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A CLOSE LOOK AT DISSAVING IN THE LONGITUDINAL RETIREMENT HISTORY SURVEY

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Hurd (1987) provided evidence from the Longitudinal Retirement History Survey that the retired elderly dissave. This paper attempts to refine and extend that analysis in several ways. I determine how sensitive his results are to his method for estimating missing data. I calculate median dissaving rates, a more robust measure of dissaving. I provide confidence intervals for those rates. Finally, I compute estimates based on a method that weights all households equally. The results are mixed. Hurd's dissaving finding is confirmed in many specifications, but questions are raised about dissaving among couples and the method of elderly dissaving.

One of the clearest implications of the life-cycle model of consumption is that retirees dissave. Yet, for years researchers were unable to determine definitively whether they did or not. Then, in 1987, Hurd provided strong confirmatory evidence from the Longitudinal Retirement History Survey (RHS). The cumulative rates of dissaving were large: −14 percent of initial wealth over a 10-year period when wealth included housing, and −27 percent excluding housing wealth.

This evidence was particularly persuasive because it was derived from panel data, in contrast to most previous work, which had relied on cross-section data. There are several well-known biases associated with using cross-section data to infer time series wealth profiles that panel data avoid. Hausman and Diamond (1984) were the first to use panel data to investigate this issue. Bernheim (1987) took the important step of employing the RHS, a dataset that specifically focused on retirement-aged individuals. Hurd (1987) then provided even more persuasive evidence of elderly dissaving by utilizing all of the waves of the RHS.[1]

The purpose of this paper is to examine more closely dissaving in the RHS by refining and extending Hurd's analysis in several ways. First, missing data are rife in the survey, so Hurd estimated them. I try to determine how sensitive his results are to his estimation method. Second, Hurd measured dissaving by calculating mean rates of growth. Mean rates, however, may be a poor measure of individual dissaving in the RHS. The paper therefore calculates median rates of growth, a more robust measure of dissaving. Third, the paper is the first to provide confidence intervals for these estimates. Lastly, most prior research has implicitly emphasized households that live longer in calculating dissaving rates. As an alternative, I generate estimates based on a method that weights all households equally.

Note: Much of the research for this was conducted while the author was a Visiting Scholar at Stanford University's Hoover Institution. I would like to thank Gary Smith, O. David Gulley, and two anonymous referees for very useful comments. All errors are mine.

[1]See Hurd (1990) for an excellent survey of research in this area.

The results of these exercises are mixed. Many estimated savings rates are negative. However, sometimes the null of no dissaving cannot be rejected. The precise method by which the elderly dissaved throughout the seventies is also puzzling. The results therefore represent qualified evidence in favor of the simple life-cycle hypothesis.

I. The Retirement History Survey

The RHS interviewed 11,153 retirement-age households in 1969, and followed those up with interviews every two years through 1979. Household heads had to be between the ages of 58 and 63 in 1969. Attrition reduced the sample to 7,352 households by the terminal year (Irelan, 1988). Information on household net worth is extensive. Amounts were recorded in 21 asset categories including residential property, farms, businesses, other real estate, checking and savings accounts, U.S. savings bonds, stocks and other bonds, and several forms of debt.

The 1973 wave omitted data in 18 of these 21 categories, so I ignored it. Some category definitions were not consistent from year to year. In 1969, the value of a farmer's home was included in the value of her farm, but beginning in 1971, the two were treated separately. To make all years compatible, I added the value of residential property to farm values for farmers after 1969. Also, in 1975 households were asked to estimate the value of their cars and trucks. Since this question was not asked in other years, and as it is unlikely that households included this amount in other asset categories, the 1975 valuations of cars and trucks were ignored. To be consistent with Hurd and others, this paper focused on bequeathable wealth. All annuity wealth was therefore ignored.[2]

The RHS records asset values in nominal terms. They were converted to real dollars using the elderly price deflators computed by Boskin and Hurd (1982). I focused exclusively on households composed of single individuals and married couples to ensure that the sample reflected only retirement-age individuals. Some elderly households in the RHS included children and relatives, but it is often difficult in those cases to determine which assets belong to whom.

The main advantage of panel data is that one can compare household wealth in adjacent waves holding constant one's sample. To be considered retired in these comparisons, the individual (or both the husband and wife) had to report not working in either wave. Some individuals classified as retired this way re-entered the labor force later on. This is not a problem, though, as the life-cycle theory suggests they should still dissave while not working.

II. Mean Rates of Dissaving

The underlying equation of individual dissaving is the following:

$$w_{t+1} = k w_t, \tag{1}$$

where w_t is real wealth in wave t. Heterogeneity across individuals and over time

[2]The RHS only records the face value of life insurance policies. Without information on the equity in these policies, this form of wealth was also ignored.

suggests appending a random error term to the right-hand side.[3] The goal is to obtain precise estimates of k, the wealth retention rate. Hurd (1987) suggested the following estimator:

$$\hat{k} = \sum w_{t+1} / \sum w_t, \tag{2}$$

which has the virtue of being consistent in the presence of random measurement error in w, unlike *OLS* estimation of equation (1).

It is not unusual for households in the RHS to be missing data in at least one wealth category. If one discarded households with incomplete data, one would lose over one-third of the sample. So Hurd and Shoven (1983, 1985) used the following technique to estimate missing data. Sample median growth rates between waves were calculated for each asset category. Then when a household was missing a value for an asset category in one year, one could estimate it by taking a value for that category in a nearby year and applying the median growth rate to it. Even if a household was missing data in all of the years but one, say 1971, one could use that 1971 value and median growth rates to estimate the values for the other years. If a household was missing data for an asset category in all of the years, Hurd and Shoven simply inserted the median value from the entire sample for that asset category for that particular year.[4] In this way, Hurd and Shoven were able to estimate all missing data.

I employed this technique with two modifications. First, I calculated asset median growth rates separately for singles and couples. Second, when a household had no observations for a particular asset category, I did not insert the sample medians from each wave. Wealthier persons tend to live longer than poorer persons (Mirer, 1979). Sample median values for wealth in 1979 were therefore likely to be higher than in 1977 simply because some poorer households had died between 1977 and 1979. Plugging in sample median values from different waves would bias upward the estimated slope of wealth profiles.

Instead, I only plugged in the 1969 sample median value (among positive observations) for that asset category. I treated that value as known and calculated values for other years with the sample median growth rates. Since those growth rates were calculated holding the sample constant, this method should be free of bias.

Mean growth rates based on this technique for estimating missing data are displayed in Table 1. When housing is included in wealth, the cumulative dissaving rate among all observations for the period 1969–79 is −12.1 percent. For wealth excluding housing, the cumulative decline is −28.4 percent. If the sample is restricted to observations with positive initial wealth, the cumulative decline for wealth with and without housing is −14.5 percent and −33.6 percent respectively. Dissaving rates are generally higher for singles than for couples.

These results concur with Hurd's finding of significant dissaving among the retired elderly, and the specific rates mirror those obtained by Hurd. His estimated cumulative real wealth changes were −13.9 percent and −27.3 percent, with and

[3]Alternatively, one can imagine a distribution of k's across households, in which case we are interested in estimating the mean of that distribution.

[4]They find the median value among positive observations and by marital status.

TABLE 1

GROWTH RATES IN MEAN WEALTH, MISSING DATA GENERATED WITH SAMPLE MEDIAN GROWTH RATES

(Total real percentage change between years)

Housing wealth:		All observations		Positive initial wealth	
		Included	Excluded	Included	Excluded
1969–71:	Singles	−8.2	−17.6	−9.6	−19.2
		(616)	(616)	(436)	(381)
	Couples	−7.5	−10.8	−7.6	−11.3
		(399)	(399)	(358)	(319)
	All	−7.8	−13.6	−8.5	−14.6
		(1015)	(1015)	(796)	(700)
1971–75:	Singles	−10.3	−18.5	−11.4	−19.9
		(746)	(746)	(567)	(495)
	Couples	−2.9	−7.3	−3.3	−8.6
		(833)	(833)	(762)	(666)
	All	−5.0	−10.1	−5.6	−11.5
		(1579)	(1579)	(1329)	(1161)
1975–77:	Singles	−10.9	−22.2	−11.4	−23.2
		(1400)	(1400)	(1154)	(1030)
	Couples	−15.6	−29.3	−16.3	−30.3
		(1971)	(1971)	(1846)	(1657)
	All	−14.4	−27.7	−15.0	−28.7
		(3371)	(3371)	(3000)	(2687)
1977–79:	Singles	9.5	20.6	8.8	17.1
		(1568)	(1568)	(1327)	(1214)
	Couples	20.1	29.9	19.4	25.3
		(2122)	(2122)	(2015)	(1826)
	All	17.2	27.5	16.5	23.1
		(3690)	(3690)	(3342)	(3040)
Cumulative:	Singles	−19.7	−37.0	−22.8	−41.7
	Couples	−8.9	−24.0	−10.7	−29.3
	All	−12.1	−28.4	−14.5	−33.6

Note: Number of observations in parentheses. All refers to singles and couples combined.

without housing for all observations. Dissaving rates are substantially greater when wealth excludes housing, most likely because most individuals remain in the same residence after they retire and housing values appreciated in the seventies. He also found substantially higher dissaving rates among single individuals.

The results display a considerable amount of variability in dissaving over time. Measurement error in the RHS, however, is responsible for some of that. In 1977, all asset categories except housing were capped at $50,000, instead of the usual $1 million. Anything larger was rounded down to that figure. This recording quirk artificially generates significant dissaving between 1975 and 1977 and significant saving between 1977 and 1979.

These results serve as the paper's benchmark. The first significant change I make is to use growth rates in mean wealth (holding the sample constant between waves) instead of median rates of growth to estimate missing data. The growth rate in mean wealth for an asset category often diverges sharply from the median rate of growth in that category. For example, between 1977 and 1979, the median rate of growth in holdings of stocks and bonds was 0 percent for married couples.

That is because most couples had zero holdings in both 1977 and 1979. The change in the average value of such holdings, however, was 115 percent. Those couples that owned stocks and bonds either did quite well or bought stocks and bonds during those years.

It is preferable to employ growth rates in mean wealth instead of median growth rates because the ultimate goal is the estimation of the growth rate of total mean wealth. One can see this by dividing both the numerator and denominator in equation (2) by the sample population. Moreover, if one is ultimately interested in the growth in mean wealth, it is logical to estimate missing asset data with growth rates in mean wealth. In other words, one would want to use the 115 percent growth rate in stock and bond holdings between 1977 and 1979 and not the 0 percent figure to estimate what was happening to average holdings of stocks and bonds.

Another way to see this is to note that $\hat{k}$ is the ratio of the value of aggregate assets in wave $t+1$ to the value of the assets owned by the same households in wave t:

$$\hat{k}=\frac{\sum_{n=1}^{N}\sum_{k=1}^{K}A_{n,k,t+1}}{\sum_{n=1}^{N}\sum_{k=1}^{K}A_{n,k,t}}=\frac{\mathrm{SUM}_{t+1}}{\mathrm{SUM}_{t}}, \tag{3}$$

where $A_{n,k,t+1}$ refers to the value of household n's holdings in asset category k during wave $t+1$.

Assume we have complete asset information in both waves for $M<N$ of these households. Also, assume that for those households lacking information, we have complete data in both waves for $K'(n)<K$ categories. This ratio then equals:

$$\hat{k}=\frac{\sum_{n=1}^{M}\sum_{k=1}^{K}A_{n,k,t+1}+\sum_{n=M+1}^{N}\sum_{k=1}^{K'(n)}A_{n,k,t+1}+\sum_{n=M+1}^{N}\sum_{k=K'(n)+1}^{K}A_{n,k,t+1}}{\sum_{n=1}^{M}\sum_{k=1}^{K}A_{n,k,t}+\sum_{n=M+1}^{N}\sum_{k=1}^{K'(n)}A_{n,k,t}+\sum_{n=M+1}^{N}\sum_{k=K'(n)+1}^{K}A_{n,k,t}}. \tag{4}$$

Rearranging, one obtains:

$$\begin{aligned}\hat{k}=&\frac{\sum_{n=1}^{M}\sum_{k=1}^{K}A_{n,k,t+1}}{\sum_{n=1}^{M}\sum_{k=1}^{K}A_{n,k,t}}\times\frac{\sum_{n=1}^{M}\sum_{k=1}^{K}A_{n,k,t}}{\mathrm{SUM}_{t}}\\&+\frac{\sum_{n=M+1}^{N}\sum_{k=1}^{K'(n)}A_{n,k,t+1}}{\sum_{n=M+1}^{N}\sum_{k=1}^{K'(n)}A_{n,k,t}}\times\frac{\sum_{n=M+1}^{N}\sum_{k=1}^{K'(n)}A_{n,k,t}}{\mathrm{SUM}_{t}}\\&+\frac{\sum_{n=M+1}^{N}\sum_{k=K'(n)+1}^{K}A_{n,k,t+1}}{\sum_{n=M+1}^{N}\sum_{k=K'(n)+1}^{K}A_{n,k,t}}\times\frac{\sum_{n=M+1}^{N}\sum_{k=K'(n)+1}^{K}A_{n,k,t}}{\mathrm{SUM}_{t}}.\end{aligned} \tag{5}$$

$$\hat{k}=(\mathrm{MEAN1}_{t+1}/\mathrm{MEAN1}_{t})\mathrm{FRAC1}+(\mathrm{MEAN2}_{t+1}/\mathrm{MEAN2}_{t})\mathrm{FRAC2}+(\mathrm{MEAN3}_{t+1}/\mathrm{MEAN3}_{t})\mathrm{FRAC3}. \tag{5'}$$

$\mathrm{MEAN1}_{t+1}$ refers to mean wealth in wave $t+1$ for households with complete data in both waves, MEAN2 refers to mean wealth in those asset categories with data in both waves among households missing data in either wave, and MEAN3 refers to (actual) mean wealth in those asset categories missing data in either wave

among households missing data in either wave. The FRAC's refer to the second ratios in each part of equation (5). They represent the fraction of wave t total wealth in each of these three categories, and sum to one.

The derivation shows that calculating the aggregate ratio is equivalent to calculating the weighted average of the ratios of three means. We know the ratios of both MEAN1 and MEAN2, but must estimate the ratio of MEAN3. Using assumed growth rates to fill in missing data is tantamount to producing an estimate of the ratio of MEAN3. The ideal assumed growth rate would therefore accurately reflect the growth in average wealth among missing data. Thus the rationale for filling in missing data with growth rates in average wealth from the rest of the sample.

TABLE 2

GROWTH RATES IN MEAN WEALTH, MISSING DATA GENERATED WITH SAMPLE GROWTH RATES IN MEAN WEALTH

(Total real percentage change between years)

		All observations		Positive initial wealth	
Housing wealth:		Included	Excluded	Included	Excluded
1969–71:	Singles	−7.6	−18.4	−9.0	−19.9
		(616)	(616)	(436)	(381)
	Couples	−7.4	−10.9	−7.5	−11.5
		(399)	(399)	(358)	(319)
	All	−7.5	−14.0	−8.1	−15.0
		(1015)	(1015)	(796)	(700)
1971–75:	Singles	−8.5	−16.1	−9.5	−17.5
		(746)	(746)	(567)	(495)
	Couples	0.0	−3.1	−0.4	−4.5
		(833)	(833)	(762)	(666)
	All	−2.4	−6.5	−3.0	−7.9
		(1579)	(1579)	(1329)	(1161)
1975–77:	Singles	−11.1	−24.6	−11.6	−25.6
		(1400)	(1400)	(1154)	(1030)
	Couples	−18.2	−34.0	−18.8	−35.0
		(1971)	(1971)	(1846)	(1656)
	All	−16.4	−31.9	−17.0	−32.8
		(3371)	(3371)	(3000)	(2687)
1977–79:	Singles	14.2	28.8	13.5	24.8
		(1568)	(1568)	(1327)	(1215)
	Couples	26.8	43.5	26.1	38.5
		(2122)	(2122)	(2015)	(1825)
	All	23.2	39.6	22.6	34.9
		(3690)	(3690)	(3342)	(3040)
Cumulative:	Singles	−14.2	−33.5	−17.4	−38.7
	Couples	−3.9	−18.3	−5.7	−23.9
	All	−6.9	−23.5	−9.3	−29.1

Note: Number of observations in parentheses. All refers to singles and couples combined.

The results of estimating data with the growth rates of mean wealth by asset category are displayed in Table 2. The estimated dissaving rates are mostly closer to 0. The cumulative decline in wealth including housing across all observations falls to −6.9 percent. If housing is excluded, the decline falls to −23.5 percent. Focusing only on observations with positive initial wealth, the cumulative changes in real wealth are −9.3 percent and −29.1 percent respectively.

TABLE 3

GROWTH RATES IN MEAN WEALTH, SAMPLE RESTRICTED TO HOUSEHOLDS WITH NO MISSING DATA

(Total real percentage change between years)

Housing wealth:		All observations		Positive initial wealth	
		Included	Excluded	Included	Excluded
1969–71:	Singles	1.4	−2.2	0.7	−3.3
		(402)	(402)	(249)	(212)
	Couples	−0.2	−0.4	−0.3	−0.9
		(226)	(226)	(197)	(173)
	All	0.4	−1.0	0.1	−1.7
		(628)	(628)	(446)	(385)
1971–75:	Singles	−0.4	−3.9	−1.8	−6.0
		(452)	(452)	(306)	(269)
	Couples	−7.8	−17.8	−8.5	−18.4
		(462)	(462)	(405)	(349)
	All	−5.8	−14.6	−6.7	−15.5
		(914)	(914)	(711)	(618)
1975–77:	Singles	−10.3	−24.0	−11.1	−25.1
		(812)	(812)	(627)	(570)
	Couples	−18.2	−34.1	−18.5	−34.5
		(1136)	(1136)	(1036)	(922)
	All	−16.3	−31.9	−16.8	−32.4
		(1948)	(1948)	(1663)	(1492)
1977–79:	Singles	8.6	20.9	8.4	17.1
		(886)	(886)	(716)	(668)
	Couples	30.6	51.8	30.1	45.5
		(1226)	(1226)	(1152)	(1047)
	All	24.9	44.2	24.5	38.5
		(2112)	(2112)	(1868)	(1715)
Cumulative:	Singles	−1.6	−13.6	−4.7	−20.2
	Couples	−1.6	−18.1	−3.2	−22.9
	All	−1.3	−17.0	−3.3	−22.3

Note: Number of observations in parentheses. All refers to singles and couples combined.

A key question is whether it matters that so many data are estimated. One way to check that is to calculate dissaving rates by omitting those households missing any data in either wave. It is not unusual for researchers to omit observations with incomplete information. Would such a procedure yield different results here?

The results of that exercise are displayed in Table 3. They show that omitting households with incomplete data makes a substantial difference. The cumulative change in real wealth including housing for all observations is now only −1.3 percent, a virtually flat wealth profile. When housing wealth is not included, the cumulative change is more negative: −17.0 percent. Looking only at households with positive initial wealth, the numbers are −3.3 percent and −22.3 percent. Now one's conclusions about dissaving depend critically on whether wealth is measured with or without residential property.

The danger in restricting oneself to households with complete data is that they may differ systematically from households with missing data. One way to test that is to examine the change in the good wealth data we have for households

TABLE 4

GROWTH RATES IN MEAN WEALTH, AMONG ASSET CATEGORIES WITH COMPLETE DATA FROM HOUSEHOLDS WITH MISSING DATA

(Total real percentage change between years)

Housing wealth:		All observations		Positive initial wealth	
		Included	Excluded	Included	Excluded
1969–71:	Singles	−20.8	−43.5	−25.1	−47.6
		(214)	(214)	(147)	(127)
	Couples	−20.9	−35.1	−21.3	−36.4
		(173)	(173)	(141)	(110)
	All	−20.9	−39.1	−23.1	−41.7
		(387)	(387)	(288)	(237)
1971–75:	Singles	−16.1	−30.7	−17.9	−36.3
		(294)	(294)	(198)	(168)
	Couples	8.8	21.0	5.8	13.3
		(371)	(371)	(301)	(238)
	All	2.2	8.1	−0.5	0.9
		(665)	(665)	(499)	(406)
1975–77:	Singles	−11.5	−27.5	−13.3	−33.2
		(588)	(588)	(426)	(350)
	Couples	−13.6	−31.8	−16.1	−37.9
		(835)	(835)	(678)	(538)
	All	−13.0	−30.7	−15.4	−36.7
		(1423)	(1423)	(1104)	(888)
1977–79:	Singles	28.6	56.6	25.4	26.8
		(682)	(682)	(479)	(410)
	Couples	20.2	29.4	17.7	19.6
		(896)	(896)	(707)	(555)
	All	22.5	37.2	19.9	21.6
		(1578)	(1578)	(1186)	(965)
Cumulative:	Singles	−24.3	−55.6	−33.2	−71.8
	Couples	−10.7	−30.6	−17.9	−46.5
	All	−13.8	−37.3	−22.4	−54.7

Note: Number of observations in parentheses. All refers to singles and couples combined.

missing some information. The percentage changes in real wealth among these data are shown in Table 4.

In general, they are much more negative than those from Table 3. The 10-year decline in real wealth for all observations including housing wealth is −13.8 percent; excluding housing wealth it is −37.3 percent. For households with positive initial wealth, the changes are even more negative. This is evidence that households missing data are different from those with complete data: they appear to dissave much more rapidly. That suggests that discarding households with missing information may bias one's estimates here.

It would therefore appear to be important to attempt to include households with missing information. The method used by Hurd and myself is to estimate missing data with sample wealth growth rates between waves. That raises the question of how sensitive one's results are to different assumptions about those growth rates.

One way to address that question is to make an optimistic assumption about those growth rates so as to generate a lower bound estimate of dissaving. Accordingly, I consider the case where missing data are assumed to grow just fast enough

TABLE 5

GROWTH RATES IN MEAN WEALTH, MISSING DATA ASSUMED TO GROW AT THE RATE OF INFLATION

(Total real percentage change between years)

Housing wealth:		All observations		Positive initial wealth	
		Included	Excluded	Included	Excluded
1969–71:	Singles	−6.5	−15.9	−7.9	−17.5
		(616)	(616)	(438)	(381)
	Couples	−6.4	−9.6	−6.5	−10.1
		(399)	(399)	(358)	(319)
	All	−6.4	−12.2	−7.1	−13.2
		(1015)	(1015)	(796)	(700)
1971–75:	Singles	−8.5	−16.4	−9.5	−17.9
		(746)	(746)	(567)	(495)
	Couples	−1.2	−4.9	−1.7	−6.3
		(833)	(833)	(762)	(667)
	All	−3.3	−7.8	−3.9	−9.2
		(1579)	(1579)	(1329)	(1162)
1975–77:	Singles	−8.8	−20.1	−9.3	−21.1
		(1400)	(1400)	(1154)	(1030)
	Couples	−14.0	−27.0	−14.7	−28.0
		(1971)	(1971)	(1846)	(1657)
	All	−12.7	−25.4	−13.3	−26.4
		(3371)	(3371)	(3000)	(2687)
1977–79:	Singles	11.1	21.9	10.4	18.4
		(1568)	(1568)	(1327)	(1214)
	Couples	20.2	30.3	19.5	25.7
		(2122)	(2122)	(2015)	(1827)
	All	17.7	28.1	17.0	23.8
		(3690)	(3690)	(3342)	(3041)
Cumulative:	Singles	−13.3	−31.6	−16.6	−36.7
	Couples	−4.4	−18.2	−6.3	−23.8
	All	−7.0	−22.6	−9.4	−28.2

Note: Number of observations in parentheses. All refers to singles and couples combined.

to maintain their real value. I consider this assumption optimistic as all the information we have on households missing data suggests they dissave rapidly. The results of this thought experiment are displayed in Table 5.

They are very similar to those found in Table 2. The cumulative decline in real wealth for the entire sample is −7.0 percent including housing and −22.6 percent excluding housing. For observations with positive initial wealth, the numbers are −9.4 percent and −28.2 percent respectively. This suggests that the finding of dissaving is not very sensitive to the specific growth rates employed to estimate missing data.

The fact that the elderly appear to dissave leaves open the question of how that dissaving occurs. Since real wealth equals real asset prices times the quantity of assets, there are two different means for the elderly to dissave: they could reduce their quantity of assets or the real prices of those assets could decline.

To determine which was the case, I attempted to decompose the dissaving rates from Table 2 into price and quantity changes. Following the methods employed by the Royal Commission on the Distribution of Income and Wealth

(1979), I attempted to measure the dissaving that would have occurred had households maintained their quantity of assets and simply experienced changes in asset prices. Estimates of the degree of dissaving this would have generated are displayed in Table 6. The residual amount of dissaving can be attributed to changes in the quantity of assets and it too is calculated and displayed there.[5]

TABLE 6

A Decomposition of the Changes in Mean Wealth Including Housing
(Total real percentage change between years)

Due to changes in:		All observations		Positive initial wealth	
		Prices	Quantities	Prices	Quantities
1969–71:	Singles	−3.5	−4.1	−3.6	−5.4
		(616)	(616)	(438)	(381)
	Couples	−4.0	−3.4	−4.5	−3.0
		(399)	(399)	(358)	(319)
	All	−3.8	−3.7	−3.8	−4.3
		(1015)	(1015)	(796)	(700)
1971–75:	Singles	−10.2	1.7	−10.2	0.7
		(746)	(746)	(567)	(495)
	Couples	−10.0	10.0	−10.1	9.7
		(833)	(833)	(762)	(667)
	All	−10.1	7.7	−10.2	7.2
		(1579)	(1579)	(1329)	(1162)
1975–77:	Singles	−1.0	−10.1	−1.1	−10.5
		(1400)	(1400)	(1154)	(1030)
	Couples	0.9	−19.1	0.8	−19.6
		(1971)	(1971)	(1846)	(1657)
	All	0.4	−16.8	0.3	−17.3
		(3371)	(3371)	(3000)	(2687)
1977–79:	Singles	5.8	8.4	5.7	7.8
		(1568)	(1568)	(1327)	(1214)
	Couples	6.6	20.2	6.3	19.8
		(2122)	(2122)	(2015)	(1827)
	All	6.4	16.8	6.1	16.5
		(3690)	(3690)	(3342)	(3041)
Cumulative:	Singles	−9.3	−4.9	−9.4	−8.0
	Couples	−7.1	3.2	−7.6	1.9
	All	−7.6	0.7	−8.0	−1.3

Note: Number of observations in parentheses. All refers to singles and couples combined.

The numbers indicate that most of the dissaving we observe can be explained by price changes. For singles, two-thirds of the cumulative decline can be traced to falling real asset prices. For couples, more than 100% of the decline can be linked to price changes since the quantity of assets rose during the sample period. Among all observations, the entire decline in real wealth can be attributed to shrinking real asset prices instead of asset quantities.

[5]Stock prices were inflated by the S&P 500 stock index, housing values were inflated by the U.S. Commerce Department's price index of new one family homes (adjusted for changes in quality), and farm prices were inflated by the U.S. Department of Agriculture's farm real estate historical series. All other asset and debt values were assumed constant in nominal terms. Only wealth including the value of housing is considered because housing inflation is such an important part of the price changes in real wealth.

These results are interesting but are not necessarily inconsistent with the life-cycle model. If retirees correctly anticipated falling real asset prices during the 1970s, it may have been logical for them to maintain the quantity of their assets. On the other hand, if they were expecting asset prices to keep up with inflation, it is puzzling why they did not systematically reduce their stock of assets. Panel data from a decade in which asset prices kept up with inflation would be useful in resolving this puzzle.

III. Median Rates of Dissaving

Bernheim (1987) suggested computing median growth rates in real wealth as an alternative measure of real dissaving. There are several reasons why it might be preferable to use such a method. First, a study by Juster and Kuester (1991) found that the RHS significantly underreported the average wealth of retirees. They compared average wealth figures in the RHS with those obtained by the Survey of Consumer Finances (SCF). Unlike the RHS, the SCF was specifically designed to measure wealth, so its wealth data are more extensive.

The SCF also carefully compensated for survey nonresponse bias. Wealthier households tend to be less willing to participate in surveys, which biases downwards one's estimates of average wealth. Unlike the RHS, the SCF ensured that high income households were properly represented. Summary figures from the SCF compare well with aggregate wealth statistics.

Juster and Kuester found that average wealth in the RHS in 1979 was 46 percent of that computed in the SCF for the same year: $65,823 vs. $137,606. Since this comparison was only done for one year, it is impossible to know how mean wealth would have compared in 1969. If the mismeasurement was equally strong from 1969 to 1979, then this difference in levels need not distort estimates of changes in real wealth. Nonetheless, this degree of error is worrisome. A small change in the degree of error over time could have a significant impact on estimated growth rates in mean wealth.

Median wealth in the RHS, on the other hand, was 94 percent that calculated in the SCF in 1979: $39,282 vs $41,697. The RHS then appears to do a better job of representing average or typical retirees. So median rates of growth may be more accurately measured than mean rates.

A second problem with calculating growth in mean wealth in the RHS is that it is extremely sensitive to the behavior of the wealthy. Unfortunately, we know that the behavior of the wealthy is distorted in the RHS. The problem is that the RHS caps all asset values at $1 million; values above that are rounded down. This top-coding procedure could have a huge impact on estimated growth rates in mean wealth. The bias could go either way, depending upon what was happening to assets valued at more than $1 million.

Top-coding would likely pose much less of a problem for estimating median growth rates, because it affects only a small number of observations in each wave. Medians also do not weight wealthier individuals more heavily, which would significantly diminish the impact of these erroneous observations on the estimate of k.

TABLE 7

MEDIAN GROWTH RATES IN REAL WEALTH
(Total real percentage change between years)

		Singles	Couples	All
1969–71:	Housing included	−8.3	−7.0	−8.0
		[−8.5 to −6.2]	[−8.5 to −4.2]	[−8.5 to −4.9]
		(438)	(358)	(796)
	Housing excluded	−10.3	−10.8	−10.6
		[−20.6 to −8.5]	[−16.2 to −8.5]	[−15.5 to −8.5]
		(381)	(319)	(700)
1971–75:	Housing included	−12.9	−0.3	−5.9
		[−17.2 to −10.3]	[−3.2 to 2.2]	[−8.4 to −2.8]
		(567)	(762)	(1329)
	Housing excluded	−20.8	−19.8	−20.8
		[−23.3 to −20.7]	[−20.8 to −14.7]	[−20.8 to −19.4]
		(495)	(666)	(1161)
1975–77:	Housing included	−10.5	−4.2	−6.1
		[−12.5 to −8.3]	[−5.4 to −3.6]	[−7.3 to −4.8]
		(1154)	(1846)	(3000)
	Housing excluded	−13.1	−13.1	−13.1
		[−13.1 to −13.0]	[−13.4 to −13.1]	[−13.1 to −13.0]
		(1030)	(1657)	(2687)
1977–79:	Housing included	−8.2	4.3	1.3
		[−10.1 to −5.5]	[2.3 to 5.8]	[0.0 to 2.1]
		(1327)	(2015)	(3342)
	Housing excluded	−12.3	−11.1	−12.3
		[−12.3 to −12.2]	[−12.3 to −7.9]	[−12.3 to −12.0]
		(1214)	(1826)	(3040)
Cumulative:	Housing included	−34.4	−7.4	−17.7
	Housing excluded	−46.0	−44.7	−46.0

Note: Number of observations in parentheses. 95 percent confidence intervals in brackets.

A final reason for preferring median growth rates is that one can easily compute confidence intervals for them. Each sample household rate is a Bernoulli trial with a 50 percent probability of exceeding the true median and a 50 percent probability of falling below it. The probability that a certain fraction will exceed the true median has a binomial distribution from which one can identify the ends of a 95 percent confidence interval (Smith, 1991).[6]

A problem one encounters here is how to treat non-positive initial observations of net worth. For instance, what is the growth rate if net worth goes from −$500 to +$1,000? To avoid these problems, I focused exclusively on households with positive initial wealth.

To estimate missing data, I employed Hurd and Shoven's procedure of using median growth rates by asset category, given that the ultimate objective here is a median. The estimated median growth rates with confidence intervals are displayed in Table 7. The cumulative decline in real wealth among all observations is 17.7 percent including housing. The dissaving rate is usually much higher for singles

[6]I examine median growth rates, but one could also look at the growth rates of median wealth. The advantage of the former is that one can readily compute confidence intervals for them.

than for couples. Excluding housing, the decline for all households is much greater: −46.0 percent or −6 percent a year.

Unlike Bernheim (1987) then, we find that these rates generally exceed the rates of dissaving calculated earlier. A zero percent dissaving rate can be rejected in three of the four sample periods when wealth includes housing. When housing wealth is omitted, no dissaving can be rejected in all four periods. The one partial exception is that among couples including housing wealth, one cannot reject the null of no dissaving in two of the four sample periods.

TABLE 8

MEDIAN GROWTH RATES IN REAL WEALTH, SAMPLE RESTRICTED TO HOUSEHOLDS WITH COMPLETE DATA

(Total real percentage change between years)

		Singles	Couples	All
1969–71:	Housing included	−5.7	−1.8	−4.3
		[−10.1 to 1.2]	[−8.0 to 4.5]	[−8.2 to 1.2]
		(249)	(197)	(446)
	Housing excluded	−25.7	−12.1	−16.3
		[−38.8 to −12.0]	[−22.6 to −7.0]	[−27.2 to −10.4]
		(212)	(173)	(385)
1971–75:	Housing included	−8.4	1.7	−1.6
		[−14.0 to −1.9]	[−2.8 to 8.0]	[−6.5 to 3.5]
		(306)	(405)	(711)
	Housing excluded	−19.2	−13.1	−15.6
		[−26.9 to −12.6]	[−19.9 to −3.4]	[−20.8 to −11.1]
		(269)	(349)	(618)
1975–77:	Housing included	−7.3	−2.5	−4.2
		[−11.3 to −3.4]	[−4.8 to −0.2]	[−6.2 to −2.2]
		(627)	(1036)	(1663)
	Housing excluded	−13.1	−15.2	−14.5
		[−16.5 to −9.1]	[−19.6 to −13.1]	[−17.0 to −13.0]
		(570)	(922)	(1492)
1977–79:	Housing included	−1.8	8.2	4.7
		[−5.8 to 1.7]	[5.9 to 10.8]	[2.6 to 6.3]
		(716)	(1152)	(1868)
	Housing excluded	−12.3	2.3	−5.1
		[−14.4 to −10.0]	[−2.4 to 6.3]	[−7.6 to −1.5]
		(668)	(1047)	(1715)
Cumulative:	Housing included	−21.4	5.4	−5.5
	Housing excluded	−54.2	−33.7	−42.7

Note: Number of observations in parentheses. 95 percent confidence intervals in brackets.

These rates again differ from those obtained for households with no missing data. As Table 8 shows, the cumulative median growth rate in wealth including housing is −5.5 percent among all such households. Zero dissaving cannot be rejected in three of four sample periods. Excluding housing, the number is −42.7 percent and zero dissaving can be rejected in all four sample periods. Omitting households with missing data generally lowers recorded dissaving.

One can also examine how dissaving varies with the age of the head of the household. Table 9 displays biannual dissaving rates for four different age categories. When housing wealth is excluded, the dissaving rates appear fairly constant. When housing wealth is included, however, the rates appear to fall with age; older

TABLE 9

MEDIAN BIANNUAL GROWTH RATES IN REAL WEALTH BY AGE GROUP
(Total real percentage change per two years)

Ages		Singles	Couples	All
0–61:	Housing included	−8.5	−3.5	−6.6
		[−9.5 to −6.6]	[−6.0 to 0.1]	[−8.3 to −4.4]
		(417)	(275)	(692)
	Housing excluded	−12.8	−11.0	−11.0
		[−15.8 to −8.8]	[−13.4 to −8.5]	[−13.4 to −9.3]
		(357)	(238)	(595)
62–65:	Housing included	−8.5	−2.2	−4.7
		[−9.5 to −7.2]	[−3.5 to −0.6]	[−5.6 to −3.7]
		(1086)	(1396)	(2482)
	Housing excluded	−12.9	−11.0	−12.3
		[−13.1 to −11.7]	[−13.1 to −10.8]	[−13.1 to −11.0]
		(958)	(1241)	(2199)
66–69:	Housing included	−8.9	−0.6	−3.2
		[−10.8 to −6.6]	[−2.0 to 0.7]	[−3.9 to −2.0]
		(1532)	(2671)	(4203)
	Housing excluded	−12.9	−12.3	−12.3
		[−13.1 to −12.3]	[−13.1 to −12.3]	[−13.1 to −12.3]
		(1386)	(2403)	(3789)
70+:	Housing included	−6.0	5.6	1.4
		[−11.1 to −2.0]	[2.3 to 8.6]	[−0.9 to 3.2]
		(451)	(639)	(1090)
	Housing excluded	−12.3	−9.2	−11.9
		[−12.3 to −9.4]	[−12.3 to −4.5]	[−12.3 to −7.7]
		(419)	(586)	(1005)

Note: Number of observations in parentheses. 95 percent confidence intervals in brackets.

households dissave less. This surprising finding may be due to a couple of factors. First, observations on older households are more likely to come from the more recent waves in the RHS. If by chance income shocks were more positive later in the survey, that could generate unusually low dissaving rates among older households. A second possible explanation is that households may desire to hold some minimum level of bequeathable wealth for precautionary purposes. As households age, more and more may dissave to the point where they reach this wealth floor and stop dissaving.[7]

IV. AN ALTERNATE MEASURE OF DISSAVING

Students of this research are often drawn to the bottom line: the cumulative percentage change over the entire sample period. What is often not recognized is that those rates implicitly weight more heavily those households that live longer. A person that dies in 1972 will affect only the 1969–71 dissaving rate. A person that survives to 1979 will affect all four dissaving rates and have a bigger influence on the cumulative rate. Since wealthier households tend to live longer, this may also have the effect of emphasizing wealthier households.

[7]Most of those households would presumably subsist on annuity income such as Social Security benefits.

I propose an alternate method for calculating dissaving rates that treats all households equally. It is meant to serve as a complement to, not a substitute for, existing cumulative statistics. First, calculate the annual dissaving rate for each household over however many years they live. That produces one observation per households. Then compute the median among those observations.

TABLE 10

MEDIAN GROWTH RATES IN REAL WEALTH, SAMPLE COMPOSED OF EACH HOUSEHOLD'S MEAN ANNUAL GROWTH RATE

(Real percentage change)

	Singles	Couples	All
Annual rate:			
Housing included	−3.2	0.1	−0.9
	[−4.0 to −2.7]	[−0.3 to 0.5]	[−1.3 to −0.6]
	(1809)	(2643)	(4452)
Housing excluded	−6.4	−5.7	−6.2
	[−6.8 to −6.4]	[−6.2 to −5.1]	[−6.4 to −5.8]
	(1657)	(2426)	(4083)
Projected change over a decade:			
Housing included	−27.8	1.0	−8.6
Housing excluded	−48.4	−44.4	−47.3

Note: Number of observations in parentheses. 95 percent confidence intervals in brackets.

Table 10 contains estimated median dissaving rates using this procedure.[8] The estimated dissaving rate among all observations for real wealth including housing is −0.9 percent a year, equivalent to −8.6 percent per decade. This represents less dissaving than found in Table 7. Nonetheless, the null of no dissaving can be rejected at conventional statistical levels. However, when the data are split up between singles and couples, the null of no dissaving can only be rejected among the singles. Excluding housing from wealth generates greater dissaving and in all three cases, the null of no dissaving can be rejected.

V. CONCLUSION

Modifications and refinements have been suggested for estimating dissaving rates among retirees. In many cases, the results confirm Hurd's finding that retirees run down their bequeathable assets. Estimated savings rates are negative in most periods for both singles and couples, whether or not housing wealth is included in one's wealth measure. Hurd's approach of not omitting households lacking data also seems appropriate: households lacking data dissave significantly more rapidly than households with complete information. These results also do not appear to be sensitive to how one estimates the missing data. The findings complement other recent studies (Hurd, 1990; Kuehlwein, 1993) that support the basic life-cycle model.

On the other hand, this paper raises two important questions about the consistency of the data with the life-cycle theory. First, it demonstrates that the evidence that elderly couples dissave is weak. Refining Hurd's estimates of growth

[8]Again, the sample is restricted to households with positive initial levels of wealth.

in mean wealth including housing for couples moves the dissaving rate close to zero. Computing the median growth rate in real wealth including housing, one finds that in two of the four sample subperiods the null of no dissaving for couples cannot be rejected. Moreover, when all households are weighted equally, the median saving rate among couples is actually slightly positive. Second, the dissaving that occurred in the 1970s appears to have derived almost completely from a drop in real asset prices and not a reduction in the quantity of assets as one might have expected.

Neither of these results, of course, is proof that the life-cycle model is wrong. However, they are puzzling enough to suggest that it is as yet not clear that the data unequivocally support the crucial implication of the life-cycle model that retirees dissave.

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