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THE RETIREMENT-CONSUMPTION PUZZLE:
ANTICIPATED AND ACTUAL DECLINES
IN SPENDING AT RETIREMENT

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Actual Declines in Spending at Retirement
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ABSTRACT

The simple one-good model of life-cycle consumption requires "consumption smoothing." However, British and U.S. households apparently reduce consumption at retirement and the reduction cannot be explained by the life-cycle model. An interpretation is that retirees are surprised by the inadequacy of resources. This interpretation challenges the life-cycle model where consumers are forward looking. However, data on anticipated consumption changes at retirement and on realized consumption changes following retirement show that the reductions are fully anticipated. Apparently the decline is due to the cessation of work-related expenses and the substitution of home production for market-purchased goods and services.

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1. Introduction

The simple one-good model of life-cycle consumption requires “consumption smoothing:” the trajectory of consumption by an individual should be continuous in time. If the trajectory is not continuous, a reallocation of consumption so as to reduce the size of the discontinuity will increase utility without an increase in the use of resources. However, British households apparently reduce consumption at the ages associated with retirement and the reduction cannot be explained by the life-cycle model (Banks, Blundell and Tanner, 1998). Households in the Panel Study of Income Dynamics sharply reduced several components of consumption at retirement (Bernheim, Skinner and Weinberg, 2001). The observed drop in consumption at retirement is the retirement-consumption puzzle.

The explanation for the drop in consumption has important implications for economic theory. Banks, Blundell and Tanner interpret the drop to be the result of “unanticipated shocks occurring around the time of retirement (p. 784).” Bernheim, Skinner and Weinberg take the decline (as well as patterns of wealth holdings) to be evidence against models of behavior in which agents are rational and forward looking. Retirees are surprised to find that their economic resources are fewer than anticipated, forcing them to reduce consumption. “If households follow heuristic rules of thumb to determine saving prior to retirement, and if they take stock of their financial situation and make adjustments at retirement (so that the adequacy of saving is “news”), then one would expect to observe the patterns documented in this paper (p. 855).” If these interpretations of the retirement-consumption puzzle are correct, they cast doubt on models of rational forward-looking economic behavior, such as the life-cycle model. Because the life-cycle model is the standard model for the analysis of intertemporal decision-making at the household level, its rejection would require a substantial change in research strategies.

There are, however, other interpretations of the retirement-consumption puzzle. The most obvious interpretation has to do with work-related expenses, but it appears that such expenses are not large enough to explain observed drops in consumption at retirement (Banks, Blundell and Tanner). A second obvious explanation is that suddenly households have considerably more leisure, and this leisure can be used to purchase goods more efficiently or to substitute home-produced goods for purchased goods. However, the increased leisure can also lead to increases in purchased goods because of complementarities. The overall effect is an empirical matter, but we would *expect* consumption to change at retirement, not that it be smooth. A third explanation is that the timing of retirement is uncertain. Some workers retire because of a health event or unemployment, resulting in an unexpected reduction in lifetime resources, and the reduction leads to a concurrent reduction in consumption. Such a reduction in consumption is well within the spirit of the life-cycle model.

This paper has three main goals. The first is to present evidence that prior to retirement households anticipate reducing consumption at retirement, and that the anticipations are fully consistent with the reductions that households report having made when they did retire. That is, the *ex ante* and the *ex post* reductions in consumption are consistent with rational anticipatory behavior. At least as measured by consumption the adequacy of savings is not “news.” Second we will offer evidence that some of the variation in anticipated and realized consumption as a function of observable characteristics is consistent with uncertainty about the timing of retirement. The third goal is to document that the pattern of spending and time-use before and after retirement is qualitatively consistent with models of household production in which time is combined with

purchased goods to produce utility. In such a model we would expect that the volume of purchased goods would change in a discontinuous manner when the volume of leisure changes in a discontinuous manner as it does at retirement.

2. Background

2.1. Previous findings

Hamermesh (1984a) estimated models of consumption and leisure based on the Retirement History Survey (RHS). The consumption measure is partial consumption which was estimated by Hamermesh to comprise slightly more than half of total spending. Because the study is based on the behavior of white males aged 62-69 for whom most of the variation in leisure is due to full-time work versus complete retirement, the study is essentially a comparison of the spending behavior of households in which the husband is retired with the spending behavior of households in which the husband is not retired. For the purposes of our paper the main finding is that leisure and consumption are complements: the residuals from estimated demand for consumption and demand for leisure are positively correlated, implying that after controlling for observed Social Security wealth, pension wealth, bequeathable wealth and earnings, the retired consume more than those who are working.

While the approach of Hamermesh is very much in the spirit of our work, particularly the view that household production will modify the demand for purchased goods, we have reservations about the data and about the resulting estimations. First, the finding that retired households have greater consumption is at odds with results based on better measures of consumption such as those reported by Banks, Blundell and Tanner (1998) based on the 25 cross-sections of the British Family Expenditure Survey. Furthermore, in the Consumer Expenditure Survey (CEX) consumption is substantially lower in the post-retirement years than in the pre-retirement years. Thus, in both the Family Expenditure Survey and the CEX retirement is associated with lower consumption. Second, bequeathable wealth is always measured with error, and in the RHS pension entitlements in particular are not well measured (Rust and Phelan, 1997). Mis-measurement of these variables will induce a positive correlation in the residuals as found by Hamermesh, and it is likely that the effect could be substantial. Unlike the usual case with measurement error, the sign of the correlation is not preserved: a true negative correlation could be estimated to be positive.

By comparing the RHS partial measures of consumption with measures from the CEX, Hamermesh (1984b) estimated that post-retirement consumption was about 12 to 16 percent greater than total income, including income that would result from the annuitization of bequeathable wealth. An interpretation that is consistent with the retirement-consumption puzzle is that some households retired recently and they have not yet adjusted their consumption to the unexpected reality of lower incomes in retirement. Note, however, that these households are not working, but they are not necessarily recently retired. An alternative interpretation is that these households are simply following the life-cycle model: consumption should be greater than income because households aim to spend their resources before dying.

Hamermesh also found that between 1973 and 1975 consumption was reduced among 171 panel households by about nine percent (real) over two years. This reduction in consumption in two waves of the panel is consistent with reductions based on six waves of the RHS panel where the maximum age reaches 73 and where most of the households are not newly retired (Hurd, 1992).

That is, the decline in consumption cannot be related to any shock of discovery about resources shortly following retirement. Hamermesh interprets the results on both the levels and changes in consumption as “retired households optimize by consuming beyond their means early in retirement and reducing consumption rapidly as they age. They do this because of their tastes... (Hamermesh, 1984b, page 6).” He supposes these tastes to be a bequest motive and a high rate of time discount and that the reduction in consumption is not because of the inability to plan optimally for consumption in retirement.

Banks, Blundell and Tanner (1998) used data from 25 years of the British Family Expenditure Survey. Because these surveys are a series of cross-sections, one cannot observe retirement at the household level and any associated change in consumption. Rather the change must be inferred by observing the variation in consumption from household-to-household as a function of whether the household is retired. After accounting for work-related expenses, changes in consumption that may be related to mortality risk, and other determinants that may be anticipated by the household, Banks, Blundell and Tanner find (p. 784) that “Whereas the anticipated fall in consumption growth is around 2 percent, actual consumption growth at retirement falls by as much as 3 percent.” They argue that “...the evidence points to the arrival of new and unfavorable information at retirement (p. 770).” In our view a gap of one percent in the change in consumption is well within the range that could be produced by a model of household production especially in view of how little is known about household production.¹ Furthermore, the data themselves are less than ideal in that they are synthetic cohorts rather than true panel data.

Bernheim, Skinner and Weinberg (2001) base their estimate of the drop in consumption on the change in food consumption, both at home and away from home, and on the implicit flow of housing services from owner-occupied housing and from rental housing. The total of these consumption items is inflated up to an estimated total by a factor derived from the ratio of these items to total consumption in the CEX. In that the inflation factor is fixed, the estimated percentage changes in total consumption are the same as the percentage changes in the sum of food and housing consumption.

Bernheim, Skinner and Weinberg estimate that among 430 households in the PSID from 1978 to 1990 consumption dropped by an average of 14% at retirement with a median drop of 12%. Their interpretation of this decline is that households take stock of their economic resources shortly after retiring, and find that they are less than they had anticipated. The inadequacy of saving is “news” and so they adjust consumption downward just as they would when faced with any negative shock. In their view this presents a challenge to the life-cycle model in which agents are forward looking and rational: why do agents not continually assess economic resources and continuously adjust consumption? Or stated differently, why did they not reduce consumption before retirement so that the consumption path would be smooth?

We do not dispute the finding that consumption drops at retirement: indeed in 1986-87, which is at the midpoint of the period studied by Bernheim, Skinner and Weinberg, consumption by 65-74 year-olds was just 72% of consumption by 55-64 year-olds.² Although this figure is partly the

¹ Banks, Blundell and Tanner state that they have used appropriate instrumental variables to control for changes in consumption that are due to anticipated retirement. We do not see how instrumental variable estimation can account for the changes in the marginal utility of consumption of purchased goods that a model of household production specifies.

² Based on the CEX.

result of compositional changes in household structure and cohort effects, it is unlikely that accounting for them would alter the conclusion that consumption declines at retirement.

According to the 1986-87 CEX, shelter (owner-occupied housing, rental housing and other lodging) accounts for 13.3% of the spending by 55-64 year-olds, food at home accounts for about 8.9% and food away from home accounts for 5.8%. Thus shelter is the largest component of consumption in Bernheim, Skinner and Weinberg, and although they do not report separately how much of the 14% decline is due to housing, it must be a considerable amount simply because it is 47.6% of the budget they consider. It seems obvious, however, that there are other, quite good reasons for a decline in the consumption of housing services at retirement. First, of course, a change in consumption can only happen among those households that move. Retirement is associated with a spike in moving because the job no longer ties the household to a particular location. Therefore any long-standing desire to move will be realized shortly after retirement. Second, the move provides the opportunity to adjust housing to its desired level from a level that was likely excessive, the result of holding on to the family home even after the children have left. A reduction in food away from home is likely to be anticipated because some of it is work-related. As for food at home the shift toward eating more meals at home would suggest an increase in spending, but the greater availability of leisure may facilitate a shift toward cheaper ingredients, causing total spending to decline. Thus an anticipated change could either be positive or negative, and it is an empirical matter which factor dominates. Because consumption of housing services and spending on food are expected to change with retirement, they are not good indicators of the change in total spending, which includes categories which may not change.

Our conclusion from this review of the literature on the retirement-consumption puzzle is that while there seems to be a reduction in consumption at retirement we see no convincing evidence to support the view that this drop is caused by households being surprised by the inadequacy of resources when they reach retirement. The most obvious explanations for the decline have to do with the cessation of work-related expenses and with home production, and so it is to these explanations we should look first, rather than to failures of our standard model. We do not move directly to the estimation of models of household production, which is not an easy task (Pollak, 1999), but investigate instead whether the drops in consumption were anticipated. If they were, we would want to estimate models of household production in the context of a life-cycle model; if they were not we would want to assess alternative explanations for intertemporal household decision-making.

In this paper we use data on anticipated spending change at retirement and actual spending change as recalled by those already retired.³ Our main result is that spending declines at retirement by 15% to 20%, but at ages approaching a typical retirement age the anticipated decline in spending is almost the same as the actual decline. On average people are not surprised at retirement by the decline in spending. These results are direct evidence against the interpretation of Bernheim, Skinner and Weinberg, and of Banks, Blundell and Tanner for the decline in consumption at retirement. In that interpretation people are surprised by their low levels of economic resources, and therefore have to reduce consumption in accommodation. They would not anticipate such a decline in consumption. In contrast, our results suggest that we should look for mechanisms associated with retirement that would allow for a reduction in consumption, rather than abandoning the life-cycle model as suggested by Bernheim, Skinner and Weinberg. These mechanisms would

³ Spending differs from consumption because of durable purchases and in-kind transfers. Our measure is spending, which we will use interchangeably with consumption. At the population level spending and consumption are the same in steady-state.

include the cessation of work-related expenses and home production which can substitute for market purchased goods. They would also include stochastic events that precipitate earlier-than-expected retirement, and which result in a reduction in life-time resources.

2.2. Theoretical background

In its simplest form the life-cycle model (LCM) with one consumption good specifies that individuals choose a consumption path to maximize expected lifetime utility, and that the instantaneous utility function is unchanging over time. The shape of the optimal consumption path is partially or wholly determined by utility function parameters, the interest rate and mortality risk. The level of the path is determined by the lifetime budget constraint, and the difference between the level of consumption and income determines the saving rate and the equation of motion of wealth. Auxiliary assumptions, which are not controversial, are that marginal utility is continuous in consumption and that marginal utility declines in consumption. A condition for lifetime utility maximization is that marginal utility be continuous in time: were it not continuous a reallocation of consumption across the discontinuity from the low marginal utility state to the high marginal utility state would increase total utility without a greater use of resources. Such a reallocation should continue until there no longer is a discontinuity in marginal utility. Because consumption is monotonic and continuous in marginal utility, an implication is that consumption must be continuous in time. That is, consumption must be smooth over time.

In a more general model which recognizes uncertainty, individuals or households experience unanticipated windfall gains or losses to wealth, earnings or annuities, and then reoptimize to a new consumption path, causing a discontinuity in the consumption path. However, wealth, earnings or annuity changes which are foreseeable should cause no change in the consumption path because the lifetime budget constraint has not changed. In particular consumption should not change at retirement if retirement occurs as planned.

Several generalizations in the spirit of the simple LCM lead to a change in consumption at retirement. If some of measured consumption is, in fact, work-related expenses, consumption as measured by spending would drop at retirement, but utility-producing spending would not. This is a measurement issue. A second generalization is that retirement is stochastic. If retirement is sooner than expected lifetime resources will be less than expected so that consumption will have to be adjusted downward. The obvious example is a stochastic health event that causes early retirement. Negative health shocks leading to early retirement are undoubtedly empirically important, so that we should expect to observe some unanticipated decline in consumption at retirement from these shocks alone. It should be noted that consumption decline would not be offset by consumption increases by those not experiencing negative health shocks, which could be described as positive health shocks when measured as deviations from expected health. Consider a pool of workers of age 50 who all plan to retire at 62 unless they have a health shock prior to 62. With each passing year some fraction of workers does experience the shock, and leaves the labor force, reducing consumption. The remaining workers, having survived a year of risk, can increase consumption while still working. In a continuous-time model consumption would be adjusted upward continuously so that at retirement it would remain constant as long as retirement is as planned. In a discrete time model there could be a small upward adjustment due to the coarseness of the measurement interval. It should also be noted that at age 50 all the workers have positive probabilities of both unplanned early retirement and planned normal retirement. Because early retirement leads to a decline in consumption and normal retirement leads to constant consumption, the expected change in consumption at retirement is negative. However, the magnitude of the

expected decline will decrease with age among the remaining workers, finally reaching zero as all workers reach the normal planned retirement age.

A third generalization of the LCM specifies that utility depends on more than one good, in particular leisure as well as consumption. An extension of this model is one of home production in which leisure is combined with purchased goods to produce utility. While we will show empirical outcomes that can be interpreted in the context of a model of home production, for the expository purposes of this section such a model is not necessary.

If the utility function is $u(c, l)$ the implications for retirement on consumption depend on whether the utility function is separable; that is, whether the marginal utility of consumption depends on l . If the utility function is separable, u_c should be continuous in time and consumption will also be continuous.

If the utility function is not separable, but retirement is gradual so that l increases slowly, consumption will also change in a continuous manner. But for most workers and l increases abruptly by about 2,000 hours per year. A condition of utility maximization is that u_c be the same immediately before and immediately after retirement: the argument is the same as we gave earlier in the context of a single good model of the LCM. Now, however, because of nonseparability and because of the sudden change in l , the LCM *requires* a discontinuous change in consumption.

Whether consumption will increase or decrease depends on whether l increases or decreases the marginal utility of consumption. With an exogenous change in l consumption will change according to

$$\left. \frac{\partial c}{\partial l} \right|_{u_c = \text{constant}} = - \frac{u_{cl}}{u_{cc}}$$

where u_{cl} is the derivative of the marginal utility of consumption with respect to l and u_{cc} is the derivative of the marginal utility of consumption with respect to c . In that u_{cc} is negative, consumption will increase at retirement when u_{cl} is positive, and it will decrease when u_{cl} is negative.

Consider the King-Plosser-Rebelo utility function (King, Plosser, Rebelo, 1988) which is a constant relative risk aversion utility function modified to include leisure:⁴

$$u(c, l) = \frac{c^{1-\gamma}}{1-\gamma} e^{(1-\gamma)v(l)}$$

The marginal utility of leisure

$$u_l = -c^{1-\gamma} e^{(\gamma-1)v(l)} v'$$

is positive, which implies that $v' < 0$. Then,

$$\left. \frac{\partial c}{\partial l} \right|_{u_c = \text{constant}} = \frac{cv'}{\gamma v} < 0$$

so that consumption and leisure are always substitutes. An increase in leisure at retirement will result in a decrease in consumption.

⁴ This form is advocated by Basu and Kimball (2002) as providing a good explanation for the approximate constancy of hours worked since 1960 even as real wages have approximately doubled.

A more flexible form, which allows for either substitutes or complements, is a constant elasticity of substitution embedded in a constant relative risk aversion framework. That is

$$u(c, l) = \frac{1}{1-\gamma} \left((\alpha c^\theta + (1-\alpha)l^\theta)^{\frac{1}{\theta}} \right)^{1-\gamma}$$

The marginal utility of consumption, u_c , is

$$u_c = \frac{1}{\theta} D^{\frac{1-\gamma-\theta}{\theta}} \frac{dD}{dc}$$

where $D = \alpha c^\theta + (1-\alpha)l^\theta$. Then

$$\left. \frac{d \ln c}{d \ln l} \right|_{u_c = \text{constant}} = (1-\gamma-\theta) \frac{(1-\alpha)l^\theta}{(1-\theta)(1-\alpha)l^\theta + \alpha\gamma c^\theta}$$

If $\theta = 0$, the instantaneous utility function is Cobb-Douglas. Most empirical investigations find that γ the risk aversion parameter, is greater than 1.0, and in many cases considerably greater than 1.0.⁵ If that is the case, an increase in leisure will be associated with a decrease in consumption. In the more general case the sign of the effect will depend on the sign of $1-\gamma-\theta$. In the CES function the degree of substitution between leisure and consumption depends on θ with small values of θ corresponding to less substitution. For example, if $\gamma = 2$ and $\theta > -1$ an increase in leisure will be associated with a decrease in consumption. Of course for other parameter values an increase in leisure will be associated with an increase in consumption. In this paper we will not estimate any of these parameters: our purpose in this exposition is to illustrate that we would expect consumption to change at retirement.

Some types of leisure are substitutes for the consumption of market purchased goods such as home repairs, some are complements with consumption such as travel, and some are neutral such as watching television. Everyday observation and introspection say that we have all types, and it is an empirical question as to which dominates. But the main point is that we would not expect consumption to be smoothed over retirement.

Because of differences in tastes and differences in economic resources we expect heterogeneity across households in whether substitution or complementarity dominates. For example, someone with high wealth may continue to purchase home repairs as before retirement, but spend more on travel with a net effect of an increase in spending. Someone with a high wage rate may have purchased home repairs before retirement but will do them himself after retirement for a net reduction in spending.

To the extent that retirement is planned and anticipated, and that before retirement workers can imagine their activities and spending after retirement, they should be able to state how spending will change at retirement, and on average the actual changes should match the anticipated changes. However, it is more realistic to think that workers who are far from retirement will have some difficulty imagining what their activities and spending will be after retirement. Therefore we should expect some discrepancy between anticipations and realizations when the time to retirement is substantial.

⁵ For example, Barsky, Kimball, Juster and Shapiro (1997) estimate that most people have a risk aversion parameter greater than 2.0 and many have risk aversion parameters above 4.0.

In this discussion we have simplified the problem by assuming that retirement is given exogenously. Whether retirement is chosen does not affect the discontinuity in consumption when leisure and consumption are not separable provided the increase in leisure is discontinuous. As an empirical matter a substantial majority of retirement is from full-time to completely out of the labor force (Rust, 1990) and there are good reasons for such a sharp transition. For example, a DB pension plan can have such strong incentives to retire that workers within a wide range of tastes for retirement will all retire. Most firms will not allow a gradual reduction in work hours, so that a worker who would like to retire gradually will be forced to change employers and possibly occupations (Hurd, 1996).

3. Data

Our data come from the Health and Retirement Study (HRS) and from a supplemental survey to the HRS, the Consumption and Activities Mail Survey (CAMS). The HRS is a biennial panel. Its first wave was conducted in 1992. The target population was the cohorts born in 1931-1941 (Juster and Suzman, 1995). Additional cohorts were added in 1993 and 1998 so that in 2000 it represented the population from the cohorts of 1947 or earlier. The HRS interviewed about 20,000 subjects in the year 2000 wave. In October, 2001, CAMS was sent to 5000 persons, a random subsample of the HRS. In married households it was sent to one of the spouses. There were about 3800 responses.

Although the response rate was high there was some differential non-response by demographic characteristics. HRS has supplied weights to account for non-response, and most of our analyses will use them. Because our main variables are about household spending we will use the household weights. We have conducted parallel analyses using unweighted data and the result are very little different.

CAMS has three main topics.

Part A: 36 activities or uses of time.

The addressee was requested to answer this section.

Part B: 32 consumption categories.

The most knowledgeable person about spending was requested to answer the section.

It asked about the following aspects of consumption:

- Spending on 6 big ticket items (durables)
- Spending on 26 non-durable items
- Anticipated spending change at retirement among those not retired.
- Actual spending change at retirement among those already retired.
- Spending change to hypothetical income change

Part C: Prescription drugs use.

The addressee was requested to answer the section.

Besides prescription drug use it also asked about labor market status in a more detailed way than in Part B.

The focus of this paper is on anticipated and actual change in spending at retirement, and time use as it varies with retirement status. We will make limited use of the information in Part C

about labor force status, and we will link to the HRS core data to obtain data on income, wealth, health and other personal characteristics. Our main analyses will be based on data from the following question sequence.

Excerpt from the CAMS Questionnaire:

Question B38.

We would like to understand more about spending in retirement.

Are you retired?

_____ Yes → **Complete BOX A**

No → **Complete BOX B**

<p>BOX A – Retired:</p> <p>a. How did your TOTAL spending change with retirement? _____ Stayed the same → Go to c _____ Increased _____ Decreased</p> <p>b. By how much? _____ %</p> <p>c. For the items below, check (✓) whether the spending increased, decreased or stayed the same in retirement:</p>	<p>BOX B – Not Retired:</p> <p>d. How do you expect your TOTAL spending to change with retirement? _____ Stay the same → Go to f _____ Increase _____ Decrease</p> <p>e. By how much? _____ %</p> <p>f. For the items below, check (✓) whether you expect spending to increase, decrease or stay the same in retirement:</p>
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------



B39.	Increase(d)	Decrease(d)	Stay(ed) the same
a. Trips, travel, or vacations			
b. Clothing			
c. Eating out / food and beverages			
d. New home, home repairs, or household items			
e. Entertainment, sports, and hobbies			
f. Automobile expenses			

4. Changes in spending

Table 1 shows the distribution of the sample by retirement status in the raw data. About 65% of the sample is classified as retired according to the answers in B38, and about 6% did not respond.

Table 2 shows that about 69% of those who are not retired say that they expect to decrease spending with retirement, and that just 4% say they expect to increase spending. Among those who are retired, about 52% say they reduced spending when they retired and about 12% say they

increased spending.⁶ Although the percentages will change somewhat with our selection of an analytical sample, these numbers convey the main finding of the paper: most of those not yet retired anticipate that they will reduce spending when they retire, and most of those who have retired did decrease spending. At the population level to the extent that there is any discrepancy between anticipations and realizations, it is that the anticipations of a reduction are greater than the realizations. The observed drop in spending at retirement is not a consequence of surprise; the reduction is intentional and planned.

These results are similar to those of Ameriks, Caplin and Leahy (2002). They found in a sample of TIAA-CREF participants that among those not retired 55% expect lower spending in retirement, 35% expect the same and 10% expect an increase in spending. Among those already retired 36% experienced lower spending, 44% had the same spending, and 20% had an increase in spending. The main difference between the TIAA-CREF sample and our sample is that the TIAA-CREF sample is much wealthier. As we report below the wealthier anticipate and realize smaller reductions in spending, which would qualitatively explain the difference in magnitudes between the Ameriks, Caplin and Leahy results and ours. The main point, of course, is that their results do not support the interpretation of Banks, Blundell and Tanner, and of Bernheim, Skinner and Weinberg.

To arrive at the analytical sample for this study we make some minimal selections. First, we only use those observations with a valid answer on the question regarding anticipated or realized changes in total spending at retirement (B38a and B38d), which provides the central data in this research. We drop observations where this variable is either missing (282 cases) or where the answers are ambiguous (16 cases). Some respondents stated they were retired, yet filled out Box B which is intended for the not-retired, and some respondents did the opposite. A few respondents filled out both boxes. The final selection drops observations where we have not been able to link the CAMS respondent to his or her data in the HRS 2000 core survey (113 cases). This mostly concerns cases where the relevant CAMS questions have been answered by a child or relative, or by a neighbor, friend, or caregiver of the addressee.⁷ The resulting analytical sample retains 3402 cases or 89.2% out of a total of 3813 returned questionnaires.

Within the categories of retired or not retired, there can be considerable variation in labor force status. To investigate how these nuances might affect answers to the spending questions we used information from part C of CAMS in which respondents were asked more detail about their labor force status. The distributions are given in Appendix Table 1. The main source of discrepancy is that about 6% of those who say they are retired in part B, say they are working in part C. This magnitude of discrepancy is typically found in the HRS when people are allowed to report a retirement status based on their own definition rather than on an objective definition.

There is some variation in anticipations and realizations of spending change according to detailed work status in CAMS section C. For example, as shown in Appendix Table 2 among those who are not retired according to B38 and are working according to section C, 72.2% anticipate a decline in spending. Among those not retired according to B38 but disabled according to section C, 61.3% anticipate a decline. This difference is reasonable in that some of the disabled may have already reduced spending when they left the labor force at the time of their disability. We will use

⁶ The unweighted percentages are: 67% of the retired anticipate a decline in spending at retirement and 51% of the retired had a decline. This amount of variation between the weighted and unweighted percentages is typical of our results.

⁷ Other reasons for failed matches with the HRS core survey are that the information who answered section B of CAMS is missing and cannot be inferred from other sections (11 cases), or that the spouse of the addressee answered and no observation in HRS 2000 was available for this spouse (8 cases), possibly due to recent changes in marital status.

the more detailed information about labor force status from section C in estimations to explain spending change via categorical variables to account for section C labor force status.

Figures 1 and 2 show the age distribution of the respondents after these selections. Both the not-retired and retired range in age by about 40 years. Particularly among the retired we want to reduce the age variation because it is unlikely that people can remember something like a reduction in spending at retirement many years later. With little to guide us, we limit the age range of the not-retired to 50 to 70 and of the retired to 55 to 80. As shown in Table 3 these selections and age restrictions make little difference in our main finding: about 70% of the not-retired in our restricted sample anticipate a reduction in spending at retirement and about 53% of the retired experienced a reduction at retirement.

We find qualitatively similar differences between expectations of total spending change and realized spending change in categories of spending. The CAMS respondents were asked about the categories of spending they anticipated changing at retirement or had changed at retirement.⁸ Table 4 shows the percentage distribution of whether spending would decrease, stay the same or increase. For example, 65.2% of those not retired anticipated decreasing spending on clothing, 32.8% anticipated no change and 1.9% anticipated an increase. Among the retired 60.5% had a decline in spending on clothing, 32.9% had no change and 6.6% had an increase. With the exception of trips and travel there is considerable homogeneity in expectations: 86-98% anticipate a reduction or no change in spending, and only small percentages anticipate an increase in spending. Under the assumption that travel is a superior good that is complementary with time, we would expect heterogeneity in spending change for trips and travel because of the great heterogeneity in wealth: indeed 29% anticipate an increase in such spending.

Among the retired there is much more heterogeneity, and it is due to an increase in the percentage that increased spending after retirement. Thus, in spending on the home, on automobiles or on food away from home, the percentage of the retired that had an increase in spending was 10-15% greater than the percentage that anticipated an increase in spending. This difference is consistent with our overall finding that spending was higher in realization than in anticipation.

In the rest of this paper we will base our analyses on the responses to B38b and B38e, which give the percentage change in spending at retirement. We have done parallel analyses of whether respondents anticipated or realized a decline in spending and the results are similar to those based on B38b and B38e. We prefer to analyze the percent change in spending because it is a scalar at the individual level rather than just an indicator of increase, decrease or stay the same. Table 5 gives our main result: among not-retired singles the average anticipated decline in spending is about 20% compared with an average realized decline of about 17%. Among couples the averages are about 20% and 12%. These reductions are similar to those reported in Bernheim, Skinner and Weinberg: They estimate a mean reduction of 14% and a median reduction of 12%.

A possible objection to our comparing anticipated spending change to realized spending change is that our comparison is cross-sectional: we are comparing the anticipations and experiences of different people. Perhaps selection into retirement is associated with an unanticipated decline in spending as in Bernheim, Skinner and Weinberg, and had the retired been asked about anticipations when they were still working they would not have anticipated a decline. For example suppose that prior to any retirement the entire population had the same resources in

⁸ See B39 above. During the design stage of CAMS these categories were developed from focus group responses.

terms of wealth and wage rate, and that it had a distribution of expectations about changes in spending at retirement centered at no change in spending.⁹ When we observe the population those who anticipated an increase in spending had retired because of that favorable anticipation. However, at retirement they were surprised to find their resources were less than anticipated because they had retired early, and so they were forced to reduce spending. Because of the selection the not-retired anticipate a decline in spending. The selection would produce the basic finding in our data: the retired state that spending had decreased at retirement; the not-retired anticipate a spending decline.

We address this issue by studying the age-pattern of responses. At younger ages in the HRS there has been little if any selection: the population has not yet begun to retire. At older ages in the HRS almost the entire population has retired. Figure 3 shows the fraction of the not-retired that anticipates a reduction in spending at retirement as a function of age and Figure 4 shows the fraction of the retired that experienced a reduction in spending. If anything the figures show that anticipations of a decline in spending fall with age. This pattern is not consistent with the selection mechanism which requires that the fraction anticipating a decline is zero before retirement begins and then increases as the more optimistic select into retirement. The fraction that experienced a decline should be greatest at the youngest age and then decline to zero when the entire population has retired.

The pattern in the figures is consistent with the empirical fact that some early retirement is associated with stochastic events such as a health shock that cause both retirement and an unexpected reduction in lifetime resources. At age 50 the entire population has some risk of such a shock, but with each passing year the risk of the shock happening before planned retirement decreases, so anticipations of a decline in spending at retirement decrease with age. Some early retirees are likely to have retired because of a shock (Rust, 1990) and to have experienced a decline in spending. At later ages more have retired as planned.

To bring out the patterns more clearly and to account for differing numbers of observations at each single year of age, we fit the percent change in spending at retirement to age, and separately to the expected retirement age in the case of the not-retired, and to the retirement age in the case of the retired.¹⁰ Figure 5 shows the fitted values from these estimations, evaluated at age 63. Whether fitted to age or to years before or since retirement, the pattern is the same. At age 50 or 13 years before retirement workers anticipate a 23-24% reduction in spending at retirement. This figure decreases until at age 63 or at retirement the reduction is between 16.7% and 17.7%. At age 63 or immediately following retirement the realized reduction is between 14.4% and 15.9%, and the realized reduction declines somewhat with increasing age. Thus the unanticipated change at retirement estimated from the age trends is about two percentage points of spending, but the change is to higher spending, not lower spending. The figure shows that the rather large difference between average anticipations and realizations in Table 3 is due to the differences in the ages of the not-retired and retired populations. Once age has been taken into account there is almost no difference.

Table 6 shows the average percentage change in spending either anticipated or realized classified by some household or personal characteristics as measured in HRS 2000. It is important to note that all of the classification variables except education pertain to the year 2000. Even though

⁹ We have in mind a population that does not follow the life-cycle model and so it does not engage in consumption smoothing across retirement.

¹⁰ These data were taken from the HRS core instrument.

economic status is rather stable after retirement, some households would have been classified differently at the time of retirement.

With the exception of the lowest wealth quartile the pattern of anticipated reductions is the same as the pattern of realized reductions: those in the highest quartile anticipated or realized the smallest reduction while those in the lower quartiles anticipated or realized the greatest. This pattern suggests that the well-to-do continue to purchase consumption items after retirement rather than engaging in home production.

There is little discernable pattern in anticipations across income quartiles, but actual reductions are greatest among those in the lowest quartiles. Among the retired income is a reflection of economic status because most income is from Social Security, pensions and assets. Thus the variation in actual reductions exhibits the same pattern as the variation with wealth.

The variation by self-rated health is consistent with the theoretical discussion about health risk: those in worse health have a greater risk of a health event that precipitates an early and partially unanticipated retirement with its corresponding loss of lifetime resources, and they predict a large drop in spending at retirement. The variation among the retired exhibits a substantially greater gradient: those in worse health have had a health shock which led to earlier-than-expected retirement. As far as levels are concerned, even workers in excellent health have some chance of a health event and so on average predicted a decline of 18% in spending. Those who maintained excellent health and, therefore, were likely to have retired as anticipated experienced a much smaller decline in spending. Among those in worse health the differences between anticipations and realizations is small. Of course, because of downward transitions in health the comparison is inexact: for example, 11.4% of workers classify their health as fair or poor whereas 22.4% of the retired classify their health as fair or poor. Some of the retired whose health is fair or poor have had a health shock, and so their *ex ante* prediction would have been like the predictions of those workers in better health.

There is no obvious pattern either in anticipated declines in spending or in realized declines as a function of education class.

Even in October, 2001, the stock market was considerably above what historical trend would suggest. In the context of a life-cycle model with no adjustment costs, changes in the stock market should not be correlated with changes in spending at retirement: spending before retirement would already have taken into account any windfall gains so that spending at retirement would just be a continuation of the higher level. Similarly, realizations in spending following retirement should not be correlated unless by chance the stock market happened to boom at about the same time as retirement. We see little difference in anticipations as a function of stock ownership, but considerable difference in realizations. However, retirement took place in the 1990s and the 1980s, so most retirement would not have happened during boom times. Furthermore, as shown in Figure 5 we did not find any trend in spending change as a function of age as would be expected were the recent retirees influenced by the recent stock market gains. The probable explanation is that stock owners have much greater wealth than those who do not own, and the variation by ownership status is a reflection of the gradient by wealth status.

Table 7 shows the estimated regression of the percentage change in spending at retirement either anticipated or realized. Just as in the cross-tabulations of Table 6 those in the highest wealth category both anticipated and realized the smallest decline and those in the lowest income category had the greatest decline. A difference from the cross-tabulations is that the lowest education category is associated with anticipated and realized declines that are about 9.7 and 3.6 percentage

points respectively less than the reference education level (high school). Stock ownership is associated with a smaller decline in spending but the effect is not significant.

Those in excellent health anticipate much less of a decline in spending than those in poor health. We find the same general pattern for realizations but the differences are smaller. If the spouse is in poor health the decline in spending was 10.4% greater than if the spouse was in good health.

We conclude that the broad generalizations shown in the cross-tabulations hold in these regressions with several exceptions. The ownership of stock has little predictive power for spending changes, so that the correlation between ownership and spending change in the cross-tabulations is due the relationship between ownership and wealth. Those lacking a high school education both anticipate and realized a smaller decline in spending than those in other education categories. An explanation is that even before retirement they are already engaged in home production.

Both the cross-tabulations and the regression suggest an important role for health, but, the relationship is only suggestive especially among the retired because current health and health at retirement may differ. We use a question in the HRS that relates retirement to health to address this issue. Those retired or partially retired were asked about the reasons for their retirement. We use data from various waves of the HRS core to classify whether health was an important reason for retirement. As shown in Table 8, 21.9% of the retired said that health was a very important reason for retirement and 67.6% said that it was not important at all. Among the first group, 67.5% said that spending declined with retirement, and that the average change in spending was 24.5%.¹¹ Among the second group (health not important for retirement) 48.4% said that spending declined with retirement and that the average decline was 11.4%.

These differences suggest that part of the decline in spending at retirement is due to earlier-than-expected retirement resulting from a health shock. This interpretation is consistent with studies of the effects of health shocks on actual retirement (McClellan, 1998). It is, of course, possible that the health of those who said health was a very important reason for retirement always had bad health and always anticipated retiring early. A definitive resolution would require a detailed study of the dynamics of health and retirement, which is beyond the scope of this paper.

The HRS asks about subjective indicators of well-being before and after retirement. We first analyze whether the respondent is worried about having enough income to get by in retirement, which relates to the adequacy of economic resources.¹² If resources are a surprise at retirement we would expect naïve self-satisfaction prior to retirement and a shift to less satisfaction after retirement. In fact, as shown in Table 9 among those not yet retired 38.3% were worried “a lot” about income whereas among the retired just 23.9% were worried “a lot.” The comparison is similar at other points along the “worry distribution” with the pre-retired more worried than the already retired.

Being worried “a lot” is associated with a greater-than-average anticipated decline in spending at retirement: 73.8% of those worried “a lot” anticipate a decline and the average anticipated decline is 22.5%. These figures are similar to the actual declines among the retired who are worried “a lot.” This comparison suggests that although some of the retired have fewer resources in retirement than they would like, it was not a surprise that they have fewer resources; rather it is a consequence of low lifetime income.

¹¹ Average over all, not just those who reported a spending decline.

¹² HRS respondents were asked this question in every wave. Here we use the most recent response.

Among those worried “not at all,” 63.9% of the not-retired anticipate a decline in spending and the average decline is 16.5%. Among the retired, 43.9% experienced a decline and the average was 9.5%. As with health, income or wealth the realizations produce greater variation in the decline in spending than the anticipations. Being worried about the adequacy of retirement income is related to having low levels of income and wealth (not shown), but there is no evidence that the inadequacy is a surprise.

The HRS asks the retired to assess the quality of their retirement years relative to the years just before retirement. If the retired experienced a negative shock about their retirement resources we would expect the comparison to be unfavorable. However, as shown in Table 10, 53% say their retirement years are better and just 15% say their retirement years are worse. We recognize the question is somewhat deficient: retirees could have higher utility than pre-retirees because they have more leisure, even though their spending fell unexpectedly at retirement. Lifetime utility maximization requires that the marginal utility of spending be smooth across retirement, not that utility itself be smooth. Nonetheless, this comparison of utility levels does not suggest widespread distress or unhappiness at events following retirement.

Among those who said their retirement years are better than their pre-retirement years, 49% say that spending dropped at retirement, and the average reduction was 11.4%. The distribution and changes are similar among those who said that their retirement years were the same as their pre-retirement years. Thus, about 85% of retirees stated that retirement is better than pre-retirement even though about half experienced a spending decline and the average decline was about 11% of spending. This does not suggest that the spending change was accompanied by an unpleasant surprise. However, among the 15% who say that retirement is not as good as pre-retirement, 68% had a decline in spending and the average decline was 26%. This group may well have experienced a shock at retirement, possibly the result of a health event that precipitated early retirement.

5. Time use before and after retirement

In section A of CAMS, the respondent was asked about his or her use of time. Many of these categories of time use would neither be complements nor substitutes with market purchased goods. For example, “walking,” or “watching TV” would seem to interact very little with market purchased inputs. We chose seven activities as shown in Table 11 that might be substitutes for market purchased goods or services and one that might be a complement.¹³ Because time use changes rather sharply with age we have limited our analysis to narrow age bands.¹⁴ The table compares hours spent per week among those 60-64 classified by retirement status and by sex. Thus, not-retired men spent 2.9 hours per week on house cleaning while retired men spent 3.2 hours per week. Women spent much more time on house cleaning and the difference between the not-retired and the retired is greater. For men the not-retired spent about 14.3 hours per week on the possible substitutes and the retired spent about 19.5 hours.

The reported hours of work show a difference of about 29 hours for men and 30 for women.

¹³ Section A of CAMS has 31 categories of time use, but they were not chosen for an analysis of home production, which is the reason they are so lacking in complements.

¹⁴ The sample has the additional restriction that the same person answered parts A and B of CAMS. We imposed this restriction because we want to observe the concurrent change in hours and spending, which could not be assured if different persons answered A and B. This selection reduced the sample by 77 observations out of 1294 (both age bands combined).

Table 12 has similar data for the age band 65-69. Retired men spent about 9.2 hours more per week than not-retired men on possible substitutes. There was little difference in the hours of not-retired and retired women.

Table 13 summarizes these hours differences by retirement status for the age bands 60-64 and 65-69. The last line of the table gives a rough guess of the dollar savings in market purchases when we evaluate an hour at \$10. We emphasize that this valuation is merely to gain some sense of whether the time amounts are approximately large enough to explain the anticipated and actual change in spending. If we add the possible dollar savings for men and women and compare them with total household spending in the relevant age bands as found in the CEX, we calculate that the saving due to reduced market purchases is approximately 15.4% for 60-64 year-olds and 15.0% for 65-69 year-olds. We conclude that the time spent on possible substitutes is large enough that in principle it could explain a large part of the observed drop in spending at retirement. Of course, work-related expenses could also account for 5-10% of the decline in spending.

6. Conclusions

In the life-cycle model where the utility function is not separable in leisure and consumption, we would expect consumption to change at retirement, but the magnitude and direction of the change depends on utility function parameters. In this study we have used data on expected changes in consumption at retirement and compared them with actual changes. Our results indicate that consumption changes at retirement come as no surprise to most people. In fact the average anticipated decline in consumption is larger than the average realized decline in consumption. If anything households seem to be pleasantly surprised by their level of resources in that people are more worried *ex ante* than *ex post* about the adequacy of retirement income. For a fraction of the population, there may be a surprise, but most likely any surprises are associated with stochastic events, particularly health, that lead to early withdrawal from the labor force. However, these speculations will require confirmation in panel data.

Because the spending changes are foreseen on average we see no reason to interpret the changes to a lack of forward-looking behavior. Rather they are just part of the normal planning process for retirement.

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Table 1: Evidence from Raw Data, not weighted responses

Retirement Status				
	Retired	Not retired	Missing	Total
Number	2459	1119	235	3813
Percent	64.5	29.4	6.2	100.0

Question B38: "Are you retired"

Table 2: Evidence from Raw Data, Anticipated and Realized Changes in Spending at Retirement, weighted responses

Work Status	N	Percentage distribution			Total
		decrease	same	increase	
Not retired	1069	68.9	26.6	4.4	100.0
Retired	2384	52.0	36.3	11.8	100.0
All	3453	58.5	32.6	8.9	100.0

Table 3: Anticipated and Realized Changes in Spending at Retirement in the Analytical Sample, weighted responses

Work Status	N	Percentage distribution			Total
		decrease	same	increase	
Not retired	934	70.2	26.2	3.6	100.0
Retired	1932	53.1	35.5	11.5	100.0
All	2866	60.1	31.7	8.2	100.0

Table 4: Change in Spending by Category, weighted responses

		Not Retired	Retired
Trips, travel, or vacation	Decrease	38.5	44.7
	Same	32.5	30.4
	Increase	29.0	24.9
Clothing	Decrease	65.2	60.5
	Same	32.8	32.9
	Increase	1.9	6.6
Eating out / food and beverages	Decrease	52.5	40.4
	Same	38.6	36.3
	Increase	8.8	23.3
New home, home repairs, or household items	Decrease	53.2	37.1
	Same	39.4	45.5
	Increase	7.4	17.4
Entertainment, sports, and hobbies	Decrease	46.4	44.4
	Same	40.4	45.0
	Increase	13.2	10.6
Automobile expenses	Decrease	45.1	29.4
	Same	47.3	51.0
	Increase	7.6	19.6

Table 5: Average Percentage Change in Spending at Retirement in the Analytical Sample, weighted responses

		Not Retired	Retired
Single	N= 966	-19.9	-16.8
Married	N= 1505	-20.3	-11.6

Table 6: Percentage Change in Spending at Retirement, weighted

	Expected Change among the Not Retired	Realized Change among the Retired
Wealth Quartiles		
lowest	-19.5	-21.8
second	-22.9	-16.7
third	-21.6	-13.1
highest	-17.0	- 6.7
Income Quartiles		
lowest	-17.6	-21.2
second	-19.7	-16.0
third	-22.1	-12.8
highest	-20.3	- 8.0
Education		
Less than high school	-10.8	-15.5
High school graduate	-21.9	-14.9
Some college	-22.8	-15.9
College or more	-19.0	-8.0
Stock Ownership		
Owners	-19.1	- 8.7
Not owners	-20.8	-17.0
Self-Rated Health		
Excellent	-18.3	-9.0
Very good	-19.7	-11.7
Good	-21.3	-13.0
Fair	-22.8	-19.1
Poor	-21.4	-26.1

Number of observations: Not retired: 786-789; Retired: 1613-1617.

Singles and Couples.

Wealth and income quartiles calculated by marital status and retirement status.

Table 7: OLS Regression: Percentage Change in Spending with Retirement

Variable	Not retired		Retired	
	Coefficient	P-value	Coefficient	P-value
First Wealth Quartile	1.454	0.536	-3.491	0.057
Second Wealth Quartile	-1.773	0.403	-2.354	0.153
Fourth Wealth Quartile	4.546	0.038	3.813	0.023
First Income Quartile	3.654	0.128	-5.654	0.002
Second Income Quartile	2.475	0.238	-2.147	0.189
Fourth Income Quartile	-1.060	0.624	3.663	0.025
Respondent's Education				
Less than HS	9.708	0.000	3.608	0.027
Some college	-1.529	0.430	-3.406	0.025
College +	1.960	0.355	-0.582	0.736
Own stock in 2000	1.630	0.367	2.249	0.116
Respondent: Work for pay	0.192	0.947	-4.769	0.004
Respondent's Health				
Excellent	2.736	0.206	-0.828	0.662
Very Good	1.061	0.562	-0.161	0.910
Fair	-3.226	0.263	-4.100	0.019
Poor	-8.515	0.092	-3.602	0.176
Health of spouse/partner				
Excellent	1.392	0.620	-3.089	0.221
Very Good	2.641	0.270	-3.680	0.049
Fair	-0.003	0.999	-1.889	0.394
Poor	1.162	0.813	-10.400	0.002
<i>Observations</i>	789		1617	

Regression conditioned on additional covariates including age, indicator variables for work status from section C of CAMS, missing handles.

Table 8: Importance of Poor Health as a Reason for Retirement, weighted responses

Importance of Poor Health for retirement	All	Percent who experienced a decline	Average change (%)
Very important	21.9	67.5	-24.5
Moderately important	5.9	65.8	-15.5
Somewhat important	4.7	60.9	-13.7
Not important at all	67.6	48.4	-11.4
All	100.0	54.2	-14.5
<i>Observations</i>	<i>1212</i>	<i>1212</i>	<i>1007</i>

Note: Based on HRS 2000 question G138a-1: “I am going to read you a list of reasons why some people retire. Please tell me whether, for you, these were very important reasons for retirement, moderately important, somewhat important, or not important at all.

Table 9: Worried about Retirement Income, weighted responses

Worried about Retirement Income	Not Retired			Retired		
	Distribution	Percent who anticipate a decline	Average change (%)	Distribution	Percent who experienced a decline	Average change (%)
A lot	38.3	73.8	-22.5	23.9	65.4	-23.1
Some	28.7	72.2	-20.0	21.8	58.7	-16.3
A little	11.7	68.6	-20.9	12.3	52.1	-11.8
Not at all	21.3	63.9	-16.5	42.0	43.9	- 9.5
All	100.0	70.6	-20.2	100.0	53.3	-14.4
<i>Observations</i>	<i>895</i>	<i>895</i>	<i>758</i>	<i>1426</i>	<i>1426</i>	<i>1213</i>

Note: Based on HRS 2000 question G140a-3: “Worried about not having enough income to get by.”

Table 10: Self-assessment of retirement years, weighted responses

Comparison of retirement years	Distribution	Percent who experienced a decline	Average change (%)
Better	53.1	49.0	-11.4
Same	32.2	53.5	-11.7
Not as good	14.7	67.7	-25.7

All	100.0	53.2	-13.5
<i>Observations</i>	<i>1331</i>	<i>1331</i>	<i>1099</i>

Note: Based on HRS 2000 question G137: Comparison of retirement years to years just before retirement: "Would you say that the retirement years have been ... - Better- About the same or - Not as good?"

Table 11: Importance of home production: Evidence from Time-Use Data for Respondents aged 60-64, weighted responses

N	Hours per week			
	Males 60-64		Females 60-64	
Possible substitutes				
House cleaning	2.88	3.16	5.80	7.25
Washing/ironing	1.03	1.14	3.56	3.91
Yard work/gardening	2.10	4.07	1.48	2.10
Shopping	3.16	3.41	3.86	4.74
Meal preparation	3.46	4.51	7.42	9.34
Money management	0.78	0.84	0.89	0.86
Home improvements	0.88	2.32	0.75	0.74
Total	14.29	19.45	23.76	28.94
Possible complement				
Concerts/movies	0.72	0.32	0.27	0.25
Work for pay	34.62	5.65	31.73	1.73
<i>Observations</i>	<i>88-90</i>	<i>176-179</i>	<i>153-155</i>	<i>250-255</i>

Table 12: Importance of home production: Evidence from Time-Use Data for Respondents aged 65-69, weighted responses

	Hours per week			
	Males 65-69		Females 65-69	
	Not retired	Retired	Not retired	Retired
Possible substitutes				
House cleaning	1.78	3.21	5.39	6.90
Washing/ironing	1.05	0.92	3.40	3.30
Yard work/gardening	2.05	4.97	2.26	2.26

Shopping	1.97	3.96	4.52	4.28
Meal preparation	3.11	4.57	9.17	8.57
Money management	0.80	1.09	0.90	0.97
Home improvements	0.67	1.91	0.51	0.76
Total	11.43	20.63	26.15	27.04
Possible complement				
Concerts/movies	0.20	0.43	0.25	0.33
Work for pay	33.87	3.83	26.80	2.56
<i>Observations</i>	<i>37-39</i>	<i>155-160</i>	<i>50-53</i>	<i>288-299</i>

Table 13: Change in hours per week associated with retirement, weighted responses

	Males		Females	
	60-64	65-69	60-64	65-69
Substitutes	5.16	9.20	5.18	0.89
Complement	-0.40	0.23	-0.02	0.08
Work for pay	-28.97	-30.04	-30.00	-24.24
Possible dollar saving	2,683	4,784	2,694	463

Note:

“dollar saving” (annual) from evaluating substitute hours at \$10 per hour.

Total household spending for this age group from CEX: about \$35,000.

Adding males & females as approximation for household saving from home production:

15.4 % for 60-64 year-olds

15.0 % for 65-69 year-olds

Figure 1: Age distribution of Not Retired Respondents to B38 and B38d

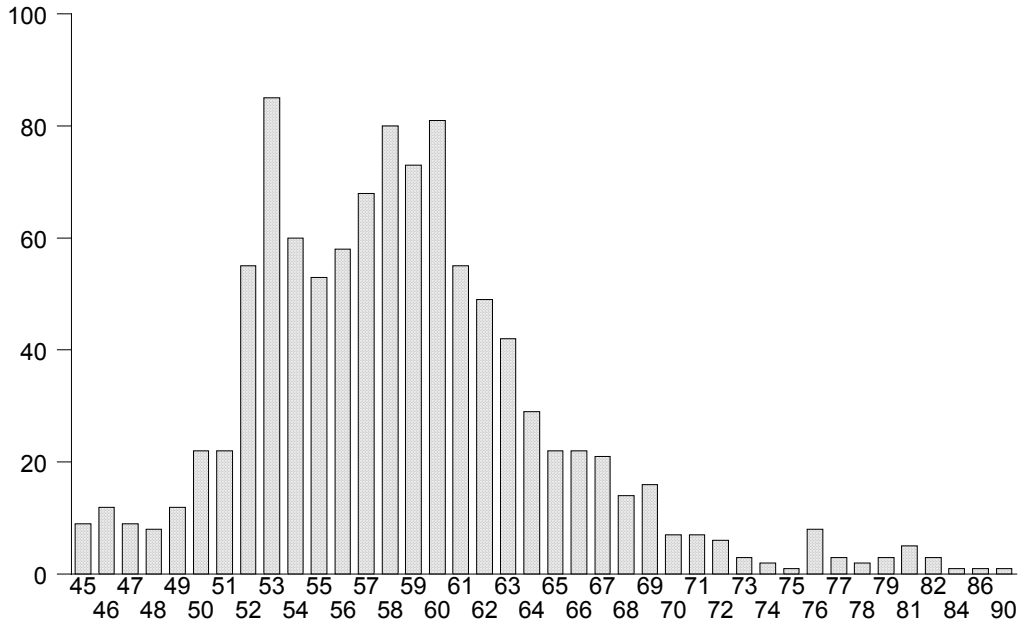


Figure 2: Age distribution of Retired Respondents to B38 and B38a

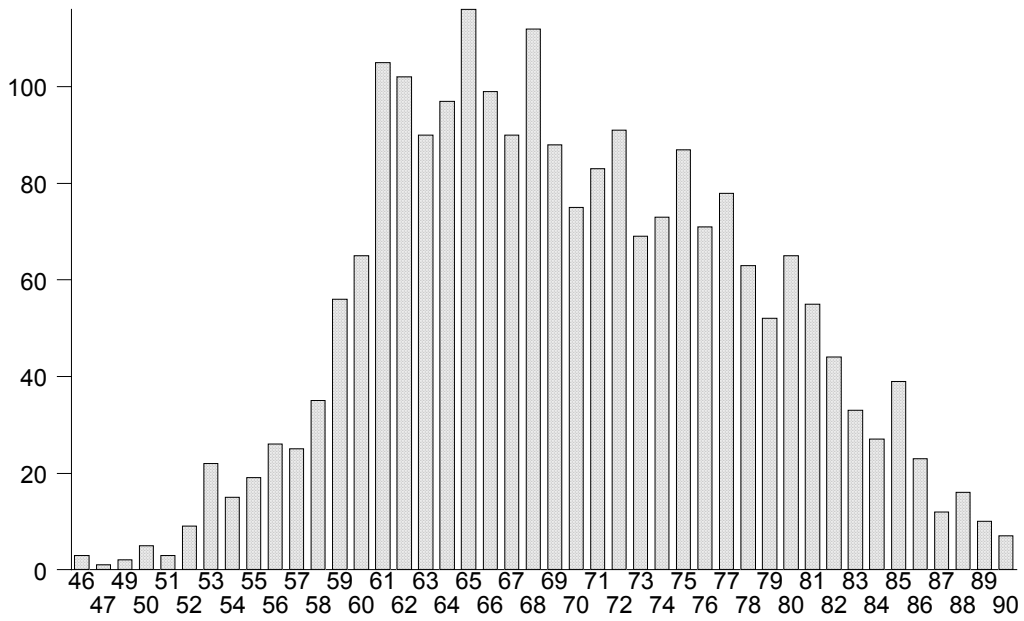


Figure 3: Fraction of Not Retired Respondents Anticipating a Decline in Spending

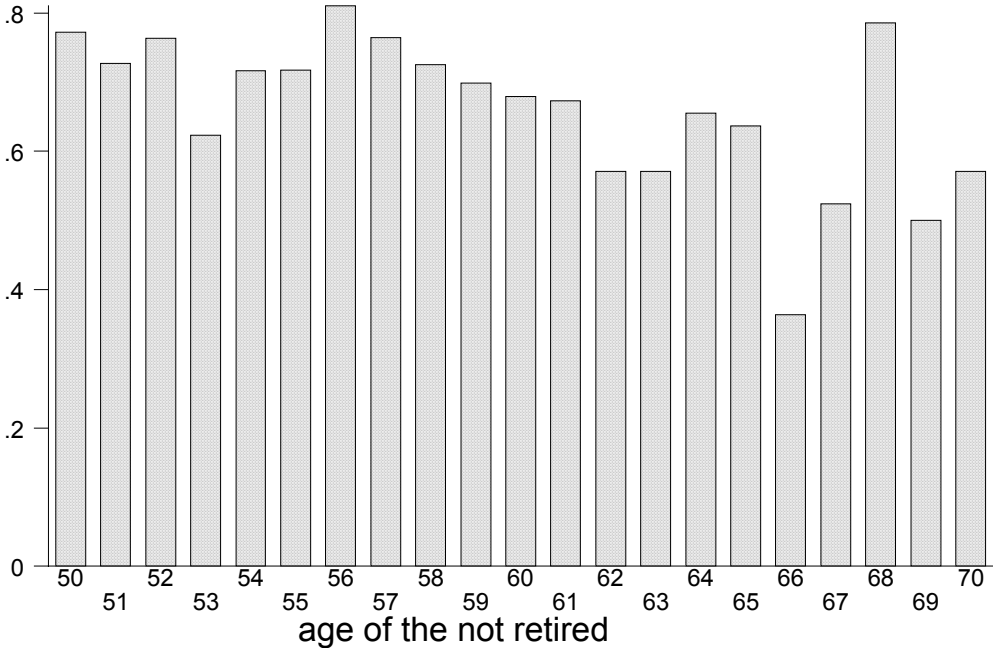


Figure 4: Fraction of Retired Respondents Who Realized a Decline in Spending

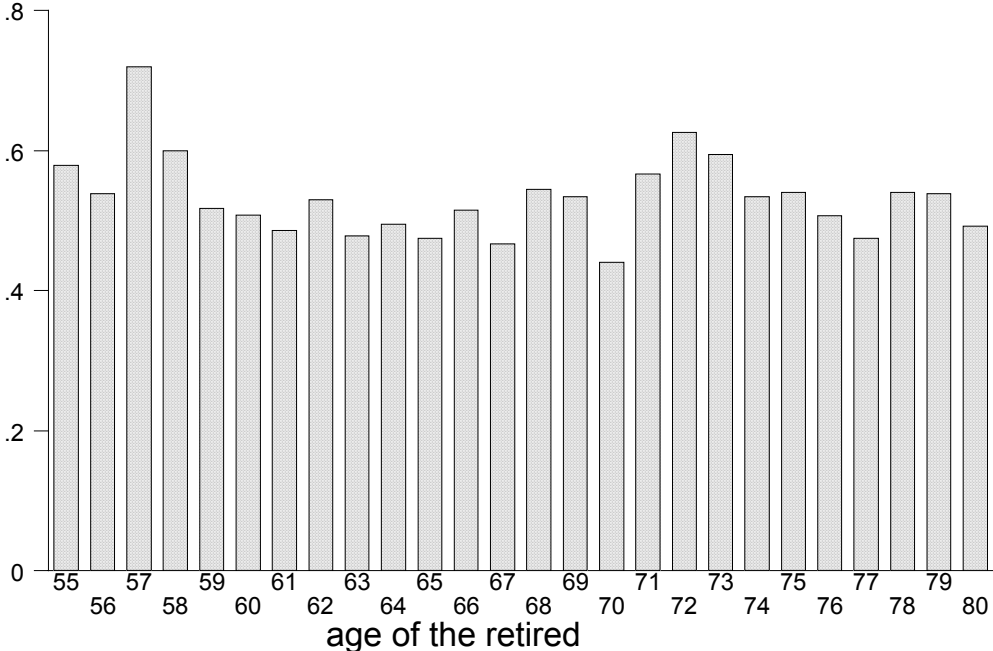
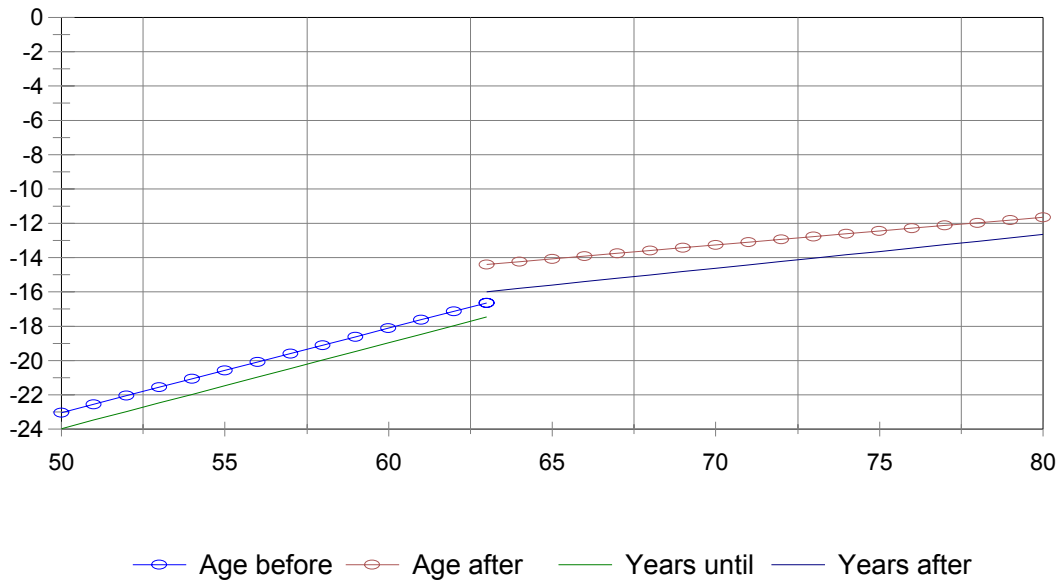


Figure 5
Spending change at retirement (%)



APPENDIX

We investigate labor force status by using questions from sections B and C. The lead-in question about retirement in B is the following.

B38 – Are you retired? Yes/No.

The answer to this question informs us on which side of the retirement date the respondent is – before or after.

There will be cases where it may be unclear for the respondent how to classify him or herself in one of these somewhat restrictive two categories. For example, it is not clear how a person who has been a homemaker all his or her life would answer this question.

Therefore, we incorporate available information on labor force status from CAMS section C and from the HRS 2000 core survey.

Appendix Table 1
Counts of labor force status

	B38 – Are you retired?			Total
	NO	YES	missing	
	1055	2280	67	3402
CAMS section C:				
Current Labor Force Status				
Working now	850	159	14	1023
Temporarily laid off	20	5	0	25
Unempl.& looking for work	28	17	1	46
Disabled	43	321	12	376
Retired	34	1779	37	1850
Homemaker	100	428	15	543
Other	1	1	0	2
Part time, less than part time empl.	15	16	1	32
Volunteer, care giving, babysitting	4	5	0	9
no information from CAMS	3	11	1	15
HRS 2000 core data:				
Consider oneself retired:				3402
not retired	846	198	11	1055
completely retired	35	1264	25	1324
partly retired	93	268	13	374
question irrelevant	73	539	18	630
missing	8	11	0	19
Working for pay:				3402
no	154	1868	49	2071
yes	899	412	18	1329
missing	2	0	0	2

Appendix Table 2

Percentage who anticipate or had a decline (weighted) in Total Spending by Work Status

Work Status in Section C	B38: Not Retired		B38: Retired	
	N=900		N=1833	
	N	Average Percent Decline	N	Average Percent Decline
Retired	23	48.4	1514	52.3
Working	771	72.2	167	45.7
Not Working	129	58.7	1666	53.8
Disabled	34	61.3	269	66.7
Homemaker	82	61.7	359	49.2

Note: Counts by category sum to more than total count because of multiple classifications