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7 The Distributional Impact of Social Security

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7.1 Introduction

Although social security retirement benefits often are thought of as a repayment of past contributions, it is now becoming a matter of general knowledge that the generation currently retired is receiving far more in retirement annuities than its members contributed in taxes during their working lives (see Aaron 1977; Burkhauser and Warlick 1981; Leimer and Petri 1981; Boskin et al. 1983). This is partly due to the state of the social security system: the retired generation is still receiving windfall start-up gains. These gains will diminish as the system matures and approaches a steady state. The excess of benefits over taxes for the presently retired is also due to the generosity of Congress in the early 1970s. Between 1968 and 1974 benefits were raised at a rate considerably higher than the rate of inflation; therefore, if the system had been actuarially fair in real terms prior to 1968, it certainly would not have been after 1974.

A natural question is, What is the magnitude of the gains or transfers (i.e., benefits less contributions in expected present value terms) of the elderly and how are they distributed? If the transfers are exceptionally large or concentrated among the affluent, a reform of the social security system might logically include the present retired generation giving up some of their gains. It is likely that additional funds or payout reductions will be required in the next 10 years and that major adjustments are necessary to operate the system over the next 75 years. The revenue sources or saving

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could include an increase in payroll taxes for workers, an advancement of the retirement age, or a decrease in the benefits of some of the currently retired. These measures to ensure the financial solvency of social security will have intergenerational effects. Raising the taxes of workers or increasing the retirement age will reduce the rate of return of the present working generation; cutting benefits, perhaps by making them taxable, will lower the gains of today's elderly. Because a substantial fraction of the elderly are far from wealthy, an across-the-board reduction in benefits is probably neither socially desirable nor politically feasible. However, the benefits of the wealthy retired could be reduced without causing undue economic hardship. If they have received large windfall gains through the social security system, fairness in restoring the financial soundness of the program would dictate a reduction in their benefits.

In this paper we calculate the present value of lifetime contributions to the social security system of a sample of the elderly and the present value of their expected benefits. The difference between the two we call social security transfers. We also compute for each family in our sample the internal rate of return to the retirement program. That is, we determine the discount rate that equates the present value of taxes to the present value of benefits. Our data are the Social Security Administration's Retirement History Survey. It originally interviewed slightly over 11,000 households in 1969. The head of household was between 58 and 64 years of age in 1969. These households were reinterviewed every two years through 1979. In this paper we calculate social security transfers and internal rates of return for the sample in 1969, 1975, and 1979 but use the other interview years to fill in missing values for our three years of primary interest.

Our primary results are that social security transfers and rates of return were very high for this population in 1969 and remained high throughout the decade. People in our sample could expect to receive three to four times as much in benefits as they made in contributions, even using a 3% real rate of time discount and calculating death probabilities using current life tables. Further, and more surprising, we find that the wealthy received the largest transfers, and in many cases they even had the highest rates of return. One must conclude that the social security system as now constituted has a substantial transfer element and that much of the transfer is from average workers to the wealthy retired.

We have attempted to calculate how the rates of return and transfers of the social security system will evolve as the system matures over the next 40–50 years. We have done this by creating some synthetic work and retirement histories for six different age cohorts and examining how the social security program, as currently constituted, would treat them. The households in this synthetic file are subject to the life hazards given by the 1969 life tables. We do not project changes in life expectancies that may

occur. We find that the transfer components monotonically decrease with each succeeding cohort (spaced in age by 10 years) and that the median two-earner household of the cohort now aged 38 will receive negative transfers. This simply implies, of course, that they experience an internal rate of return lower than the 3% real rate we used in calculating transfers.

7.2 Methods and Data

The Retirement History Survey interview data have been merged with the Social Security Administration's Earnings Record (through 1974). We have extended the earnings history of each household by using the 1975, 1977, and 1979 interview responses. We then seek to calculate social security transfers and internal rates of return for this cohort of households as of 1969, 1975, and 1979. However, we want to calculate the ex ante rate of return and transfers for the cohort with only the path of the social security program taken as given. As far as we know, no one has pointed out that calculations of transfers to the currently retired overstate transfers to the cohorts of the retired, because the calculations do not take into account taxes paid by members of the cohort who did not live to retirement age. The currently retired are the winners in the annuity gamble; to study the intergenerational transfer component of social security, we need to account for all the taxes and benefits of cohort members whether they are alive at the time of the sample or not. As we shall see, for some groups among the retired this is quite an important adjustment, substantially lowering our estimates of their rate of return from social security. Our method of accounting for taxes paid and benefits received by deceased members of the cohort is described in some detail in the Appendix, but it may be briefly summarized here.

From sex- and race-specific life tables and actual social security contribution data of married survivors, we estimate taxes paid by deceased married members of each cohort. Some of these taxes are allocated to widows to reflect the taxes paid by deceased husbands on their behalf. The remainder are allocated to the surviving couples. Each single person's history is similarly adjusted upward to account for deceased singles from the same cohort. Benefits received are treated in the same manner. That is, benefits already received by deceased members of this cohort are attributed to the survivors. In this way, we examine how an entire cohort (in this case, alive in 1937 at the start-up of the system) has fared with social security. These adjustments treat the future and the past symmetrically: future benefits are discounted, weighted by the probabilities of living to collect the benefits, and then summed to get the discounted expected discounted present value; past benefits are multiplied by the appropriate interest rates and by a multiple reflecting cohort size at the time benefits were collected. In

1969, for example, the taxes paid by the cohort and the benefits received and to be received by the cohort are assigned to the surviving members of the cohort.

7.3 Results

The first of our results are shown in tables 7.1–7.3, where we report social security taxes paid and transfers received by race and marital status for 1969, 1975, and 1979. The taxes are calculated according to earnings records to the interview year, and the benefits under the assumption that the person makes no more contributions to social security. Table 7.1 shows that the life table adjustment makes little difference for couples in the sample. This is because extra taxes are attributed to interviewed couples according to the probability that both partners of an original couple died before 1969, and this event has low probability. However, the taxes of widows and widowers (referred to in this paper as widows only because females predominate) are more than doubled. This occurs because the Social Security Earnings History only records the widows' own earnings record and contribution profile. When we attribute to widows the contributions made by their deceased spouses, it naturally raises substantially the total taxes assigned to widows. Even so, all groups, including widows, have substantial transfers both in absolute value and in the return ratio, the ratio of the present value of benefits to the present value of taxes. However, widows have smaller transfers and lower return ratios than other groups: they only receive the husband's benefit rather than the husband's and wife's benefit. In most cases the taxes paid by the widow herself do not contribute to her benefit because the husband's benefit is larger. It should be noted that if account is not made of taxes paid by deceased husbands, one gets a completely different impression of the return ratio of widows. For example, if average actual taxes and average benefits are

Table 7.1 **Social Security Taxes and Transfers by Marital Status and Race, 1969 (1968 Dollars)**

	Taxes (Life Table Adjusted) ($)	Actual Taxes ($)	Mean Benefits Less Life Adjusted Taxes ($)	Median Return Ratio	Median Rates of Return
Married	7,203	7,046	16,422	3.35	8.39
Widows and Widowers	5,406	2,345	6,011	2.03	6.01
Other singles	3,844	3,398	6,863	2.91	7.80
White	6,536	5,764	13,345	3.14	7.97
Nonwhite	4,249	3,198	7,690	2.91	7.66

Table 7.2 **Social Security Taxes and Transfers by Marital Status and Race, 1975 (1974 Dollars)**

	Taxes (Life Table Adjusted) ($)	Actual Taxes ($)	Mean Benefits Less Life Adjusted Taxes ($)	Median Return Ratio	Median Rates of Return
Married	16,222	15,282	40,041	3.58	8.76
Widows and Widowers	12,947	4,999	15,224	2.11	6.38
Other singles	9,871	7,632	15,879	2.73	7.63
White	14,752	11,609	30,422	3.23	8.19
Nonwhite	11,029	7,002	19,116	2.85	7.58

Table 7.3 **Social Security Taxes and Transfers by Marital Status and Race, 1979 (1978 Dollars)**

	Taxes (Life Table Adjusted) ($)	Actual Taxes ($)	Mean Benefits Less Life Adjusted Taxes ($)	Median Return Ratio	Median Rates of Return
Married	26,778	23,719	58,865	3.34	8.32
Widows and Widowers	22,335	7,499	23,118	2.04	6.24
Other singles	17,335	11,528	21,544	2.41	6.82
White	24,466	16,815	42,319	2.84	7.55
Nonwhite	19,400	9,991	27,457	2.52	6.95

used, the return ratio is 4.9, higher than that of couples. If average adjusted taxes are used, the return ratio is 2.03.

The internal rate of return is that interest rate that will equate the real life-table-weighted stream of taxes to the real life-table-weighted stream of benefits, assuming future benefits will be paid according to the law in effect. The median rate of return of couples in 1969 was 8.39. This is a real rate of return and is very much greater than what is generally assumed to be offered by other investments. For example, in our present value calculations for the first three columns of these tables, we have used a 3% real rate; the social security actuaries often use a 2.5% real rate. Over a number of years the difference between such rates and our calculated internal rate of return is enormous. For example, a 60-year-old in 1969 would have been 28 in 1937, the year in which social security taxes were first paid. At a real rate of 2.5%, a dollar contributed in 1937 would have grown to $2.20 in real terms by 1969; at a real rate of 8.39%, a dollar contributed in 1937 would have grown to $13.17 in real terms by 1969. At 6.01%, the widow's rate of return, it would have grown to $6.47. Over the 70 years that some

people will be paying to or receiving from the social security system, even small differences in the rates of return will produce large differences in the present values. In interpreting the very high internal rates we calculate, one should also note that social security contributions and benefits are very heavily sheltered from the personal income tax. The benefits are completely tax free, the "compounding" is done on a tax-free basis, and only half the contributions (the employee's share) are subject to personal income tax.

In 1969 the rate of return of couples was the highest of the marital groups. Many researchers have stressed how the system discriminates against two-earner couples in the sense that the contributions of the wife are wasted in that they do not increase the benefits of the family. Certainly this is true relative to one-earner couples. However, married couples as a group obviously do at least as well as singles since they are offered their choice at time of retirement between being treated as two singles or calculating their benefits as a married couple. As a group, the married couples receive the highest rates of return from social security.

Nonwhites have slightly lower rates of return than whites and significantly lower absolute transfers. These outcomes are caused by the higher mortality rates of nonwhites, meaning that fewer live to collect benefits. Our calculations that attribute taxes of deceased cohort members to the living is more important for nonwhites. Nonwhites also have lower earnings records on average (reducing the size of the absolute transfer), and a larger fraction of nonwhite couples have two earners, which tends to reduce the rates of return.

Tables 7.2 and 7.3 show social security taxes, transfers, and rates of return for 1975 and 1979 by race and marital status. By 1975, taxes and transfers of all groups had risen. The rate of return of whites had increased even further, yet the rate of return of blacks had fallen slightly. The difference is undoubtedly due to the difference in mortality: a higher fraction of nonwhites than whites in our sample died before reaching retirement age between 1969 and 1975. The difference between life-table-adjusted taxes and actual taxes of widows continues to be large, and it begins to widen for other categories. By 1979, the rates of return had begun to fall for reasons to be discussed later. It was still the case that couples had higher rates than the other marital groups and that whites had higher rates than nonwhites. The life table adjustment has become important for all groups. The 1979 samples are those aged 68–74 years, and these are certainly a sample of winners in the annuity game.

Tables 7.4–7.6 present results on taxes and transfers by age in 1969, 1975, and 1979. In general, the internal rates of return and the absolute transfers are higher for the older households in the sample in all three interview years. This is presumably due to the maturing of the social security system. The older members of this population enjoyed more of the start-

Table 7.4 **Social Security Taxes and Transfers by Age, 1969 (1968 Dollars)**

Age of Household Head	Mean Taxes (Life Table Adjusted) ($)	Mean Actual Taxes ($)	Mean Benefits Less Life Adjusted Taxes ($)	Median Return Ratio	Median Rates of Return
58	6,087	5,471	10,024	2.75	6.99
59	6,367	5,707	10,529	2.71	7.05
60	6,384	5,647	11,754	2.98	7.57
61	6,635	5,534	12,514	3.12	7.92
62	6,270	5,414	13,466	3.26	8.30
63	6,363	5,477	14,896	3.47	8.80
64	6,024	5,043	15,617	3.73	9.40

Table 7.5 **Social Security Taxes and Transfers by Age, 1975 (1974 Dollars)**

Age of Household Head	Mean Taxes (Life Table Adjusted) ($)	Mean Actual Taxes ($)	Mean Benefits Less Life Adjusted Taxes ($)	Median Return Ratio	Median Rates of Return
64	14,986	12,325	28,241	3.0	7.8
65	15,119	12,616	29,004	3.1	8.0
66	14,939	12,106	28,737	3.1	7.9
67	14,457	11,440	29,541	3.2	8.2
68	14,225	11,082	30,496	3.3	8.3
69	14,077	10,749	31,216	3.4	8.6
70	13,269	9,820	32,228	3.7	9.2

Table 7.6 **Social Security Taxes and Transfers by Age, 1979 (1978 Dollars)**

Age of Household Head	Mean Taxes (Life Table Adjusted) ($)	Mean Actual Taxes ($)	Mean Benefits Less Life Adjusted Taxes ($)	Median Return Ratio	Median Rates of Return
68	24,515	17,709	37,815	2.7	7.2
69	24,786	18,766	39,459	2.7	7.3
70	24,905	18,208	40,043	2.8	7.4
71	23,954	16,755	42,200	2.9	7.7
72	23,911	16,325	43,589	3.0	7.8
73	23,954	15,702	45,677	3.1	8.1
74	22,484	14,077	47,438	3.3	8.5

up gains of a pay-as-you-go retirement plan. The difference is most striking in 1969. Recall our assumption that no future contributions are made to the system. In 1969, the youngest cohort must wait four years to retire, so discounting has a substantial effect.

Table 7.7 collects some of the rate-of-return results from tables 7.4–7.6. It shows that the real internal rate of return to social security increased from 1969 to 1975 for the younger cohorts in our sample, even when both

Table 7.7 Rate of Return by Cohort

	1969		1975		1979	
Cohort	Rate	Age	Rate	Age	Rate	Age
7	7.0	58	7.8	64	7.2	68
6	7.0	59	8.0	65	7.3	69
5	7.6	60	7.9	66	7.4	70
4	7.9	61	8.2	67	7.7	71
3	8.3	62	8.3	68	7.8	72
2	8.8	63	8.6	69	8.1	73
1	9.4	64	9.2	70	8.5	74

taxes and benefits are life table adjusted. The real return decreased for the oldest two cohorts between 1969 and 1975 and also decreased for households of all ages between 1975 and 1979. The net change was an increase in the rate of return between 1969 and 1979 for the youngest two cohorts and a fairly sharp decline for the oldest three. These differences are probably the result of two factors: first, changes in the law between 1969 and 1975 increased the rates of return, but after 1975 changes in the law only increased the future real payments of workers through double indexing. This, however, had no effect on the real payments of retired people. Second, because delayed retirement between ages 62 and 65 is roughly actuarially fair at a 3% real interest rate, a delay in retirement will decrease the internal rate from the high values shown here. Of course, the internal rate will decrease even faster when someone works after the age of 65.

Tables 7.8–7.10 show social security transfers, return ratios, and internal rates of return by wealth quartile and by age in 1969, 1975, and 1979. The wealth variable is quite comprehensive in that it includes the value of home, business, and farm equity, other real property, stocks, bonds, bank accounts, pensions, and capitalized value of welfare payments, and the capitalized insurance value of Medicare. It excludes social security wealth and human capital. Table 7.8 indicates that social security transfers increase sharply by wealth quartile, especially if taxes are adjusted by the life tables. We feel such an adjustment is necessary to get a true picture of the way a cohort has fared with social security. The median life-table-adjusted transfer to those in the top wealth quartile is more than $6000 higher than that to those in the lowest wealth quartile, a 69% difference. The reason that the increase with wealth is greater for the life-table-adjusted numbers is that widows are heavily represented in the lower part of the wealth distribution, and the tax adjustment for mortality is much greater for them than for other groups. The increasing transfers with wealth are also due to the greater contributions of the wealthy to social se-

curity, a system that offered this generation a rate of return far greater than our 3% discount rate. The importance of using life-adjusted taxes is also shown in the return ratios: with unadjusted taxes, it appears that the lowest wealth quartile has a somewhat higher ratio of benefits to taxes than the other quartiles, yet when account is made of taxes paid by the deceased, the return ratio is almost flat across the quartiles.

Finally, the rates of return shown in table 7.8 are almost the same for the wealth groups. Most researchers would find this result surprising because the social security benefit schedule has considerable progressivity. Apparently that is neutralized by the taxes paid by the deceased and, possibly, by a different time pattern of contributions. For example, holding constant total undiscounted nominal contributions, the rate of return will increase if the contributions are made late in life rather than early.

Table 7.8 also shows how the transfers, return ratios, and rates of return vary by age within quartiles. It is important to disaggregate by age because both wealth and the rate of return vary positivity by age. Table 7.8 shows that at each age the transfers to those in the wealthiest quartile are much greater than the transfers to those in the lowest wealth quartile. In fact, for a couple of age groups the transfers are almost twice as great to the wealthy as to the poor. Table 7.8 shows that the internal rates of return are fairly flat across wealth quartiles; the highest rate of return recorded is for the upper wealth quartile among our eldest cohort, the 64-year-olds.

Table 7.9 contains similar results for 1975. The wealth and transfer figures are in 1974 dollars. The difference between adjusted and unadjusted taxes has become more important as reflected in the difference between the two transfer measures. Even more than in 1969, the unadjusted median return ratio gives a substantially different impression than the adjusted median return ratio: the one indicates that in percentage terms the poorer elderly gained more than the wealthy elderly, whereas the second indicates they did worse. The life-table-adjusted transfers to the wealthiest quartile are roughly double the transfers to the poorest quartile at every age except 70. Even their rates of return are highest at every age.

The results for 1979 as shown in table 7.10 are similar to the 1975 results: the adjustment for taxes according to the life table is important and, in fact, removes the negative correlation of the median return ratio with wealth quartile. The internal rates of return are down somewhat from 1975, most particularly for those in the wealthiest quartile. The apparent explanation is that those who worked past age 65 lowered their rates of return and that more of the relatively wealthy did that than those in the lower wealth quartiles. The overall result of tables 7.8–7.10, however, still remains that among the current elderly the wealthy have enjoyed the same high rate of return from social security as the poorer members of their age cohort.

Table 7.8 **Social Security Transfers and Rates of Return by Non-Social-Security, Non-Human-Capital Wealth Quartiles, 1969**

	Wealth Quartiles			
	$W \leq \$16{,}572$	$\$16{,}572 < W \leq \$32{,}188$	$\$32{,}188 < W \leq \$64{,}691$	$\$64{,}691 < W$
	Median Actual Transfers			
58	8,570	12,700	13,035	13,300
59	8,472	12,398	14,266	13,683
60	9,594	13,899	15,599	15,321
61	10,597	14,215	15,805	16,005
62	10,626	15,809	16,997	18,135
63	12,251	17,227	19,410	20,899
64	14,237	18,947	20,702	19,135
Entire Sample	10,542	14,508	15,830	15,802
	Median Life Table Adjusted Transfers			
58	8,108	11,678	12,851	13,222
59	7,529	11,999	14,123	13,414
60	8,310	13,230	15,233	15,241
61	9,185	13,708	15,418	15,678
62	9,164	15,211	16,535	17,838
63	11,056	16,348	18,944	20,573
64	12,818	18,117	19,871	18,248
Entire Sample	9,230	13,868	15,504	15,567
	Median Actual Return Ratio			
58	3.3	3.0	2.8	3.0
59	3.4	2.9	2.8	3.0
60	3.5	3.3	3.1	3.2

61	3.8	3.5	3.3	3.4
62	4.2	3.7	3.4	3.6
63	4.5	4.8	3.7	3.8
64	4.7	4.1	4.0	4.5
Entire Sample	4.0	3.5	3.3	3.4
	Median Life Table Adjusted Return Ratio			
58	2.9	2.7	2.6	2.8
59	2.8	2.7	2.7	2.8
60	2.9	3.0	3.0	3.0
61	3.2	3.1	3.0	3.2
62	3.3	3.4	3.2	3.2
63	3.6	3.4	3.5	3.5
64	3.7	3.6	3.7	4.0
Entire Sample	3.1	3.1	3.1	3.2
	Median Internal Rate of Return (Life Table Adjusted)			
58	7.1	7.0	6.9	7.0
59	7.1	7.1	6.9	7.2
60	7.4	7.6	7.6	7.5
61	8.1	7.8	7.7	8.0
62	8.3	8.5	8.0	8.2
63	9.0	8.7	8.7	8.4
64	9.6	9.0	9.4	9.8
Entire Sample	8.0	7.9	7.8	8.1

Note: Wealth and transfer amounts are in 1968 dollars. The number of households is 10,715.

Table 7.9 **Social Security Transfers and Rates of Return by Non-Social-Security, Non-Human-Capital Wealth Quartiles, 1975**

	Wealth Quartiles			
	$W \leq \$19{,}752$	$\$19{,}752 < W \leq \$43{,}678$	$\$43{,}678 < W \leq \$83{,}804$	$\$83{,}804 < W$
	Median Actual Transfers ($)			
64	23,522	31,911	36,793	39,541
65	23,371	29,155	39,858	42,435
66	21,959	31,762	39,574	41,643
67	25,289	29,524	39,313	41,531
68	28,152	31,317	39,455	42,554
69	27,418	31,298	37,632	43,631
70	30,271	38,189	40,639	38,933
Entire sample	25,563	30,701	40,639	41,477
	Median Life Table Adjusted Transfers ($)			
64	18,420	27,905	34,207	38,519
65	19,082	26,734	38,618	41,611
66	15,496	29,454	38,304	40,361
67	19,314	27,221	37,942	40,458
68	21,641	28,632	37,423	41,568
69	23,185	29,411	35,910	42,084
70	25,363	36,140	39,511	37,253
Entire sample	20,066	27,541	36,102	40,050
	Median Actual Return Ratio			
64	4.2	3.7	3.2	3.4
65	3.9	3.5	3.4	3.5

66	4.3	3.8	3.4	3.6
67	4.5	3.9	3.6	3.8
68	4.9	5.1	3.6	4.0
69	5.3	4.4	3.9	4.0
70	5.9	4.9	4.0	4.4
Entire sample	4.8	4.0	3.6	3.7
	Median Life Table Adjusted Return Ratio			
64	3.0	3.1	2.8	3.1
65	3.1	3.0	3.1	3.2
66	2.6	3.4	3.0	3.4
67	3.1	3.0	3.2	3.5
68	3.0	3.3	3.2	3.5
69	3.3	3.4	3.4	3.6
70	3.6	4.1	3.4	4.0
Entire sample	3.0	3.2	3.1	3.4
	Median Internal Rate of Return (Life Table Adjusted)			
64	7.8	7.9	7.6	8.0
65	8.1	7.9	8.0	8.3
66	7.1	8.3	7.9	8.2
67	8.2	7.8	8.2	8.7
68	8.4	8.3	8.1	8.7
69	8.5	8.3	8.7	9.2
70	9.2	9.5	8.8	9.5
Entire sample	8.1	8.0	8.0	8.5

Note: Wealth and transfer amounts are in 1974 dollars. The number of households is 8070.

Table 7.10 **Social Security Transfers and Rates of Return by Non-Social-Security, Non-Human-Capital Wealth Quartiles, 1979**

	Wealth Quartiles			
	$W \leq \$19{,}797$	$\$19{,}797 < W \leq \$50{,}548$	$\$50{,}548 < W \leq \$103{,}511$	$\$103{,}511 < W$
	Median Actual Transfers ($)			
68	39,618	44,030	47,245	51,808
69	38,888	38,477	49,842	53,643
70	38,977	45,507	46,972	52,251
71	44,741	42,266	52,542	49,430
72	51,341	46,162	47,541	50,907
73	52,099	44,097	50,156	51,073
74	61,877	46,068	47,144	48,087
Entire sample	46,499	41,854	47,733	50,631
	Median Life Table Adjusted Transfers ($)			
68	27,171	35,901	42,525	48,059
69	25,877	32,452	44,583	49,697
70	26,951	37,885	41,081	47,985
71	33,703	32,805	44,358	46,256
72	39,610	36,223	40,359	45,193
73	41,473	36,121	42,690	48,139
74	46,532	34,853	41,624	42,101
Entire sample	34,042	32,802	40,354	45,814
	Median Actual Return Ratio			
68	5.2	3.9	3.2	3.1
69	4.2	3.7	3.3	3.3

70	4.5	4.0	3.3	3.2
71	5.2	3.9	3.6	3.8
72	5.5	4.3	3.4	3.4
73	5.7	4.5	3.8	3.8
74	6.3	5.3	4.0	4.0
Entire sample	5.4	5.2	3.5	3.5
	Median Life Table Adjusted Return Ratio			
68	2.4	2.9	2.7	2.5
69	2.7	2.7	2.8	2.8
70	2.6	3.1	2.6	2.8
71	3.0	2.8	2.9	3.1
72	2.9	3.2	2.9	2.9
73	3.1	3.0	2.9	3.2
74	3.5	3.2	3.0	3.3
Entire sample	2.9	2.8	2.7	2.9
	Median Internal Rate of Return (Life Table Adjusted)			
68	7.2	7.6	7.3	7.0
69	7.4	7.1	7.3	7.6
70	7.3	7.9	7.2	7.4
71	8.1	7.4	7.5	7.9
72	8.2	8.1	7.3	7.7
73	8.4	7.9	7.5	8.3
74	9.2	8.2	7.9	8.2
Entire sample	7.9	7.4	7.2	7.6

Note: Wealth and transfer amounts are in 1978 dollars. The number of households is 7137.

7.4 Simulations

In this section we calculate the projected transfers and rates of return for six age cohorts, four household types, and three levels of earnings histories. This gives us some information about the intergenerational transfers implied by the social security system and predicts how the intragenerational transfers will change for later cohorts. It also shows the effects of the maturing of the system on the rate of return it offers.

The household types examined are single males, single females, and one- and two-earner married couples. We have collected data on median annual earnings for men and women by age from 1937 to 1977. These data were extended through the year 2020 with the assumption that median earnings grow at 10% from 1977 to 1982 and 6% thereafter. The accuracy of this assumption is not critical to our analysis because we use it only to generate the nominal earnings histories of our simulated households; that our profiles exactly match median values is relatively unimportant. We project 2% productivity growth, and therefore 4% CPI inflation, beyond 1982. For the simulated single men and women, we create three earnings profiles from age 20 to age 65, or, for the older cohorts, from 1937 until retirement at age 65. The low earnings profile is set at one-half the median earnings pattern, while the high earnings profile is set at the maximum earnings level subject to social security payroll taxes or five times the median, whichever is less. The one-earner married couples are assigned earnings histories equivalent to the single males, while the taxes of the two-earner married couples are the sum of those of a low-earning single male and female, a median-earning male and a low-earning woman, and, finally, a high-earning male and a median-earning woman. All told, there are 12 simulated households in each age cohort; three earnings profiles for each of four household types. The age cohorts are people who reach age 65 in 1970, 1980, 1990, 2000, 2010, and 2020. Husbands and wives are assumed to be the same age.

Unlike in the previous section, our simulations do not include widows. The single households have been life-long singles and their taxes reflect their own contributions plus the contributions of singles who, according to the life tables, die before age 65. The taxes of marrieds are also life table adjusted, but only for married couples where both spouses fail to reach age 65. After retirement, assumed to take place at age 65, we keep track of the joint survival probabilities of married couples and credit the benefits received during the resulting widowhood after the death of the first spouse.

Table 7.11 shows the internal rates of return for the 12 simulated households in six age cohorts. Several clarifications are necessary before these can be properly interpreted. First, these rates of return are done in an "ex ante" sense from age 65. By that we mean that individuals assume that the annuities they receive will remain constant in real terms (except for re-

Table 7.11 **Projected Internal Rates of Return by Household Type and by Age Cohort**

Demographic Status	Earnings Profile	Year in Which Head of Household Becomes 65					
		1970	1980	1990	2000	2010	2020
Single males	Low	7.5	5.3	3.2	2.4	2.2	2.1
	Median	6.3	4.5	2.4	1.6	1.3	1.3
	High	5.4	4.0	2.3	1.4	.9	.7
Single women	Low	10.7	7.7	5.9	5.0	4.5	4.4
	Median	9.1	6.6	4.6	3.8	3.4	3.3
	High	6.7	5.1	3.5	2.6	2.1	1.8
Married couples	Low/zero	9.7	7.4	5.3	4.3	4.1	4.0
	Median/zero	8.5	6.7	4.5	3.6	3.3	3.2
	High/zero	7.5	6.0	4.4	3.5	2.9	2.6
Married couples	Low/low	8.8	6.4	4.4	3.5	3.3	3.2
	Median/low	7.7	6.0	3.9	3.1	2.7	2.6
	High/median	6.7	5.1	3.4	2.6	2.2	1.9

Note: Benefits and taxes were projected according to the law at time of retirement except in 1970 where inflation indexation was assumed.

duced survivor benefits), and they do not take into account changes which may take effect ex post. Second, and similarly, the benefits and taxes paid out and collected after 1983 in our calculations are those projected in the Annual Statistical Supplement of the Social Security Bulletin (1980). Thus, these are not adjusted for changes that appear to be necessary to balance aggregate social security retirement benefits and taxes. The effect of the proposed changes will be to drive down the real rates of return for the younger cohorts, almost certainly making them negative for high-earning single males and some two-earner couples. The rates of return reported in table 7.11, then, should be taken as absolute upper bounds for these households and age cohorts since all signs indicate that they will pay more taxes and receive lower benefits than those officially projected in the Social Security Bulletin and used in these calculations.

The internal rates of return calculated for the 1970 cohort are consistent with our earlier examination of the Retirement History Survey population. Again, it should be emphasized that our simulated singles do not include widows. Within each household type the higher-earnings household has a lower rate of return. However, our earlier results indicated that this did not imply that wealthier retired households had lower rates of return on social security. The projected decline with cohort age in real internal rates of return is monotonic and substantial. For example, the median single female retiring in 1970 has an expected real rate of return of 9.1%. If she reached age 65 in 2000, however, she would only enjoy an expected 3.8% return. Single women earn higher rates than single men, not only due to their longer life expectancy but also due to their lower earnings profiles.

The results of table 7.11 indicate that those reaching age 65 in 1970 and 1980 were among those receiving windfall gains from the start-up and expansion of a pay-as-you-go social security scheme. The 1970 cohort enjoyed higher rates partly because it had a shorter history of tax payments (this generation was 32 years old in 1937). The 1980 cohort and to a lesser extent the 1990 cohort did well because social security tax rates were low during a substantial fraction of their work lives. Consistent with the results of the previous section, we find that the start-up and expansion gains are diminishing but that they extend over a longer period than is commonly realized. Those who retired on social security from 1940 to 1990 will enjoy some of these gains, and a noticeable fraction of the elderly population will be in this category until the year 2010.

The life-table-adjusted expected social security transfers in 1970 dollars are shown in table 7.12 for our simulated households. Again, the results are roughly in accord with our examination of the Retirement History Survey population. As in the previous section, the real discount rate used in the transfer calculations was 3%. For the households retiring in 1970, social security was "a good deal," and in most cases the higher earnings

Table 7.12 Projected Transfers by Cohort (1980 Dollars)

Demographic Status	Earnings Profile	Year in Which Head of Household Becomes 65					
		1970	1980	1990	2000	2010	2020
Single males	Low	20,980	20,718	2,524	−12,556	−19,052	−25,410
	Median	25,615	23,994	−13,690	−48,670	−69,237	−88,482
	High	23,332	18,748	−19,301	−64,713	−121,610	−179,654
Single women	Low	25,784	28,270	23,746	22,255	21,513	24,649
	Median	32,027	34,660	21,169	14,915	9,825	9,377
	High	41,861	45,819	13,921	−17,324	−56,982	−96,659
Married couples	Low/zero	46,077	60,296	45,282	38,150	36,693	42,649
	Median/zero	63,425	87,293	51,960	30,664	16,596	16,596
	High/zero	63,907	88,025	53,996	27,707	−7,351	−41,365
Married couples	Low/low	47,704	55,587	33,651	19,139	11,759	10,858
	Median/low	58,052	76,031	33,758	5,250	−17,564	−25,915
	High/median	59,384	68,934	19,265	−23,122	−75,670	−126,388

Note: Benefits and taxes were projected according to the law at the time of retirement except in 1970 where inflation indexation was assumed.

households received larger transfers because they were allowed to participate in this good deal to a greater extent. This effect offset the somewhat lower internal rate earned by households with higher earnings profiles, as shown in the previous table. For the younger cohorts, the level of transfers is much lower (and in some cases negative), and their pattern across earnings profiles is very different. Consider the higher-earnings households retiring in the year 2010 or later; rather than being allowed to participate in a larger extent in a good deal (which was the case for the high earners earlier), those with high earnings in the later cohorts are forced to participate to a larger extent in a program that offers them a poor return. Each of our high-earnings household types retiring in the year 2010 has negative transfers. The progressive nature of the program, which has had essentially no impact on those who have retired to date, is strongly evident by the year 2010. The reforms currently being discussed will not only further lower the transfer numbers of the young cohorts but may add to the strong progressive pattern of the transfer figures already projected for them under current law.

7.5 Conclusion

We have examined the real rates of return and the transfers in the retirement (OASI) component of social security. Most of our analysis uses the Retirement History Survey population, which ranged in age from 58 to 64 in 1969 and which was interviewed six times from 1969 to 1979. Our primary result is that this generation did extremely well on social security, earning a real rate of return of roughly 8%. We calculated this number taking into account the taxes paid by the unfortunate cohort members who did not live to retirement age, and found this to be an important correction. Without it, we would get even higher rates of return for the RHS household population.

We examined the rates of return and transfers by marital status, race, and age. The results were that the married couples had higher rates of return than singles in the RHS population and that nonwhites did less well than whites. The lowest rates of return were for widows when account is taken of the taxes paid by the deceased spouses.

Perhaps our most interesting result, other than the high rate of return itself, is that the rate of return does not decline with wealth for this population sample. In fact, the wealthy in the RHS population have earned roughly the same high rate of return as their poorer cohort members and have enjoyed far higher absolute transfers.

In the final section of the paper we simulated the evolution of the impact of the social security system on 12 household types. We project that the high rates of return would have declined monotonically and signifi-

cantly even before the social security changes now contemplated. The transfer components become negative for some households; for example, the negative transfer is projected at $180,000 (1980 $) for high-income single males currently age 27. The intergenerational transfers are extremely large and the intragenerational distribution of transfers is quite different (more progressive) for the currently young than it is for the presently elderly.

The results of this paper should be useful in assessing how the social security system could be revised. It indicates that the idea that all current retirees should be protected from cuts and only those who will retire in 20 or more years should be asked to rescue the system would lead to a policy of protecting those who have done well at the expense of those who are already projected to do poorly. Of course, this consideration must be weighted against the financial flexibility of the young relative to the currently elderly.

Appendix

Calculation of Present Value of Taxes and Benefits, and Rate of Return

The basic principle is that all taxes paid and benefits received by a cohort will be allocated to surviving members of the cohort. Unless this is done the survivors will appear to have received above-average rates of return even under an actuarially fair annuity system. We distingish groups according to marital status (married, single, or widowed), sex, and race.

Consider first a single person of age A with a stream of past taxes, t_i, and of past benefits, b_i. Let P_i be the probability that a person will live to age A given that he has reached age i. Thus, for each person of age A there were $1/P_i$ persons living at age i. There were on average $t_i(1/P_i - 1)$ taxes paid at age i by people who died before reaching age A and who had similar tax histories to the surviving person in the sample. The present value of these taxes over all ages less than A is

$$\sum_{i=1}^{A} t_i(1/\mathrm{P}_i - 1)\,\beta_i(1 + r_i)^{A-i},$$

where β_i is the price level adjustment. r_i was taken to be a constant 3%. This number was added to the present value of taxes actually paid to get the total of taxes paid by the person in the sample and by similar people who did not survive until age A. Because the sample is self-weighting, aggregating over all singles will give a good estimate of total taxes paid by

the cohort, provided mortality rates are independent of tax contributions. The mortality probabilities are race and sex specific; they are calculated from the 1969 life tables.

The present value of past benefits received by the cohort is calculated in a way symmetric to the calculation of taxes.

Now consider a widow in the 1969 sample. The data only include her tax contributions, which will be treated in the same way as the taxes of a single person. However, in almost all cases her benefits are based on the taxes of her deceased husband, and a rate-of-return calculation should take those into account. This is done by allocating part of the taxes paid by deceased husbands to the widows. The general reasoning is that for each surviving couple there were additional couples who paid taxes but did not survive as couples. Some survived as widows, some as widowers, and some had no survivors. From the life tables and our data on the tax histories of husbands, we can calculate taxes paid by deceased husbands in the same way as was done for singles. That amount multiplied by the probability that the wife survived is allocated to widows; the remainder is allocated to surviving couples. More specifically, if t_i is the tax stream of a husband in the sample, $ET = \sum_{i=1}^{A} t_i(1/\mathrm{P}_i - 1)\,\beta_i(1 + r_i)^{A-i}$ is the present value of taxes paid by deceased husbands who were similar to the surviving husband. ET multiplied by the probability the wife survives until the survey year is allocated to widows, and the remainder is allocated to married couples in the sample. The allocation for widows is summed over all couples. That amount divided by the number of widows is added to the life-table-adjusted taxes actually paid by each widow on her own earnings record. In principle, the taxes paid by deceased wives should be similarly allocated between the couple and widowers, but for simplicity we allocated all of them to the couples: wives have small tax contribution histories, and the probability that the husband outlives the wife is small. Again, it is assumed that the mortality rates are independent of taxes. In addition, we assume independence between mortality rates of husbands and wives. Past benefits are treated symmetrically to taxes.

The present value of future benefits uses the 1969 life tables. Mortality probabilities of husbands and wives are assumed to be independent. The following provisions of the law were taken into consideration: actuarial reduction for early retirement; 1% benefit increase for work past age 65; a wife may draw on her own record or her husband's record; a widow may draw at age 60 at a reduced fraction of her husband's PIA, but at age 62 she can switch to her own record if it yields a higher benefit; the PIA calculation is based on the law in effect in the year of the calculation; a widow's benefit is reduced if her former husband drew benefits before he was 65 or if she draws benefits before she is 65.

The rate of return in year T is calculated in the following way. Let t_i and b_i be the life-table-adjusted real stream of taxes and benefits of an individual. The t_i will be zero prior to year of employment and after retirement. The b_i will be zero before retirement; after T, they will be calculated according to the social security law in effect in year T. The rate of return in year T solves the equation $\sum_{i=0}^{N} b_i(1 + r)^{T-i} = \sum_{i=0}^{T} t_i(1 + r)^{T-i}$, where N is the maximum age and $0 < T < N$.

Comment

Henry J. Aaron

Social security annually receives about 5% of gross national product in taxes and pays out roughly the same amount in benefits. In any year there is little overlap between taxpayers and beneficiaries. At some time during their lifetimes, however, most workers are both taxpayers and beneficiaries.

Most economists agree that an annual perspective is not useful for measuring such redistribution as may occur under social security. It is inadequate because any kind of insurance would appear redistributive from an annual perspective, even if premiums and benefits were set according to strict actuarial rules. Thus, redistribution would appear where none was occurring over time or among risk groups.

Hurd and Shoven argue that the lifetime is the appropriate period over which to measure the amount of redistribution that occurs under the social security system. They focus on the lifetime not of individuals but of age cohorts of individuals. They calculate the present value of the total taxes paid by various cohorts and of the benefits that they will receive, discounted at a 3% real interest rate. By focusing on cohorts they deal automatically with the fact that not everyone survives to receive the retirement benefits to which their own earnings entitle them or to which the earnings of others might entitle them.

Under the social security system, of course, death of a covered worker or retiree often triggers survivor benefits for surviving relatives; and early withdrawal from the labor force because of disability, followed by death before age 65, triggers first disability and then survivor benefits. These benefits flow not only to spouses but also to children and sometimes to others. Hurd and Shoven disregard disability and survivor benefits paid to relatives other than surviving spouses; presumably they also exclude the portion of payroll taxes that cover these benefits. In the case of couples of

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different ages, Hurd and Shoven assign to the surviving widow (or widower) the benefits paid after a spouse's death and a portion of the taxes imposed previously on the spouse. They do not explain in their paper how the division of taxes is made, but I assume that they assign a portion of the total taxes paid by the active worker equal to the ratio of the present value of taxes paid to the surviving spouse to the present value of all benefits paid to the surviving spouse and to the couple before the spouse's death. They make no mention of dependents or survivors benefits in addition to those paid to workers and their spouses. After describing the results, I shall comment on the assignment of benefits and taxes in analyzing the distributional consequences of taxes and transfers.

Hurd and Shoven find that the internal rate of return has been handsome for cohorts reaching retirement age in time to be interviewed in the 1969 Retirement History Survey. Couples did better than other aged persons, with internal rates of return of more than 8% and median ratios of benefits to costs of more than 3.3. Whites did slightly better than blacks, despite the progressivity of the benefit formula and the lower average earnings of blacks, because blacks die before receiving benefits more often than do whites.[1] These rates increase somewhat in the 1975 survey, presumably because Congress liberalized benefits in 1972. They decline in the 1979 survey and will continue to decline, unless benefits are liberalized again, because the sustained payment of benefits greater than the growth of the labor force and real wages is not possible in a pay-as-you-go social security system. This fact shows up in the tables presenting results for individual age cohorts, which reveal that older age groups enjoy higher ratios of benefits to costs and higher median rates of return than do younger cohorts. Hurd and Shoven adopt a computational simplification that contributes to this result. They exclude expected tax payments between date of interview and expected retirement and discount expected benefits to present values.

Hurd and Shoven also find that the absolute difference between benefits and costs increases with wealth. The transfer to the top and next-to-the-top cohorts are about equal in 1969, but both are larger than that received by the second quartile, which is larger than that received by the first. Much the same situation obtains in 1975, although the top quartile begins to do a bit better than the one just below it. By 1979, the absolute transfer to the bottom quartile has moved past that going to the second quartile but remains below those of the top two quartiles. One would expect that with the passage of time, as the internal rate of return declined, the pattern of transfers at a 2.5% discount rate would reverse; eventually the bottom wealth classes will receive algebraically larger transfers than do the top wealthy classes. As of now, however, low-wealth workers may receive higher rates of return or higher ratios of benefits to costs than do high-wealth workers; but because the marginal benefit in the social security

system has exceeded the marginal cost (because the benefits to early participants in a pay-as-you-go social security system have overwhelmed everything else), the wealthy receive larger absolute transfers.

One may approach the analysis in this paper from one or more of three standpoints. Are the analytical techniques innovative and worth studying for future use? Are the results novel and interesting? Do the results have clear relevance to important questions of policy?

Methods of Analysis

The methods of analysis that Hurd and Shoven use are well established in most respects. Both Leimer and Petri (1981) and Aaron (1977) analyzed the distributional effects of social security on cohorts. Burkhauser and Warlick (1981) found that the excess of the present value of benefits over costs rose irregularly with permanent income. Like Hurd and Shoven, Aaron also took account of differences in life expectancy by income, race, and education.

Hurd and Shoven emphasize the importance of viewing the effects of social security ex ante with respect to mortality. But this adjustment raises other difficult questions. Ex ante, say at age 18, few people know whether they will reach retirement single, married, widowed, or divorced. Few know with certainty where life's vicissitudes will bring them in the distribution of permanent income. About all that they know for sure is their race, sex, and birthdate. A consistent ex ante calculation would require the specification of the ex ante probabilities not just of death but of all events relevant to the calculation of the present value of social security benefits and taxes.[2] In short, a true ex ante calculation of redistribution is likely to be damnably difficult, and Hurd and Shoven have not done it.

Even worse, such a calculation would shed no light on many of the questions about redistribution in which most of us are interested. As a practical matter, we are interested as well in ex post outcomes and ex post redistribution. We *do* want to know how various income classes fare, how one- and two-earner couples are treated relative to single, divorced, or widowed persons, and so on. To measure ex post redistribution, we need to measure the record of completed payments for people who actually move through the system. It makes sense within such an ex post framework to compare the relative treatment of couples, single persons, widows, and widowers. But it makes no sense within an ex ante framework, unless one is prepared to shoulder the monumental task of calculating ex ante probabilities of marriage, divorce, death of a spouse, and earnings achievement.

One may view the Hurd and Shoven calculations as ex post calculations, except with respect to mortality. But ex post calculations have imperatives of their own—for example, survivors and disability benefits, a topic that Hurd and Shoven try to skirt (like virtually everyone else), raise

similar problems. Despite the progressivity of the social security benefit formula and relatively low average lifetime earnings, blacks according to Hurd and Shoven receive a smaller internal rate of return than do whites.[3] The reason for this result is that mortality rates for blacks are higher than for whites up to about age 65. Blacks, therefore, have a lower probability than whites of claiming retirement benefits. But the fact of higher mortality and the correlated higher incidence of disability means that blacks are disproportionate beneficiaries of survivor and disability benefits. Simply subtracting a proportion of payroll taxes from taxes paid that equals the average cost of survivors and disability benefits does not help at all. The essence of the problem is that complementary programs produce complementary benefits that exactly undo one of the more striking and misusable results.[4] And what sense does it make to compute separate rates of return for widows and widowers separately from those for couples in a life-cycle contest, as widowers and widows, by definition, were once part of a couple and some will yet be. This distinction is a speck of "annual perspective" clogging the gears of a life-cycle calculation.

Thus, the most useful framework for analysis probably is ex post. But proper application requires that one measure all of the benefits a cohort receives. Furthermore, such measurement requires that one hypothesize what would happen in the absence of the program. For example, if social security replaces privately financed transfers, from the covered worker to spouses or other dependents that would be made in the absence of the public program, the benefits as well as the costs accrue to the worker. If the benefits are in addition to those the worker would have provided voluntarily, the benefits accrue to the spouse or dependent and the tax to the worker. Here may be the reason Hurd and Shoven and others have focused on retirement benefits—they accrue to one or both members of a couple which we feel more comfortable treating as a unit in the life-cycle framework. Of course, such benefits may replace or increase intergenerational transfers, as Barro has pointed out. This possibility underscores once again that analysis of redistribution through social security and other programs usually implies a particular underlying framework of utility maximization and makes sense only within it.

Results

The results that this paper generates are not new, but they are an example of a product all too rare in economics, the confirmation of previous findings with a new set of data.[5]

The findings are in the "it's-not-surprising-when-you-think-about-it" class. If benefits rise with earnings, then the first cohort to receive benefits in a pay-as-you-go system will receive very high internal rates of return, and the excess of benefits over costs to that cohort will rise with income and, very likely, with wealth. In a mature pay-as-you-go system, the inter-

nal rate of return will equal the sum of the rates of growth of population and of real wages, subject to variations in life expectancy, labor force participation rates, retirement ages, and other factors that might affect the ratio of the number of active workers to beneficiaries. There will be no transfer component, if benefits and taxes are discounted at this internal interest rate, other than intracohort redistribution that arises from nonproportionality of the benefit formula. Of course, internal rates of return may vary widely over time depending on variations of birth rates, productivity, and other factors, and among households at any given time, depending on the benefit formula and personal characteristics.

Between opening day and maturity, rates of return will drop and, if the benefit formula is progressive, like that in social security, the bonus to high-income (and relatively wealthy) beneficiaries will reverse. Stated this way, the result is not surprising.

Policy

The most important question is, having been shown this result, how much the man on the street or his elected representative would have learned that is relevant to public policy. Hurd and Shoven stated that they think he would have learned a lot: "If [the wealthy retired] have received large windfall gains through the social security system, fairness in restoring the financial soundness of the program would indicate a reduction in their benefits."

I am not sure quite what this statement means, quite apart from the implicit allusion to an accepted metric for measuring fairness. Should benefits be reduced for the 70-year-old newly retired dentist? The 65-year-old formerly disabled steelworker? The 85-year-old rich widow? At least some beneficiaries in each of these classes will be receiving above-average benefits and, as Hurd and Shoven show, above-average net transfers. If their benefits are to be cut, how is it to be done? By a comprehensive wealth test? By an income test and, if so, repeated how often? By a retroactive cut in the benefit formula? Or should the cut be applied only to those who have not yet claimed benefits, presumably on the ground that people should be given some warning? But how much warning? Not 20 years, we are told. One year? Five? Ten?

These questions are rhetorical, but they raise a serious point. As economists we are much and properly concerned with property rights. The Constitution protects certain forms of property from seizure without due process of law. An extensive literature exists analogizing various features of the economic arrangements to property in which people have rights somehow defined. Tax reformers are alert to the problem of capitalization and to the limitations that it places on optimal changes in tax laws. As Feldstein (1976) pointed out, optimal tax reform may depend sensitively on the course of previous tax legislation. Capitalization may take the

form of changes in market prices, which are then ratified by transactions, a possibility that undergirds the saying, sometimes suggestive, sometimes wrong, that an old tax is a good tax. But capitalization may also take the form of investments in human capital or acquired habits that are costly or painful to change. For the same reason that we are cautious in changing taxes that are capitalized or that are embodied in contracts or that may have induced other economic behavior, we should hesitate before we modify transfers on the expectation of which people may have based behavior that is costly or impossible to reverse. That does not mean that benefits once given should never be withdrawn. But it does mean that one should be modest about claiming fairness and that one is obliged to describe how one proposes to achieve an objective, however self-evident its fairness may appear.

In summary, the methods that this paper applies are familiar but subject to important challenge, the results confirm previous findings, and their applicability to public policy is yet to be established.

Notes

1. This fact arises from the higher mortality rates of blacks before age 65. Mortality rates of blacks and whites after age 65 are virtually identical.
2. Even if in some data heaven one might hope to get information sufficient for such calculations, one would not be able to get them from a survey like the Retirement History Survey.
3. This result appears inconsistent with the findings of Frieden et al. (1976) based on actual social security earnings and benefit records. The exclusion of two-earner families in Frieden et al. may resolve this apparent inconsistency.
4. These comments are more mea culpa than criticism, as they apply with just as much force to work I have done as they do to this paper.
5. The other rare but useful scientific contribution is the test of a set of conclusions for robustness, based on slight variations in specification using the same body of data.

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