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## Understanding Consumption in Retirement: Recent Developments

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## Understanding Consumption in Retirement: Recent Developments

### Abstract

This chapter summarizes five facts that have emerged from the recent literature on consumption behavior during retirement. Most importantly, there is substantial heterogeneity in spending changes at retirement across consumption categories. The declines in spending during retirement are limited to the categories of food and work related expenses. Even though food spending declines during retirement, actual food intake remains constant. Furthermore, the literature shows that there is substantial heterogeneity across households in the change in expenditure associated with retirement. Much of this heterogeneity, however, can be explained by households involuntarily retiring. Overall, the evidence suggests that the standard model of lifecycle consumption augmented with home production and uncertain health shocks does well in explaining the consumption patterns of most households as they transition into retirement.

### Keywords

consumption, retirement, spending

### Disciplines

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### Comments

The published version of this Working Paper may be found in the 2008 publication: *Recalibrating Retirement Spending and Saving*.

# **Recalibrating Retirement Spending and Saving**

EDITED BY

John Ameriks and Olivia S. Mitchell

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## Chapter 3

# **Understanding Consumption in Retirement: Recent Developments**

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*Erik Hurst*

According to the standard life-cycle model of consumption, forward-looking agents will smooth their marginal utility of consumption across predictable income changes such as retirement.<sup>1</sup> But a large empirical literature shows that household expenditure falls precipitously upon retirement—a phenomenon now known as ‘the retirement consumption puzzle’ (Attanasio 1999). Indeed Bernheim, Skinner, and Weinberg (2001: 854) go so far as to state that ‘contrary to the central tenets of life-cycle theory, there is little evidence that households use savings to smooth effects on consumption of predictable income discontinuities’ such as retirement.

This chapter reviews recent research on expenditure patterns as people transition into retirement. In doing so, we highlight several stylized facts that have emerged with respect to the behavior of consumption around retirement. We conclude that the preponderance of evidence suggests that pessimistic views regarding households’ ability to smooth predictable changes in retirement income may be prematurely negative. Observed declines in expenditures, aside from work-related expenses, primarily occur in food and the declines are largest for those who involuntarily retired. This is not to discount the possibility that some households are myopic with respect to their consumption decisions (or have time inconsistent preferences); rather, it is just that these households are only a relatively small fraction of the total population. As a result, one must conclude that standard models of life-cycle consumption, augmented with home production and uncertain health shocks, do well in explaining the consumption patterns of most households as they transition into retirement.

We recognize that, just because households smooth their consumption as they transition into retirement, need not imply that they have saved adequately for retirement. It is possible that households who planned insufficiently would not learn about their saving shortfall until well after they have retired (perhaps when they receive a future health shock). In this chapter, we show that most households have the ability to sustain their consumption in retirement.

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The remainder of the chapter is organized around summarizing the existing literature to provide support for the stylized facts to be developed. First we review recent literature on the retirement consumption puzzle and show that almost all of the declines in spending at the time of retirement are in the consumption categories of food- and work-related expenses. Second we discuss the work that shows that food consumption is constant in retirement (despite declining food expenditures) and that households allocate much more time to food production in retirement. Next we discuss the ample work on the heterogeneity in consumption declines upon retirement within the population. The fourth section addresses how involuntary retirement (often via health shocks) can explain a portion of the heterogeneity in consumption declines upon retirement. The last section concludes and offers some perspective by drawing on the literature about whether households save adequately for retirement.

#### **Documenting Stylized Facts about Changing Expenditures at Retirement**

A large volume of research has emerged during the last decade examining household expenditures at the time of retirement which we review in this section.<sup>2</sup> In doing so, we draw particular attention to a fact that emerges when aggregating results across papers: the extent to which expenditures decline in retirement varies with the measure of consumption examined. In particular, essentially all of the declines in expenditures at the time of retirement documented within the literature occur in two consumption categories: work-related expenses (clothing and transportation costs) and food (meals at home and meals away from home).

The fact that work-related expenses decline in retirement is not at all surprising. Any model that has some expenditures which are strong complements with working (such as business attire) will predict those expenditures will fall as households exit the labor force. However, to the extent that food is a large share of households' budgets and is often considered a necessity with a relatively low income elasticity, food-spending declines in retirement could be seen as a puzzle. As is detailed below, what the literature has documented as a 'retirement consumption puzzle' is actually a misnomer. In actuality, the literature has primarily documented a 'retirement food consumption puzzle.' Moreover, the true puzzle is why food expenditures fall sharply *despite* the fact that the remaining portion of the households' non-work-related/nonfood expenditures remain roughly constant.

A recent study focused on the differential life-cycle spending patterns for different consumption categories (Aguiar and Hurst 2007*b*); that analysis

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uses the Consumer Expenditure Survey (CEX) as opposed to other US micro data-sets, such as the Panel Study of Income Dynamics (PSID), the Retirement History Survey (RHS), or the Health and Retirement Survey (HRS). The CEX differs from these other surveys in two key ways. First, it has broader measures of consumption than the other surveys. Second, the CEX is a cross-sectional survey with only a short (4 quarter) panel component. The PSID, HRS, and RHS follow the same individual over much longer periods. To get around this potential drawback, Aguiar and Hurst use multiple cross sections from the CEX to create a synthetic panel by following a given cohort over time. In doing so, they compare the spending patterns of all households of a given cohort between the ages of 60 and 62 to the spending patterns of all households of the same cohort between the ages of 66 and 68 (six years later). Of particular interest is the life-cycle profile of spending in 11 categories of nondurable consumption, including total food, alcohol and tobacco, nondurable transportation, clothing and personal care, domestic services, entertainment services, utilities, charitable giving, net gambling receipts, all other nondurable expenditures (including business services), and housing services. The authors exclude education and health expenditures from their measure of nondurable expenditures. They also compute the service flow of housing for homeowners by using the self-reported answer to the question of what the homeowners would charge (net of utilities) to someone who wished to rent their housing structure today. For renters, the service flow of housing is their monthly out-of-pocket expenditures on rent.

Aguiar and Hurst's (2007*b*) main finding was to demonstrate that spending on total food, clothing, and nondurable transportation falls for people between their early and late 60s, by 10, 22, and 20 percent respectively. Conversely, spending on housing services, utilities, charitable giving, net gambling receipts, and entertainment remains constant or rises during the retirement years. For example, between the early and the late 60s, entertainment spending increases by 9 percent and charitable giving increases by 40 percent. These results are hard to reconcile with households being ill-prepared for retirement. Why is it that households would forgo food (a necessity) while simultaneously increasing their spending on entertainment (going to the movies, golf games, and vacations) and charitable giving? The authors conclude that the Becker model of consumption commodities handily explains the observed life-cycle patterns of different consumption categories (Becker 1965). Specifically, spending on goods that are complementary to time (like entertainment) will increase in retirement, while spending on goods that are substitutes to time (like food production) will fall during retirement.

This general conclusion is consistent with those provided by Fisher et al. (2006) who also use CEX data from a similar time period but who employ a

Au: 'HRS' has been defined as Health and Retirement Study in chapter 2, while here and in chapter 4 it has been defined as Health and Retirement Survey. Please check.

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different empirical strategy. This study compares the spending patterns of *nonretired* households between the ages of 60 and 64 with spending patterns of *retired* households between the ages of 65 and 69 five years later. In so doing, the analysis must assume that retirement status prior to and after the age of 65 is completely exogenous to factors that determine household consumption. This assumption is likely not valid given that households will also optimize over their choice of retirement age. Moreover, that study only looks at total spending (with and without housing services) and food spending. Subject to these caveats, those authors find that most of the action of the decline in total expenditures at the time of retirement occurs within the food categories (food at home and food away from home). Specifically, for their third cohort, food at home and food away from home fell upon retirement by roughly 8.3 and 15.9 percent, respectively.<sup>3</sup> The corresponding changes over these age ranges for their broad measure of consumption excluding housing services and their broad measure of consumption including housing services were  $-3.1$  and  $-1.2$  percent. Again, the declines in food spending, associated with retirement for CEX households, were much larger than the declines in total spending.<sup>4</sup>

In other words, the declining expenditures at the time of retirement in the USA appears to be mainly a result of less food spending and fewer work-related expenditures. Changes in other categories are either close to zero or close to positive, as households transition to retirement. In particular, spending on luxury goods, like entertainment services, actually increases as households transition into retirement.

There is research offering a different view of the spending patterns of retirees, including that of Laitner and Silverman (2005) who use CEX data and a different methodology. That paper reports that total expenditures drop by 16 percent upon retirement. Although they do not disaggregate the consumption decline into separate categories, their decline in total spending is much larger than the declines reported above using nearly identical data-sets. The technical explanation for this difference is that their structural model estimates the change in spending at retirement using both an age effect and a retirement effect. This permits a large offsetting positive age effect for households during their 60s, which offsets the negative retirement effect. In other words, a household's desired consumption level would appear to be increasing during their 60s, but almost all households retire during their 60s, so consumption becomes suppressed. The reason we believe they estimate such a strong age effect is that households with higher permanent incomes tend to retire later than households with lower permanent incomes, yet they assume retirement timing is exogenous to factors that determine consumption levels.

International data have also been developed on changes in consumption at the time of retirement. Banks, Blundell, and Tanner (1998) use

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data from Britain's Family Expenditure Survey (FES), and they draw conclusions similar to those of Aguiar and Hurst (2007*b*) and Fisher et al. (2006). Moreover, they document that the declines in food expenditures and the declines in work-related expenditures (including canteen and restaurant meals, transport, and adult clothing) are much larger than total nondurable expenditures. Miniaci, Monfardini, and Weber (2003) use the Italian Survey of Family Budgets (ISFB) to analyze consumption declines by consumption category for older Italian households. Not only are their results for Italy consistent with the results for the USA and the UK, but they also analyze a much broader set of consumption categories. The only decline in expenditures found for retired Italian households occurred in either work-related categories (clothing and transportation) or food (food at home and food away from home). All other components of nondurable consumption either remained constant or actually increased through retirement years (households in their 60s). These remaining categories include health expenditures, fuel expenditures, and other housing expenditures. Again, their results show that to the extent that nondurable consumption falls in retirement, it is mostly (if not completely) driven by work-related expenditures and food expenditures. Battistin et al. (2006) also studied Italians using the Bank of Italy Survey on Household Income and Wealth (SHIW); they use a regression discontinuity approach to instrument for retirement status. This approach provides identification since different Italians are eligible for the state-provided pension at different ages (and as a result, the incentive to retire at a given age differs among the different groups). They conclude that nondurable consumption falls by roughly 9 percent as households transition to retirement, with the greatest declines in spending in meals away from home, clothing, and transportation.

The measured decline in work-related expenses can be reconciled with the standard life-cycle model of consumption with work-specific expenditures (such as formal dress and work-related transportation). Yet the observed decline in food expenditures is harder to explain. Given that food is a necessity and therefore has a small income elasticity, some argue that analyzing food expenditures provides a strong test of consumption smoothing during retirement. The prevailing view has been that, if retired households do not smooth food expenditures, this implies it is unlikely they will smooth spending on other components of their consumption bundle. For this reason, much of the literature on the US retirement consumption puzzle has mainly focused on food expenditures. For example, Bernheim, Skinner, and Weinberg (2001) use the PSID to examine changes in household spending at the time of retirement. Their measure of consumption includes food expenditures at home, food expenditures away from home, and the imputed or actual rental value of one's residence. They show results

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for their composite measure of consumption and separately for food at home and food away from home. Results for a measure of consumption that only includes the imputed or actual rental value of one's residence at the time of retirement are not shown. They find that, on average, their composite expenditure measure falls by 14 percent.

A variety of other studies confirm that food expenditures drop sharply upon retirement. Hurst (2006) uses a different methodology and a different time period from the PSID and finds similar results with respect to food spending. If one follows a specific household through retirement, food spending declines by 12 percent at the median on average. Likewise, Haider and Stephens (2007) use panel data from the RHS and find that households that retire when expected experience a 10 percent decline in food expenditures, on average. However, the latter authors also analyze data from the HRS and find no decline in food spending among the recently retired. This latter result is interesting in the sense that it is the only study reporting that food expenditures do not decline sharply with the incidence of retirement. Fisher et al. (2006) suggest that either period effects or cohort effects from the late 1990s may explain the lack of findings in the HRS data analyzed Haider and Stephens (2007).<sup>5</sup>

Hurd and Rohwedder (2003, 2006) take a different approach to analyzing changes in spending at the time of retirement by using retroactive survey data. Instead of using the data-sets described previously, where households are asked about their spending patterns during the last month or during the last quarter, these studies rely on household retrospective assessments of how much their expenditures fell upon retirement. For example, someone in their survey currently 69 years old but who retired when he was 63 would be asked to recount his change in spending from six years earlier. This recall is provided by a supplemental survey called the Consumption and Activities Mail Survey (CAMS), matched to the HRS. The CAMS survey asked current retirees to report how their total spending changed with retirement in two steps. First, they report the direction of the change in spending at the time of retirement (increase, decrease, or stay the same). Second, the household is asked to report the percentage change in spending, if they report that their spending increased or decreased. Using a very different methodology than the earlier surveys, these analyses show, on average, that total spending falls by roughly 14 percent at the time of retirement. The median decline in spending, however, is zero. This corresponds almost exactly to the median results on total spending changes discussed above.

Ameriks, Caplin, and Leahy (2007) use data from two separate surveys of Teachers Insurance and Annuity Association-College Retirement Equities Fund (TIAA-CREF) participants: the Survey of Participant Finances (SPF) and the Survey of Financial Attitudes and Behavior (FAB). Similar to the

Au: Is 'Teachers Insurance and Annuity Association, College Retirement Equities Fund' the correct expansion for the term 'TIAA-CREF'? Please check.

### 3 / Understanding Consumption in Retirement 35

CAMS data, households are asked to assess the direction of their change in spending at the time of retirement and the amount of the change. The TIAA-CREF samples differ from the CAMS, in the sense that TIAA-CREF respondents are much more educated and much wealthier than the households in CAMS. These surveys again report that, at the median, there is no decline in total spending at the time of retirement.

One thing that distinguishes the last studies by Hurd and Rohwedder (2003, 2006) and Ameriks, Caplin, and Leahy (2007) from the other work on the retirement consumption puzzle is that these surveys also ask households before retirement about their *expected* declines in spending at retirement. In other words, this work speaks to the question of whether preretired households expect their expenditures to fall upon retirement. Interestingly, nearly 70 percent of preretired respondents in CAMS expected their expenditures to fall in retirement, while almost 60 percent of preretired TIAA-CREF households expected to decrease their expenditures upon retirement. This research sheds light on the fact that for most households declines in spending are forecastable well in advance of the actual date of retirement.

What does this synthesis of all of the above research allow one to conclude about the retirement consumption puzzle? Evidence from many countries does show that household expenditures drop at retirement. But these studies also show that most of the declines are found in work-related expenditures and in food expenditures. Broader measures of consumption always show less of a decline than the narrow categories of food or work-related expenses. Moreover, although it is rarely directly documented, it appears that total expenditures excluding food and work-related items remain relatively constant as households transition to retirement. Furthermore, these spending declines at retirement are predictable by households, before actual retirement.

#### **Explaining the 'Retirement Food Consumption Puzzle'**

From the life-cycle perspective, it makes sense that expenditures that are complements with working (i.e., professional clothing) should fall when households exit the labor force. But without augmentation, the model still has a difficult time explaining why food expenditures would fall while the rest of the consumption bundle remains relatively constant. If that were truly the case, the retirement consumption puzzle should be more appropriately named the 'retirement food consumption' puzzle. A possible explanation for this phenomenon is offered by Aguiar and Hurst (2005) who argue that consumption is the output of 'home

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production,' which uses as inputs both market expenditures and time. People will tend to substitute away from market expenditures toward time spent in home production, including more intensive searching for bargains, as the relative price of time falls. Naturally, retirees have a lower opportunity cost of time relative to their preretired counterparts and, as a result, should be able to engage in nonmarket production to reduce the cost of their consumption bundle while keeping their actual consumption intake relatively constant. This could explain the behavior of food expenditures during retirement given that food is amenable to home production.

Testing this hypothesis requires data on how food consumption changes in retirement. Aguiar and Hurst (2005) rely on the Continuing Survey of Food Intake of Individuals (CSFII), conducted by the U.S. Department of Agriculture, which tracks the dollar value, the quantity, and the quality of food consumed by US households. Using a variety of statistical tests, they find no actual deterioration in a household's diet as they transition into retirement.<sup>6</sup> Actual food consumption does not decline despite the declining expenditure. This just pushes the question back a step: how do retirees maintain their food consumption despite their declining food expenditures? Using detailed time diaries from National Human Activity Pattern Survey and from the American Time Use Survey, the authors show that retirees dramatically increase their time spent on food production relative to otherwise similar nonretired households. The fact that retirees allocate more time to nonmarket production than their nonretired counterparts was also shown by Hurd and Rohwedder (2003, 2006) using the CAMS supplement to the HRS and by Schwerdt (2005) using data from the German Socio-Economic Panel.

In separate work, Aguiar and Hurst (2007*a*) examine the mechanism by which retirees reduce their spending on food. Is it that retirees are shopping more frequently and, as a result, are paying less for their exact same food consumption bundle? Or, are they actually switching their consumption bundle from relative expensive premade groceries (like using the grocery store's salad bar to purchase a premade salad) to relatively cheaper raw ingredients which they can combine themselves into a meal (like buying all the vegetables separately and chopping them up themselves to make the salad). Household data provided by the ACNielsen company tracks the purchases of the household at the universal product code (UPC) level and links those purchases to detailed information about the purchaser. This permits the authors to show that, holding constant the exact good (as measured by UPC code), retirees pay lower prices for their grocery bundle than slightly younger nonretired households. In all, about 20 percent of the declining expenditures on food for older households can be attributed to increased shopping intensity resulting in lower prices paid for the same

Au: Is 'universal product code' correct expansion for the form 'UPC'? Please check.

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good. The remaining 80 percent, they find, is due to increased amounts of home production.

Broadly, their results suggest that retired households should experience a slight decline in nonfood items simply resulting from the increased shopping intensity of retired households. This is consistent with the facts in Aguiar and Hurst (2005) which show retired households spend 60 percent more time shopping for nonfood goods than their nonretired counterparts.

#### **The Heterogeneity of Expenditure Declines Across Individuals**

A decade of research on the retirement expenditure puzzle has taught us three things: (a) declines in expenditure, on average, are anticipated at retirement; (b) the bulk of the decline in expenditures at retirement is concentrated among work-related expenditures and food; and (c) the decline in food expenditures can be explained by an increase home production of food by retirees in the sense that the time allocated to food production goes up dramatically in retirement and actual food intake does not change in any meaningful way as households retire. Yet the literature has also demonstrated one additional fact about changes in expenditure among retirees: there is a tremendous amount of heterogeneity in expenditure changes experienced by retirees.

This point was first made by Bernheim, Skinner, and Weinberg (2001) who use panel data from the PSID which permit the authors to follow a given household as it transitions through retirement. An innovative element of their research is that they examined food consumption declines for individuals with differing amount of retirement resources,<sup>7</sup> characterized along two dimensions: (a) accumulated total assets prior to retirement relative to preretirement nonasset income and (b) postretirement nonasset income relative to preretirement nonasset income. Their hypothesis was that households with higher accumulated assets prior to retirement or higher income replacement rates postretirement should be better able to maintain consumption during retirement. The authors' empirical results are striking. First, they show that that essentially all households, independent of preretirement wealth and postretirement income replacement rates, experienced a decline in (primarily food) expenditure during retirement. Second, the declines in expenditure are largest for households with the lowest retirement resources. For example, households in the lowest preretirement wealth quartile (irrespective of postretirement income replacement quartile) experienced a 31 percent decline in expenditures up to four years after retirement. Expenditure declines for households in

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the second, third, and top preretirement wealth quartiles (irrespective of postretirement income replacement quartile) are 14, 14, and 9 percent, respectively.<sup>8</sup> In other words, the declines in expenditures for the wealthiest households (top preretirement wealth quartile) are similar to the declines in expenditures for households in the second and third preretirement wealth quartiles. Those households in the bottom preretirement wealth quartile, however, experienced a much larger decline in expenditures at retirement.

While the declines in food expenditures for the households in the top three wealth quartiles can be explained by changing home production and shopping activities, such a modification to the life-cycle model has a hard time matching the magnitudes of the decline in expenditures for households in the bottom quartile of the wealth distribution. To this end, Aguiar and Hurst (2005) show that some households—those with very little accumulated wealth (less than \$1,000 of nonpension assets)—do experience some decline in the quantity and quality of food intake associated with retirement. Other researchers have confirmed the existence of important heterogeneity in expenditure decline around the time of retirement. For example, Hurst (2006) uses PSID data and relates preretirement wealth on a full vector of income and demographic variables. Next, he splits households into a sample with low preretirement wealth residuals (bottom 20 percent) and all other households. He shows that the food expenditure declines associated with retirement are twice as large for those households with low preretirement wealth residuals compared to other households (20 percent declines vs 10 percent declines).

A related point is that the CAMS HRS supplement shows substantial heterogeneity in expenditure changes at the time of retirement. Specifically, Hurd and Rohwedder (2003) report that only slightly over half (53 percent) of households currently retired report experiencing a decline in total expenditure at the time of retirement. Of the remaining, 12 percent reported experiencing an *increase* in total expenditures at the time of retirement, while 36 percent reported that retirement was associated with no change in total expenditures. And actual drops in expenditure at retirement grew as net worth declined: households in the lowest wealth quartile experienced a 22 percent decline in actual expenditure while households in the second, third, and top wealth quartile experienced 17, 13, and 7 percent declines, respectively.<sup>9</sup>

Given these results, the focus of changes in expenditures in retirement should be limited to the minority of households who enter retirement with very low wealth and, as a result, experience very dramatic declines in expenditures at the time of retirement relative to other households with higher amounts of wealth.

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#### **The Role of Unanticipated Retirement in Explaining Observed Heterogeneity**

One concern that motivates the identification of the 'retirement consumption puzzle' is that retirement is often endogenous to life events which change household consumption trajectories. Among the most commonly cited causes of involuntary retirement are health shocks. For instance, McClellan (1998) finds that workers who have worse health are more likely to have subsequent negative health shocks and are more likely to retire early. Hurd and Rohwedder (2005) find that 29 percent of the CAMS sample report that adverse health was 'very important' or 'moderately important' for their decision to enter retirement.

A health shock can affect the optimal consumption decision in multiple ways. First, households who are forced to retire earlier than expected will likely experience a sharp permanent decline in their lifetime resources. According to standard life-cycle theories, such a shock should cause a household to optimally lower their level of consumption, all else equal. As a result, one should expect to see declining consumption growth as households transition into their retirement.<sup>10</sup> Also, health shocks should cause a reallocation of the consumption bundle, all else equal, toward health expenditures away from other consumption categories. If the measure of consumption excludes health expenditures, one may observe declining expenditures in retirement. Third, health shocks often affect consumption needs. For example, someone stricken with a severe illness that affects ability to work may also have decreased appetite causing one to spend less on food during a given period. Lastly, the health shock could alter the household's expected length of life. Again, according to standard consumption theories, an abrupt change in the planning horizon will alter the household's consumption path.

A relevant question is to whether health shocks (or unexpected retirement, more generally) can explain observed heterogeneity in expenditure declines at the time of retirement, particularly among those with low pre-retirement wealth.<sup>11</sup> Haider and Stephens (2007) tackle the question of unexpected retirements directly using RHS data. They instrument for the time of a household's retirement with that household's own expectation of their retirement date some years prior to their actual retirement, and then the authors compare the overall change in food spending for all households as they transition to retirement with the overall change in food spending for only those households where the date of retirement was predicted well in advance. Their estimate of the decline in food expenditures at the time of retirement, when age is used as an instrumental variable for retirement status, is roughly -15 percent. Using retirement expectations as an instrument instead reduces the estimated decline in food expenditures

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at retirement to –10 percent. In other words, the decline in food expenditures for households where the date of retirement is not forecastable is much larger than the decline in food expenditures for households where the date of retirement is known in advance.

The importance of involuntary early retirement is underscored by Smith (2006) who examines the British Household Panel (BHP). She divides her sample retirees into households who retire ‘voluntarily’ and those who retire ‘involuntarily’; involuntarily retirees are those who transition into retirement from a nonwork employment state (usually unemployment or long-term disability). She links this to total spending on food consumed at home (meals away from the home are not included). Although her sample sizes are small (226 voluntary retirees and 57 involuntary retirees), she still is able to conclude that those who retire involuntarily experience much larger consumption declines than those who retire voluntarily; she cannot, however, reject that those who retire voluntarily experience any expenditure declines upon retirement. However, those who retire involuntarily experience expenditure declines of over 10 percent.

Taken together, these results indicate that some of the observed heterogeneity in the spending declines associated with retirement is due to involuntary retirement. Specifically, those who are forced to retire involuntarily experience much larger expenditure declines than households who retire when planned. Some of this may be due to health shocks. For instance Hurd and Rohwedder (2005) examine expenditure changes for CAMS households who self-report that poor health was a very important reason for their retirement and compared these to those households who self-report that poor health was not important at all for their decision to retire. They show that those who experienced a poor health shock forcing them to retire were more likely to report expenditure declines at the time of retirement (68 vs 48 percent) and experienced larger expenditure declines at the time of retirement (25 vs 11 percent). Accordingly, it does seem that adverse health shocks account for some of the large heterogeneity in expenditure declines as households transition to retirement.

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### Conclusions and Discussion

Until recently, many analysts felt that consumption patterns around the retirement date were poorly captured by life-cycle models. This claim relied on the fact that even though retirement is fairly predictable for most households, consumption expenditures declined precipitously for everyone at that point. Such a phenomenon had been referred to as the ‘retirement consumption puzzle.’

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Our chapter has confirmed that certain types of expenditures do fall sharply as households enter into retirement—not only in the USA but elsewhere as well. We also show that the expenditure drops are mostly limited to two consumption categories: work-related items (such as clothing and transportation expenditures) and food (both at home and away from home). When broader measures of consumption are analyzed or when expenditure categories that exclude food and work-related expenses are analyzed, the measured declines in spending upon retirement are either close to zero or are increasing. As a result, the retirement consumption puzzle is a bit of a misnomer. The fact that work-related expenses fall upon retirement is in no sense puzzling when viewed through the lens of standard consumption models. What is potentially puzzling is why food expenditures decline sharply at the time of retirement while the rest of the household's consumption bundle remains relatively constant.

Another stylized fact highlighted is that actual food intake (as measured by the quantity and quality of one's diet) remains constant through retirement despite the fact that food expenditures fall sharply. This is partly due to the fact that retirees spend much more time on food production (preparing meals and shopping for groceries) than their nonretired counterparts. We also document substantial heterogeneity across individuals in the population with respect to changing expenditures in retirement. Specifically, expenditure drops are mostly marked for households that have little accumulated wealth prior to retirement.

Last, we conclude that households which experience real consumption declines at retirement often experience involuntary retirement, some due to health shocks. There are other potential explanations as well. Hurst (2006) suggests that households with low preretirement wealth entering retirement may be myopic with respect to their consumption decisions and, as a result, plan insufficiently for retirement. Scholz, Seshadri, and Khitatrakun (2006) run individual earnings, demographic and health trajectories (for an actual household) through a calibrated life-cycle consumption model (with idiosyncratic income and health shocks). They then compare the predicted household wealth on the eve of retirement from such a model to the household's actual preretirement wealth and find that roughly 20 percent of households are ill-prepared to sustain consumption during retirement. The remaining 80 percent of households have accumulated enough wealth to maintain their marginal utility of consumption through retirement.

The bottom line is that, for most households, there is no retirement consumption puzzle. In other words, most households are maintaining their marginal utility of consumption as they transition into retirement across all consumption categories. These results also provide sharp conclusions

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about the nonseparability of actual consumption and leisure in household utility.<sup>12</sup> Future work can learn more about the households who may, in fact, be ill-prepared to maintain their consumption levels postretirement. Moreover, the data seems to suggest that there may potentially be room for an improved insurance market that would allow households to maintain consumption in the event that they receive a health shock. Studying the consumption needs of such households after a health shock, therefore, would also be a fruitful area for future research. Another fruitful venue for future work is to focus on consumption patterns beyond retirement. As households live longer, the question will shift toward whether households can maintain their consumption well into their periods of retirement. That is, households may be able to smooth their consumption as they transition into retirement but may be unable to sustain that consumption level over their remaining lifetimes.

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## Notes

<sup>1</sup> The classic references include Modigliani and Brumberg (1954) and Friedman (1957). The standard life-cycle model usually assumes that household utility is separable in consumption and leisure; Heckman (1974) proposes a life-cycle model with utility being nonseparable between consumption and leisure.

<sup>2</sup> This survey focuses on recent innovations in retirement spending, although evidence about the existence of a retirement consumption puzzle extends back over two decades. The classic reference is Hamermesh (1984); that paper uses data from the 1973 and 1975 RHS to show that expenditures of retirees fall sharply in the first few years after retirement.

<sup>3</sup> Fisher et al. (2006) create three separate five-year birth year cohorts within the CEX data. We report the results for the third cohort, which in terms of magnitude was in the middle of the first and second cohorts. The first cohort (the cohort that retired during the mid-1990s) looked different than the second and third cohorts. While the second and third cohorts experienced substantial declines in food spending upon retirement, their first cohort experienced little change in food spending upon retirement.

<sup>4</sup> Fisher et al. (2006) only broke out food as a separate consumption category. They did not separately analyze other categories such as work-related expenses or entertainment.

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<sup>5</sup> Lundberg, Startz, and Stillman (2003) document declines in food expenditures within the PSID for married households.

<sup>6</sup> Actually, Aguiar and Hurst (2005) find that measured food consumption increases slightly as households transition into retirement. This would be consistent with a modest substitution effect resulting from the fact that the price of 'producing' a unit of food has declined after retirement.

<sup>7</sup> As discussed above, Bernheim, Skinner, and Weinberg (2001) use a composite consumption measure, which is based on food consumed at home, food consumed away from home, and the implicit or actual rental cost of housing.

<sup>8</sup> These statistics come from using Table 2a and Appendix Table A1 of Bernheim, Skinner, and Weinberg (2001).

<sup>9</sup> Ameriks, Caplin, and Leahy (2007), using their survey of TIAA-CREF participants, find results similar to those reported by Hurd and Rohwedder. Specifically, 47 percent of retired households reported experiencing a decline in total expenditures at the time of retirement while 22 percent experienced an increase in expenditures at the time of retirement. As in the other studies, the decline in expenditure was largest for those with low wealth; this is interesting in view of the fact that the TIAA-CREF sample is better educated and much more likely to be high income than the nationally representative sample of CAMS participants. Using the German Socio-Economic Panel, Schwerdt (2005) also finds similar evidence: he shows that households with low retirement income replacement rates experienced much larger expenditure declines than households with high retirement income replacement rates.

<sup>10</sup> This is the view expressed by Banks, Blundell, and Tanner (1998: 769) who state: 'We argue that the only way to reconcile fully the fall in consumption [at retirement] with the life-cycle hypothesis is with the systematic arrival of unexpected adverse information.'

<sup>11</sup> There is a well-established relationship between household wealth and household health. Hurd and Rohwedder (2005) show that those who cite adverse health shocks as a reason for retirement in the CAMS and HRS had significantly worse reported health prior to retirement.

<sup>12</sup> Despite the suggestions of Heckman (1974) and Laitner and Silverman (2005), there is no evidence that consumption and leisure, on average, are substitutes in utility.

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