7   The Poverty of Widows: Future Prospects

Michael D. Hurd

7.1 Introduction

Although the economic well-being of the elderly has improved substantially over the past several decades, a high fraction of the elderly, especially of widows, is still in poverty. One might hope that as today's elderly population ages further this fraction will decline because the young elderly come from cohorts with substantially higher lifetime earnings than the cohorts of the old elderly. The purpose of this paper is to study the likelihood this will happen. The approach is to examine a number of the factors that will influence the fraction in poverty and to forecast how the fraction will change in the future.

One method to forecast the fraction of the elderly in poverty would be to study trends in income and apply the trends to the incomes of each age group. This would amount to forecasting the future economic status of today's young elderly from the economic status of today's old elderly and from trends in income. But this method is not likely to be reliable for a number of reasons. First, each cohort has had different lifetime earnings and rates of return on their savings; therefore, the current economic status of today's old elderly is probably not a useful guide to the current or future economic status of today's young elderly. Second, the elderly have had substantial changes in Social Security and Medicare/Medicaid whereas both of these programs will probably be stable in the future. Third, changes in mortality rates will mean that poverty rates of the young elderly will eventually be higher than a trend

201

analysis would indicate. Finally, a trend analysis can only answer a limited number of questions because it is not based on an economic model; for example, it cannot say how the poverty rate would change in response to a change in Social Security because it does not model how the individuals would respond to such a change.

In this paper I forecast the poverty rates of the elderly by using an economic model of consumption. The parameters of the model have been estimated from panel data. The model takes as initial conditions the resources of retirement-aged couples and individuals. Given those resources, the model predicts what consumption will be in each future time period. Thus one can trace out the future path of consumption, wealth, and income of each individual and couple. This method has a number of advantages. It is based on observed behavior, and it is founded on economic theory. Because it forecasts the consumption of individuals, it provides details on the distribution of consumption, income, and wealth, not just on the means. It can be used to study changes in poverty rates in response to changes in the environment. Finally, it can be used to define a consumption-based measure of poverty that, I believe, is more appropriate for the elderly than the usual income-based measure.

7.2   Forecasting the Economic Status of the Elderly

The future economic status of a cohort of the elderly depends on initial economic resources, the future economic environment, the choices the individuals make, and future random events. The problem is simplified considerably if one considers only people who have retired because their economic resources are known; forecasting the future economic status of workers is complicated because the resources of workers depend on future wage growth and labor force participation. Furthermore, many of the elderly have a rather stable economic environment because most of their assets (housing, Social Security, and Medicare/Medicaid) are indexed. Indeed, the elderly apparently were better protected against the fall in real income during the 1970s than the rest of the population (Hurd and Shoven 1983).

In this paper I concentrate on forecasting how the economic status of the elderly changes as a result of their consumption decisions. I take as initial conditions the distribution of resources, ages, and household structures in the 1979 Retirement History Survey (RHS). Using a utility-based model of consumption behavior that I have estimated over ten years of data from the RHS, I forecast the consumption and wealth trajectories of each household in the RHS. Each household will, with a probability that is based on the mortality tables, produce households of different composition in each future period. Thus the number of

households defined by composition and assets grows each time period, but the weight attached to each type shrinks. From the forecasts, a future population of the elderly is generated. It is the elderly population that would be found in a steady-state economy in which each cohort reaches the age of the 1979 RHS population with the distribution of assets and household composition of the 1979 RHS. From this standing population, I study the distribution of assets, consumption, and poverty status at each age. Of course, an alternative statement is that the forecasts are of the 1979 RHS population at each future age.

The advantage of this paper's method is that it distinguishes how much poverty is due to initial conditions and how much is due to life-cycle behavior after retirement. It has the further advantage that a consumption-based measure of economic well-being comes naturally from the calculations. This is especially important for the elderly because income, the usual measure, is not a good measure of their economic position; life-cycle considerations indicate that at some age they will consume part of their capital. Although wealth is probably a better measure of economic position than income, it is not completely satisfactory either because of the importance of Social Security and other annuities. When they are exogenous it is not obvious how to aggregate them with bequethable wealth.

The model that is used to forecast consumption and wealth is based on utility maximization under uncertainty about the date of death. The utility-maximization problem can be solved for singles but not for couples because the utility function of couples changes depending on the future mortality realizations. Although the consumption model is appropriate for studying the future economic status of the 1979 widows in the RHS, by itself it cannot be used to forecast the poverty status of widows because the couples will generate new widows as they age; in order to project the economic status of the new widows, their initial conditions must be known. My ad hoc solution is to assume that couples consume their bequeathable wealth at the average rate that was observed over retired couples in the ten years of the RHS. This rate was 0.016 per year.

Because the forecasts depend on the quality of the model and the parameter estimates, I discuss in the appendix the specification and estimation of the economic model. (More details can be found in Hurd 1986.) Here I briefly outline the ideas behind the consumption model.

Suppose a retired individual wants to maximize lifetime utility when the date of death is uncertain. Utility depends on consumption each time period and on any bequests he might leave should he die. Economic resources are initial bequeathable wealth and annuities, which include Social Security, Medicare/Medicaid, and private pensions. It can be shown that the solution to this utility-maximization problem

implies that desired consumption will depend on the parameters of the utility function, mortality rates, bequeathable wealth, the entire time path of annuities, and the strength of the bequest motive. I used the solution to the utility-maximization problem along with data from the ten years of the RHS to estimate the parameters of the utility function. Given the parameters, the economic resources, and the utility-based model, I can forecast the future consumption and wealth paths of each individual in the RHS.

7.3   Forecasting Consumption and Wealth

The consumption and wealth of each single person in the 1979 RHS can be projected given the estimated model and initial conditions by solving equations (5) of the appendix. The initial conditions are real annuities, which include Social Security benefits and Medicare/Medicaid, nominal annuities, which include pensions and bequeathable wealth, and the path of mortality rates which are defined by age, race, and sex. There are two types of solutions depending on which of the parameter estimates are used in the solution. As explained in the appendix, the different sets of parameter estimates come from different estimation methods. The first type of solution, which I call the nonlinear least squares (NLLS) solution, is illustrated in figure 7.1. The second type, which I call the nonlinear two-stage least squares (NL2SLS), is shown in figure 7.2. The NLLS path of consumption quickly falls so that bequeathable wealth is exhausted for most people at an early age.
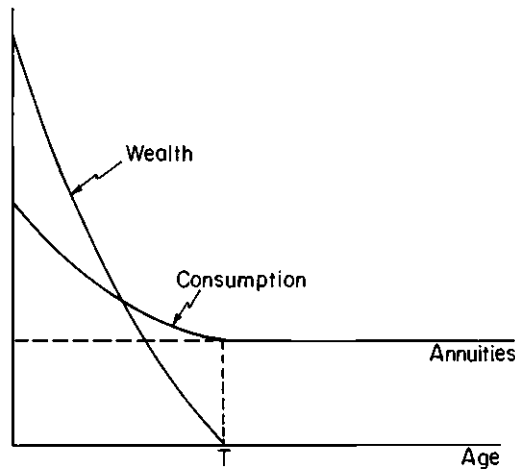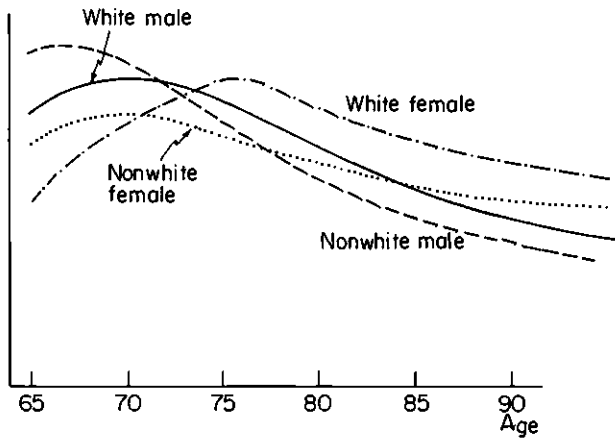

Fig. 7.1   Consumption and wealth trajectories based on the NLLS parameters

Fig. 7.2   Consumption paths based on the NL2SLS parameters

The NL2SLS path of consumption is much flatter, and wealth lasts to a greater age. Regardless of which estimates are used, the wealth and consumption paths of all the 1979 single people will, when weighted by the probabilities of living, give the expected distributions of wealth and consumption not only at each year but also across years.

Table 7.1 shows, for the 1979 RHS widows, the means and medians of consumption, wealth, and income every two years from 1979 through 1999.[1] Part A, based on the NLLS estimates, has consumption and wealth paths like those of figure 7.1. The widows are poor to begin with and rapidly become poorer. By 1989 median bequeathable wealth has fallen to zero, so that at least half of the surviving widows will live from their annuity income only. By 1999 mean bequeathable wealth is essentially zero; therefore, all observations will have exhausted their bequeathable wealth.

Regardless of what the definition of poverty is, it is obvious that, according to these projections, these surviving widows will be poor. It will be useful, however, to make an estimate of the fraction in poverty in each year. The U.S. Bureau of Labor Statistics (BLS) defines poverty according to observed income. For the elderly there are at least two weaknesses to this definition. First, if the rate of inflation is positive, using nominal income from capital implies real capital decumulation because the interest rate that is used to calculate the income is nominal. Thus, the welfare implications of nominal income are obscured. Second, according to the life-cycle hypothesis, income of the elderly is not a good welfare indicator because some wealth should be consumed at advanced ages. I use two measures to calculate the fraction below poverty. The first, an income-based measure, is the sum of annuities and real income from capital. I use a real rate of 0.03. The second is

Table 7.1   Forecasts of the Economic Status of 1979 Widows, Summary Statistics (1979 dollars)

| | | | In Poverty | | | | Consumption | | Income | | Wealth | |
| | Median | Total | Cons | | Inc | | | | | | | |
Year	Age	HH	#	%	#	%	Mean	Median	Mean	Median	Mean	Median
A. Based on the NLLS parameter estimates												
Medicaid/Medicare Included in Wealth and Consumption												
1979	71.0	1,922	250	13	499	26	10,513	8,280	5,377	4,714	41,454	24,608
1981	73.0	1,830	294	16	524	29	9,143	7,147	4,986	4,476	29,072	15,562
1983	74.0	1,721	317	18	539	31	7,995	6,322	4,746	4,334	19,402	8,855
1985	76.0	1,595	346	22	540	34	6,092	5,512	4,527	4,177	12,123	4,087
1987	78.0	1,453	372	26	519	36	5,973	4,948	4,373	4,063	6,993	1,156
1989	80.0	1,299	379	29	476	37	5,238	4,498	4,274	3,998	3,677	0
1991	82.0	1,137	372	33	424	37	4,730	4,232	4,217	3,971	1,760	0
1993	84.0	968	341	35	366	38	4,434	4,084	4,190	3,941	773	0
1995	86.0	798	290	36	303	38	4,290	3,987	4,182	3,941	319	0
1997	88.0	630	234	37	239	38	4,231	3,971	4,184	3,942	119	0
1999	90.0	475	178	37	179	38	4,208	3,954	4,191	3,950	34	0
Medicaid/Medicare Excluded from Wealth and Consumption												
1979	71.0	1,922	398	21	836	43	9,683	7,297	4,547	3,827	41,454	24,608
1981	73.0	1,830	465	25	872	48	8,313	6,275	4,156	3,594	29,072	15,562
1983	74.0	1,721	504	29	872	51	7,166	5,386	3,917	3,457	19,402	8,855
1985	76.0	1,595	555	35	854	54	6,074	4,532	3,699	3,309	12,123	4,087
1987	78.0	1,453	604	42	820	56	5,146	4,017	3,546	3,216	6,993	1,156
1989	80.0	1,299	618	48	751	58	4,413	3,614	3,449	3,154	3,677	0
1991	82.0	1,137	592	52	675	59	3,907	3,366	3,394	3,124	1,760	0
1993	84.0	968	543	56	580	60	3,614	3,193	3,369	3,097	773	0
1995	86.0	798	465	58	479	60	3,473	3,144	3,364	3,096	319	0
1997	88.0	630	373	59	378	60	3,418	3,122	3,371	3,102	119	0
1999	90.0	475	283	60	284	60	3,402	3,121	3,384	3,108	34	0

B. Based on the NL2SLS parameter estimates

							Medicaid/Medicare Included in Wealth and Consumption					
1979	71.0	1,922	427	22	499	26	6,659	5,530	5,377	4,714	41,454	24,608
1981	73.0	1,830	387	21	487	27	6,712	5,608	5,202	4,637	36,257	21,162
1983	74.0	1,721	353	21	476	28	6,783	5,671	5,094	4,573	30,979	17,478
1985	76.0	1,595	326	20	464	29	6,726	5,630	4,936	4,477	25,731	14,123
1987	78.0	1,453	297	20	443	31	6,590	5,566	4,783	4,372	20,657	10,619
1989	80.0	1,299	279	21	417	32	6,370	5,372	4,641	4,278	15,894	7,467
1991	82.0	1,137	257	23	380	33	6,069	5,179	4,512	4,188	11,602	4,700
1993	84.0	968	241	25	335	35	5,709	4,923	4,405	4,112	7,958	2,377
1995	86.0	798	218	27	284	36	5,326	4,650	4,324	4,038	5,073	758
1997	88.0	630	188	30	227	36	4,964	4,424	4,270	3,988	2,984	0
1999	90.0	475	153	32	174	37	4,673	4,236	4,238	3,980	1,601	0

							Medicaid/Medicare Excluded from Wealth and Consumption					
1979	71.0	1,922	662	34	836	43	5,828	4,539	4,547	3,827	41,454	24,608
1981	73.0	1,830	604	33	816	45	5,882	4,614	4,371	3,723	36,257	21,162
1983	74.0	1,721	562	33	787	46	5,954	4,704	4,264	3,672	30,979	17,478
1985	76.0	1,595	521	33	765	48	5,898	4,680	4,107	3,590	25,731	14,123
1987	78.0	1,453	485	33	722	50	5,763	4,647	3,956	3,501	20,657	10,619
1989	80.0	1,299	456	35	667	51	5,545	4,470	3,815	3,414	15,894	7,467
1991	82.0	1,137	425	37	605	53	5,246	4,245	3,689	3,342	11,602	4,700
1993	84.0	968	394	41	531	55	4,889	4,019	3,585	3,255	7,958	2,377
1995	86.0	798	356	45	452	57	4,508	3,774	3,507	3,207	5,073	758
1997	88.0	630	304	48	363	58	4,152	3,575	3,457	3,178	2,984	0
1999	90.0	475	244	51	276	58	3,866	3,419	3,431	3,156	1,601	0

consumption. For singles, consumption is estimated from the utility model. For couples, consumption is the sum of annuities, real income from capital, and the change in capital. Because of the ad hoc assumption about the trajectory of the capital stock of couples, the estimate of consumption for couples reduces to the sum of annuities and 4.6 percent of capital. I take the poverty levels to be those given by the BLS: $3,479 for one person over the age of 65, and $4,388 for two persons over the age of 65, both figures in 1979 dollars.

Any measure of the welfare of the elderly must address the problem of placing a value on Medicare/Medicaid. The program certainly is of some value. Were there no such program, the elderly would spend more of their own wealth on medical care. Rather then speculate about the value, I present two sets of consumption and income measures. The first follows Hurd and Shoven (1983). It includes a value roughly equal to the average transfer through the Medicare/Medicaid system to each eligible person. The idea is that the transfer is the value of a fair medical insurance policy which is given each year to those eligible. The second set of results excludes any valuation for Medicare/Medicaid.

According to the income-based measure of poverty that includes Medicare/Medicaid, the fraction of 1979 RHS widows in poverty begins at a high level and rises slowly as wealth is decumulated. It eventually reaches 38 percent. Because mean wealth is zero, the fraction in poverty will not change further: all the widows that are below the poverty line will remain in poverty and all above will remain out of poverty. The consumption-based measure shows the fraction in poverty starting at a modest level but eventually reaching the same point as the income-based level. This happens, of course, because when bequeathable wealth is exhausted, consumption equals annuity income.

If Medicare/Medicaid is excluded, the results change substantially. The fractions in poverty are much higher at the beginning, and they reach very high levels. Again, however, there are large differences in the early years between the consumption-based and income-based measures.

Part B of table 7.1 gives projections based on the NL2SLS parameter estimates. Typical consumption paths are shown in figure 7.2. The consumption paths are much flatter and more wealth is held than the paths based on the NLLS parameter estimates. This means that initially the consumption-based measure of poverty will show a higher fraction in poverty, but at more advanced ages the fraction in poverty will be smaller. The average fraction in poverty over all age groups is about the same.

The projections of the 1979 RHS widows do not give any idea of the economic status of a steady-state population of widows because the composition only changes by the mortality of the widows. In that

couples are substantially more wealthy than widows, the mortality of husbands will add new widows that are more wealthy than the original widows. Because I do not have a utility-based model of the consumption decisions of couples, I take their wealth decumulation to be 1.6 percent per year, which is the average of all couples over the ten years of the RHS. Each time period each couple will generate three other households: a widow, a widower, and a couple, each with a probability that is calculated from the mortality tables. The new widows and widowers have initial conditions that are related to the wealth and annuities of the couple from which they came. The situation is shown in figure 7.3. For example, a couple in 1979 will generate four additional households by 1984, each of which will have a different wealth level because each is identified by the sex of the survivor and the date of creation.

I make some assumptions about changes in bequeathable wealth and annuities if the husband dies. All nominal annuities are lost. This is roughly confirmed in the RHS data; apparently most nominal annuities are pensions without survivors benefits (Hurd and Wise, ch. 6, in this volume). Human capital is lost as it is almost exclusively due to the husband's working. Social Security benefits become 0.67 of their former level, which assumes the family's benefit is based on the husband's earnings record. Medicare/Medicaid becomes half of its former level. I give two sets of results, each based on different assumptions about bequeathable wealth. In the first set I assume that bequeathable wealth decreases by 32 percent when the husband dies. This is the average
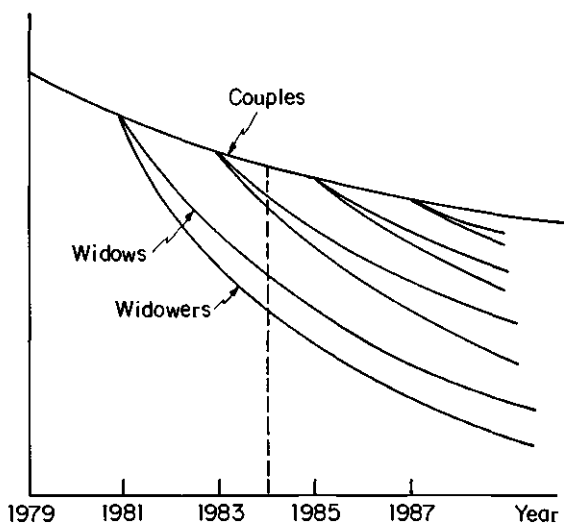

Fig. 7.3   Consumption trajectories of a couple and surviving widow and widower

figure over the ten years of the RHS (Hurd and Wise, ch. 6, in this volume). In the second set, bequeathable wealth does not change at the husband's death.

Table 7.2 gives medians and means of consumption, income, and wealth of couples from 1979 through 1999. Because these results are mostly used to generate initial conditions for the projections of the singles, and because they are so heavily dependent on the assumptions of the ad hoc model, I will only discuss them briefly. In the first panel, both consumption and income include an imputed flow from Medicare/Medicaid; in the second panel, the flow is excluded. Even for the very oldest couples, consumption and income including Medicare/Medicaid are substantial at both the mean and median, and the fraction in poverty is small. Excluding Medicare/Medicaid increases somewhat the fraction in poverty, but the general impression is that couples are reasonably well-off.

As shown in table 7.3, the results for widows when the composition is allowed to change due to the mortality of husbands are very different from the projections of the 1979 RHS widows: income, wealth, and consumption are much higher especially among older widows, and the fractions in poverty much lower. The reasons are that in each time period the widows who are added at the husband's death have much higher bequeathable wealth, even after the reduction for the wealth destruction at the husband's death, than the 1979 widows, and the new widows have substantially higher levels of Social Security benefits, even after reduction, than the 1979 widows.

Table 7.3, part A, shows that in the first few years consumption that includes Medicare/Medicaid is somewhat lower than couples, but income and wealth are substantially lower. This is, of course, a reflection of the much faster consumption of capital by singles than by couples.[2] In later years, consumption by widows is only about half that of couples at the median. The fraction of widows in poverty according to the consumption-based measure starts at a rather low level and rises to 20 percent by 1999. By then the median age of the widows is 89, and, even though the mortality rate of the widows is high, there are still a sizeable number of widows because almost all of the husbands have died. According to the income-based measure of poverty, the fraction of widows in poverty actually falls. This is caused by the high level of Social Security added by the new widows.

Even though the new widows have higher bequeathable wealth than the original widows, the median wealth holdings become zero by 1993, so that at least half of the widows will live off of Social Security and Medicare/Medicaid.

In the standing population of widows, the fraction in poverty is 17.6 percent based on the consumption measure and 24.6 percent based on

Table 7.2   Forecasts of the Economic Status of 1979 Couples, Summary Statistics (1979 dollars)

Year	Median Age M	Median Age F	Total HH	In Poverty Cons #	Cons %	In Poverty Inc #	Inc %	Consumption Mean	Consumption Median	Income Mean	Income Median	Wealth Mean	Wealth Median
				Medicaid/Medicare Included in Wealth and Consumption									
1979	71.0	69.0	2,418	45	2	60	2	13,594	11,830	11,871	10,651	93,714	58,300
1981	73.0	71.0	2,102	43	2	54	3	13,331	11,624	11,667	10,457	90,469	56,227
1983	75.0	72.0	1,777	35	2	45	3	13,356	11,697	11,750	10,614	87,369	54,276
1985	77.0	74.0	1,452	30	2	38	3	13,171	11,577	11,619	10,505	84,404	52,461
1987	79.0	76.0	1,139	24	2	31	3	12,989	11,452	11,489	10,368	81,545	50,586
1989	81.0	78.0	855	19	2	23	3	12,810	11,310	11,363	10,292	78,741	48,824
1991	83.0	80.0	611	13	2	17	3	12,630	11,156	11,234	10,175	75,916	47,061
1993	85.0	82.0	412	9	2	12	3	12,452	11,011	11,107	10,065	73,137	45,286
1995	86.0	84.0	260	6	2	8	3	12,274	10,881	10,979	9,983	70,417	43,629
1997	88.0	86.0	151	4	2	5	3	12,104	10,732	10,856	9,885	67,841	42,004
1999	90.0	87.0	80	2	3	3	3	11,940	10,584	10,737	9,806	65,388	40,488
				Medicaid/Medicare Excluded from Wealth and Consumption									
1979	71.0	69.0	2,418	168	7	215	9	11,746	9,957	10,023	8,805	93,714	58,300
1981	73.0	71.0	2,102	149	7	191	9	11,484	9,732	9,820	8,625	90,469	56,227
1983	75.0	72.0	1,777	126	7	160	9	11,511	9,825	9,904	8,743	87,369	54,276
1985	77.0	74.0	1,452	104	7	132	9	11,327	9,707	9,775	8,624	84,404	52,461
1987	79.0	76.0	1,139	82	7	106	9	11,147	9,568	9,648	8,529	81,545	50,586
1989	81.0	78.0	855	61	7	81	9	10,972	9,431	9,524	8,447	78,741	48,824
1991	83.0	80.0	611	45	7	59	10	10,795	9,301	9,399	8,334	75,916	47,061
1993	85.0	82.0	412	31	8	40	10	10,620	9,166	9,275	8,242	73,137	45,286
1995	86.0	84.0	260	20	8	26	10	10,447	9,024	9,152	8,139	70,417	43,629
1997	88.0	86.0	151	12	8	15	10	10,283	8,901	9,035	8,046	67,841	42,004
1999	90.0	87.0	80	6	8	8	10	10,127	8,782	8,924	7,961	65,388	40,488

Table 7.3 Forecasts of the Economic Status of Widows in Steady-State: Decrease in Bequeathable Wealth at Husband's Death (1979 dollars)

Year	Median Age	Total HH	In Poverty				Consumption		Income		Wealth	
			Cons		Inc							
			#	%	#	%	Mean	Median	Mean	Median	Mean	Median

A. Based on the NLLS parameter estimates

Medicaid/Medicare Included in Wealth and Consumption

Year	Median Age	Total HH	Cons #	Cons %	Inc #	Inc %	Cons Mean	Cons Median	Income Mean	Income Median	Wealth Mean	Wealth Median
1979	71.0	1,922	250	13	499	26	10,513	8,280	5,377	4,714	41,454	24,608
1981	72.0	2,047	298	15	534	26	10,000	7,843	5,295	4,694	33,739	18,014
1983	74.0	2,148	325	15	561	26	9,635	7,480	5,301	4,748	27,650	12,414
1985	76.0	2,214	359	16	576	26	9,234	6,999	4,277	4,787	22,756	8,058
1987	78.0	2,230	391	18	570	26	8,854	6,517	5,263	4,804	18,753	4,488
1989	80.0	2,186	406	19	539	25	8,467	6,016	5,249	4,832	15,367	1,976
1991	81.0	2,078	407	20	496	24	8,064	5,654	5,232	4,846	12,422	450
1993	83.0	1,906	384	20	443	23	7,667	5,438	5,213	4,866	9,859	0
1995	85.0	1,680	339	20	381	23	7,281	5,289	5,195	4,883	7,639	0
1997	87.0	1,414	285	20	313	22	6,900	5,196	5,179	4,884	5,741	0
1999	89.0	1,129	228	20	245	22	6,523	5,099	5,164	4,880	4,139	0

Medicaid/Medicare Excluded from Wealth and Consumption

Year	Median Age	Total HH	Cons #	Cons %	Inc #	Inc %	Cons Mean	Cons Median	Income Mean	Income Median	Wealth Mean	Wealth Median
1979	71.0	1,922	398	21	836	43	9,683	7,297	4,547	3,827	41,454	24,608
1981	72.0	2,047	472	23	903	44	9,127	6,862	4,423	3,802	33,739	18,014
1983	74.0	2,148	521	24	939	44	8,725	6,559	4,391	3,829	27,650	12,414
1985	76.0	2,214	586	26	963	43	8,293	5,995	4,336	3,810	22,756	8,058
1987	78.0	2,230	653	29	972	44	7,887	5,456	4,295	3,793	18,753	4,488
1989	80.0	2,186	690	32	942	43	7,478	5,017	4,260	3,793	15,367	1,976
1991	81.0	2,078	692	33	896	43	7,059	4,577	4,226	3,789	12,422	450
1993	83.0	1,906	670	35	819	43	6,648	4,327	4,194	3,777	9,859	0
1995	85.0	1,680	615	37	721	43	6,252	4,162	4,166	3,767	7,639	0
1997	87.0	1,414	533	38	605	43	5,863	4,056	4,142	3,763	5,741	0
1999	89.0	1,129	439	39	482	43	5,481	3,972	4,122	3,758	4,139	0

B. Based on the NL2SLS parameter estimates

		Medicaid/ Medicare Included in Wealth and Consumption										
1979	71.0	1,922	427	22	499	26	6,659	5,530	5,377	4,714	41,454	24,608
1981	72.0	2,047	394	19	497	24	7,128	5,886	5,488	4,877	40,160	23,403
1983	74.0	2,148	365	17	497	23	7,607	6,355	5,614	4,996	38,098	21,768
1985	76.0	2,214	342	15	496	22	7,963	6,621	5,656	5,135	35,385	19,544
1987	78.0	2,230	317	14	486	22	8,229	6,858	5,664	5,190	32,119	17,304
1989	80.0	2,186	302	14	469	21	8,383	6,999	5,639	5,184	28,380	14,174
1991	81.0	2,078	283	14	441	21	8,401	6,983	5,588	5,153	24,296	10,910
1993	83.0	1,906	269	14	400	21	8,284	6,807	5,520	5,127	20,091	7,625
1995	85.0	1,680	249	15	349	21	8,037	6,525	5,445	5,088	15,992	4,576
1997	87.0	1,414	220	16	291	21	7,678	6,131	5,373	5,044	12,203	2,264
1999	89.0	1,129	185	16	232	21	7,239	5,781	5,306	4,997	8,859	662
		Medicaid/Medicare Excluded from Wealth and Consumption										
1979	71.0	1,922	662	34	836	43	5,828	4,539	4,547	3,827	41,454	24,608
1981	72.0	2,047	623	30	847	41	6,255	4,926	4,615	3,933	40,160	23,403
1983	74.0	2,148	596	28	851	40	6,697	5,342	4,705	4,052	38,098	21,768
1985	76.0	2,214	567	26	860	39	7,022	5,594	4,715	4,111	35,385	19,544
1987	78.0	2,230	540	24	848	38	7,262	5,887	4,696	4,132	32,119	17,304
1989	80.0	2,186	519	24	822	38	7,394	5,983	4,651	4,126	28,380	14,174
1991	81.0	2,078	494	24	784	38	7,396	5,940	4,582	4,099	24,296	10,910
1993	83.0	1,906	470	25	725	38	7,265	5,750	4,501	4,039	20,091	7,625
1995	85.0	1,680	440	26	650	39	7,008	5,451	4,416	3,983	15,992	4,576
1997	87.0	1,414	395	28	556	39	6,641	5,049	4,336	3,915	12,203	2,264
1999	89.0	1,129	339	30	452	40	6,197	4,649	4,264	3,863	8,859	662

the income measure. These fractions were found by taking a weighted average of the fractions in poverty in each year.

When Medicare/Medicaid is excluded from the income and consumption measures, the results change substantially; both income and consumption drop by about $1,000 as that is roughly the per person transfer amount imputed to the Medicare/Medicaid system. The fractions in poverty rise sharply, especially at older ages; both for the consumption-based and income-based measures, the fraction in poverty in 1999 almost doubles. In the standing population, the fraction in poverty increases to 30 percent by the consumption measure and to about 43 percent by the income measure.

Apparently a substantial number of widows have income and consumption near the poverty line, so that a fairly small change causes a large number to fall below the poverty line. This is illustrated in table 7.4, which gives the consumption distributions in 1983. Because the value of Medicare/Medicaid is large relative to the poverty line, many widows are shifted into poverty by excluding Medicare/Medicaid. Both the thickness of the distribution of widows near the poverty line and the shifting indicate the rather artificial nature of the official classification into poverty. In particular, if one wants to attach welfare significance to the poverty level, more research needs to be done on the valuation of Medicare/Medicaid.

Table 7.3, part B, has the projections based on the NL2SLS parameter estimates of the steady-state population of widows. As measured by consumption, the time path of the poverty rate is changed substantially. There is much more poverty at earlier ages and much less later. As measured by income, there is less poverty overall because more wealth is held. This points out again the weakness of an income-based definition of poverty; the population appears to be better-off even though they have consumed less. Although bequests at the death of the widow

Table 7.4   **Distribution of Consumption, by Number of Households (1979 dollars)**

Consumption	Medicare/Medicaid Included	Medicare/Medicaid Excluded
< $1,000	63.5	72.6
$1,000–2,000	47.9	106.8
$2,000–5,000	544.4	666.0
$5,000–10,000	748.0	665.8
$10,000–20,000	571.9	486.4
$20,000–50,000	155.8	134.5
$50,000–100,000	15.5	15.0
> $100,000	1.4	1.3
Total households	2,148.4	2,148.4

are not shown directly here, the results imply higher bequests simply because at each age more wealth is held. That is, even among poor widows the NL2SLS consumption paths imply that less wealth is consumed and more bequeathed.

Table 7.5 gives results similar to table 7.3 except I have assumed that no bequeathable wealth is lost at the husband's death. In that the differences between tables 7.3 and 7.5 are about the same for each estimation method, I will not discuss separately parts A and B. Of course, because bequeathable wealth is not lost at the husband's death, consumption, income, and wealth are higher. The largest changes are at mean levels because of the skewed distribution of bequeathable wealth. In fact, there is very little change in the poverty levels: those close to the poverty level have very little bequeathable wealth; thus, it matters little whether bequeathable wealth decreases by 32 percent at the husband's death or not.

Because the projections generate a complete distribution of couples and widows, a poverty rate over both groups is found by taking a weighted average. The rates based on the results of tables 7.2 and 7.3, part A, are:

| | Poverty Rates | |
Medicare/Medicaid	Income-based	Consumption-based
Included	17%	12%
Excluded	31%	22%

This shows again the importance of Medicare/Medicaid. The difference between the consumption-based and income-based measures are not as large, but it should be remembered that the consumption of wealth by couples is not based on a utility model.

7.4   Conclusions

The widows in the 1979 RHS had little wealth and, according to my projections, they quickly became even poorer. Thus, the future prospects of the 1979 RHS widows are not bright. When the population of widows was allowed to change as husbands died, the extent of poverty was substantially less. The future prospects of the population of widows that would be generated in steady-state by the 1979 RHS sample of widows and couples are much better. A critical unresolved issue, however, is the measurement of poverty. I presented four measures, and they gave substantially different fractions in poverty. Over the steady-state population of couples and widows, the measures range from a low of 12 percent to a high of 31 percent. The welfare consequences are quite different at these extremes. For widows, the variation is even

Table 7.5 Forecasts of the Economic Status of Widows in Steady-State: No Change in Bequeathable Wealth at the Husband's Death (1979 dollars)

			In Poverty				Consumption		Income		Wealth	
			Cons		Inc							
Year	Median Age	Total HH	#	%	#	%	Mean	Median	Mean	Median	Mean	Median
A. Based on the NLLS parameter estimates												
					Medicaid/Medicare Included in Wealth and Consumption							
1979	71.0	1,922	250	13	499	26	10,513	8,280	5,377	4,714	41,454	24,608
1981	72.0	2,047	297	15	534	26	10,178	7,865	5,339	4,699	35,179	18,247
1983	74.0	2,148	325	15	560	26	9,948	7,515	5,371	4,755	29,979	12,751
1985	76.0	2,214	358	16	575	26	9,650	7,067	5,361	4,825	25,556	8,393
1987	78.0	2,230	390	17	567	25	9,336	6,547	5,351	4,825	21,699	4,708
1989	80.0	2,186	404	18	536	25	8,978	6,089	5,334	4,856	18,214	2,154
1991	81.0	2,078	405	19	494	24	8,579	5,704	5,309	4,878	14,995	543
1993	83.0	1,906	382	20	441	23	8,158	5,496	5,279	4,897	12,056	0
1995	85.0	1,680	337	20	380	23	7,719	5,341	5,248	4,899	9,423	0
1997	87.0	1,414	284	20	312	22	7,270	5,231	5,220	4,897	7,125	0
1999	89.0	1,129	227	20	244	22	6,823	5,131	5,195	4,896	5,160	0
					Medicaid/Medicare Excluded in Wealth and Consumption							
1979	71.0	1,922	398	21	836	43	9,683	7,297	4,547	3,827	41,454	24,608
1981	72.0	2,047	472	23	901	44	9,305	6,875	4,466	3,803	35,179	18,247
1983	74.0	2,148	520	24	935	44	9,039	6,587	4,461	3,835	29,979	12,751
1985	76.0	2,214	584	26	957	43	8,709	6,052	4,420	3,821	25,556	8,393
1987	78.0	2,230	650	29	965	43	8,368	5,525	4,384	3,814	21,699	4,708
1989	80.0	2,186	685	31	933	43	7,989	5,098	4,346	3,821	18,214	2,154
1991	81.0	2,078	685	33	887	43	7,574	4,655	4,303	3,813	14,995	543
1993	83.0	1,906	663	35	811	43	7,139	4,370	4,260	3,802	12,056	0
1995	85.0	1,680	608	36	714	43	6,690	4,205	4,219	3,789	9,423	0
1997	87.0	1,414	527	37	601	42	6,233	4,098	4,183	3,772	7,125	0
1999	89.0	1,129	434	38	480	42	5,781	4,001	4,153	3,766	5,160	0

B. Based on the NL2SLS parameter estimates

Medicaid/Medicare Included in Wealth and Consumption

1979	71.0	1,922	427	22	499	26	6,659	5,530	5,377	4,714	41,454	24,608
1981	72.0	2,047	393	19	496	24	7,219	5,901	5,531	4,880	41,601	23,674
1983	74.0	2,148	364	17	496	23	7,781	6,383	5,689	5,004	40,580	22,157
1985	76.0	2,214	341	15	494	22	8,211	6,681	5,752	5,151	38,566	20,045
1987	78.0	2,230	316	14	484	22	8,543	6,944	5,771	5,213	35,700	17,837
1989	80.0	2,186	301	14	467	21	8,748	7,092	5,751	5,213	32,095	14,917
1991	81.0	2,078	281	14	437	21	8,806	7,068	5,697	5,206	27,925	11,539
1993	83.0	1,906	268	14	398	21	8,711	6,914	5,621	5,168	23,459	8,104
1995	85.0	1,680	247	15	347	21	8,470	6,623	5,535	5,123	18,975	5,072
1997	87.0	1,414	218	15	289	20	8,097	6,258	5,448	5,070	14,724	2,627
1999	89.0	1,129	183	16	231	20	7,625	5,875	5,366	5,026	10,877	848

Medicaid/Medicare Excluded in Wealth and Consumption

1979	71.0	1,922	662	34	836	43	5,828	4,539	4,547	3,827	41,454	24,608
1981	72.0	2,047	622	30	845	41	6,347	4,938	4,658	3,938	41,601	23,674
1983	74.0	2,148	592	28	847	39	6,871	5,369	4,779	4,067	40,580	22,157
1985	76.0	2,214	563	25	856	39	7,270	5,654	4,811	4,132	38,566	20,045
1987	78.0	2,230	536	24	842	38	7,576	5,960	4,804	4,169	35,700	17,837
1989	80.0	2,186	515	24	814	37	7,759	6,056	4,762	4,159	32,095	14,917
1991	81.0	2,078	490	24	774	37	7,800	6,042	4,691	4,128	27,925	11,539
1993	83.0	1,906	464	24	717	38	7,692	5,858	4,602	4,082	23,459	8,104
1995	85.0	1,680	433	26	642	38	7,440	5,544	4,506	4,013	18,975	5,072
1997	87.0	1,414	388	27	549	39	7,060	5,153	4,411	3,953	14,724	2,627
1999	89.0	1,129	334	30	446	40	6,583	4,736	4,324	3,888	10,877	848

greater. The poverty rates of widows based on the results in table 7.3, part A, are:

Medicare/Medicaid	Poverty Rates of Widows	
	Income-based	Consumption-based
Included	25%	18%
Excluded	43%	30%

Thus, the variation is from 18 percent in poverty to 43 percent depending on the definition. As between the income-based and consumption-based measures, I certainly prefer the consumption-based measure: the income-based measure gives no weight whatsoever to the stock of wealth that is consumed. As between the measures that include and exclude Medicare/Medicaid, the correct choice probably is, as usual, neither, but something in between.

Appendix[3]

I assume that individuals maximize in the consumption path (c_t) lifetime utility:

(1) $$\int U(c_t)e^{-\rho t}a_t dt \; + \; \int V(w_t)e^{-\rho t}m_t dt,$$

in which

$$U(c_t) = c_t^{1-\gamma}/(1 - \gamma), \text{ and}$$
$$a_t = 1 - \int_0^t m_s ds$$

is the probability that the individual is alive at tw m_t is the instantaneous mortality rate; ρ is the subjective time rate of discount; r is the real interest rate which is taken to be known and fixed; $V(.)$ is the utility from bequests. This formulation of utility maximization with bequests is from Yaari (1965). The resources available are bequeathable wealth, w_t, and annuities, including pensions, Social Security, and Medicare/Medicaid. Annuities are distinguished from bequeathable wealth in that they cannot be borrowed against and are not bequeathable. The conditions on the utility maximization are that initial wealth; w_0, is given, and that

(2) $$w_t = w_0 e^{rt} + \int_0^t (A_s - c_s)e^{(t-s)r}ds \geq 0 \text{ for all } t.$$

A_s is the flow of annuities at time s. This formulation differs from the usual intertemporal utility-maximization problem in that the annuity stream cannot be summarized by its expected present value. It turns

out, because many of the elderly have large annuities relative to their bequeathable wealth, that the corner solutions are important. I parameterize the bequest function by assuming that the marginal utility of bequests is constant. This assumption may be defended in several ways. First, from a practical point of view, without such an assumption the model cannot be solved; the estimation requires a model solution. Second, in other work I found that the strength of the bequest motive did not seem to depend on the wealth level (Hurd 1987). Third, variations in the level of wealth cause only small variations in the level of the wealth of the heirs; therefore, the marginal utility of wealth of the heirs will roughly be constant over variations in wealth of the older generation, and one would expect the marginal utility of bequests to be constant.

The Pontryagin necessary conditions associated with this problem are that

$$(3) \qquad\qquad c_t = A_t,$$

if $w_t = 0$, and that

$$(4) \qquad c_t^{-\gamma} a_t = c_{t+h}^{-\gamma} a_{t+h} e^{h(r-\rho)} + \alpha \int_t^{t+h} e^{(s-t)(r-\rho)} m_s ds,$$

over an interval $(t, t + h)$, in which $w_t > 0$; α is the constant marginal utility of bequests.

If $\rho > r$, these conditions generate consumption trajectories that slope downward, and, unless wealth is very large, wealth trajectories that also slope downward. A typical example is shown in figure 7.1: the consumption path follows equation (4) until bequeathable wealth is exhausted at T; then it follows equation (3). The present value of the area under the consumption path and above the annuity path equals initial bequeathable wealth. The solution is implicitly defined by:

$$(5.1) \qquad\qquad c_T = A_T,$$

$$(5.2) \qquad c_0^{-\gamma} = c_t^{-\gamma} a_t e^{t(r-\rho)} + \alpha \int_0^t e^{(r-\rho)s} m_s ds,$$

$$(5.3) \qquad w_T = w_0 e^{rT} + \int_0^t (A_s - c_s) e^{(T-s)r} ds,$$

$$(5.4) \qquad\qquad w_T = 0.$$

If initial wealth is very large, wealth will never go to zero, and the nature of the solution is different. Although these cases are taken care of in the estimation, I will not discuss them here because empirically they are not important.

Data

The data are from the Longitudinal Retirement History Survey. About 11,000 households whose heads were born in 1906–11 were interviewed

every two years from 1969 through 1979. Detailed questions were asked about all assets (except a meaningful question on life insurance), and the data were linked with official Social Security records so that one can calculate exactly Social Security benefits. There are some data on consumption, but they are not complete, so I estimate the parameters of the model over wealth data. Bequeathable wealth includes stocks and bonds, property, businesses, and savings accounts, all less debts. As suggested by King and Dicks-Mireaux (1982), I exclude housing wealth because the costs of adjusting housing consumption are substantial, so that people may not follow their desired housing consumption path. As long as the consumption of other goods follows its desired path, the parameters may be estimated over bequeathable wealth excluding housing wealth. Annuities include pensions, Social Security benefits, an estimated income value from Medicare/Medicaid, privately purchased annuities (which are very small), welfare transfers, and transfers from relatives. See Hurd and Shoven (1985) for a detailed description of the data.[4]

The estimation method is to use equations (5) to solve for the consumption path as a function of an initial choice of the parameter values. This requires numerical integration and a search for T. The solution will depend on initial wealth. Then, wealth in the next survey, w_2, is predicted from equation (2). That is, the necessary conditions and the boundary conditions, equations (5), implicitly define

$$w_2 = f(w_0, \{A\}, \theta),$$

in which w_0 is initial wealth, (A) is the annuity stream, and θ is the parameter vector $(\gamma \; \varepsilon \; \alpha)'$. The parameter space is searched to minimize a function of $(w_2 - f)$.

Although α is, in principle, identified through nonlinearities in the functional form, the identification is very weak. Therefore, I specify that α is zero if a household has no living children.[5] The interpretation of α is the increase in the marginal utility of bequests across households according to whether they have living children or not. The first set of parameter estimates comes from solving

$$\min_{\theta} \sum \; [w_2 - f(w_0, \{A\}, \theta)]^2.$$

The estimated parameter values, which I refer to as the nonlinear least squares (NLLS) estimates, are

γ	ρ	α
0.729	0.0501	5.0×10^{-7}
(0.004)	(0.091)	(1×10^{-4})

Number of observations = 5,452

An analysis of the residuals was consistent with the hypothesis that wealth is observed with error. Therefore, I estimated the parameters by nonlinear two-stage least squares (NL2SLS), in which the parameter estimates come from solving

$$(15) \qquad \min_{\theta} \; [w_2 - f(\theta)]'X(X'X)^{-1}X'[w_2 - f(\theta)].$$

X is an $n \times 15$ matrix of observations on income from wealth; these data are not derived from the wealth data but come from separate questions in the RHS. Thus, they should not be correlated with the observation errors in w_0.

The results from the NL2SLS are

γ	ρ	α
1.12	−0.011	6.0×10^{-7}
(0.074)	(0.002)	(32×10^{-7})

Number of observations = 5,452

The major difference between the two sets of results is in $r - \rho$, which, if the mortality rate were zero, would control the slope of the consumption trajectory. In the NLLS $r - \rho$ is approximately -0.02; even with a bequest motive, the consumption path will slope downward. In the NL2SLS estimates $r - \rho$ is about 0.04. Even without a bequest motive, the consumption slope will have a positive slope until the conditional mortality rate, m_t/a_t, exceeds 0.04. The NL2SLS consumption trajectories will be much flatter than the NLLS trajectories.

Both sets of estimates produce an estimate of γ that is much smaller that what has typically been assumed in the literature. For example, Kotlikoff, Shoven, and Spivak (1983, 1984) use a value of 4 in their simulations. Hubbard [1987] uses values of 0.75, 2, and 4. Davies's (1981) "best guess" for his simulations is 4. Large values of γ mean that the slope of the consumption trajectory is not sensitive to variations in mortality rates; my estimates imply that the consumption paths of the elderly will have substantial variation with mortality rates.

The marginal utility of bequests, α, is estimated to be very small, which is consistent with other estimates I have made in a model that is almost free of functional form restrictions (Hurd 1987). The small estimate of α is caused by the fact that in the data there is no difference between the saving rates of households with children and households without children.

Notes

1. I include housing wealth in these simulations because the simulations should give a good idea of the economic status of the elderly. A reasonable supposition is that housing wealth declines over long periods at the same rate as other bequeathable wealth. An alternative method would be to exclude housing wealth from the simulations and to impute a consumption value to the stock. The parameters used in the forecasts are those from the NLLS estimation.

2. Couples should decumulate wealth at a slower rate than singles because the life expectancy of the household is greater.

3. This section is drawn from Hurd (1986).

4. The estimation is over all singles observed in any two-year period. The real interest rate, r, is taken to be 0.03.

5. Although the RHS does not have information about the ages of the children, because of the ages of the RHS population the median age of the children would be about 30 in the first year of the survey. Thus, almost all the children will have their own households.

References

Davies, J. 1981. Uncertain lifetime, consumption and dissaving in retirement. *Journal of Political Economy* 86 (June): 561–77.

Hubbard, R. G. 1987. Uncertain lifetimes, pensions, and individual saving. In *Issues in Pension Economics*, ed. Z. Bodie, J. Shoven, and D. Wise. Chicago: University of Chicago Press.

Hurd, M. 1986. Mortality risk and bequest. Typescript.

———. 1987. Savings of the elderly and desired bequests. *American Economic Review* 77 (June): 298–312.

Hurd, M., and J. Shoven. 1983. The economic status of the elderly. In *Financial aspects of the United States pension system*, ed. Z. Bodie and J. Shoven. Chicago: University of Chicago Press.

———. 1985. Inflation vulnerability, income, and wealth of the elderly, 1969–1979. In *Horizontal equity, uncertainty, and economic well-being*, ed. M. David and T. Smeeding. Chicago: University of Chicago Press.

King, M., and L-D. Dicks-Mireaux. 1982. Asset holdings and the lifecycle. *The Economic Journal* 92 (June):247–67.

Kotlikoff, L., J. Shoven, and A. Spivak. 1983. Annuity markets, saving, and the capital stock. NBER Working Paper no. 1250.

———. 1984. The impact of annuity insurance on savings and inequality. NBER Working Paper no. 1403.

Yaari, M. 1965. Uncertain lifetime, life insurance and the theory of the consumer. *Review of Economic Studies* 32 (April):137–50.

Comment   David E. Bloom

Michael Hurd's paper is concerned with the future economic status of elderly widows. The paper's starting point is the observation that the incidence of poverty among elderly widows is substantial and that the availability of appropriate panel data makes it possible to research the dynamics of the process that led them into that state. By making certain assumptions about (1) the future economic environment, (2) the rate at which elderly widows are ''born,'' (3) the magnitude of economic resources available to elderly widows when they are ''born,'' and (4) the death rate of elderly widows, one can use estimates of a dynamic model of economic well-being among elderly women to project the size of the next generation of elderly widows as well as various aspects of their economic situation.

Two key exercises form the core of this paper. The first involves estimating a dynamic programming model of consumer choice by elderly widows using data contained in the Retirement History Survey (RHS). Since consumption expenditures are not directly observed, they are inferred from data on annuity income, asset income, and changes in assets. An intertemporal utility function is posited with consumption and bequests as its arguments. Individuals are assumed to make choices that maximize the value of this function subject to an intertemporal budget constraint. There are two ways in which individuals can become poor in this model: (1) their initial level of assets and annuity income may be too low to keep them out of poverty, or (2) they may decumulate their assets ''too quickly,'' perhaps because they live longer than they expected. The empirical analysis is focused on the estimation of three key parameters: the marginal utility of bequests, a risk-aversion parameter in a constant risk-aversion utility function, and individuals' subjective rate of time discount. The parameters are estimated by nonlinear least squares and nonlinear two-stage least squares (to account for possible measurement error).

The second exercise reported in this paper involves the projection of consumption expenditures for elderly widows over the years 1979 to 1999. This projection involves the application of the parameters of Hurd's intertemporal consumption model to wealth and income data on (1) women who were elderly widows in 1979 and (2) women in the 1979 wave of the RHS who are at risk of becoming elderly widows by 1999. The data for both groups of women were adjusted for expected mortality using standard demographic life tables. Necessary data on initial economic resources (i.e., assets, asset income, and annuity

David E. Bloom is a Professor of Economics at Columbia University and a Research Associate of the National Bureau of Economic Research.

income) are directly available in the RHS for the first group of women. For the second group, these data are estimated under the (empirically justified) assumptions that couples decumulate their assets smoothly at the rate of 1.6 percent per year, and that there is roughly a one-third decline in the value of bequeathable assets at the point at which the husband dies and an elderly widow is "born."

The main result that emerges from Hurd's research is that the future incidence of poverty among elderly widows will be quite high. When the value of Medicare/Medicaid is included as part of an individual's resources, the rate of poverty is projected to lie between 16 percent and 22 percent, depending on whether one measures poverty in terms of income (i.e., annuity income plus asset income) or consumption (i.e., annuity income plus asset income plus changes in wealth) and whether one relies on the nonlinear least squares results or on the nonlinear two-stage least squares results. If one places zero value on Medicare/Medicaid benefits, the poverty rate projections increase to a range of 30 percent to 42 percent.

As the above summary should make clear, the ideas in Dr. Hurd's paper are fairly straightforward. In discussing it, I would like to focus on two issues: first, whether the paper addresses an interesting question, and second, the extent to which the paper answers the main question it sets for itself.

As noted above, the principal goal of this paper is to forecast the economic status of elderly widows, with special emphasis on the incidence of poverty among this group. Insofar as elderly widows are an easily identifiable group of individuals with an above-average rate of poverty (i.e., 19 percent according to the March 1986 Current Population Survey, as compared to about 14 percent in the overall population), it is hard to argue that this is not an interesting topic for research. Nonetheless, it is not clear that widows are either the most natural or the most interesting group of elderly women on which to focus such an analysis. The term widow is used to refer to women whose husbands died while they were still married. Although widows represent 85 percent of all elderly women who are not currently married (see table 7.6), it is not immediately apparent why they should be treated separately from never-married women and from women who divorced their last husband and never remarried. Both of these groups of women had even higher rates of poverty than elderly widows in 1986: 22 percent for elderly never-married women and 28 percent for elderly divorced or separated women. More importantly, because of the secular decline in the marriage rate and the increase in the divorce rate, the number of elderly women in these latter groups will probably grow at much faster rates over the remainder of this century than the number of elderly widows. Thus, while I think that Dr. Hurd's paper researches an in-

Table 7.6   Selected Characteristics of Women Aged 65 and Over, by Marital Status

	All	Married	Widowed	Divorced or Separated	Never Married
Percent	100.0	38.5	52.0	5.5	4.0
Percent in income poverty	14.1	4.6	19.0	28.4	21.7
Percent not living with relatives	42.0	1.3	69.3	69.4	41.4
Percent in labor force	7.0	6.7	6.0	14.0	12.5
Percent with earnings in previous year	9.4	9.3	8.1	15.0	19.9
Average earnings in previous year for those who worked (in dollars)	7,235	5,269	6,679	16,402	9,594

Source: Tabulations from the March 1986 Current Population Survey.

teresting question, I think it overlooks an even more interesting question that was well within its grasp. In other words, I would have preferred to comment on a paper entitled: "The Poverty of Elderly *Unmarried Women:* Future Prospects." It may sound a bit less sexy, but I think it would be somewhat more meaningful.

In terms of the question that Dr. Hurd does try to answer, I have some concerns about the appropriateness of his theoretical model. In particular, the model does not account for the two major responses that elderly women can make to evade poverty: (1) they can go to work, or (2) they can situate themselves within economically well-off households.

The labor supply of elderly widows has never been a major focus of empirical labor economics, undoubtedly because it is so low. Data contained in the March 1986 Current Population Survey indicate that the labor force participation rate of elderly widows is 6.0 percent, with a rate of 7.6 percent among elderly widows living alone and a rate of just 2.5 percent among elderly widows living with others (see table 7.7). In addition, 8.1 percent of the widows had positive earnings in 1985 and they earned an average of nearly $6,700. These labor force participation rates and average earnings levels are anything but large in magnitude, but they do make it clear that the imputation of consumption expenditure as the sum of annuity income plus asset income plus the change in assets introduces systematic error into Hurd's model.

Table 7.7   **Selected Characteristics of Husbandless Women Aged 65 and Over, by Marital Status and Living Arrangements**

	Widowed		Divorced or Separated		Never Married	
	Living with relatives		Living with relatives		Living with relatives	
	No	Yes	No	Yes	No	Yes
Percent	58.6	26.0	6.2	2.7	2.7	3.8
Percent in income poverty	24.6	6.2	34.7	14.1	31.5	14.7
Percent in labor force	7.6	2.5	12.4	17.6	12.9	12.2

Source: Tabulations from the March 1986 Current Population Survey.

The error introduced by the omission of reported earnings from the imputed value of consumption is likely to be further aggravated to the extent that the elderly are not reporting income earned as a result of labor supplied to the underground economy. Although it is obviously a complex problem requiring data that may be extremely difficult to generate, future research on the consumption of elderly individuals should not assume their labor supply to be exogenously fixed at zero.

The second problem with the theoretical model set out by Hurd is that it pays scant attention to the living arrangements of elderly widows. According to the March 1986 Current Population Survey, 30.7 percent of (noninstitutionalized) elderly widows live with relatives. The importance of living arrangements to the economic well-being of elderly widows is strongly suggested by the poverty rates reported in table 7.7. The poverty rate among elderly widows living with relatives is roughly one-fourth the poverty rate among elderly widows that do not live with relatives. For elderly women who are divorced, separated, or never married, poverty rates are also substantially lower for those living with relatives than for those not living with relatives. These data highlight the importance of accounting for living arrangements insofar as they may be correlated with intrahousehold transfers that can substantially affect individual well-being. Although somewhat less pronounced, comparisons for women in particular age groups exhibit similar relationships.

Another dimension of the relationship between living arrangements and economic well-being is illustrated by the fact that the dollar increase in the poverty line is only 26 percent when a household changes composition from one individual aged 65 and over to two such individuals. This less-than-proportional increase reflects economies of scale in the

provision of household goods and further establishes the fact that "living arrangements" is likely to be a critical choice variable in whatever constrained utility-maximization process elderly widows go through. Ignoring the determinants and consequences of different living arrangements among elderly widows is potentially a gross oversight in Hurd's analysis.

Although it is disturbingly unclear in Hurd's paper, the future well-being of those women who are elderly widows in 1979 is not calculated in a way that accounts for their actual living arrangements in 1979. The RHS simply does not contain information on the income of all family/household members in which an elderly widow might reside. For this reason, the RHS is fundamentally inappropriate as a source of data for studying the economic well-being of the elderly, a point that seems to be frequently overlooked in the empirical literature on this subject.

It also appears that elderly widows who are "born" after 1979 are assumed by Hurd to live the remainder of their lives in single-person households. If this is so, the figures reported in table 7.7 clearly suggest that Hurd's poverty rate projections will be upward biased estimates of the true rates, since many elderly widows will undoubtedly become members of multi-person households in order to economize on their scarce resources.

One is not actually able to tell from the paper whether the parameters of the structural consumption model are estimated from a restricted sample that only includes elderly widows who are living alone or an unrestricted sample that includes all elderly widows but treats them as if they are living alone. If the sample is restricted to lone elderly widows, we clearly have a case in which sample selectivity is likely to be severe. We also have a set of projections that do not generalize to the entire population of elderly widows. In addition, biases introduced by having ignored the widows' labor supply are probably aggravated in such a sample, since the labor force participation rate of elderly widows living alone is more than three times that of elderly widows who do not live alone. On the other hand, if all elderly widows are treated as if they live alone, the poverty rate projections in Hurd's paper are likely to be biased upward, as explained above, perhaps by as much as 6 or 7 percentage points.

In addition to problems relating to the theoretical basis of Hurd's model, I feel quite apprehensive about several features of the empirical analysis. The paper offers no basis for careful assessment of the empirical results. Simple descriptive statistics are not even reported. In addition, although the overriding purpose of Hurd's analysis is prediction, the paper reports no evidence relating to the goodness-of-fit of the model to the data. The empirical model also ignores available data on a wide range of potentially useful control variables such as race,

birth cohort, educational attainment, and geographic region. I am disconcerted by Hurd's inattention to variables that would almost certainly improve the predictive power of his predictive model substantially. It would also have been nice to see some details in the paper on the method used to impute the value of Medicare/Medicaid.

Doubts should also be expressed about the robustness and the plausibility of the parameter estimates. Estimates of the subjective rate of time discount vary between specifications from -0.01 to 0.05, which translates into large differences in the (negative) slope of the intertemporal consumption profile. On the other hand, estimates of the risk-aversion parameter in the utility function vary less—between 0.73 and 1.12—but they are both in a range that implies much greater sensitivity of consumption to variations in mortality risk than would be considered sensible based on other literature in this general area. Finally, the marginal utility of bequests—assumed to be constant in wealth—is estimated to be close to zero. Although close in magnitude to estimates reported in previous work by Hurd, this parameter is identified largely off the functional form of the empirical model and by a somewhat arbitrary restriction. More analysis is required if we are to believe the parameter estimates presented in Hurd's paper.

My final comment simply involves stressing the fact that Dr. Hurd's paper focuses on only a small piece of the problem of forecasting the economic well-being of elderly widows—analyzing the evolution of their consumption over the last part of their life cycle. If one were truly interested in accurately projecting the future rate of poverty among elderly widows, a number of other factors would also deserve serious consideration. Included on a list of such factors would be increasing longevity, the emergence of alternative living arrangements among the elderly, the effect of changing generation sizes and a widening generation gap, increased geographic mobility among individuals of all ages, and increasing educational attainment, labor force participation, and "careerism" among women. The role of nursing homes and other residential institutions for the elderly deserves special research attention.

One factor that is likely to be of considerable importance to the future economic well-being of the elderly is the increasing tightness in the U.S. labor market. Over the past three decades, the American labor force has grown at an average annual rate of 2 percent, largely a consequence of the "baby boom" entering the labor market and of rapid growth in female labor force participation rates. During the remaining years of this century, the labor force will grow at perhaps 1.0 to 1.1 percent per year. Higher real wages are the most likely result of tighter labor markets, although I think we can also expect to see the expansion of employment opportunities that cater more closely to the needs and

preferences of segments of the population that could potentially supply more labor, such as the elderly. For example, some employers in the service-producing industries have already begun to formulate and implement recruitment strategies that focus on elderly workers. As another example, the child-care industry is almost certain to undergo major growth in the next 10 to 15 years, and it is absolutely clear that many elderly widows have superb backgrounds and training for taking up jobs in that industry. Increases in hours worked by elderly widows, as well as in their earnings per hour, should certainly be accounted for in analyses of their future economic prospects.

Another factor that should be considered in assessing the future economic prospects of the elderly relates to their future political clout. There is little doubt that the United States will be a considerably nicer place for elderly persons to be at the turn of the century than it is today. Political favoritism of the elderly has already begun and will gain further momentum as the elderly become an increasingly powerful political constituency.

The bottom line of Dr. Hurd's paper is that elderly widows have a rather dim economic future. He reaches that conclusion by analyzing a narrow piece of the overall problem, using imperfect data to estimate a rather structured and restrictive economic model. Dr. Hurd's analysis notwithstanding, I am more optimistic about the future economic prospects of elderly widows on the basis of casual speculation about relevant social, economic, and political adjustments that have already begun and that will almost certainly continue to occur during the remainder of this century.