual equity. However, other interested citizens express a strong desire to obtain current measurements of a worker's expected taxes and benefits, and to them this paper is addressed.

Scope and Limitations

Anyone who investigates this subject will soon discover that the results of the calculations are sensitive to the methods and assumptions used. We, therefore, caution the reader to study the methodology and examples used before forming conclusions about the results presented by any researcher. Although other approaches have been used, each valid in its own way, the approach used here was selected in order to develop simple, reasonable and timely results.

Our intention in this paper is to present calculations for hypothetical workers that are sufficiently representative to be of some analytical use. The scope of this paper extends only to the Old-Age, Survivors, and Disability (OASDI) portion of the social security program (i.e., Medicare is not included). The individual examples are for continuously employed workers, with steadily rising covered earnings, who either remain unmarried or remain married to a nonworking spouse until one of the spouses dies. Thus, the paper does not directly analyze cases of workers whose employment is intermittent, or whose earnings do not increase steadily, or whose marriages are not of long duration, or whose spouses also work in employment covered by social security.

All of the examples presented here relate either to an unmarried worker or to a married male worker with a non-working wife and two children. No example involving a married female worker is included, because such a woman typically would also become entitled to a wife's or widow's benefit based on her husband's earnings record, and proper analysis of the two-worker family situation is far too lengthy and complex to include within the scope of this paper. In view of this omission of married female worker examples, conclusions about covered workers drawn from these results are necessarily limited.

Methods and Assumptions

The methods and assumptions used generally followed the intermediate set of assumptions in the 1977 OASDI Trustees Report, modified to the extent necessary because of the changes in benefits and taxes contained in the Social Security Amendments of 1977, and because of the scope of this analysis, as indicated below.

A. Benefits and Worker Characteristics

1. Benefits included the old-age, survivors and disability provisions of the Social Security Act as amended in December 1977. However, benefit characteristics were simplified by omitting survivor benefits payable to aged parents and by not considering benefit losses due to divorce or remarriage.

2. Worker examples were selected to include the following items:

    - Entry into covered employment was assumed at exact age 22 (or a higher age if so indicated).
    - Marital status after 1978 was assumed to remain unchanged (until death of one spouse, in examples of married workers).
    - A married worker was assumed to be male, with a nonworking wife the same age, and two children (25 and 27 years younger) who would remain eligible for child's benefits until age 22.

3. Worker's earnings examples were selected to cover five levels of earnings, as follows:

    - "Very Low" earnings were set at $2,000 in 1978, representing an example of a part-time worker (who might also have full-time employment not covered by social security).
    - "Low" earnings were set at $5,271 in 1978, or approximately the current federal minimum wage for a full-time worker.
    - "Median" earnings were set at $9,654 in 1978, the estimated median earnings of all workers with four quarters of coverage in 1978.
    - "High" earnings were set at $16,000 in 1978.
    - "Maximum" earnings were the maximum taxable earnings in all years.

    For these five earnings categories, pre-1978 earnings trends were assumed to follow the past trend in median earnings, while post-1978 trends were based on the economic assumptions described later (except that maximum earnings follow these trends only after 1981, and follow the legislated maximum earnings for 1981 and before).

The five earnings categories are illustrated below for 1978 to 1981. During these years the "maximum" earnings are scheduled by law to increase substantially, but after 1981 all five earnings examples follow the same trend.

Year	Worker's Annual Covered Earnings				
	"Very Low"	"Low"	"Median"	"High"	"Maximum"
1978	$2,000	$5,271	$9,654	$16,000	$17,700
1979	2,156	5,682	10,407	17,248	22,900
1980	2,309	6,085	11,146	18,473	25,900
1981	2,457	6,475	11,859	19,655	29,700

B. Economic Assumptions

1. Covered Earnings and the Consumer Price Index were assumed to increase as follows (consistent with the 1977 Trustees Report).

Calendar Year	Annual Percentage Increase Over Prior Year	
	Earnings[1]	CPI In First Quarter
1979	7.80%	5.20%
1980	7.10	5.00
1981	6.40	4.20
1982	6.00	4.00
1983 & Later	5.75	4.00

1/ Assumed both for the worker's earnings history and for computing average indexed monthly earnings.

2. Interest was assumed at 6.6% for purposes of computing the present values. (This can be considered equivalent to a 2.5% real interest rate compounded with a 4.0% rate of anticipated inflation.)

C. Non-Economic Assumptions

1. Mortality rates were those assumed for the year 2000 in the 1977 Trustees Report. (No mortality was assumed for children.)

2. Disability rates of incidence and termination were those used in the 1977 Trustees Report.

3. Expenses of administration were disregarded.

4. Retirement was assumed at age 65.

General Format of Results and Rationale

Results are presented in the form of illustrative figures for hypothetical workers, both for workers newly becoming covered under social security in 1978 and for workers already covered. For each worker example two basic figures are shown:

(1)   a "worker's future value ratio", defined as (a) the present value of OASDI benefits to be gained, divided by (b) the present value of employee payroll taxes to be paid for OASDI, and

(2)   a "replacement cost", defined as (a) the present value of OASDI benefits to be gained, expressed as a percentage of (b) the present value of the worker's future covered earnings.

The "present value" concept, used to measure each worker's expected future covered earnings, tax contributions and benefits, is explained in the Appendix. Benefits "to be gained" were calculated for workers already covered by first setting aside all benefits that would be payable if the worker withdrew from covered employment on January 1, 1978, and then considering as benefits to be gained only the additional benefits resulting from further covered employment after that date.

For a given example, the worker's future value ratio and the replacement cost are closely linked--the latter equals the former multiplied by the employee's half of the average future payroll tax percentage (with this average calculated using the present value technique).

A question raised in the past concerning this topic is whether to use the employee taxes alone or the combined employer-employee taxes. Although many arguments can be raised on both sides, we have chosen to use the employee taxes to compute the worker's future value ratios. Those who prefer to use the combined employer-employee taxes may multiply the ratios shown by one-half; similarly, for self-employed workers the ratios could be multiplied by approximately two-thirds. (For the replacement costs, such an adjustment would not be meaningful, because these were calculated from benefits without regard to taxes.)

For several examples, components of the two basic figures are set forth to illustrate details of the methodology used, along with the relative value of the various categories of benefits, including the future benefits derived from past covered employment and the remaining benefits "to be gained" from future covered employment.

The results are based on each hypothetical worker's average "expectation" of benefits payable for each of the three categories--old-age benefits (including benefits payable to a retired worker's wife or widow), disability benefits and survivor benefits payable if the worker dies before retirement. Because OASDI contains elements of insurance, it should be noted that there is a pooling of risk. Thus, a specific worker may receive benefits having a much greater or lesser value than suggested by this paper, depending on the possible occurrence of events at various ages. For example, the benefits payable for a worker who dies at age 100, or one who dies leaving a widow and young children, will be far more than the average expected; conversely, the benefits payable for an unmarried worker who dies at age 64 before applying for benefits will be far less than the expected. The present value concept takes into account the likelihood of death or disability at all possible ages in measuring the value of OASDI.

Assumptions as to future experience (described earlier) were needed in order to prepare this analysis. Because of the uncertainties inherent in forecasting, actual earnings, contributions and benefits for any worker (or any group of workers) will almost certainly differ from those projected. One could question certain simplifications made, for example the use of the same age for a man as for his wife, and the use of the same assumed earnings trend for an individual worker as for all covered workers. The assumptions and techniques used reflect the authors' desire to develop reasonable results using simple methodology to the extent possible.

It should be emphasized that the results are intended only as reasonable estimates rather than guaranteed predictions. If different assumptions had been used, of course, different results would have emerged. The results would have shown the social security benefits at a lower value in relation to taxes if the assumptions had been changed in any one of the following ways: (1) lower rates of increase in the CPI or general wage levels, (2) higher rates of increase in a given worker's earnings than in general wage levels, (3) a higher interest rate, (4) higher mortality rates, (5) lower disability rates, (6) higher rates of disability termination, (7) a higher retirement age, (8) an assumption that the wife is older than her husband, (9) fewer children per married couple, (10) younger parents when the children are born or (11) children leaving school before age 22. For each of these 11 items a change in the opposite direction (for example a lower interest rate) would have presented social security benefits at a higher value relative to taxes. Also, if OASDI were being compared with a privately funded arrangement, administrative expenses of the private arrangement could reasonably be added to the replacement costs; administrative expenses of OASDI, about 2% of benefits, are paid from OASDI taxes.

It should be noted that the examples were selected arbitrarily to cover a broad range of parameters (excluding two-worker families), and are not pro-portioned to any sample of the working population. Thus, when some proportion of all the examples display certain results, it would generally be wrong to infer that such results could simply be extended to the same proportion of a real group of workers. However, with judgement some conclusions can be drawn about actual groups of workers.

Results for Workers Becoming Covered in 1978 (Tables 1, 2, and 3)

Table 1 gives examples of the worker's future value ratios described above, for workers with no prior social security coverage. These examples are for unmarried males, married males and unmarried females, at five different levels of earnings as described above, and at seven attained ages (ranging from 22 to 52), thus developing 105 different examples. Following is a brief discussion of the Table 1 ratios.

Ratios under 1.00 (marked ** in Table 1) indicate that the worker should not expect to receive benefits with a value as great as his own tax contri-butions. The one example so marked in Table 1 is for a very young male worker with maximum earnings, who will remain unmarried for life. Because the ratio in this example is close to one (the ratio is 0.92), and because it is believed few actual workers will fit the conditions of this example, Table 1 is interpreted by the authors to indicate that practically all

unmarried steady workers can expect benefits having a value greater than the worker's OASDI tax contributions. (Although we have not attempted to quantify an unmarried male worker's expectation of marrying, those with steady high earnings appear very likely to marry sooner or later in life.)

Ratios of 1.00 to 2.00 (marked * in Table 1) indicate that the expected benefits to be gained by future covered employment have a value greater than the employee taxes, but below the combined employer-employee taxes. The cases so marked in Table 1 all involve unmarried workers, especially young male workers with substantial earnings.

Ratios above 2.00 indicate that expected benefits to be gained by future covered employment have a value exceeding the combined employer-employee taxes. All of the examples for married male workers (assumed to have nonworking wives, as discussed above) fall into this range, along with many examples of workers who remain unmarried. The highest ratio (11.78) is for a married male with very low earnings, becoming covered at the highest age analyzed (age 52); this example could represent a "windfall benefits" case involving a government employee.

To someone familiar with the OASDI benefit structure, it should not be surprising that the Table 1 ratios cover so wide a range. OASDI benefits are designed in part to provide for social adequacy based on presumed need, and thus are more valuable in relation to taxes for workers who are low-paid or who have dependents.

Table 2 gives replacement costs for the same 105 examples of workers with no social security coverage before 1978. The replacement costs are expressed as a percentage of the worker's future covered earnings, and so are comparable to the combined employer-employee taxes payable for a covered employee. Based on present value calculations, the scheduled combined employer-employee taxes fall within a range of 10.9% to 11.9% of future covered pay, grading up for younger workers. Examples where these tax percentages (not shown in Table 2) were above the replacement costs are marked (*) in Table 2; the examples so marked are the same examples that were marked in Table 1. The percentages in Table 2 are very close to the ratios in Table 1 multiplied by 5.7%, which is roughly the average present value of a worker's future contribution rates for OASDI. (5.7% is half of the midpoint of the 10.9% to 11.9% range described earlier.) Thus the figures for the two tables follow a similar pattern; Table 2 merely presents the figures in a "percentage of pay" form that may be more useful for some purposes.

Table 3 can be used to examine the components of the age 22 and age 42 figures appearing in Tables 1 and 2 (for maximum and median earnings only, a total of 12 examples from Tables 1 and 2), if one is interested in the methodology or in the allocation of expected benefits by category. For example, it can be seen that more than half of the expected benefit costs for a 22 year old married male worker are for dependents' benefits, with the largest single benefit item representing payments to his wife or widow after his 65th birthday. Also, the old-age benefits payable for a female worker are shown as having a value about 50% higher than for a male, because of the lower mortality of females.

Each of the dollar items (earnings, taxes and benefits) in Table 3 is a present value figure, that reflects the future cash flows discounted back to 1978 for interest, mortality and disability, using standard actuarial mathematics, as explained in the Appendix.

Results for Workers Already Covered (Tables 4, 5, and 6)

The results in these three tables follow a pattern different from the earlier results, because future benefits derived from past covered employment before 1978 entered into the calculations. Results were calculated from the additional benefits "to be gained" by future covered employment, after setting aside all future benefits derived from past employment.

Table 4 shows examples of worker's future value ratios, for workers who already have 5, 10 or 20 years of social security coverage, a total of 210 examples. These figures may be of use in considering whether or not a worker can expect to benefit from remaining covered under social security (although the vast majority who will remain employed do not have such a choice). A few examples are marked (**) in Table 4 to indicate that the ratio is less than 1.00; all these examples are for workers with more than 10 years of past coverage. A good many more examples are marked (*) to indicate a ratio between 1.00 and 2.00. The meaning of such ratios is the same as described earlier for Table 1; examples with a ratio above 1.00 (or above 2.00, depending on one's point of view) represent workers who can expect to receive more than they will pay in as a result of remaining covered under OASDI.

Table 4 indicates that, among workers with a given number of years of covered employment in the past, the ratios increase with age (except for some cases of very low earnings, because of minimum benefit formulas that may apply). It can also be seen that the ratios in Table 4 for a worker with 5 years of past coverage will decrease after the worker's age and service have moved up by 5 years, reflecting the high value of obtaining the 40 quarters of coverage needed to receive old-age benefits. In addition, as was true for Table 1, the ratios tend to be higher for male workers if they are married, for unmarried workers if they are female, and for all workers if they are lower paid. The ratios cover a wider range (from a low of 0.85 to a high of 13.80) than do the Table 1 ratios.

Table 5 gives replacement costs for these same 210 examples of workers with coverage before 1978. These figures are very close to the results that could be arrived at by simply multiplying each of the ratios in Table 4 by 5.7% (the approximate average of the future employee tax rates for OASDI). As in Table 2, the replacement costs that fall below combined employer-employee taxes are marked (*) in Table 5. The percentages in Table 5 follow the same pattern as the ratios in Table 4, with the same examples marked in both tables to indicate that expected benefits have a value below the combined employer-employee taxes. The range of replacement costs in Table 5 is 5.0% to 75.4% of future covered earnings.

Table 6 presents detailed calculations underlying the figures in Tables 4 and 5, for four of the cases involving a male worker aged 42 with 20 years of coverage before 1978. Apart from demonstrating the methodology used, this example was selected because it represents a worker in mid-career,

and thus illustrates the allocation of benefits derived from past and future coverage. The earlier discussion of the figures in Table 3 also applies to Table 6, except that Table 6 also displays benefit figures labeled "If Coverage Terminates January 1, 1978." These represent the future benefits payable as a result of past employment which were deducted from the total future benefits (labeled "If Coverage Continues After 1978"), with the difference representing benefits to be gained by future years' coverage. Because of the weighted structure of the OASDI benefit formulas, a typical employee in mid-career is already scheduled to receive more than half of the benefits that can eventually be received. Thus, for example, a 42 year old married male employee with maximum earnings and 20 years of past coverage can gain additional benefits with a replacement cost of 10.6% of future earnings, as shown in Tables 5 and 6. A similar employee becoming newly covered at age 42 can gain benefits with a replacement cost of 19.8% of future earnings, as shown in Tables 2 and 3.

Conclusion

In this note we have attempted to introduce readers to the "money's worth" question under the new social security law by presenting computations related to various hypothetical workers. The reader should recognize that the often-asked question "Will I get my money's worth from social security?" cannot be answered absolutely, regardless of the information available concerning the particular worker, because one cannot predict the future experience of this worker. The variety of examples presented here were limited to those whose status is fixed; i.e., the steadily employed worker whose marital status remains the same and who is the sole earner in his family. Although it would be interesting to study examples of workers who do not meet all of these conditions, a great deal can be learned from the examples given in this note if the reader finds our methods generally acceptable and does not mistake the results for absolute predictions.

Unmarried workers with no past coverage can generally expect to receive more in OASDI benefits than the value of their own tax contributions; however, some workers with 10 or more years of past coverage may not gain as much in additional benefits as the value of their additional contributions. These relationships are also affected by the level of earnings, because workers with relatively low earnings receive relatively high benefit amounts in relation to their earnings. Married workers in a one-earner family will almost always have a very favorable ratio of expected benefits to contributions. Although the two-earner family has not been analyzed for this note, with few exceptions such a family would generally receive their "money's worth" in relation to the sum of their contributions, because each earner will receive at least the benefits payable to an unmarried worker.

In summary we conclude that steady workers (if considered either as unmarried individuals or as married couples) can usually expect to gain additional benefits that are worth more than their own future OASDI taxes; the rare exceptions to this rule involve highly paid male workers who will remain unmarried, especially those who have already worked at least 10 years under social security.

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Table 1

WORKER BECOMING COVERED IN 1978:
ILLUSTRATIVE OASDI WORKER'S FUTURE VALUE RATIOS[1]

Age at January 1, 1978	Very Low Earnings	Low Earnings	Median Earnings	High Earnings	Maximum Earnings
A. Unmarried Male Worker:					
1. Age 22	2.81	1.75*	1.41*	1.15*	0.92**
2. Age 27	3.25	2.02	1.62*	1.33*	1.06*
3. Age 32	3.49	2.25	1.78*	1.49*	1.18*
4. Age 37	3.60	2.49	1.92*	1.65*	1.32*
5. Age 42	3.81	2.84	2.12	1.79*	1.51*
6. Age 47	4.15	3.38	2.45	2.02	1.79*
7. Age 52	5.27	4.30	3.08	2.48	2.14
B. Married Male Worker With Dependents:					
1. Age 22	6.33	3.95	3.20	2.62	2.10
2. Age 27	7.64	4.77	3.87	3.17	2.52
3. Age 32	8.06	5.21	4.12	3.47	2.75
4. Age 37	8.25	5.70	4.39	3.78	3.02
5. Age 42	8.59	6.44	4.81	4.07	3.43
6. Age 47	9.22	7.58	5.50	4.54	4.01
7. Age 52	11.78	9.47	6.83	5.48	4.74
C. Unmarried Female Worker:					
1. Age 22	3.80	2.37	1.90*	1.56*	1.25*
2. Age 27	4.42	2.75	2.21	1.82*	1.45*
3. Age 32	4.79	3.09	2.45	2.05	1.62*
4. Age 37	4.92	3.40	2.62	2.26	1.80*
5. Age 42	5.14	3.84	2.89	2.44	2.06
6. Age 47	5.49	4.55	3.31	2.73	2.42
7. Age 52	6.80	5.73	4.12	3.31	2.87

[1] See text for methods and terminology used.

** Indicates ratio below 1.00
* Indicates ratio of 1.00 to 2.00

Table 2

WORKER BECOMING COVERED IN 1978:
ILLUSTRATIVE REPLACEMENT COSTS OF OASDI BENEFITS
(Percent of Covered Earnings)1/

Age at January 1, 1978	Very Low Earnings	Low Earnings	Median Earnings	High Earnings	Maximum Earnings
A. Unmarried Male Worker:					
1. Age 22	16.7%	10.4%*	8.3%*	6.9%*	5.5%*
2. Age 27	19.2	12.0	9.6*	7.9*	6.3*
3. Age 32	20.5	13.2	10.5*	8.8*	7.0*
4. Age 37	21.0	14.5	11.2*	9.6*	7.7*
5. Age 42	21.9	16.3	12.2	10.3*	8.7*
6. Age 47	23.4	19.0	13.8	11.4	10.1*
7. Age 52	28.8	23.5	16.8	13.5	11.8
B. Married Male Worker With Dependents:					
1. Age 22	37.6	23.5	19.0	15.6	12.5
2. Age 27	45.1	28.2	22.9	18.7	14.9
3. Age 32	47.3	30.6	24.2	20.4	16.2
4. Age 37	48.0	33.1	25.5	22.0	17.6
5. Age 42	49.3	37.0	27.6	23.4	19.8
6. Age 47	52.0	42.7	31.0	25.6	22.7
7. Age 52	64.3	51.7	37.3	29.9	26.0
C. Unmarried Female Worker:					
1. Age 22	22.6	14.1	11.3*	9.3*	7.5*
2. Age 27	26.1	16.3	13.1	10.7*	8.6*
3. Age 32	28.1	18.1	14.4	12.0	9.6*
4. Age 37	28.7	19.8	15.3	13.2	10.5*
5. Age 42	29.6	22.1	16.6	14.1	11.9
6. Age 47	31.1	25.8	18.7	15.5	13.7
7. Age 52	37.2	31.4	22.6	18.1	15.8

1/ See text for methods and terminology used.

* Indicates replacement cost below the present value of future combined employer-employee taxes (which range from 10.9% to 11.9% of future covered earnings, grading up for younger workers).

Table 3

WORKER BECOMING COVERED IN 1978:
COMPONENTS OF CERTAIN FIGURES SHOWN IN TABLES 1 AND 2[1]/
(Dollar Figures are Present Values at January 1, 1978)

	Worker Becoming Covered at Age 22		Worker Becoming Covered at Age 42	
	Median Earnings	Maximum Earnings	Median Earnings	Maximum Earnings
I. Male Worker:				
A. Worker's Covered Earnings	$329,414	$830,730	$186,318	$463,722
B. Worker's OASDI Taxes:				
1. Amount	19,557	49,439	10,701	26,726
2. Percentage of Covered Earnings	5.9%	6.0%	5.7%	5.8%
C. Benefits Payable to Unmarried Worker:				
1. Old-Age	$ 20,856	$ 34,635	$ 19,652	$ 35,105
2. Disability[2]/	6,648	11,003	3,076	5,302
3. Total Benefits (1. plus 2.)	27,504	45,638	22,728	40,407
*4. Worker's Future Value Ratio (C.3. divided by B.1.)	1.41	0.92	2.12	1.51
**5. Replacement Cost (C.3. as % of A)	8.3%	5.5%	12.2%	8.7%
D. Additional Benefits Payable to Dependents of Married Worker:				
1. Old-Age (to spouse and surviving spouse)	$ 25,084	$ 41,658	$ 22,611	$ 40,390
2. Disability	1,313	1,924	21	44
3. Death Before Retirement	8,708	14,477	6,145	10,946
4. Total Benefits (1. plus 2. plus 3.)	35,105	58,059	28,777	51,380
E. Total Benefits Payable to Married Worker and Dependents:				
1. Total Benefits (C.3. plus D.4.)	$ 62,609	$103,697	$ 51,505	$ 91,787
*2. Worker's Future Value Ratio (E.1. divided by B.1.)	3.20	2.10	4.81	3.43
**3. Replacement Cost (E.1. as % of A)	19.0%	12.5%	27.6%	19.8%
II. Unmarried Female Worker:				
A. Worker's Covered Earnings	$343,465	$866,737	$195,307	$486,749
B. Worker's OASDI Taxes:				
1. Amount	20,421	51,654	11,249	28,129
2. Percentage of Covered Earnings	5.9%	6.0%	5.8%	5.8%
C. Benefits Payable to Unmarried Worker:				
1. Old-Age	$ 32,187	$ 53,453	$ 29,466	$ 52,636
2. Disability [2]/	6,713	11,138	3,039	5,226
3. Total Benefits (1. plus 2.)	38,900	64,591	32,505	57,862
*4. Worker's Future Value Ratio (C.3. divided by B.1.)	1.90	1.25	2.89	2.06
**5. Replacement Cost (C.3. as % of A)	11.3%	7.5%	16.6%	11.9%

1/ See text for methods and terminology used.

2/ Includes lump-sum death benefit value.

* Indicates figures are also shown in Table 1.

** Indicates figures are also shown in Table 2.

Table 4

WORKER ALREADY COVERED IN 1978:
ILLUSTRATIVE OASDI WORKER'S FUTURE VALUE RATIOS 1/

Covered Service Before 1978	Age at January 1, 1978	Very Low Earnings	Low Earnings	Median Earnings	High Earnings	Maximum Earnings
A. Unmarried Male Worker:						
1. 5 Years	27	3.18	1.99*	1.60*	1.31*	1.05*
2. "	32	3.76	2.35	1.89*	1.55*	1.22*
3. "	37	4.14	2.70	2.14	1.80*	1.40*
4. "	42	4.40	3.10	2.40	2.06	1.61*
5. "	47	5.11	3.82	2.88	2.42	2.00*
6. "	52	6.22	5.09	3.73	3.06	2.59
7. 10 Years	32	2.91	1.50*	1.15*	1.01*	0.85**
8. "	37	3.50	1.79*	1.37*	1.19*	0.98**
9. "	42	3.88	2.04	1.51*	1.37*	1.11*
10. "	47	3.66	2.24	1.56*	1.50*	1.26*
11. "	52	2.85	2.58	1.66*	1.61*	1.54*
12. 20 Years	42	2.97	1.27*	1.18*	1.07*	0.91**
13. "	47	3.76	1.56*	1.46*	1.31*	1.07*
14. "	52	4.64	1.84*	1.75*	1.60*	1.30*
B. Married Male Worker With Dependents:						
1. 5 Years	27	7.26	4.51	3.66	2.99	2.40
2. "	32	8.58	5.36	4.36	3.55	2.79
3. "	37	9.42	6.17	4.90	4.12	3.20
4. "	42	10.12	7.10	5.49	4.72	3.70
5. "	47	11.38	8.59	6.46	5.43	4.49
6. "	52	13.80	11.30	8.28	6.79	5.74
7. 10 Years	32	6.26	3.06	2.35	2.09	1.81*
8. "	37	7.60	3.71	2.84	2.51	2.09
9. "	42	8.33	4.24	3.13	2.89	2.37
10. "	47	7.62	4.68	3.21	3.15	2.70
11. "	52	5.69	5.40	3.44	3.40	3.28
12. 20 Years	42	6.00	2.33	2.26	2.12	1.84*
13. "	47	7.79	2.99	2.90	2.65	2.21
14. "	52	9.66	3.62	3.53	3.29	2.69
C. Unmarried Female Worker:						
1. 5 Years	27	4.36	2.72	2.19	1.80*	1.44*
2. "	32	5.14	3.21	2.59	2.12	1.67*
3. "	37	5.68	3.69	2.93	2.45	1.91*
4. "	42	6.01	4.21	3.26	2.81	2.19
5. "	47	6.81	5.12	3.87	3.25	2.69
6. "	52	8.12	6.75	4.95	4.07	3.45
7. 10 Years	32	3.91	1.97*	1.50*	1.33*	1.13*
8. "	37	4.68	2.35	1.78*	1.57*	1.30*
9. "	42	5.21	2.67	1.97*	1.80*	1.47*
10. "	47	4.85	2.93	2.02	1.97*	1.66*
11. "	52	3.68	3.36	2.14	2.11	2.02
12. 20 Years	42	3.83	1.56*	1.49*	1.37*	1.17*
13. "	47	4.85	1.92*	1.84*	1.66*	1.38*
14. "	52	6.01	2.29	2.22	2.05	1.67*

1/ See text for methods and terminology used.

** Indicates ratio below 1.00.
* Indicates ratio of 1.00 to 2.00.

Table 5

WORKER ALREADY COVERED IN 1978:
ILLUSTRATIVE REPLACEMENT COSTS OF OASDI BENEFITS
(Percent of Covered Earnings)[1]

Covered Service Before 1978	Age at January 1, 1978	Very Low Earnings	Low Earnings	Median Earnings	High Earnings	Maximum Earnings
A. Unmarried Male Worker:						
1. 5 Years	27	18.8%	11.7%*	9.5%*	7.8%*	6.2%*
2. "	32	22.1	13.8	11.1 *	9.1 *	7.2 *
3. "	37	24.1	15.7	12.5	10.5 *	8.2 *
4. "	42	25.3	17.8	13.8	11.8	9.3 *
5. "	47	28.8	21.5	16.2	13.6	11.3 *
6. "	52	34.0	27.8	20.4	16.7	14.2
7. 10 Years	32	17.1	8.8 *	6.7 *	5.9 *	5.0 *
8. "	37	20.4	10.4 *	7.9 *	6.9 *	5.7 *
9. "	42	22.3	11.7	8.7 *	7.9 *	6.4 *
10. "	47	20.6	12.6	8.8 *	8.4 *	7.1 *
11. "	52	15.6	14.1	9.1 *	8.8 *	8.4 *
12. 20 Years	42	17.1	7.3 *	6.8 *	6.2 *	5.2 *
13. "	47	21.2	8.8 *	8.3 *	7.4 *	6.1 *
14. "	52	25.4	10.0 *	9.6 *	8.7 *	7.1 *
B. Married Male Worker With Dependents:						
1. 5 Years	27	42.9	26.7	21.6	17.7	14.2
2. "	32	50.3	31.5	25.6	20.9	16.4
3. "	37	54.8	35.9	28.5	24.0	18.7
4. "	42	58.1	40.8	31.5	27.1	21.3
5. "	47	64.1	48.4	36.4	30.6	25.4
6. "	52	75.4	61.7	45.3	37.1	31.5
7. 10 Years	32	36.7	17.9	13.8	12.3	10.6 *
8. "	37	44.2	21.6	16.5	14.6	12.2
9. "	42	47.8	24.3	18.0	16.6	13.7
10. "	47	43.0	26.4	18.1	17.8	15.3
11. "	52	31.1	29.5	18.8	18.6	18.0
12. 20 Years	42	34.5	13.4	13.0	12.2	10.6 *
13. "	47	43.9	16.8	16.4	14.9	12.5
14. "	52	52.8	19.8	19.3	18.0	14.8
C. Unmarried Female Worker:						
1. 5 Years	27	25.8	16.1	13.0	10.6 *	8.5 *
2. "	32	30.2	18.9	15.2	12.5	9.8 *
3. "	37	33.1	21.5	17.1	14.3	11.2 *
4. "	42	34.6	24.3	18.8	16.2	12.7
5. "	47	38.5	29.0	21.9	18.4	15.2
6. "	52	44.4	37.0	27.1	22.3	18.9
7. 10 Years	32	23.0	11.6 *	8.8 *	7.8 *	6.7 *
8. "	37	27.3	13.7	10.4 *	9.2 *	7.6 *
9. "	42	30.0	15.4	11.4 *	10.4 *	8.5 *
10. "	47	27.4	16.5	11.4	11.1 *	9.4 *
11. "	52	20.2	18.4	11.7	11.5	11.1
12. 20 Years	42	22.1	9.0 *	8.6 *	7.9 *	6.8 *
13. "	47	27.4	10.9 *	10.4 *	9.4 *	7.8 *
14. "	52	32.9	12.6	12.2	11.2	9.2 *

1/ See text for methods and terminology used.

* Indicates replacement cost below the present value of future combined employer-
employee taxes (which range from 10.9% to 11.9% of future covered earnings,
grading up for younger workers).

Table 6

WORKER ALREADY COVERED IN 1978:
COMPONENTS OF CERTAIN FIGURES SHOWN IN TABLES 4 AND 5[1]/
(Dollar Figures are Present Values at January 1, 1978)

	Male Worker Age 42 With 20 Years Coverage	
	Median Earnings	Maximum Earnings
A. Worker's Future Covered Earnings	$186,318	$463,722
B. Worker's Future OASDI Taxes:		
1. Amount	10,701	26,726
2. Percentage of Covered Earnings	5.7%	5.8%
C. Benefits Payable to Unmarried Worker:		
1. If Coverage Continues After 1978		
a. Old-Age	$ 25,770	$ 39,580
b. Disability [2]/	5,609	8,051
c. Total Benefits (a. + b.)	31,379	47,631
2. If Coverage Terminates January 1, 1978		
a. Old-Age	17,605	21,950
b. Disability [2]/	1,106	1,440
c. Total Benefits (a. + b.)	18,711	23,390
3. Benefits to be Gained by Future Coverage (C.1. minus C.2.)	12,668	24,241
*4. Worker's Future Value Ratio (C.3. divided by B.)	1.18	0.91
**5. Replacement Cost (C.3. as % of A.)	6.8%	5.2%
D. Additional Benefits Payable to Dependents of Married Worker:		
1. If Coverage Continues After 1978		
a. Old-Age (to spouse and surviving spouse)	$ 29,650	$ 45,538
b. Disability	293	329
c. Death Before Retirement	10,223	14,959
d. Total Benefits (a. + b. + c.)	40,166	60,826
2. If Coverage Terminates January 1, 1978		
a. Old-Age	20,256	25,255
b. Disability	293	320
c. Death Before Retirement	8,065	10,256
d. Total Benefits (a. + b. + c.)	28,614	35,831
3. Benefits to be Gained by Future Coverage (D.1. minus D.2.)	11,552	24,995
E. Total Benefits Payable to Married Worker and Dependents, To Be Gained by Future Coverage:		
1. Total Benefits (C.3. + D.3.)	$ 24,220	$ 49,236
*2. Worker's Future Value Ratio (E.1. divided by B.1.)	2.26	1.84
**3. Replacement Cost (E.1. as % of A.)	13.0%	10.6%

[1]/ See text for methods and terminology used.

[2]/ Includes lump-sum death benefit value.

* Indicates figures are also shown in Table 4.

** Indicates figures are also shown in Table 5.

Appendix

"PRESENT VALUE" EXPLAINED

Any series of future payments can be converted to an equivalent single sum payment, the present value, which is the amount that could be invested today to make the future payments out of both principal and interest. The present value adjusts a series of payments for both the likelihood and the time of each payment, and thus provides a valid way of comparing a worker's expected social security benefits with the same worker's expected taxes. (Based on the mortality table we used, the life expectancy at age 65 is 14.1 years for a man, and 18.5 years for a woman; life expectancies are usually not appropriate or accurate for computing present values.) The present value concept is illustrated below, for the old-age benefits that will be payable to a male worker now 42 years old with median earnings, assuming interest can be earned at 6.6%.

Worker's Age (In 5-Year Periods)	Old-Age Benefits Payable at Ages 65 Through 89				
	Possible Benefits	Expected Benefits		Present Value of Expected Benefits	
		Amount	Ratio to (1)	Amount	Ratio to (2)
	(1)	(2)	(3)	(4)	(5)
65 to 69	$55,158	$37,401	0.68	$7,451	0.20
70 to 74	67,109	37,903	0.55	5,380	0.14
75 to 79	81,647	33,103	0.41	3,501	0.11
80 to 84	99,337	25,692	0.26	1,980	0.08
85 to 89	120,859	16,754	0.14	948	0.06
Total Before Age 90	$424,110	$150,880	0.36	$19,260 1/	0.13

1/ The $19,652 figure in Line I.C.1. of Table 3 also includes benefits payable after age 89.

Possible Benefits in column (1) represent the dollars of benefits that would be payable during each 5-year period from ages 65 through 89, if the employee lives to his 90th birthday. It can be seen that each figure in column (1) is 22% higher than the figure on the line above it, reflecting the 4% per year CPI increases assumed during each of the five years.

Expected Benefits in column (2) represent the column (1) benefits, reduced to reflect the likelihood that the 42-year-old worker will live to collect them. As indicated by column (3), he can expect to receive 68% of the possible benefits at ages 65-69, but only 14% of the possible benefits at ages 85-89, and a very small amount of benefits at ages 90 and over (not shown). This indicates the decreasing likelihood that he will live to a given age.

The Present Value of Expected Benefits in column (4) represents the column (2) figures, reduced to reflect the time of payment. For example, based on 6.6% interest, $1.00 payable 22 years in the future has a present value of $.25; the $.25 would earn $.75 interest over the time involved, and

thus would accumulate to $1.00. In the illustration above for a 42-year-old worker, all of his old-age benefits are payable more than 22 years in the future, so that each dollar of expected benefits is reduced below $.25 in arriving at the present value, as indicated in column (5).

In summary, the present value reduces each future dollar of possible benefits (or of employee taxes) to reflect the likelihood that the worker will live to collect it (or to pay it), and reduces it further to reflect the interest that could be earned before the time of payment. The result is the single sum equivalent of all the benefits (or taxes) as of a given date, permitting a direct comparison of the resulting values under the same set of conditions.