Full Length Article

Heterogeneity in spending change at retirement

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ABSTRACT

The simple one-good model of life-cycle consumption requires that consumption be continuous over retirement; yet prior research based on partial measures of consumption or on synthetic panels indicates that spending drops at retirement, a result that has been called the retirement-consumption puzzle. Using panel data on total spending, nondurable spending and food spending, we find that spending declines at small rates at retirement, rates that could be explained by mechanisms such as the cessation of work-related expenses, unexpected retirement due to a health shock or by the substitution of time for spending. We find substantial heterogeneity in spending change at retirement: in the upper half of the wealth distribution spending increased. In the low-wealth population where spending did decline at higher rates, the main explanation for the decline appears to be early retirement due to poor health, possibly augmented by a short planning horizon by a minority of the population.

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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 lifetime 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 et al., 1998). Households in the Panel Study of Income Dynamics (PSID) sharply reduced several components of consumption at retirement (Bernheim et al., 2001). Because the mechanisms underlying this observed drop in consumption at retirement are not well understood, it has been referred to as the retirement-consumption puzzle.

There are a number of interpretations or explanations for this drop. The most obvious has to do with the cessation of work-related expenses, but it appears that such expenses are not large enough to explain the observed drop in consumption at retirement (Banks, Blundell and Tanner).

A second explanation is that workers do not adequately foresee the decline in income associated with retirement (Bernheim et al., 2001). On reaching retirement they assess their financial resources, and, finding them less than anticipated, reduce consumption. This interpretation is damaging to the life-cycle model, which assumes that economic agents are forward-looking planners. For most workers, retirement is a predicable event, and workers should be assessing continuously their financial situation so that they will not be surprised. They should have saved enough so that they would not have to reduce consumption at retirement. However, at least on average, this explanation lacks empirical support: prior to retirement workers anticipate a decline in spending at retirement (Hurd and Rohwedder, 2003).

A third interpretation is that workers under-saved but they were aware they had under-saved: they were not surprised by the inadequacy of their resources. A lack of self control caused the under-saving and the decline in income forced them to reduce consumption. This interpretation is also damaging to the life-cycle model, which assumes that people are both forward-looking and that they follow through on their (optimal) plans.

A fourth interpretation is that the timing of retirement is uncertain. Some workers retire earlier than anticipated 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.

A final explanation is that retired households have considerably more leisure than working households. The increased leisure can

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be used to purchase goods more efficiently or to substitute home-produced goods for purchased goods. In this interpretation, spending declines, but actual consumption does not (Aguir and Hurst, 2007). We note, however, that the increased leisure time could also lead to increases in purchased goods because of complementarities such as spending on travel. If some uses of time are substitutes for market-purchased goods and some are complements, the overall effect is ambiguous, but we would expect consumption to change at retirement, not that it be smooth.

Because of the multiplicity of explanations, heterogeneity in spending change at retirement should be expected: some identifiable groups are less forward-looking than others; some are more subject to health shocks; some are more time-constrained in spending prior to retirement; and so forth. Apparently, in the literature cited above, these disaggregated spending changes averaged to a spending decline in the population.

In this paper we use panel data on the total spending of individual households. Consequently we are able to make a number of contributions to the literature. We use a measure of total spending based on 36 categories of spending plus 6 big-ticket items in panel data. While the measure is based on fewer items than the US Consumer Expenditure Survey, it is comprehensive and so avoids the difficulties that have been identified in the literature of measures based just on food spending. Our spending measure is embedded in the HRS allowing us to study heterogeneity in spending change at retirement as a function of observable characteristics. We make use of longitudinal data on personal characteristics such as health, on expectations and on qualitative assessments such as recollections to provide evidence about causal mechanisms. We have complete measures of income and wealth in close proximity to the spending measures to assess the levels and changes in economic resources associated with retirement.

Based on panel data on spending before and after retirement, we find that, spending declines at retirement at a small rate, 1% to 6% depending on the measure. We cannot reject the hypothesis of no change in spending, and the 95% confidence intervals do not cover large changes. A change of these magnitudes could plausibly be due to the cessation of work-related expenses, a loss of earnings due to early retirement in response to a health shock, by the use of time to economize on spending, or by a combination of these factors. We conclude that these data do not support a retirement-consumption puzzle at the population level.

We analyze spending change as a function of pre-retirement wealth, of planning horizon, and of the importance of health as a factor associated with retirement. We found substantial heterogeneity across wealth quartiles showing declines in spending at retirement among low wealth households and increases in spending among those in the highest wealth quartile. In subpopulations where spending does decline at larger rates, the main explanation seems to be early retirement associated with poor health. We found some support for an explanation based on a short planning horizon, but the fraction of the population where this applies is small.

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; 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 the 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 marginal utility is monotonic and continuous in consumption, an implication is that consumption must be continuous in time. In particular, consumption should be continuous over retirement.[1]

In a more general model, which recognizes uncertainty, individuals or households experience unanticipated windfall gains or losses to wealth, earnings or annuities, and then re-optimize 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.[2] But if retirement occurs 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 declines in consumption at retirement from these shocks alone provided we can identify the population that experienced the shocks.

A second generalization of the LCM specifies that utility depends on more than one good, in particular leisure as well as consumption. If the utility function is separable, the marginal utility of consumption should be continuous in time and consumption will also be continuous. If the utility function is not separable, but retirement is gradual consumption will also change in a continuous manner. But for most workers leisure increases abruptly by about 2000 h per year. Because the marginal utility of consumption should be the same immediately before and immediately after retirement, which it would not be were consumption to be continuous, nonseparability of the utility function requires a discontinuous change in consumption.[3]

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 suggest that we have all types, and it is an empirical question 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

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[1] Continuity does not depend on whether retirement is given exogenously as, say, by mandatory retirement or whether it is an object of choice: regardless of retirement age consumption should be continuous in this simple model. Thus in a population with heterogeneous tastes, which will lead to differing retirement ages, consumption will be continuous for each individual, and therefore it will be continuous in the population.

[2] 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.

[3] We have stated nonseparability in terms of the utility function, but the conclusions are the same in the context of home production when the inputs into home production, time and purchased goods are not separable.