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5 Inflation Vulnerability, Income, and Wealth of the Elderly, 1969–1979

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5.1 Introduction

The welfare of the elderly in the United States is a major social and political concern for a number of reasons. First, the fraction of the population over sixty-five years of age has increased and is projected to increase dramatically. Second, because of a limited ability to participate in the labor market, the elderly may be particularly harmed by fluctuations in real asset values. Erosion in the financial position of the elderly may have occurred in the 1970s due to the poor performance of stock and bond markets and the unexpected, rapid rate of inflation. Third, the elderly are the beneficiaries of a number of large and growing federal transfer programs. Chief among these is Social Security, Medicare, and Supplemental Security Income (SSI). In combination, these programs are designed to put a floor under the income available to the retired population.

In two previous papers we began to examine how the elderly have fared with the combination of inflation, poor financial market returns, and massive federal programs (Hurd and Shoven 1982b, 1983). In those papers we found the following:

1. The cost of living increased the same percentage for the elderly as for the general population in the 1960s and 1970s. The Consumer Price Index (CPI) exaggerated the increase in the price level for all groups (because of an inappropriately high weight on housing), but the effect of the different consumption bundles of people in different age categories proves to be negligible.

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2. The real income of the elderly rose faster than that of the nonelderly during the 1970s, whether income is measured on a per person or per household basis. This occurred despite the decreased labor force participation of the elderly and the increased labor force participation of the nonelderly.

3. Related to 2 above, even the poor among the elderly improved their position in the last two decades. The percent of elderly below the official poverty line had decreased from 1960 levels by well over half by 1977.

4. The composition of income of the elderly has changed markedly over the period. The biggest changes are the decline in the importance of labor income and the increase in the government-provided health care insurance (income in kind). Old Age Survivors Insurance (OASI) and private pensions have grown somewhat in their share of the elderly's income.

We began a detailed examination of the income and wealth of the elderly and their inflation vulnerability by analyzing the Social Security Administration's Retirement History Survey (RHS). Our earlier work used the 1969–75 waves of that longitudinal survey, as they were the only ones available. This chapter is very much an extension of our earlier work: it uses the full 1969–79 RHS data and explores in depth some of the results we found interesting from the earlier work. In particular, we now tabulate detailed income statements (as well as balance sheets) for the RHS population and subpopulations for 1969, 1975, and 1979. We emphasize these three years, but we use the 1971, 1973, and 1977 files to fill in values that are missing in the three years under examination. In preparing this material, we have changed our use of the data from our earlier papers. While in the past we only examined households that survived in the sample through 1975, we now include all households in each wave (regardless of whether they appear in subsequent surveys). This both expands our sample in 1969 and eliminates a possible bias in our numbers. The extension of the data to 1979 is interesting because by that time the RHS population was sixty-eight to seventy-four years of age and predominately retired. Also, our sample period now encompasses the majority of the inflationary episode of the 1970s. Further, the extension of the data allows us to examine whether elderly households adjusted their portfolios to the inflationary experience of the early part of the decade.

We examine in this paper a number of alternative measures of the vulnerability of the wealth of the RHS population to unexpected changes in inflation and price level. We compute how inflation vulnerability varies across time, by wealth level, and by marital status. Further, we ask how vulnerable the elderly would be if Social Security retirement annuities were not indexed (either implicitly or explicitly). Other measures of how much inflation protection government programs offer are presented. We examine the entire distribution of inflation vulnerability among the elderly. This gives us a picture of how risky the situation is for those whose wealth is the most affected by inflation.

5.2 Data

Our primary data source is the Longitudinal Retirement History Survey. In 1969, 11,153 heads of households who were born in the years 1906 through 1911 were interviewed. The surviving households were reinterviewed every two years through 1979. In this paper we report results for 1969, 1975, and 1979; thus the original heads of the households were ages fifty-eight through sixty-four, sixty-four through seventy, and sixty-eight through seventy-four during these years. Because the original household was reinterviewed even though the original head may have died after 1969, the age of the actual head often falls outside the standard age range. Our results cover all the surviving households regardless of the age of the actual head.

Many income and wealth figures are reported in the RHS. We use comprehensive measures of income and wealth, which we finally aggregate into thirty-seven income categories and forty-two wealth categories. At this level of disaggregation, there will invariably be many invalid responses and missing data items. Had we eliminated observations with missing values in any of the income or wealth categories, the sample would have been reduced until it was almost useless. Therefore, a substantial amount of work and care was devoted to filling in missing values. Our basic operating principle was to use data from other survey years to infer the value in the year of interest. For example, if the respondent indicated he owned a house in 1969, but the value of the house was missing, we inferred the value from the value reported in 1971 with an adjustment for housing inflation. If the 1971 value was missing, we used data from later years. Thus, we used all six surveys even though we only report results for three years. A complete description of the process is given in the appendix. Our aim was to estimate not only the mean values of the income and wealth variables, but the distribution as well; thus, it is important to retain the individual component. If the individual component is stable over time, our procedure will do this.

In some wealth or income categories, only the wealth component or only the income component is given in the RHS. Examples would be the value of a house and the income from an annuity. Wealth was converted to income at a 3 percent real rate of interest, and income was annuitized according to life tables and whether the income was inflation protected or not. Inflation-protected income was discounted at 3 percent. Other income was discounted at 6 percent in 1969, 7.75 percent in 1975, and 9.5 percent in 1979.

Observations are classified according to family type—married, single, or widowed—and in the case of singles, by sex. We report results for each family type.

We used one other source of data: we wanted to account for the implicit income from Medicare and Medicaid, and we did this by finding in offi-

cial data average per elderly Medicare and Medicaid expenditures. The procedure is described in the appendix.

5.3 Income, Wealth, and Inflation

In this section we present the basic results on income, wealth, and inflation vulnerability from the RHS data. Table 5.1 gives the distribution of income for 1969, 1975, and 1979 for all households and for different marital status groups. Income is comprehensively defined to include the insurance value of government-provided health care or insurance and the real implicit return on owner-occupied housing. This latter was simply taken as 3 percent of the market value of the house. The first thing that is apparent in the distributions of table 5.1 is that mean incomes significantly exceed median incomes, indicating that the distribution is skewed towards high incomes. In real terms both mean and median incomes declined for the population over the period. In 1968 dollars, using the Boskin-Hurd (1982) cost of living estimates, the median income for all households was $6,529 in 1968, $5,428 in 1974, and $5,237 in 1978. The average income is $8,246 for 1968, $7,230 for 1974, and $6,768 for 1978. The decline in real income is due solely to the reduced labor force participation of this population as they age. This occurs most dramatically between 1968 when their ages range from fifty-eight to sixty-four and 1974 when they range from sixty-four to seventy. Despite the fall in mean and median real income, the real income of the lower tail of the distribution has increased. This is due to the sharp increase in SSI, Medicare, and Social Security for this population as most of them become age eligible for the programs. In general, the distributions become tighter through time. Another fact displayed in table 5.1 is that the distribution of income of single women is lower than for single men. This was particularly true in 1968, when earnings differentials contributed towards the income differences.

Table 5.2 presents a detailed breakdown of income composition of the RHS sample in 1968. The first striking fact is that earnings are still the major source of income for these people. For all households in the RHS survey in 1969 (while the survey took place in 1969, the income reported is from 1968), labor earnings amount to 76 percent of total income. Pensions and Social Security income are relatively unimportant and, as might be expected, property and capital income are quite concentrated. For instance, while the income of those in the upper 10 percent of the wealth distribution is three times the average, they receive nearly fifty times as much interest and dividends. The poorest 10 percent of the population in terms of wealth have incomes that average only $732; they have little labor income, only $160 for the year on average. This compares with an overall mean labor income of $6,304. The income of single females is less than that of single males, and the difference is more than accounted for in their

Table 5.1 **Income Distribution of Retirement History Survey Population, Ages 58–63 in 1968, 1974, 1978**

Percentile Points	Households			Nonfarm			Couples			Single Males			Single Females		
	1968	1974	1978	1968	1974	1978	1968	1974	1978	1968	1974	1978	1968	1974	1978
5%	793	2,007	3,295	807	1,985	3,266	1,869	3,685	5,710	419	1,732	3,344	266	1,338	2,454
10	1,362	2,711	3,954	1,376	2,698	3,933	3,106	4,801	6,964	882	2,402	3,742	666	1,897	3,308
25	3,745	4,314	5,714	3,358	4,240	5,634	5,546	6,992	9,667	1,753	3,505	4,873	1,435	2,893	4,274
50	6,529	7,494	9,501	6,678	7,450	9,379	8,740	10,270	13,250	4,120	5,405	7,167	3,068	4,312	5,932
75	10,595	12,044	14,608	10,718	11,980	14,443	12,590	15,208	18,682	7,145	8,361	10,704	5,254	6,852	8,902
90	15,689	18,840	22,228	15,736	18,650	21,657	18,447	22,974	28,910	10,697	12,724	15,386	7,841	10,670	13,468
95	21,062	25,483	30,257	21,089	25,129	29,568	25,038	31,426	39,953	13,629	16,879	20,024	9,752	13,506	17,604
Mean	8,246	9,981	12,280	8,325	9,909	12,091	10,569	13,176	16,751	5,270	6,967	9,210	3,829	5,562	7,493
Observations	10,715	8,070	7,137	9,799	7,483	6,610	6,804	4,535	3,552	1,018	805	745	2,893	2,730	2,840

Table 5.2 **Income Statements of the RHS Sample, 1968 (means in current dollars)**

	All	Nonfarm	10% Wealth Tail	90% Wealth Tail	Couples	Singles	Single	
							Males	Females
Income from								
1. House	344	310	95	881	433	340	315	347
2. Farm	140	54	8	618	192	49	77	39
3. Business	111	134	3	824	165	18	29	14
4. Other real property	325	329	80	1,455	400	194	175	200
5. Interest received	410	419	30	2,191	494	263	246	268
6. Interest paid	11	11	5	36	15	4	8	3
Income from								
7. Pensions and annuities	292	311	53	505	328	230	282	212
8. SSI	0	0	0	0	0	0	0	0
9. Welfare and other transfers	107	111	113	209	98	123	106	129
10. Insurance value of Medicare-Medicaid	0	0	0	0	0	0	0	0
11. Social Security	216	220	183	84	199	246	164	275
12. Transfers from relatives	7	7	12	1	4	13	2	17
13. Labor earnings	6,304	6,459	160	19,301	8,270	2,884	4,039	2,477
14. Total income	8,246	8,325	732	26,034	10,567	4,204	5,270	3,829
Observations	10,715	9,799	1,072	1,072	6,804	3,911	1,018	2,893

respective labor earnings. The mean 1968 labor earnings of the single females in the RHS sample is 63 percent of the males, a figure that is approximately the female/male average wage ratio for any date on record. It might be noted that Social Security is higher on average for single women than single men. This is probably because widows can begin collecting retirement annuities at age sixty and, therefore, more of them are age eligible than the rest of the singles.

Table 5.3 contains the same information for 1974 income. Earnings account for only 37 percent of income for the sample as a whole. As before, labor earnings form a lower fraction of income for the poor than the wealthy. It appears that people who are wealthy tend to work longer. Even in the age range sixty-four to seventy years, over half the income of those in the upper 10 percent wealth tail is derived from labor earnings. The income flows from pensions and Social Security are much larger in 1974 than 1968 because of greater eligibility and retirement. By 1974 single women no longer receive more Social Security than single males. This is presumably because both are now age eligible for the program. The income of those in the lowest wealth tail is still very low ($1,820 on average), but has increased significantly relative to the mean income level. This is because of the large government transfer programs that are age tested.

Table 5.4 shows the 1978 income statements. Earnings continue to decline in importance, accounting for 17 percent of income on average. Earnings are much more important for the wealthy, producing 28 percent of their income. Single male incomes, which at younger ages exceeded female incomes because of labor earnings, are, by 1978, greater than incomes of women due in large part to larger pensions. The combination of income from Social Security, SSI, and Medicare is much more evenly distributed than other income. Therefore, one does get the impression that these programs in combination somewhat reduce inequality among the elderly. Private pensions on the other hand seem at least as concentrated as total income. Those in the upper tail get 15 percent of their income from pensions and annuities, while this source accounts for only 4 percent of the income of those in the lowest 10 percent wealth tail.

Table 5.5 begins to present the wealth data. It shows the mean wealth and income levels for those reporting positive values and the percentage of those reporting positive values. This permits us to separate the change in mean value into a change in "participation" and a change in mean value of those participating. The table indicates that the RHS population did not sell their homes as they aged. Roughly 70 percent of the households own their own homes for the full ten years. The mean value of their homes increased faster than the general price level, as is well known. The homes of the elderly increased in value at about the same rate as the increase in the home ownership index of the CPI: from table 5.5 we find that market values of houses increased by 123 percent between 1969 and 1979; the

Table 5.3 **Income Statements of the RHS Sample, 1974 (means in current dollars)**

	All	Nonfarm	10% Wealth Tail	90% Wealth Tail	Couples	Singles	Single	
							Males	Females
Income from								
1. House	565	503	137	1,372	740	340	315	347
2. Farm	139	66	−6	746	190	74	115	61
3. Business	75	76	2	561	121	16	18	15
4. Other real property	475	454	33	2,549	682	209	155	225
5. Interest received	956	973	43	4,725	1,261	565	639	543
6. Interest paid	16	16	28	52	22	8	10	7
Income from								
7. Pensions and annuities	1,290	1,351	91	3,388	1,670	801	1,174	691
8. SSI	63	65	226	19	31	105	82	112
9. Welfare and other transfers	156	157	95	231	171	136	122	95
10. Insurance value of Medicare-Medicaid	536	533	270	427	640	402	430	394
11. Social Security	2,033	2,048	834	1,620	2,415	1,543	1,660	1,509
12. Transfers from relatives	12	12	12	10	6	20	3	25
13. Labor earnings	3,697	3,687	112	16,208	5,270	1,679	2,198	1,526
14. Total income	9,981	9,909	1,820	31,804	13,176	5,882	6,967	5,562
Observations	8,070	7,483	807	807	4,535	3,535	805	2,730

Note: Convert 1974 dollars to 1968 dollars by multiplying by .724 (Boskin-Hurd index).

Table 5.4 **Income Statements of the RHS Sample, 1978 (means in current dollars)**

	All	Nonfarm	10% Wealth Tail	90% Wealth Tail	Couples	Singles	Single	
							Males	Females
Income from								
1. House	894	801	166	2,388	1,194	596	566	604
2. Farm	229	102	5	1,391	299	159	334	113
3. Business	73	77	−10	605	111	34	57	29
4. Other real property	558	534	99	2,867	813	305	308	305
5. Interest received	1,456	1,476	55	7,890	2,082	836	922	814
6. Interest paid	12	12	5	67	19	5	9	4
Income from								
7. Pensions and annuities	1,790	1,874	110	5,785	2,478	1,107	1,650	965
8. SSI	102	100	467	36	58	145	102	156
9. Welfare and other transfers	151	152	83	458	173	129	176	117
10. Insurance value of Medicare-Medicaid	1,388	1,375	703	1,580	1,813	967	1,054	944
11. Social Security	3,590	3,618	1,203	4,191	4,579	2,610	2,833	2,551
12. Transfers from relatives	12	13	8	15	5	19	2	23
13. Labor earnings	2,050	1,981	70	10,690	3,164	947	1,212	878
14. Total income	12,280	12,091	2,954	37,830	16,751	7,850	9,210	7,493
Observations	7,137	6,610	714	714	3,552	3,585	745	2,840

Note: Convert 1978 dollars to 1968 dollars by multiplying by .551 (Boskin-Hurd index).

Table 5.5 **Mean Wealth and Income over Households with Positive Values, RHS Sample (current dollars)**

	1969		1975[a]		1979[b]	
	% with Positive Values	Mean	% with Positive Values	Mean	% with Positive Values	Mean
A. Wealth Components						
House, market value	67.3	19,754	70.7	28,640	70.6	43,972
House, mortgage	20.8	7,168	15.9	8,694	11.8	10,522
Farm, market value	10.1	50,106	7.6	69,632	6.8	120,082
Farm, mortgage	2.7	12,558	1.5	23,336	0.9	51,181
Business, market value	8.7	50,595	5.3	62,810	3.6	87,229
Other property, market value	17.5	22,950	15.8	33,034	12.9	44,497
U.S. bonds	25.6	3,017	21.6	4,308	17.9	5,006
Stocks/bonds/shares	21.5	21,605	23.4	25,110	21.9	30,401
Loan assets	9.4	8,242	10.8	14,713	10.1	19,912
Checking accounts	61.9	1,042	70.2	1,212	75.2	1,383
B. Income Components						
Government pensions	8.1	1,992	13.6	4,212	15.5	5,574
Private pensions	5.4	1,970	23.8	2,450	26.6	2,823

[a]Convert to 1969 dollars by multiplying by .696 (Boskin-Hurd index).

[b]Convert to 1969 dollars by multiplying by .523 (Boskin-Hurd index).

home ownership index in the CPI increased by 126 percent over that period. The percentage of the households holding a mortgage declined, as did the percentage owning farms and businesses. The rapid rise in farm values between 1975 and 1979 is clearly shown. There was a decrease in the fraction of the RHS population who owned U.S. bonds. A number of reasons could account for this. First, savings bonds may have been accumulated during the working period and decumulated during retirement in accordance with life-cycle theory. Second, the real rates of return on government securities were very low in both absolute terms and in comparison with other instruments. Finally, this was a period of financial deregulation. Banks, savings and loans, and other financial organizations offered a wide variety of new accounts which made direct participation in U.S. security markets less attractive. Participation in the stock and bond markets stayed roughly constant with just over one-fifth of the elderly being involved. Those who did participate, however, had substantial investments, averaging over $30,000 in 1979. The participation in checking accounts is high and increasing. One theory would be that people open checking accounts to facilitate the automatic deposit of federal transfer checks. This practice is actively advocated by Social Security. The average balance in checking accounts is relatively modest and actually falls in real terms.

Part B of table 5.5 shows participation and average values (flows) conditional on participation in government and private pensions. Naturally, participation increases as this population ages and retires. By 1979, 26.6 percent of the population is receiving a private pension and 15.5 percent a government pension. Note that the amount of government pensions increases far more than private pensions. For example, between the figures reported in 1975 and 1979 (for 1974 and 1978 income, respectively) the average government pension grows 32.3 percent, while inflation was 31.4 percent. Private pensions, on the other hand, go up only 15 percent. In both the cases of private and public pensions, some of the increase is due to those who retired relatively late (between 1975 and 1979) receiving above-average pension amounts. This occurs because these people have a longer tenure on the job, and their pensions are for the most part inflation protected while they continue to work. The evidence of table 5.5 seems completely consistent with the findings of Clark, Allen, and Sumner (1983) that postretirement increases in private pension benefits offset two-fifths of the rise in the Consumer Price Index from 1973 to 1979. Later, when we examine the inflation vulnerability of the elderly, we will assume that private pensions do not adjust to inflation at all. It should be noted that this assumption exaggerates the inflation vulnerability of the elderly.

In table 5.6 we present average asset and liability holdings in 1969 over one entire sample and over a number of subsamples. The pensions and annuities figures are the capitalized value of the flow either reported as actu-

Table 5.6 **Balance Sheet of the RHS Sample, 1969 (mean values in current dollars)**

	All	Nonfarm	10% Wealth Tail	90% Wealth Tail	Couples	Singles	Single	
							Males	Females
1. Net house	11,481	10,342	685	35,052	14,460	6,298	5,238	6,671
2. Net farm	4,655	1,795	−18	31,814	6,402	1,617	2,560	1,286
3. Net business	3,704	3,787	−941	30,980	5,485	606	973	477
4. Net other property	5,233	5,354	1,241	24,115	6,383	3,233	3,176	3,253
5. U.S. bonds	765	798	35	3,168	890	547	789	462
6. Corporate stocks and bonds	4,694	4,961	56	35,449	6,266	1,959	2,083	1,915
7. Loan assets	781	743	35	5,047	954	479	631	425
8. Bank accounts	4,417	4,414	318	15,975	5,054	3,309	3,226	3,338
9. Nonproperty debts	(366)	(355)	(237)	(1,492)	(492)	(148)	(276)	(103)
10. Pensions and annuities	13,663	14,523	318	55,924	14,023	13,038	13,730	12,795
11. SSI	0	0	0	0	0	0	0	0
12. Welfare and other transfers	935	976	492	3,032	758	1,243	863	1,376
13. Medicare-Medicaid	7,795	7,752	5,520	8,878	9,194	5,360	4,301	5,733
14. Social Security	18,485	18,769	6,605	23,027	23,021	10,595	9,994	10,807
15. Transfers from relatives	331	352	136	308	28	858	716	908
16. Total nonhuman wealth	76,573	74,211	14,243	271,275	92,426	48,993	48,003	49,341
17. Total human wealth	28,440	28,848	9,312	54,632	38,177	11,500	18,599	9,002
18. Total wealth	105,013	103,059	23,555	325,907	130,602	60,492	66,602	58,343
Observations	10,715	9,799	1,072	1,072	6,804	3,911	1,018	2,893

ally received or anticipated. The SSI number is zero since the program was not yet in effect. Social Security and Medicare wealth are again the capitalized flows for which households qualify based on their work history to date. Human wealth is the capitalized value of future labor earnings discounted for time, mortality, and labor force participation. The details of these calculations are described in the appendix. The mean wealth is $105,013 of which $28,440 is the present value of future earnings and $26,280 is Social Security and Medicare. The most striking information in the table, however, may be the distribution of wealth. The average wealth of the poorest 10 percent of the population is $23,555 and, of that, $9,312 is human wealth. Fully 89 percent of their nonhuman wealth is composed of Social Security, Medicare and Medicaid, and welfare and other transfers. On average, all other assets sum to only $1,626 for this group. The level of human wealth is very low: the poor in nonhuman wealth are also poor in future labor earnings. Apparently there is a persistent pattern of low lifetime income that results, naturally, in very little wealth. In contrast, the transfer programs just listed amount to 36 percent of the wealth of the whole population and only 13 percent of the wealth of those in the upper 10 percent of the wealth distribution.

Those in the wealthiest 10 percent of the RHS sample in 1969 have an average 3.1 times as much wealth as the entire population. Their average housing wealth is the same multiple of the overall average housing wealth, but they have farms and businesses that are 7.5 times as valuable as the population average, and have 7.6 times as much invested in stocks and bonds. Private pension wealth is roughly as concentrated in the upper wealth tail as is wealth in general. In absolute terms, the wealthy get more welfare and other transfers than the population as a whole. This is probably due to their receipt of more unemployment compensation and disability payments. The table indicates that couples are roughly twice as wealthy as singles, and that among singles, males and females have about the same nonhuman wealth. Males, on average, can expect more labor earnings (human capital). Even if females had the same wealth figures, they would in some sense be financially worse off since they must use this money to finance a longer expected lifetime.

Table 5.7 contains the balance sheets for the same subpopulations of the RHS sample as table 5.6, but the figures are for 1975. We should note that the composition of the subpopulations changed between 1969 and 1975; in particular, there was a growing number of singles because of the death of a spouse. Perhaps the first thing one notices about this table is that human wealth becomes small. On average, the present value of expected labor earnings amounts to only 6 percent of total wealth. Nonhuman wealth increases slightly faster than the CPI. Using that index to deflate the 1975 total nonhuman wealth figure to 1969 dollars results in a $78,900 figure, some 3 percent higher than nonhuman wealth in

Table 5.7 **Balance Sheet of the RHS Sample, 1975 (mean values in current dollars)**

	All	Nonfarm	10% Wealth Tail	90% Wealth Tail	Couples	Singles	Single	
							Males	Females
1. Net house	18,828	16,775	1,232	56,031	24,680	11,321	10,494	11,565
2. Net farm	4,631	2,203	−636	34,329	6,326	2,457	3,845	2,048
3. Net business	2,494	2,524	−216	20,866	4,033	518	612	490
4. Net other property	5,807	5,828	299	33,171	8,314	2,591	2,667	2,566
5. U.S. bonds	931	940	40	3,255	1,120	689	880	633
6. Corporate stocks and bonds	5,878	6,197	44	44,303	8,366	2,686	3,199	2,535
7. Loan assets	1,586	1,555	45	9,024	2,205	792	850	775
8. Bank accounts	9,270	9,243	621	32,793	11,326	6,632	6,922	6,546
9. Nonproperty debts	(519)	(533)	(719)	(262)	(335)	(241)	(1,341)	(1,593)
10. Pensions and annuities	16,842	17,362	1,439	61,814	22,619	9,430	12,813	8,433
11. SSI	816	841	2,154	165	461	1,271	805	1,409
12. Welfare and other transfers	1,140	1,148	625	1,933	1,158	1,117	1,350	1,048
13. Medicare-Medicaid	11,985	11,895	8,362	14,270	14,961	8,167	6,878	8,547
14. Social Security	36,144	36,365	11,755	49,783	47,700	21,319	20,295	21,621
15. Transfers from relatives	103	102	126	181	49	172	20	217
16. Total nonhuman wealth	115,935	112,425	25,171	361,656	152,983	68,921	71,289	66,840
17. Total human wealth	7,340	7,232	1,804	19,936	10,396	3,419	3,755	3,319
18. Total wealth	123,275	119,657	26,975	381,592	163,379	72,348	75,044	70,159
Observations	8,070	7,483	807	807	4,535	3,535	805	2,730

Note: Convert 1975 dollars to 1969 dollars by multiplying by .969 (Boskin-Hurd index).

1969. Pension wealth drops in real terms (partly due, of course, to shorter remaining life expectancy), but Social Security wealth more than offsets this decline. Bank accounts grow, perhaps due to the aforementioned easing of regulations and automatic deposit of federal transfer payments.

The poorest group still has very little nontransfer wealth. Social Security, SSI, Medicare and Medicaid, and welfare amount to 91 percent of their nonhuman wealth. Other assets amount to only $2,275, of which $1,232 is house equity. The richest 10 percent continue to have a disproportionate amount of farm, business, and stock and bond wealth. The institution of SSI equalizes wealth somewhat, since unlike other transfer programs, the wealthy seem to be effectively excluded from this program. Couples now have slightly more than twice as much as singles, and among the singles, the men have a little more wealth than the women.

Table 5.8 gives the analogous numbers for 1979. By this time, human wealth is trivial, barely accounting for 2 percent of total wealth. Social Security accounts for 28 percent of total wealth, about the same percentage as in 1975 and sharply up from the 18 percent figure of 1969. The fact that government transfer programs make up the vast majority of the wealth of the poor amongst the elderly continues to be true. In 1979, SSI, Social Security, Medicare and Medicaid, and welfare total 86 percent of the nonhuman wealth of those in the lowest 10 percent of the wealth distribution. The same programs amount to 19 percent of the nonhuman wealth of those in the upper 10 percent tail. The patterns reamin roughly the same. The mean real value of nonhuman wealth declines, though very little. The 1979 figure expressed in 1975 dollars would be $113,000 versus the 1975 figure of almost $116,000. Such a trivial decline seems inconsistent with the life-cycle theory since these people have "consumed" at least 20 percent of their life expectancy between 1975 and 1979. In fact, the decline in Social Security wealth (due exclusively to the aging of the population) more than accounts for the decline in total wealth. Other assets that decline in real value are pensions and annuities, and stocks and bonds. Houses, bank account balances, and Medicare wealth all grow at rates faster than inflation.

Tables 5.9 and 5.10 give a more complete picture of the wealth distributions in 1969, 1975, and 1979. The former shows the distributions of total wealth (including human capital) and the latter includes only nonhuman wealth. The first point is that the wealth distributions changed far less from 1969 to 1979 than did the income distributions in table 5.1. This is because the 1969 wealth figures include the capitalized expected value of assets (such as Social Security and Medicare), which generated no current income in 1969. Further, there is only a weak link between human capital and 1969 labor income because retirement age varies widely and a six-year age difference occurs between some of the households in the sample. One

Table 5.8 **Balance Sheet of the RHS Sample, 1979 (mean values in current dollars)**

	All	Nonfarm	10% Wealth Tail	90% Wealth Tail	Couples	Singles	Single	
							Males	Females
1. Net house	29,784	26,704	1,418	94,819	39,792	19,868	18,864	20,131
2. Net farm	7,619	3,389	46	59,715	9,969	5,292	11,147	3,756
3. Net business	2,418	2,559	−836	22,505	3,699	1,149	1,901	951
4. Net other property	8,969	9,005	1,974	41,961	12,409	5,561	5,099	5,683
5. U.S. bonds	897	920	32	2,963	1,131	665	924	597
6. Corporate stocks and bonds	6,654	6,975	92	46,756	10,330	3,010	3,848	2,791
7. Loan assets	2,020	2,028	35	12,689	2,925	1,123	1,211	1,100
8. Bank accounts	13,214	13,026	775	49,455	17,769	8,701	9,675	8,446
9. Nonproperty debts	(388)	(411)	(230)	(2,192)	(621)	(157)	(300)	(120)
10. Pensions and annuities	17,304	18,017	1,552	57,327	24,839	9,838	14,115	8,716
11. SSI	1,157	1,138	3,503	439	777	1,534	853	1,713
12. Welfare and other transfers	1,093	1,099	522	3,037	1,192	996	1,320	911
13. Medicare-Medicaid	17,836	17,717	11,919	21,760	23,429	12,294	9,875	12,929
14. Social Security	43,767	44,008	14,240	64,131	60,886	26,805	25,346	27,188
15. Transfers from relatives	93	99	51	12	46	140	15	173
16. Total nonhuman wealth	152,437	146,273	35,094	475,378	208,571	96,820	103,894	94,964
17. Total human wealth	3,876	3,850	982	14,320	6,095	1,677	1,228	1,795
18. Total wealth	156,313	150,124	36,076	489,698	214,666	98,497	105,122	96,759
Observations	7,137	6,610	714	714	3,552	3,585	745	2,840

Note: Convert 1979 dollars to 1969 dollars by multiplying by .523 (Boskin-Hurd index).

Table 5.9 **Total Wealth Distribution of RHS Sample (current dollars)**

Percentile Points	All Households	Nonfarm	Couples	Singles	Single	
					Males	Females
			1969			
5%	20,262	20,511	37,563	14,483	12,779	14,792
10	27,605	27,626	48,584	18,176	17,011	18,648
25	47,261	46,911	71,420	27,719	27,489	27,756
50	82,512	81,793	102,684	45,088	51,889	42,901
75	124,969	122,889	146,107	75,155	85,527	71,018
90	180,363	175,591	210,156	107,705	120,700	103,133
95	239,950	232,945	287,589	132,828	156,118	129,131
Mean	105,012	103,059	130,602	60,492	66,602	58,343
			1975[a]			
5%	28,247	28,061	57,993	21,640	19,876	21,942
10	35,065	34,664	68,978	27,228	25,014	27,949
25	55,931	54,329	94,035	36,702	36,003	36,909
50	96,674	94,528	130,140	54,650	55,402	54,527
75	148,093	144,572	179,729	86,580	92,078	85,603
90	217,507	208,472	264,715	130,659	133,682	128,779
95	294,769	279,378	365,962	170,862	178,758	169,714
Mean	123,275	119,657	163,379	72,340	75,044	70,159

Table 5.9 (continued)

Percentile Points	All Households	Nonfarm	Couples	Singles	Single	
					Males	Females
			1979[b]			
5%	37,584	37,361	78,933	32,776	30,743	33,211
10	45,386	44,848	94,739	37,880	35,377	38,838
25	69,327	67,576	124,680	49,186	46,012	49,941
50	121,241	118,254	170,707	72,897	69,547	73,558
75	185,760	180,403	233,645	117,259	120,099	116,833
90	279,654	263,573	357,247	172,804	174,121	170,692
95	388,594	353,695	499,112	236,479	258,972	232,869
Mean	156,313	150,124	214,666	98,497	105,122	96,789

[a]Convert to 1969 dollars by multiplying by .696 (Boskin-Hurd index).

[b]Convert to 1969 dollars by multiplying by .523 (Boskin-Hurd index).

Table 5.10 **Nonhuman Wealth Distribution of RHS Sample (current dollars)**

Percentile Points	All Households	Nonfarm	Couples	Singles	Single	
					Males	Females
			1969			
5%	15,982	16,171	27,282	11,835	10,793	12,357
10	21,169	21,116	33,139	14,747	13,431	15,494
25	33,527	33,239	45,780	21,413	19,154	22,305
50	54,741	53,730	65,808	33,340	31,108	33,715
75	86,361	84,396	99,586	57,412	64,872	55,101
90	131,994	126,522	152,874	92,056	90,406	92,385
95	177,749	167,687	211,976	114,857	114,702	115,161
Mean	76,573	74,211	92,426	48,993	48,003	49,341
			1975[a]			
5%	26,759	26,727	53,944	20,828	19,581	21,091
10	33,977	33,533	64,986	25,970	24,422	26,744
25	52,591	51,097	88,194	35,532	34,554	35,815
50	90,604	88,488	121,753	51,577	52,918	51,147
75	139,102	136,022	168,309	81,328	82,960	80,769
90	204,432	196,808	247,111	125,958	131,425	122,620
95	274,016	259,235	340,658	162,816	169,453	162,073
Mean	115,935	112,425	152,983	68,921	71,289	66,840

Table 5.10 (continued)

Percentile Points	All Households	Nonfarm	Couples	Singles	Single	
					Males	Females
			1979[b]			
5%	37,089	36,736	76,629	31,895	30,560	32,787
10	44,982	44,283	91,592	37,306	35,115	38,122
25	68,247	66,308	121,814	48,414	45,493	49,363
50	118,579	115,946	166,879	71,866	68,885	72,356
75	181,608	176,269	228,197	115,149	116,982	114,667
90	272,437	257,016	347,480	167,104	173,301	165,947
95	380,039	341,956	480,873	233,451	257,920	229,946
Mean	152,437	146,274	208,571	96,820	103,894	94,964

[a]Convert to 1969 dollars by multiplying by .696 (Boskin-Hurd index).

[b]Convert to 1969 dollars by multiplying by .523 (Boskin-Hurd index).

notices in both tables 5.9 and 5.10 that median wealth figures are far below the mean. There is a large dispersion in the wealth distribution, slightly more so with singles than with couples. Among singles, the female wealth distribution is slightly more compact than that for males. All the total wealth distributions of table 5.9 become more compact in real terms through time. For instance, the lower five percentile points remain about constant whereas the median and ninty-five percentile points fall considerably in real terms. The fall of these higher percentile points in real terms is partly due to the decline in human capital wealth. The big change occurs between 1969 and 1975 when average human wealth falls from $28,440 to $7,340. By 1979 female singles have a higher median wealth than males, although a lower mean wealth. This, of course, is just another reflection of the somewhat more compact wealth distribution of single women. By 1979 it would seem that a substantial fraction of the RHS population, whose ages range from sixty-eight to seventy-four years at that time, are reasonably well-off financially. This is particularly true for couples where the top half has more than $170,707 in wealth and the top 10 percent more than $357,247.

Table 5.10 also shows that the real nonhuman wealth position of each family type improves over time for the entire wealth distribution. That is, not only does median real wealth of couples increase, but the five percentage and ninety-five percentage points of the distribution increase in real terms. The same is true of the wealth distributions of single males and single females. Considering the shorter life expectancy required to be financed by nonhuman assets, it appears that people in all parts of the wealth distribution gain between 1969 and 1975 and between 1975 and 1979.

Table 5.11 shows median nonhuman wealth by age for 1969, 1975, and 1979 for the entire sample and particular subsamples. The numbers are weakly supportive of the life-cycle theory. First, notice that wealth generally increases with age in 1969, where the oldest are closest to retirement, and decreases with age in 1979, where almost all are retired but the oldest have lower wealth. This effect in 1979 is partly or perhaps solely due to the reduced annuity value of Social Security, other transfers, and private pensions for the older members of the cohort because of their shorter expected remaining life. Nonetheless, this is the pattern the life-cycle theory predicts. Also consistent is the fact that the youngest members of each cohort had the largest real wealth gain between 1969 and 1975 and also between 1975 and 1979. This is partly due to the fact that they were more likely to be working during this period and hence more likely to benefit from the double indexing of Social Security.

Table 5.12 provides information regarding the correlation of income and wealth for each of the three years. The numbers shown are cross-tabulations of income and wealth quartiles in absolute frequencies; for example, the upper-left-hand-corner number indicates that 18.3 percent of

Table 5.11 **Median Nonhuman Wealth by Age and Marital Status**

Age in 1969	58	59	60	61	62	63	64
All							
1969	49,874	53,352	53,367	54,138	55,920	56,913	59,929
1975	92,732	94,095	97,081	93,409	91,857	87,374	89,027
1979	126,155	129,497	129,958	121,519	114,805	114,888	106,672
Couples							
1969	61,451	63,166	63,285	65,626	67,247	70,282	68,405
1975	119,579	119,531	123,262	123,811	123,762	118,463	120,596
1979	170,611	172,411	171,060	168,131	165,077	161,450	154,020
Singles							
1969	28,966	31,113	30,457	34,629	34,839	34,594	34,363
1975	57,711	52,188	49,607	49,499	50,488	48,744	48,318
1979	80,609	73,784	65,989	69,607	66,587	64,917	61,617
Single males							
1969	24,630	31,116	29,553	29,382	32,536	35,815	29,649
1975	46,043	58,801	52,800	49,437	55,973	50,240	55,879
1979	76,098	84,656	69,829	61,084	75,468	65,176	75,456
Single females							
1969	30,262	31,109	31,063	35,637	35,634	34,238	34,768
1975	60,880	51,005	48,811	49,507	50,084	47,616	47,027
1979	83,730	70,440	63,869	72,770	65,989	64,658	60,050

Table 5.12 **Cross-Tabulation of Income Quartiles by Total Wealth Quartiles, 1969, 1975, 1979 RHS Sample**

Wealth Quartiles	Income Quartiles			
	0–25%	25–50%	50–75%	75–100%
	1969			
0–25%	18.3	6.2	0.5	0.1
25–50%	3.9	13.6	6.8	0.7
50–75%	2.2	3.6	13.0	6.0
75–100%	0.6	1.4	4.7	18.2
	1975			
0–25%	18.8	5.2	0.8	0.2
25–50%	5.0	13.5	5.4	1.1
50–75%	0.9	5.4	13.5	5.3
75–100%	0.3	1.0	5.4	18.4
	1979			
0–25%	19.2	5.2	0.5	0.1
25–50%	4.8	14.0	5.6	0.7
50–75%	0.9	5.2	14.0	5.0
75–100%	0.2	0.6	5.0	19.3

Note: Entries are percentage of total population in each cell.

the population in 1969 is in both the lower-income and -wealth quartile. Another way of saying the same thing is that 73.2 (or four times 18.3) percent of those in the lowest-income quartile are also in the lowest-wealth quartile. One can see from the tables that income is a good predictor of wealth at the extremes. That is, those with high income are likely to have high wealth, and those with low incomes, low wealth. The off-diagonal corners are almost nonexistent; for example, almost no one in the top income quartile is in the bottom wealth quartile. The concentration along the diagonal is high (63.1 percent in 1969 are in the same income and wealth quartiles, 64.2 in 1975, and 66.5 in 1979) and increases with time. The reason that income becomes a better proxy for wealth is that nonpaying retirement assets are fewer in 1979 and labor force participation has greatly declined.

We next investigate the vulnerability of the wealth position of the elderly to unanticipated changes in the price level and the inflation rate. As we mentioned in the introduction, the elderly may be particularly harmed by inflation because of their inflexibility in not being able to work. Further, a common and lasting impression is that the elderly often have to make do on fixed nominal incomes. To investigate the inflation vulnerability of the RHS population, we have constructed a number of mea-

sures. All of them classify assets and liabilities into three categories: those that offer a real or indexed return and are therefore protected from unanticipated price changes or inflation; those that offer fixed nominal returns and hence whose real value is reduced by inflation; and those whose real values increase (or real liabilities decrease) with inflation. Our basic classification is shown in table 5.13, although we do investigate the vulnerability of the wealth of the elderly when common stocks and even Social Security are fixed nominal assets. If someone has a nominal asset and prices take an unexpected and once-and-for-all 1 percent jump, the real value of that asset will be 1 percent lower. However, the effect of a 1 percent change in inflation and nominal interest rates (via a Fisher effect) on real wealth values depends on the maturity of the nominal asset. A long-term bond may easily and immediately lose 6 to 8 percent of its value if interest rates climb 1 percent. In table 5.13 we list the sensitivity of the value of nominal assets and liabilities to an unexpected 1 percent change in the long-term nominal interest rate. The numbers differ by year because of differences in the base interest rate and the duration of the assets. For example, private pensions become a shorter asset with the passage of time as remaining life expectancy falls. Table 5.13 indicates that in 1969, a 1 percent increase in the nominal interest rate would have reduced the value of a nominal pension claim for the RHS population by 9.4 percent. This sensitivity to nominal interest rates is only 4.2 percent by 1979. A detailed explanation of table 5.13 is given in the fourth section, "Calculation of Inflation Vulnerability," of the appendix.

Our first measure of vulnerability (V_1) measures the percentage loss in real wealth per percentage of unanticipated increase in the price level. It is simply defined as nominal assets less nominal liabilities (the sum of category B entries in table 5.13 less those in category C) divided by total nonhuman capital net worth. The idea is that the real value of nominal assets and liabilities declines point for point with unanticipated jumps in the price level. A V_1 value of zero would mean that the household is completely protected against price level jumps, whereas an index of one would indicate that the household's real wealth declines 1 percent for each 1 percent rise in the price level. V_2, our second measure, differs only in that it treats common stocks as nominal assets and, therefore, places them in category B. Theoretically, stocks represent a claim to the income flows of real capital, and unanticipated increases in the price level should increase their real value to the extent the company is leveraged. That is, it is the stockholders who should gain at the expense of the bondholders. The performance of the U.S. stock market in the past seventeen years is such that one would not want to carry this argument too far, and hence the calculation of V_2.

The third measure, V_3, differs from the first two in that it attempts to measure the sensitivity of the wealth position of the elderly to an unex-

Table 5.13 Inflation Vulnerability of Assets and Liabilities

A. Protected from Price Level Shocks and Inflation

Social Security
Medicare-Medicaid
Transfer payment benefits
Houses[a]
Other physical assets
Common stocks[b]

B. Vulnerable to Price Changes and Inflation (Financial Assets)

	Price Sensitivity to Inflation Change		
	1969	1975	1979
U.S. bonds	3.5	2.4	3.4
Corporate bonds	8.0	6.1	5.9
Private pensions	9.4	5.0	4.2
Loan assets	1.0	1.0	1.0
Bank accounts	1.0	1.0	1.0

C. Gain from Price Changes and Inflation (Financial Liabilities)

	Price Sensitivity to Inflation Change		
	1969	1975	1979
Mortgage liabilities	6.4	6.1	4.2
Other debts	2.5	2.5	2.5

[a]There is a theoretical reason for thinking that houses are overindexed—the value of houses will rise faster than inflation due to their tax treatment. Thus, our vulnerability measures may overstate true vulnerability.

[b]We examine some inflation vulnerability statistics where common stocks are considered in class B, i.e., vulnerable to unexpected price changes.

pected increase in the inflation rate and the long-term nominal interest rates. We assume a strict point-for-point Fisher effect. The difference between this vulnerability and V_1 and V_2 is that for V_3 the maturity of assets is important. For example, a 1 percent price level increase would depress the real value of a consol by 1 percent. However, a 1 percent increase in inflation that drove interest rates from 7 to 8 percent would immediately reduce the value of a consol by 12.5 percent. We attempt to calculate in V_3 the immediate fall in real wealth as a fraction of total nonhuman wealth for an unexpected one point increase in inflation.

The vulnerability of assets listed in table 5.13 to price level shocks is zero for those in category A, plus one for those in category B, and minus one for category C. Their vulnerability to inflation rate shocks is again zero for assets in category A, the numbers shown in the table for category B, and minus the numbers shown for category C. The vulnerability of a

portfolio is the weighted average of the vulnerability of the assets in the portfolio where the weights are the relative importance of the assets. Vulnerability will be low if either assets in category A are relatively large or if those in category C offset those in category B.

Table 5.14 displays the median vulnerability figures for the three measures with respect to three different wealth bases. Each measure is the ratio of the loss in real wealth caused by a 1 percent change in price level (V_1 and V_2) or inflation (V_3) to a particular wealth measure (total nonhuman wealth, nonhuman, non-Social Security wealth, and nonhuman, nontransfer wealth). We also calculate what the price and inflation vulnerability of the nonhuman wealth of the elderly would be if Social Security were not indexed. This presumes that households would not adjust their portfolios to such a change in regimes. If the government simply announced that Social Security were no longer indexed, the possibilities for the existing elderly to alter greatly their wealth portfolio is probably limited, so our assumption may not be too far off the mark.

Concentrating first on the vulnerability of total nonhuman wealth (the first set of measures in table 5.14), we see that median vulnerability is low by all measures. For example, both V_1 and V_3 measure .034 for 1969, meaning that a 1 percent inflation or price shock would reduce real wealth only 0.34 percent. V_2, which treats the stock market as vulnerable to price shocks, still only has a median value of .042. The measures' increase over time may be due to the decrease in mortgage liabilities in the population. Among singles, men are more vulnerable than women. This is due to the higher private pension wealth of men and their lower Social Security and Medicare-Medicaid wealth figures. The vulnerability measures are, thus, consistent with the wealth composition figures of tables 5.6–5.8. The median vulnerability within the lowest 10 percent wealth tail is zero, while the richest 10 percent of the RHS population is far more vulnerable than average. The poor simply have zero or trivial nominal financial assets. They have nothing to lose. The rich, on the other hand, hold bonds and have substantial pension wealth, both of which make them more vulnerable to price or inflation shocks. Even for the wealthy, the vulnerability medians are not large: a 10 percent jump in prices would cause them to lose 1.1 percent in real wealth in 1969, and a 10 percent permanent increase in the rate of inflation would cause them to lose 3.2 percent of their wealth in 1969.

All the numbers in the first part of the table lead us to conclude that the popular notion of inflation vulnerability of the elderly is wrong: the elderly do not live on fixed incomes derived from assets that depreciate when inflation increases. Rather, a substantial fraction of the elderly have an index of inflation vulnerability that is so low that inflation has no appreciable effect on their wealth. To the extent that the elderly are vulnerable, the vulnerability is concentrated in the class that is of least social concern—the wealthy elderly. Of course, these statistics do not imply that

Table 5.14 **Measures of Vulnerability of Wealth to Inflation of RHS Sample (medians)**

		All Households	Couples	Singles	Single		Wealth Tails	
					Male	Female	10%	90%
		A. Vulnerability of Total Nonhuman Wealth						
V_1	1969	.034	.035	.031	.044	.027	.000	.110
	1975	.057	.066	.042	.057	.037	.000	.130
	1979	.065	.083	.042	.063	.036	.000	.120
V_2	1969	.042	.045	.038	.053	.033	.000	.160
	1975	.065	.075	.045	.062	.041	.000	.200
	1979	.074	.094	.046	.073	.041	.000	.210
V_3	1969	.034	.036	.030	.045	.027	.000	.320
	1975	.063	.079	.041	.056	.038	.000	.230
	1979	.085	.122	.046	.075	.040	.000	.230
		B. Vulnerability of Non-Social Security, Nonhuman Wealth						
V_1	1969	.053	.054	.051	.070	.045	.000	.120
	1975	.098	.115	.075	.098	.069	.000	.160
	1979	.108	.137	.066	.097	.058	.000	.250
V_2	1969	.069	.074	.062	.083	.055	.000	.190
	1975	.114	.133	.080	.103	.074	.000	.250
	1979	.122	.155	.075	.108	.065	.000	.280
V_3	1969	.057	.059	.053	.080	.045	.000	.360
	1975	.111	.137	.074	.099	.069	.000	.280
	1979	.138	.196	.074	.112	.065	.000	.350

Table 5.14 (continued)

		All Households	Couples	Singles	Single		Wealth Tails	
					Male	Female	10%	90%
		C. Vulnerability of Private (Nontransfer) Wealth						
V_1	1969	.087	.084	.091	.107	.085	.000	.130
	1975	.178	.168	.198	.245	.187	.090	.170
	1979	.165	.188	.125	.173	.113	.000	.180
V_2	1969	.114	.116	.109	.132	.102	.000	.200
	1975	.211	.200	.228	.282	.216	.090	.270
	1979	.188	.220	.143	.196	.129	.000	.280
V_3	1969	.107	.104	.114	.181	.098	.000	.380
	1975	.224	.214	.231	.325	.220	.050	.290
	1979	.217	.274	.152	.212	.136	.000	.300
		D. Vulnerability of Total Nonhuman Wealth with Social Security Treated Like a Nonindexed Pension Annuity						
V_1	1969	.447	.459	.412	.465	.399	.490	.230
	1975	.524	.527	.517	.565	.499	.530	.300
	1979	.482	.497	.457	.511	.445	.450	.310
V_2	1969	.471	.485	.436	.490	.423	.490	.300
	1975	.543	.548	.532	.580	.517	.530	.390
	1979	.502	.519	.475	.520	.461	.460	.390
V_3	1969	3.714	3.932	3.211	3.648	3.130	4.52	1.41
	1975	2.251	2.298	2.167	2.341	2.119	2.56	1.08
	1979	1.749	1.821	1.662	1.828	1.623	1.86	.960

the poor elderly are well-off: to the contrary, as we have seen, the lowest 10 percent of the wealth distribution has very little wealth. The statistics simply show that they are not made worse off by price or inflation shocks.

The second part of the table answers the question What would inflation vulnerability be if there were no Social Security wealth, yet everything else were the same? The price shock index, V_1, is about 60 percent higher with no Social Security wealth because Social Security significantly increases wealth, and it is inflation protected. The differential is greater for females than for males; it is small for the wealthy in 1969. V_3 changes in about the same way as V_1 in going from part A to part B of table 5.14. One interesting finding is that by 1979 excluding Social Security wealth, as was done for part B, causes V_1 and V_3 to increase substantially for the wealthy. This happens because the importance of Social Security in the portfolios of the wealthy increases between 1969 and 1979: in 1969 Social Security is about 8 percent of the wealth of those in the upper 10 percent tail of the wealth distribution; by 1979 it accounts for about 13 percent of their wealth.

Part C of table 5.14 gives the inflation vulnerability indexes over private wealth, that is, SSI, welfare, Medicare, Medicaid, and Social Security wealth are excluded. A comparison of parts A and C shows that the government programs are very important in reducing vulnerability: overall household price shock vulnerability, V_1 in 1969 changes from .034 to .087. Over some groups the changes are much greater: V_1 of single males in 1975 changes from .057 to .245. The changes in inflation vulnerability, V_3, are even greater. For example, for all households in 1975 V_3 changes from .063 to .224; for single males, it goes from .056 to .325. We conclude that the government programs included in our wealth calculation, all of which are roughly inflation protected, make an important contribution to protecting the elderly from inflation.

The last part of table 5.14 gives the vulnerability measures when Social Security is not indexed. Thus, Social Security is treated like the usual private sector annuity. The changes in the indexes are large and make the elderly at the median substantially vulnerable to inflation. For example, V_1 in 1969 changes from .034 to .447; with Social Security indexed, a price jump would have caused a trivial change in real wealth; without indexing of Social Security, a 1 percent price jump causes almost a 0.5 percent loss in real wealth. Even more startling are the changes in V_3: with indexed Social Security, inflation rate changes are not a serious problem at the median; without indexing a 1 percent change in the inflation rate would have caused in 1969 a 3.7 percent drop in real wealth at the median. But perhaps the most important finding is what the change would do to the poor elderly. It would change them from a group that at the median is completely insulated from inflation shocks to one that is highly vulnerable. In 1969 their V_3 changes from zero to 4.52 when Social Security is taken to be not indexed. This means, of course, that the household with the median

vulnerability among the poor would suffer nearly a 23 percent loss in real wealth if inflation and interest rates unexpectedly increased 5 percent.

The wealthy elderly also gain from indexing Social Security, but the gain in inflation protection is not nearly as great as the gain of the poor elderly. We conclude, therefore, that indexing Social Security has been an important tool in protecting the poor elderly from inflation, and without its protection they would have suffered considerable wealth losses in the inflation of the 1970s.

Part D of the table also shows that the importance of indexing Social Security declines with time. This is because the RHS population is aging, so the importance of Social Security in their wealth portfolios declines as life expectancy decreases. Also, since Social Security is a shorter asset, it is less vulnerable to inflation shocks even if it is unindexed. Nevertheless, even by 1979 when the RHS population is sixty-eight to seventy-four years of age, our elderly sample would have substantial inflation risk without the indexing of Social Security. For example, the median person would lose about 1.7 percent of his real wealth if the inflation rate permanently and unexpectedly increased by 1 percent.

Our overall conclusion from this table is that as a group the elderly are not especially vulnerable to either price jumps or increases in the rate of inflation. At the median, the poor elderly are completely unaffected by inflation; the wealthy are somewhat vulnerable, but from a social policy point of view that vulnerability may not be important. The impression one has from the popular press and from casual observation is that the elderly suffer greater wealth losses than the young when inflation increases. In fact, if there are no real wealth consequences of increases in inflation and only distributional consequences, a loss by the elderly would be a gain by the young. Our findings indicate that although some elderly may gain and some may lose through inflation, as a group the losses are slight. Thus, inflation does not cause any substantial transfer of wealth from the elderly to the young, and the popular impression is false.

We have alluded to the fact that some elderly may actually gain when an increase occurs in the inflation rate. This can happen to people whose assets are inflation protected but whose liabilities are nominal with a long maturity. Home mortgages are a good example of the latter. In table 5.15 we give the distributions of V_1 and V_3 by age and year in two situations: when all nonhuman wealth is included and when Social Security is treated like a nominal annuity. The two sets of distributions correspond, therefore, to parts A and D of table 5.14.

We see that in 1969, 5 percent of the fifty-eight-year-olds have a V_1 index less than $-.24$. That is, among fifty-eight-year-olds in 1969, a 1 percent increase in the price level would cause at least a .24 percent gain in real wealth in 5 percent of that population. At the upper end, 5 percent of that same group would have at least a .43 percent loss in real wealth in re-

sponse to a 1 percent jump in the price level. This seems to us to be a substantial spread in the distribution of inflation vulnerabilities. For example, as reported in table 5.14, the median of V_1 in the upper-wealth tail is .11, which is much smaller than ninetieth percentile point of about .32. This means that many people who are not in the upper-wealth tail still have high-inflation vulnerability. One may conclude from table 5.14 that as a group the elderly are not particularly vulnerable to inflation, but table 5.15 shows that there is a wide spread in the vulnerability, and that some individuals have considerable inflation vulnerability.

The distribution seems to become more compact as people age. For example, in 1969 the 5 percent point rises from $-.24$ at age fifty-eight to $-.16$ at age sixty-four; yet the 95 percent point falls as age increases. This is probably caused by a decrease in the fraction of the RHS population with mortgage liabilities: people holding mortgages tend to be in the lower part of the vulnerability distribution in 1969, whereas people in the upper part of the distribution are not mortgage holders. Thus, when mortgages decrease, the lower part of the distribution changes, but the upper remains the same.

It is hard to see any time trend in the distribution. We can roughly check this by comparing the index of sixty-four-year-olds in 1969 with the index of sixty-four-year-olds in 1975. These are, of course, different cohorts. Similarly, we can compare sixty-eight-, sixty-nine-, and seventy-year-olds in 1975 and 1979. Such a comparison gives little evidence of a change in the distribution over time. For example, the 10 percent points of sixty-four-year-olds in 1969 and 1975 are $-.07$ and $-.05$ respectively. The 10 percent point of sixty-eight-year-olds is $-.02$ in both 1975 and 1979. Our overall reading of these and other comparisons is that little change occurs in the distribution of V_1 over time, holding age constant.

The distribution of V_3 is even more wide spread than the distribution of V_1. For example, the 5 percent point in 1969 of fifty-eight-year-olds is -1.42, and the 95 percent point is 3.26. Thus 5 percent of that group gains at least 1.42 percent of their wealth for an increase in the inflation rate of 1 percent, yet 5 percent of the group loses at least 3.26 percent of its wealth for each 1 percent jump in the inflation rate. These are much bigger variations in the vulnerability index than we found across the groups given in table 5.14. The impression is that although at the median the RHS population in 1969 is not especially vulnerable to jumps in the inflation rate, substantial numbers of people gained or lost significant fractions of their wealth in the inflation of the 1970s.

As with V_1, aging seems to make the V_3 distribution more compact: the 5 percent point rises and the 95 percent point falls in 1969 as age increases. An interesting finding that does not appear in the distribution of V_1 is the large decrease in the 95 percent point over time: its average over all the age groups declines from about 2.95 in 1969 to about .85 in 1979, yet the medi-

ans remain roughly the same. It is not easy to say what caused this change because we do not have the distribution of the composition of wealth. One might speculate that the high inflation of the 1970s induced people who were particularly vulnerable to inflation rate increases to change their portfolio composition to gain some inflation protection.

The large decline in the 95 percent point is symptomatic of the compacting of the distribution of V_3 over time, holding age constant. Again, making the same kind of comparisons that were outlined for V_1, we find, holding age constant, a tighter distribution. For example, the 10 percent points of sixty-four-year-olds in 1969 and 1975 are -1.51 and $-.42$ respectively; the 90 percent points are 1.48 and .70.

The second part of table 5.15 gives the distributions of V_1 and V_3 when Social Security is treated like a nominal annuity. A comparison with the first part of the table shows that for V_1 the whole distribution is shifted to the right and substantial numbers of people are highly vulnerable to price jumps. For example, about 10 percent of the people in each year have V_1 indexes above .70. Their losses would be at least 70 cents for each dollar or price jump. There does not seem to be a time trend in the shape of the distribution, nor any systematic variation in the distribution by age.

The distribution of V_3 under nominal Social Security shows the importance of indexing Social Security in protecting some of the elderly from inflation. In 1969 fully 25 percent of the RHS population have a V_3 index of more than five. Permanent increases in the rate of inflation would have wiped out substantial fractions of their wealth. For example, if we take the inflation rate of 1968, 4.7 percent, to be the initial permanent rate, this group would have lost about 37 percent of its real wealth with the inflation that occurred in the 1970s. With nominal Social Security, this group would conform to the popular stereotype of an inflation-vulnerable elderly population. The V_3 distribution becomes somewhat more compact over time, due in large part to the fall in the upper 5 percent point. That fall is mainly caused by the declining importance of annuities in the portfolios.

We conclude from the distributions given in table 5.15 that there is great variation in the elderly's vulnerability to price jumps and inflation increases. Substantial numbers of the RHS are completely protected or even gain from inflation, while substantial numbers are hurt. If Social Security were not indexed, the distribution would be much wider and many elderly would be badly hurt by inflation increases. Indexing seems both to protect the elderly as a group and to reduce the variation in the risk.

5.4 Conclusion

Our overall impression from the RHS data is that as a group the elderly maintained their economic position quite well during the 1970s. Their in-

Table 5.15 **Vulnerability of Nonhuman Wealth for 1969, 1975, and 1979**

A. Total Nonhuman Wealth, Distribution by V_1

Percentile Points		Age in 1969						
		58	59	60	61	62	63	64
5%	1969	−.24	−.22	−.22	−.21	−.16	−.15	−.16
	1975	−.11	−.16	−.11	−.09	−.07	−.05	−.08
	1979	−.08	−.08	−.05	−.05	−.05	−.02	−.03
10	1969	−.13	−.13	−.13	−.11	−.08	−.07	−.07
	1975	−.05	−.06	−.04	−.02	−.02	−.01	−.02
	1979	−.02	−.02	−.01	−.01	−.01	−.00	−.00
25	1969	−.02	−.02	−.02	−.01	−.00	.00	.00
	1975	.00	.00	.00	.00	.00	.00	.00
	1979	.00	.00	.00	.00	.00	.00	.01
50	1969	.02	.02	.03	.03	.04	.04	.04
	1975	.05	.04	.06	.06	.06	.07	.05
	1979	.06	.06	.07	.06	.06	.07	.07
75	1969	.17	.15	.16	.16	.17	.16	.15
	1975	.16	.16	.17	.17	.19	.18	.15
	1979	.17	.16	.17	.16	.17	.17	.17
90	1969	.33	.33	.33	.32	.33	.32	.31
	1975	.31	.28	.30	.29	.30	.32	.31
	1979	.30	.27	.29	.27	.28	.31	.30
95	1969	.43	.41	.42	.41	.42	.42	.40
	1975	.40	.35	.40	.36	.36	.40	.40
	1979	.37	.33	.37	.35	.36	.38	.37

Table 5.15 (continued)

B. Total Nonhuman Wealth, Distribution by V_3								
Percentile Points		Age in 1969						
		58	59	60	61	62	63	64
5%	1969	−1.42	−1.38	−1.38	−1.23	−1.02	−.91	−.43
	1975	−.65	−1.01	−.68	−.69	−.49	−.40	−.49
	1979	−.33	−.33	−.24	−.23	−.30	−.12	−.18
10	1969	−.83	−.81	−.74	−.69	−.50	−.44	−.51
	1975	−.42	−.42	−.26	−.22	−.16	−.12	−.18
	1979	−.08	−.10	−.05	−.04	−.05	−.01	−.02
25	1969	−.12	−.11	−.10	−.04	−.02	−.01	−.02
	1975	−.01	−.01	.00	.00	.00	.00	.00
	1979	.00	.00	.00	.00	.00	.00	.00
50	1969	.02	.02	.02	.03	.04	.05	.04
	1975	.05	.04	.07	.06	.08	.08	.06
	1979	.07	.08	.09	.08	.08	.10	.09
75	1969	.54	.49	.49	.50	.63	.65	.45
	1975	.27	.24	.36	.36	.38	.40	.32
	1979	.33	.32	.39	.32	.34	.37	.30
90	1969	2.02	2.15	2.10	2.03	2.01	1.98	1.48
	1975	.77	.75	.82	.86	.89	.83	.70
	1979	.67	.64	.67	.65	.64	.70	.64
95	1969	3.26	3.20	3.00	2.96	2.90	2.79	2.51
	1975	1.14	1.07	1.25	1.16	1.16	1.23	1.14
	1979	.88	.84	.85	.84	.85	.84	.85

C. Social Security Treated as a Nonindexed Pension Annuity, Distribution by V_1

Percentile Points		Age in 1969						
		58	59	60	61	62	63	64
5%	1969	.00	−.01	.00	.00	.00	.00	.00
	1975	.04	.00	.06	.01	.07	.02	.03
	1979	.06	.03	.09	.05	.06	.08	.03
10	1969	.06	.05	.10	.08	.12	.10	.10
	1975	.17	.12	.18	.17	.21	.17	.14
	1979	.19	.13	.20	.16	.18	.18	.15
25	1969	.24	.21	.25	.26	.27	.28	.26
	1975	.36	.31	.35	.34	.36	.37	.33
	1979	.35	.31	.35	.32	.32	.34	.31
50	1969	.42	.41	.45	.45	.47	.46	.45
	1975	.52	.50	.54	.52	.53	.53	.52
	1979	.49	.48	.49	.47	.47	.49	.47
75	1969	.59	.58	.60	.60	.62	.61	.60
	1975	.65	.63	.66	.65	.65	.66	.64
	1979	.60	.59	.60	.59	.60	.61	.59
90	1969	.71	.70	.70	.71	.72	.72	.70
	1975	.73	.72	.74	.73	.75	.76	.74
	1979	.68	.69	.68	.68	.70	.71	.70
95	1969	.76	.76	.75	.76	.77	.77	.75
	1975	.78	.76	.78	.79	.79	.80	.78
	1979	.72	.73	.73	.73	.75	.76	.75

Table 5.15 (continued)

D. Social Security Treated as a Nonindexed Pension Annuity, Distribution by V_3

Percentile Points		Age in 1969						
		58	59	60	61	62	63	64
5%	1969	.00	.00	.06	.01	.07	.03	.00
	1975	.04	.00	.09	.01	.11	.03	.02
	1979	.15	.07	.26	.04	.15	.17	.03
10	1969	.52	.47	.87	.75	.91	.85	.65
	1975	.58	.32	.73	.55	.73	.64	.48
	1979	.46	.45	.70	.51	.63	.61	.38
25	1969	1.84	1.73	2.13	2.09	2.21	2.29	2.11
	1975	1.42	1.25	1.45	1.45	1.52	1.50	1.36
	1979	1.24	1.10	1.21	1.13	1.17	1.22	1.10
50	1969	3.50	3.46	3.76	3.76	3.84	3.83	3.74
	1975	2.26	2.16	2.34	2.30	2.25	2.26	2.22
	1979	1.81	1.74	1.80	1.77	1.72	1.75	1.69
75	1969	5.11	5.03	5.26	5.23	5.25	5.23	5.07
	1975	2.94	2.83	2.99	2.92	2.93	2.94	2.85
	1979	2.27	2.27	2.28	2.23	2.22	2.26	2.18
90	1969	6.20	6.18	6.19	6.25	6.34	6.29	6.03
	1975	3.40	3.36	3.42	3.44	3.48	3.51	3.40
	1979	2.66	2.70	2.70	2.64	2.67	2.72	2.61
95	1969	6.68	6.69	6.62	6.76	6.79	6.82	6.49
	1975	3.62	3.56	3.63	3.64	3.76	3.77	3.60
	1979	2.85	2.87	2.85	2.87	2.93	2.93	2.84

comes held up in the face of growing inflation, and their nonhuman wealth actually increased slightly in real terms. Furthermore, their portfolios were such that at the median they were substantially protected from inflation. We found that government programs can take credit for much of the inflation protection in the sense that private wealth is much more inflation vulnerable than the sum of private and public wealth. Indexing Social Security is largely responsible for this fact in that if Social Security were not indexed, the elderly would be highly vulnerable to inflation. This is especially true of the poor elderly, a group that under indexing is, at the median, completely protected from inflation; without indexing, the poor elderly would lose large fractions of their small wealth, were the rate of inflation to rise. They would change from being the least vulnerable group among the elderly, to being the most vulnerable. We also found, however, from our study of the distributions of income, wealth, and inflation vulnerability, that to speak of the median or mean of the elderly obscures the wide diversity of economic positions among them. Many elderly are well-off with adequate holdings of private wealth augmented with Social Security and Medicare, while at the same time many elderly have almost no wealth beyond that supplied by government programs. Similarly, the median elderly person is not particularly vulnerable to inflation, yet many elderly actually gain from increases in the rate of inflation, and many others lose significant amounts. The findings that the elderly's wealth positions were not harmed during the 1970s and that they were not particularly vulnerable to inflation are not, of course, independent findings. Rather, they complement each other and ought to increase our confidence that both findings are correct.

Appendix

Description of the Data

The Retirement History Survey (RHS) is a national longitudinal survey of 11,153 households whose heads were born in 1906 through 1911. The surviving households were reinterviewed every two years through 1979. Detailed data on financial characteristics, work behavior, and health were obtained. The file is especially useful for this study because the RHS data were matched to Social Security earnings records, which give contributions to Social Security throughout the working life through 1974. Therefore, it is possible to calculate exactly the Social Security benefits a worker would receive were he to retire in 1975 or before. We construct from the RHS the earnings records for 1975 through 1979, so that Social Security benefits can be calculated for workers not yet retired by 1975.

For a variety of reasons, missing values occurred on the data tape. If we had eliminated households on the basis of missing values, the resulting sample would have been small because of the large number of components of income and wealth. Therefore, we imputed missing values after carefully examining the raw data. Where an item was missing in the particular wave of the RHS, its value was imputed if possible from the previous wave of the RHS by multiplying the answer given for the same item by the same respondent from the previous wave by the growth rate in the median value of such assets for all nonmissing respondents between the previous wave of the RHS and the particular wave. Imputation used the latest wave of the RHS that had a valid value, but could reach as far back as the 1969 (first) wave or as far forward as 1979. If a datum could not be imputed by reference to the same question in another year for the same respondent, the datum was set equal to the median of all nonmissing answers for other respondents in the particular wave.

The raw data yielded fifty-two data items for each year. Several of these items are aggregates of even more finely defined variables. For 1971, 1973, 1975, 1977, and 1979, a list of fifty-two corresponding completion codes precedes the list of data items. The data items are:

1. Market value of house
2. Outstanding mortgage debt on house
3. Other debt on house
4. Market value of farm
5. Outstanding mortgage debt on farm
6. Other debt on farm
7. Market value of business
8. Business debt
9. Market value of other real property
10. Outstanding mortgage debt on other real property
11. Other debt on other real property
12. Market value of motor vehicles
13. Debt on motor vehicles
14. Face value of U.S. savings bonds
15. Value of U.S. corporate stocks and bonds
16. Value of loans owned by respondent
17. Money in checking accounts
18. Money in savings accounts
19. Face value of life insurance
20. Face value of annuities
21. Medical bills outstanding
22. Store debts outstanding
23. Outstanding debts to banks and savings institutions
24. Outstanding debts to private individuals

25. Actual annual pension income, railroad retirement
26. Actual annual pension income, military service
27. Actual annual pension income, government employment
28. Actual annual pension income, private employment
29. Annual income from SSI program
30. Annual benefits from AFDC program
31. Annual benefits from other public assistance programs
32. Annual state cash sickness benefits
33. Annual workmen's compensation benefits
34. Annual benefits from unemployment insurance
35. Annual income from private insurance and annuities
36. Annual benefits from private welfare agencies
37. Annual benefits from disability programs, other than Social Security
38. Annual income from relatives
39. Annual income from other private individuals outside the household
40. Annual interest income from stocks, bonds, dividends, and savings
41. Annual rental income
42. Annual income from Social Security
43. Expected annual income from AFDC
44. Expected annual pension income, railroad retirement
45. Expected annual pension income, military service
46. Expected annual pension income, government employment
47. Expected annual interest income
48. Expected annual income from private insurance and annuities
49. Expected annual rental income
50. Expected annual income from relatives
51. Expected annual income from other private individuals outside the household
52. Expected annual income from other public assistance programs.

After each of the fifty-two data items are imputed (this process is repeated for the survey years 1969, 1975, and 1979), a vector of incomes and a vector of wealth components are created. Responses to questions regarding flows are capitalized to yield wealth figures if corresponding wealth data were not available. Where possible, expected rather than actual flows were capitalized to yield wealth. Incomes were obtained directly from the RHS questions if possible. Otherwise, corresponding wealth figures were converted to flows by assuming a 3 percent service flow from the stock figure. Items that are capitalized to create wealth stocks are capitalized at either a nominal interest rate (nominal rate = 6 percent in 1969, 7.5 percent in 1975, and 9.5 percent in 1979) or a real rate of 3 percent depending on the particular income. Flows that were not expected to grow with inflation were capitalized at the nominal rate, while flows that were expected to grow (such as income from government programs) were cap-

italized at the real rate. Flows were capitalized for a term consisting of the expected value of the life expectancy (assuming person is midway between birthdays) of the respondent or his spouse (if present, and greater than respondent's), depending upon whether the income flow was assumed to continue to the spouse after the death of the respondent. The assumptions on length of flow were:

Railroad pension—respondent's life expectancy
Military pension—respondent's life expectancy
Government pension—respondent's life expectancy
Private pension—respondent's life expectancy
Income from SSI—maximum of respondent's or spouse's life expectancy
Benefits from AFDC—three years only, or respondent's life expectancy if less
Benefits from other public assistance—maximum of respondent's or spouse's life expectancy
Income from private insurance and annuities—maximum of respondent's or spouse's life expectancy
Benefits from private welfare agencies—maximum of respondent's or spouse's life expectancy
Benefits from non-Social Security disability—respondent's life expectancy
Income from relatives—maximum of respondent's or spouse's life expectancy
Income from other private persons outside household—maximum of respondent's or spouse's life expectancy.

A capitalized value of Medicare and Medicaid payments is computed by applying the average per person benefits to the life expectancy (appropriately discounted) of the respondent, plus benefits over the life expectancy of respondent's spouse, if married. For survey year 1969, the mean 1975 Medicare-Medicaid value was used, adjusted by change in price index between 1968 and 1975. The figures were obtained from the 1981 Social Security annual statistical supplement. Of course, actual payments will vary from individual to individual, and the insurance value will vary somewhat from state to state. Furthermore, the utility value to someone in a payment-in-kind program is overstated by the cash value of the program. Our numbers, therefore, overstate the actual insurance value, and they do not capture the variation from individual to individual.

In computing income for the sample, we took a broad view of the components of income. In addition to such conventional income sources as Social Security, wage, rent, interest, pensions, government transfers, annuities, and contributions from relatives, we imputed income from owner-occupied housing and Medicare-Medicaid.

The imputations and conversion of stocks to flows and the reverse where necessary produced the basic data used in the analysis. These variables are:

1. House services
2. Mortgage service
3. Other debt on house service
4. Farm services
5. Mortgage on farm service
6. Other debt on farm service
7. Business services
8. Debt on business service
9. Other real property services
10. Other real property mortgage service
11. Other real property debt service
12. Car services
13. Car debt service
14. Interest income
15. Income from life insurance and annuities
16. Medical bills service
17. Store debt service
18. Bank debt service
19. Private debt service
20. Rental income (this actually should be ignored, as rental income is already included in income from real property)
21. Pension income, railroad retirement
22. Pension income, military
23. Pension income, government
24. Pension income, private
25. Income from relatives
26. State cash sickness benefits
27. Workmen's compensation
28. Unemployment insurance
29. SSI
30. AFDC
31. Income from other public assistance (non-AFDC)
32. Income from non–Social Security disability
33. Income from private welfare
34. Income from other private individuals
35. Medicare-Medicaid
36. Income from Social Security (from RHS)
37. Wage income (computed in phase 1 and phase 2)
38. Market value of house
39. Mortgage on house

40. Other debt on house
41. Market value of farm
42. Mortgage on farm
43. Other debt on farm
44. Market value of business
45. Debt on business
46. Market value of real property
47. Mortgage on real property
48. Other debt on real property
49. Market value of motor vehicles
50. Debt on motor vehicles
51. U.S. savings bonds, face value
52. U.S. corporate stocks and bonds, face value
53. Loans owned
54. Checking accounts
55. Savings accounts
56. Life insurance, face value
57. Annuities, face value
58. Medical bills
59. Store debts
60. Debts to banks
61. Debts to private individuals
62. Rental wealth (should ignore)
63. Pension wealth, railroad
64. Pension wealth, military
65. Pension wealth, government
66. Pension wealth, private
67. Wealth from relatives

Variables 68 through 70 are not capitalized. It is assumed that the household only received these benefits for the year prior to the evaluation year and in the evaluation year.

68. Wealth from state cash sickness benefits
69. Wealth from workmen's compensation
70. Wealth from unemployment insurance
71. Wealth from SSI
72. Wealth from AFDC
73. Wealth, other public assistance
74. Wealth, non-Social Security disability
75. Wealth, private welfare
76. Wealth, from other source (private individuals)
77. Wealth, Medicare-Medicaid
78. Wealth, Social Security
79. Human capital.

Calculation of Social Security Variables

The input data set is a matched file of responses to the 1969, 1971, 1973, 1975, 1977, and 1979 Retirement History Surveys, plus matched Social Security Administration earnings records through 1974. From these data we calculate Social Security benefits were the worker to retire; Social Security wealth—the expected present value of benefits were the worker to retire; and Social Security taxes—the present value of taxes paid in with an adjustment for probabilities of death. For most observations the calculations, while not routine, are reasonably straightforward. Here we mainly concentrate our discussion on the difficulties that arise due to the complexity of the law and peculiarities of the data. In particular, the treatment of widows is very complicated.

Because of differences between SSA earnings record year-of-birth information and year-of-birth derived from age in the 1969 RHS, the year-of-birth derived from RHS was used in the computation of Social Security wealth. Using the SSA earnings record year-of-birth would make some respondents as old as seventy years at the time of the RHS survey.

The Social Security Primary Insurance Account (PIA) is calculated for each person based on his earnings record, using the law in effect on 1 January of a particular year (the evaluation year) and assuming the individual retires as soon as possible (age sixty-two or as soon as sufficient quarters of covered employment are accumulated after age sixty-two for those not yet eligible by age sixty-two). If an individual's PIA is based on average monthly wage; if the year is later than 1970, then an individual who delays retirement past age sixty-five receives a bonus of 1 percent per year for each year of delayed retirement past age sixty-five. However, if PIA is based on either of the other methods (covered-years method or method using pre-1950 income), then no bonus is received for delayed retirement. Also, the bonus stops at age seventy-two. (See U.S. Department of Health and Human Services 1981, p. 19.) If an individual retires before reaching age sixty-five, PIA is reduced for early retirement.

We assumed that for married couples, the male's Social Security wealth is always simply based on his own PIA computed from his own earnings record. The female's Social Security wealth is taken as the maximum of her own PIA or her spouse or widow's benefit based on her husband's PIA. She is allowed to switch from her own benefit to her spouse or widow's benefit over time, or from spouse or death benefit to her own benefit. Single men and women have a Social Security wealth based on their own PIA only.

If the original 1969 respondent was a widow (and has not remarried by the evaluation year), then we calculate her benefits in a special way. The Social Security Administration Earnings file contains no information on the widow's deceased husband, so we utilize data from the RHS to obtain widows' benefits. If the widow has remarried since the 1969 survey year,

she is treated the same as other married women (her new husband should have SSA records). If an original 1969 widow is still a widow in the evaluation year, then we calculate widows' benefits using information from RHS. We perform the calculation only if she has good tax records from the SSA file. We take the view that if a widow is found to receive Social Security benefits, those benefits are survivors' benefits. This approach was used because it is possible that true survivors' benefits were recorded in the retired worker's benefits slot. Note that this may not be true in practice and the woman may actually be drawing benefits based on her own PIA. Beginning with data from the 1971 survey, we calculate benefits either from the RHS (using old age or survivors' benefits) or from her own earnings records. If survivors' or old age benefits are not being drawn, then Social Security wealth is calculated based only on the widow's own PIA. If survivors' or old age benefits are drawn (as indicated in RHS), we assume that the individual began drawing those benefits at the earliest possible age (age sixty). That age is earlier than the earliest age at which the widow could draw benefits based on her own PIA (i.e., age sixty-two). Hence, we assume that if the widow is receiving survivors' or old age benefits, she never drew (and never will draw) benefits based on her own PIA.

We check whether the widow is drawing Social Security or survivors' benefits. If so, then we ask whether she is receiving Social Security in 1969 (note that in the 1969 survey, no distinction is made between survivors' and old age benefits). If so, then we assume the widow drew benefits at the earliest possible age. If she did not draw in 1969, then we assume she began to draw in 1970. If a widow did not draw in 1971, then we search forward to the other survey years. We assume she began to draw benefits (Social Security or survivors' benefits) in the year prior to the survey year where a positive response was elicited for receiving benefits. If a widow has not drawn benefits by the 1979 survey year, then we assume she never would draw widows' benefits. When we find a survey year in which a widow was found to receive benefits, we determine widows' benefits by taking the maximum of survivors' benefits and old age benefits. We then adjust the benefit back to the evaluation year (the adjustment allows for change in Social Security law).

For surviving widows of original 1969 male respondents, however, there is information on the deceased spouse. These widows are allowed to draw widows' benefits if they are greater than the benefits based on their own PIA. If the original husband was eligible for benefits by the time he died (i.e., had accumulated sufficient quarters of coverage by the year of death) but was not old enough to retire by the time of death, then we assume the person would not have retired until age sixty-five (thus, for a widow, she would not be penalized for her husband's "computed" early retirement in the calculation of her benefits). If the deceased husband was not eligible for benefits by the time of his death, then his widow would not be eligible for widow benefits.

If the deceased husband was older than age sixty-five at the time of his death, then we search the wage data to determine whether he retired at an age greater than sixty-five (the widow does not receive a bonus if her husband delayed retirement—but if he retired early, then his basic benefit would be reduced for purposes of computing widows' benefits. This reduction, however, only applies for evaluation years after 1972). Not that this is only important for female surviving spouses since for these individuals, death benefits are computed using the husband's PIA and any adjustment for early retirement.

If the husband was sixty-two years of age or younger at the time of his death, then we assume that he had not retired by the year of his death. For purposes of calculating widow benefits, we set retirement age of the deceased husband at sixty-five. If the husband was working in the year prior to his death, we assume he did not retire by the time he died. For purposes of computing widows' benefits, we set the husband's age at retirement at sixty-five. Male-surviving-spouse Social Security benefits are computed using own PIA information only.

If a respondent does not have sufficient covered quarters of employment by the evaluation year to be eligible for Social Security benefits, we use information on current employment, state of retirement, and expectations about future employment to determine the quarter of eligibility, if any.

Life tables by race and sex were used in all wealth calculations, and an interest rate of .03 was used to discount benefits.

Calculation of Human Capital

The basic idea is to find the actual flow of earnings during the years of the RHS, the expected flow during the years after 1979, and then calculate an expected present value of earnings using the life tables and a real interest rate of .03. We use conditional labor force participation rates (the probability of participating in year $t + 1$ given participation in year t) to estimate the probability of earnings in years after 1979 for those not yet retired in 1979. The extrapolation and imputation of earnings is now described.

We calculate human capital by extrapolating income in the evaluation year out to age eighty-three using labor force participation rates and life tables. Age eighty-three is the last age used in the calculations, because labor force participation is zero after age eighty-three for all individuals. If income is missing in the evaluation year, then it is first imputed from income data for other years. Both forward and backward (if possible) searches were made for the imputation, though backward searches were tried first. Imputed income is calculated by adjusting a valid income datum by the ratio of nominal wage indexes and then by adjusting for the price level. If income could not be imputed, it was set to zero (only two individuals on the full file had bad income data for all years). In addition,

we impute income for the year prior to the evaluation year if that value was invalid.

We needed labor force participation rates for males, married females, and single females. The rates were computed by using figures in Bowen and Finegan for individuals age fifty-five plus. Those rates are from the 1960 census. These 1960 figures were adjusted by the change in the labor force participation in the population between 1960 and the evaluation year. Values for earlier ages were derived from the *Employment and Training Report of the President* (1981). If figures were not given for each age (as was the case for the figures for ages below fifty-five), values were interpolated by assigning the mean labor force participation rate to the mean age in each age category, and then joining each of those points to form a piecewise linear function. Values for each age were then taken from this derived function.

Calculation of Inflation Vulnerability

Table 5.13 classifies assets and liabilities into three categories: (1) those for which unexpected inflation or price shocks do not affect real value, (2) those whose real value is eroded, and (3) those whose real value is increased (or whose real liability is reduced). We distinguish between a one-shot price-level jump, which leaves all interest rates unaffected, and an unexpected increase in the (steady) rate of inflation, which causes nominal interest rates to rise. If the scenario is a one-shot, 1 percent jump in prices, then nominal assets that are vulnerable lose 1 percent of their real value (as do liabilities). However, if the circumstance is a change in the rate of inflation accompanied by a rise in nominal interest rates, then the erosion in real value of assets or liabilities depends on their maturity. We have assumed a strict Fisher point-for-point relationship between inflation and nominal interest rates. An unexpected 1 percent rise in interest rates would roughly reduce the value of a one-year asset by 1 percent, but could change the value of a twenty-year asset by 10 or 12 percent, depending on the initial interest rate. The sensitivity of the value of long-term nominal assets to interest rate fluctuations depends on both the maturity of the assets and on the basic interest rate. A change in the rate of interest from 4 to 5 percent affects value far more than a change from 10 to 11 percent, for example.

The numbers in parts A and B of table 5.13 were constructed using available published data where possible. The figure for U.S. bonds was calculated using the average maturity and interest rate figures published in the *Economic Report of the President* (1983). The corporate bond figures take ten years as the average maturity of long-term corporate bonds and use average Baa interest rates during 1969, 1975, and 1979, which were 7.8, 10.6, and 10.7 percent, respectively. The sensitivity of the value of bonds to a 1 percent increase in interest rates declined through time as interest rates rose between 1969 and 1979. We do not take into account that

the elderly may hold shorter-than-average maturity issues of U.S. and corporate bonds.

The private pensions are valued as a nominal annuity lasting the average life expectancy of our sample in 1969, 1975, and 1979. These numbers are certainly not precisely estimated, given the range of ages in the sample and the inclusion of couples and both single males and females. The estimates are consistent with a seventeen-year annuity in 1969, thirteen years in 1975, and ten years in 1979, and probably capture inflation risk reasonably accurately. The final inflation vulnerability figures in this chapter are quite interesting to the precision of these assumptions. It is not clear what number to estimate for the average duration of bank accounts and loan assets. It depends on how fast the interest rate in these contracts adjusts. We have assumed that the loans and bank accounts remain outstanding at a fixed nominal interest rate for one year.

Households gain in their wealth position when inflation erodes the real value of their liabilities. Again, the extent of this gain depends on the existing interest rate and the maturity of the contract. We have gathered figures on average mortgage rates from the *Economic Report of the President* (1982) and have assumed the maturity of mortgages for this RHS population declines from fifteen years in 1969 to ten years in 1979. Other debts, including personal and automobile loans, have an assumed maturity of roughly three years.

Once we have estimated the vulnerability of the real value of each asset and liability to changes in the nominal interest rates, our computation of each household's vulnerability is straightforward. The vulnerability of a household's portfolio is simply the weighted average of the vulnerability of the assets in that portfolio, where the weights depend on the amount of each type of asset. Take, for example, someone who in 1975 had 75 percent of his net wealth in corporate bonds, 75 percent in bank accounts, and negative 50 percent in mortgages (that is, he had a mortgage liability of 50 percent of net worth). His vulnerability to inflation and interest rate changes would be

$$.75 \times 6.1 + .75 \times 1.0 - .5(6.1) = 2.25.$$

This would indicate that a 1 percent rise in inflation would reduce the value of his wealth by 2.25 percent.

Comparison with Previous Results

In an earlier paper (1982b) we calculated wealth and inflation vulnerability only over the sample that survived until 1975. It turns out that the basic conclusion holds whether we use the sample of survivors or the complete sample—the basis for the results of this chapter. For example, we previously reported mean wealth in 1969 to be $71,302; it is $76,573 in this chapter. The difference is almost entirely due to an increase in pension evaluation from $6,645 to $13,663. The change in pension evaluation is

caused by a more elaborate imputation procedure employed in this chapter, not to the sample selection. Median inflation vulnerability, V_3, was .06 based on the old sample and .03 on the new sample. Both numbers are small and the difference is not important.

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Comment Sheldon Danziger

Introduction

Hurd and Shoven have provided, in their own words, "a detailed examination of the income and wealth of the elderly and their inflation vulner-

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ability by analyzing the . . . Retirement History Survey. . . . This chapter is very much an extension of our earlier work" (p. 126). The chapter contains a wealth of descriptive information, but the documentation is so sparse that the reader must accept much of what is presented on the basis of what the authors choose to reveal. As a result, my critique consists mainly of a list of questions whose answers could not be found in this chapter. These possible sources of bias would not necessarily alter the conclusions, although they would attenuate some of the results.

Two quotations illustrate the major conclusions of the two main parts of the paper:

> Our overall impression from the RHS data is that as a group the elderly maintained their economic position quite well during the 1970s. Their incomes held up in the face of growing inflation, and their nonhuman wealth actually increased slightly in real terms. (P. 156)

In this quotation the meaning of *quite well* is not entirely clear. For example, one can use the Boskin-Hurd price index and compare the change in incomes over the 1968–78 decade. The data in tables 5.2 and 5.4 show a decline in real income of 18 percent for all elderly households, a 13 percent decline for couples, and a 3 percent increase for singles. If we exclude the insurance value of Medicare-Medicaid (one of the authors' adjustments that is very ad hoc) from this calculation for both years, the result would be a decline of 22 percent for couples and a decline of 10 percent for singles.

Nonhuman wealth (table 5.6), however, increases by 2 percent for all the elderly over the 1969–79 decade even if Medicare-Medicaid is excluded. Also, the real income of the bottom 10 percent has increased because of increased expenditures on public transfer programs. While data on the nonelderly are not presented in this paper, it is in comparison to the nonelderly that the elderly do "quite well." That is, over this period the real incomes of the elderly fell by less than those of the nonelderly, even though most of the elderly had retired.

> We found that government programs can take credit for much of the inflation protection in the sense that private wealth is much more inflation vulnerable than the sum of private and public wealth. Indexing Social Security is largely responsible for this fact in that if Social Security were not indexed, the elderly would be highly vulnerable to inflation. This is especially true of the poor elderly, a group that under indexing is, at the median, completely protected from inflation; without indexing, the poor elderly would lose large fractions of their small wealth, were the rate of inflation to rise. They would change from being the least vulnerable group among the elderly to being the most vulnerable. (P. 161)

The latter part of the paper, from which this conclusion is derived, is better documented than the first because the authors show the sensitivity of the inflation-vulnerability results to some of their assumptions about the sources of income. Also, while there are several other recent studies of

the relative economic status of the elderly, Hurd and Shoven are the first to focus on the distributional effects of inflation among the elderly.

Sample Selection

Let me begin my catalog of questions with reference to the sample selectivity issue. What difference does it make that in an earlier paper the authors analyzed survivors, including only those who were in the sample in both the initial and terminal years, while in this chapter they included anyone who was in the sample in any single year? Obviously this chapter uses a larger number of observations—but how much larger? Because sample size for some of the deciles is already small (e.g., about 75 for single males in 1978), comparisons of population subgroups over time could be misleading even if the means for the entire sample are not very sensitive to this issue.

Using the Current Population Survey computer tapes, I found that the cohort of couples who were fifty-five to sixty-four in 1967 and sixty-nine to seventy-eight in 1981 was 40 percent smaller for whites and 42 percent smaller for blacks in the later year. We know that mortality rates are higher for the poor and that the poor are more likely to leave the sample by moving in with others or into nursing homes. If more of the poor are excluded in the terminal year, then income growth over time is biased upward. In fact, in the earlier Hurd and Shoven paper they stated: "Because we study changes in economic position, we dropped from the 1969 sample households that did not survive until 1975. We were left with 8,244 households (a decline of 26 percent from the initial 11,153 heads)" (1982, p. 52). In this paper they defend their choice of all observations, because "This both expands our sample in 1969 and eliminates a possible bias in our numbers" (p. 126). To what bias are they referring? I accept the logic of the first paper.

The compositional change in the sample due to differential survivorship is probably largest for single women and couples. The typical case is one in which the husband dies and the widow remains in the sample. If poorer males are the most likely to die, then the trend in well-being is biased upward for couples, since the poor are not in the terminal-year sample. But if the recently widowed women are wealthier than the already-widowed or never-married women, then the change in well-being for single women is also biased upward.

Data Creation

Turning now to the data creation, I have several additional questions. The authors converted wealth to income at a 3 percent real rate of return. How sensitive are their results to this discount factor? What if they had used actual data on average rates of return that varied by year and by type of asset? What I have in mind is the range of actual rates of return shown

in chapter 11 of this volume, by Farley and Wilensky. Hurd and Shoven specify some income as inflation protected when it may not be—for example, transfers other than Social Security and Medicaid. How sensitive are their results to this factor? While the inflation-vulnerability section considers alternative assumptions, the income and wealth tables do not.

The authors state: "Responses to questions regarding flows are capitalized to yield wealth figures if corresponding wealth data were not available. Where possible, expected rather than actual flows were capitalized" (p. 163). Why use expected flows when actual ones are observed? For example, how did the authors derive a value for expected income from AFDC? Why didn't they use actual data?

For how many observations did the authors impute income and wealth data? Was it done more for the poor than for the elderly? If so, the procedure would impart biases since "if a datum could not be imputed by reference to the same question in another year for the same respondent, the datum was set equal to the median of all nonmissing answers for other respondents" (p. 162). Thus, if the poor were most likely to have missing data in all the years, then the use of the median would raise well-being and reduce inequality relative to their "true" values.

Hurd and Shoven's use of a single value for real Medicare and Medicaid expenditures for every year for every elderly person is particularly troublesome. The authors are interested in differences across the income and wealth distributions, and these payments vary dramatically by state of residence, over time, and by income of the respondent. Since the real values of Medicare and Medicaid benefits have eroded in recent years, estimates of changes in well-being over time will be biased upward. And to the extent that residents of poorer states receive below-average Medicaid benefits, the results are again upward biased.

In addition, most Medicaid expenditures for the elderly subsidize nursing home residents who are not included in the RHS sample. The appropriate procedure to obtain a Medicare-Medicaid value for persons in the RHS is either to reduce the numerator to reflect the insurance value of Medicare and Medicaid for the noninstitutionalized or to increase the denominator to account for elderly persons in nursing homes. The latter procedure also requires an adjustment to the mean level of well-being of the cohort, since nursing home residents have below-average income and wealth.

Finally, the aged now spend a higher percentage of their income on medical care than they did in the mid-1960s. Could some portion of the large increase in Medicare-Medicaid income the authors assign to RHS respondents, not in a general equilibrium model, be more appropriately assigned to medical care providers? Of course, one would need to distinguish pure price gains to providers from quality and quantity increases. This problem is most relevant to comparisons of the relative economic

well-being of the elderly and nonelderly, but also to differences over time for this cohort.

Life-Cycle Hypothesis

The authors examine the median nonhuman wealth data in table 5.11 and suggest that "the numbers are weakly supportive of the life-cycle theory" because wealth increases with age in 1969 and decreases with age in 1979.

But rather than read across the rows (age groups) as the authors do, I suggest reading down the columns (years) and focusing on how the wealth of a single-year age cohort changes over the ten-year period. Consider couples, for example. In each age group, real wealth is much higher in 1979 than in 1969. For example, among those couples whose head was sixty in 1969, nonhuman wealth was $63,285 in 1969 and $171,060 in 1979. This latter figure, adjusted with the Boskin-Hurd index (see table 5.8), is about $90,000 in 1969 dollars. Thus, as these couples aged from 60 to 70, and as most retired, their nonhuman wealth increased by over 40 percent. I view this failure of wealth to decline as a weak rejection of the life-cycle hypothesis. I suggested above that the authors' choices of sample, data, and valuation techniques probably overstated the growth in well-being over time. However, I do not think that the alternatives I discussed would turn a 40 percent increase in wealth into a decline.

Conclusion

I am confident that the adjustments and data concerns I suggested would not affect the authors' strong conclusion that government programs substantially increase the well-being of the elderly, reduce inequality among them, and make them less vulnerable to inflation. Nor do I doubt that the most important contributor to these results in recent years has been the indexation of government benefits, particularly Social Security.

For example, consider the relative economic well-being of two successive cohorts of the elderly, one of which is similar to the RHS cohort. Using Current Population Survey data, I found that between 1967 and 1981, the real-money income of couples whose head was fifty-five to sixty-four in 1967 and sixty-nine to seventy-eight in 1981 declined by about 25 percent. This is consistent with the Hurd-Shoven change in real-money income. But couples whose head was sixty-nine to seventy-eight in 1981 had real incomes about 25 percent above those of couples who were sixty-nine to seventy-eight in 1967. The major source of improvement for the younger cohort was that its real Social Security income was more than 50 percent higher.

Hurd and Shoven have provided a detailed picture of the progress of the elderly over the 1969–79 decade. Although they do not draw policy im-

plications, one point is clear. The taxation of Social Security benefits, such as the method enacted in the 1983 Social Security Amendments, will have much less adverse distributional impacts on the distribution of well-being among the elderly than will any change in benefit indexation.

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