

# Is Time Running Out? Savings and Investments of Renters Nearing Retirement Age

Russell N. James III and Deanna L. Sharpe

*How do renters approaching retirement respond to their absence of housing equity? Traditional life cycle accumulation theory suggests compensation by increased investment in other asset classes. Behavioral “mental accounting” suggests that there may be no affect on investment in other asset classes. Finally, a model of self-selection based on underlying savings preference predicts lower investment in other asset classes. Double-hurdle and Tobit analyses of data from the 1995-2005 Consumer Expenditure Surveys indicated that, compared with otherwise similar homeowners, renters nearing retirement were (a) less likely to contribute to retirement savings, (b) invested less when they did contribute, and (c) favored investment in short-term convenience accounts over retirement savings. Results imply that housing tenure may result from underlying time preference.*

*Key Words: homeowner, renter, retirement planning, savings*

## The Importance of Homeownership

For most Americans, the value of their home comprises the bulk of their net worth (Cocco, 2004; Yao & Zhang, 2005). Using data from the Survey of Income and Program Participation, Luckett (2001) estimated that owned homes accounted for 44% of all wealth in the U.S. Although residential real estate is not the most rapidly appreciating asset class—averaging about 7.3% appreciation since 1980 (Office of Federal Housing Enterprise Oversight, 2007)—it does offer a unique opportunity to leverage investment assets. New homeowners routinely gain ownership of an asset worth 10 times their actual cash investment. With such leverage, even modest appreciation can cause the home to quickly become the dominant source of net worth within the personal finance portfolio.

For those in retirement, homeownership offers especially important economic benefits. Homeownership may provide housing services at a lower cost than renting, especially if the home mortgage has been fully paid. According to a recent study commissioned by the American Association of Retired Persons (AARP), a substantial number of Americans expect to enjoy such services over a number of years. This study found that 83% of Americans aged 45 and older owned their own home, and most of these home-

owners were optimistic about being able to age in place (American Association of Retired Persons [AARP], 2003). Homeownership also provides a source of liquidity as various financial instruments will convert home equity into cash (Sheiner & Weil, 1992).

Conversely, those nearing retirement without owning a home may be at particular risk. As the nation prepares for the largest retirement age cohort in history, it is critical to understand the savings and investment behavior of renters nearing retirement. Renting households are no small proportion of the population, constituting almost one third of all American households (Joint Center for Housing Studies [JCHS], 2007). The ways in which these potentially “at risk” individuals choose to prepare for the approaching retirement years may have a profound impact on social program needs in the coming years. As noted by Apgar and Di (2005), “the inability of all households to realize the benefits of homeownership leaves behind gaping holes in the retirement security safety net” (p. 19).

Given this potential vulnerability, it is particularly important for financial educators and counselors to understand the investment and retirement savings behaviors of renters as they near retirement age. Without the economic cushion

*Russell N. James III, Ph.D., Assistant Professor, Department of Housing & Consumer Economics, University of Georgia, 205 Dawson Hall, Athens, GA 30602, rjames@uga.edu, (706) 206-3518*

*Deanna L. Sharpe, Ph.D., Associate Professor, Department of Personal Financial Planning, University of Missouri–Columbia, 239 Stanley Hall, Columbia, MO 65211, SharpeD@missouri.edu, (573) 882-9652*

of long-term homeownership, financial counseling services may be especially critical for these clients. Further, the absence of housing equity among renters provides a scenario for examining competing theories in personal financial planning, specifically relating to the absence of a particular asset class. This paper examines three such theoretical approaches, each describing different scenarios related to the impact of housing tenure on household investment behavior.

## **Theoretical Framework**

### ***Traditional Life Cycle***

Under a traditional life cycle approach, households will smooth their consumption experience by acquiring assets before retirement and consuming them during retirement (Modigliani, 1986; Modigliani & Brumberg, 1954). The traditional form of this theory assumes assets are fungible, i.e., the rational individual treats all forms of wealth identically. An increase in real estate wealth through home appreciation can compensate for a lack of investment from other sources. Conversely, a lack of real estate wealth would generate an increased desire to save in other instruments, so that, ultimately, the target level of permanent income could be achieved. Thus, a household that holds relatively less real estate wealth (such as equity in a personal residence) will compensate by increasing investments in other categories. Following this line of reasoning, when tenants, who presumably lack real estate equity, are compared with otherwise financially similar homeowners, we would anticipate tenants acting to compensate for their lack of equity by choosing to save more in other investment categories.

Although the traditional life cycle theory has proven useful as a general model of retirement wealth accumulation (Milligan, 2005; Scholz, Seshardri, & Khitatrakun, 2004), specific predictions of the theory have been challenged by a number of empirical studies. Households have appeared to violate the fungibility assumption with regard to housing equity. Housing wealth accumulation and deaccumulation has not followed the same general patterns of other financial investments (Yang, 2005). Although housing equity can form a substantial amount of wealth, retired households have not generally been observed to liquidate housing equity in order to support consumption in later years (Venti & Wise, 1990). Rather, older age housing sales have been brought about by dramatic changes in health or the death of a spouse, rather than as a means to sustain a target level of consumption (Venti & Wise, 2001; Ostrovsky, 2004).

Despite these challenges, some researchers have posited a “crowding out” effect of housing equity in the personal finance portfolio. Yao and Zhang (2005) developed a model that suggested that investors who are indifferent between owning and renting will, as homeowners, make substantially different portfolio choices than they would have as renters. In particular, homeowners should be expected to reduce the securities proportion of their net worth, substituting home equity for risky stocks. Homeownership essentially allows diversification by adding home equity to investments in bonds and stocks. Using a different scenario, Cocco (2004) found that housing price risk could “crowd out” stock holdings. Flavin and Yamashita (2002) presented a model that implied that otherwise identical households may have different financial asset portfolios because “each household is optimizing their portfolio subject to a constraint on housing, and this constraint varies over households” (p. 359). Brueckner (1997) predicted that when homeowners attempt to take the investment and the consumption aspects of housing into account, their portfolio mix may reflect an overinvestment in housing as compared with an optimal level derived from economic theory. Hu (2005) noted that a homeowner’s portfolio should take the high transactions cost of housing into account. These transaction costs increase the probability that home equity will build up, and this, in turn, reduces the need for higher levels of precautionary savings.

### ***Behavioral Life Cycle (Mental Accounts)***

Shefrin and Thaler introduced a new form of the life cycle theory by relaxing the assumption that individuals perceive wealth as fungible. Instead of this assumption, Shefrin and Thaler’s alternative approach suggested that individuals use a mental accounting system for different types of assets and investments (Shefrin & Thaler, 1988; Thaler, 1990, 1994). So, for example, individuals may view housing equity as a separate mental account, distinct from retirement savings. Under this behavioral life cycle theory, retirement savings behavior may be largely unaffected by increases or decreases in housing equity. Because retirement savings is a separate mental category, the presence or amount of housing equity may not have a significant impact on the amount of retirement savings (Levin, 1998). Given this separate mental accounting, we might expect the retirement savings patterns of non-homeowners to roughly match those of otherwise similar homeowners. Although homeowners have home equity wealth, that wealth is in a different mental category and may not impact the wealth accumulation goals within the retirement savings category.

### ***Self-Selection (Savings Preference)***

A third theoretical perspective is that homeownership reflects an underlying taste for investment, saving, and asset accumulation. A strong preference for asset accumulation will be manifested by engagement in various similar activities including saving for a down payment, owning rather than renting, and investing for retirement. Disney, Henley, and Stears (2002) found evidence that supported this approach in a study of savings behavior among British homeowners aged 55-69. High levels of housing investment costs relative to income were associated with higher levels of saving in other investment categories. Rather than crowding out non-housing investments or having no impact due to separate mental accounting, a high level of housing investment relative to income seemed to reveal an underlying preference for asset accumulation. This strong preference was then reflected in other investment categories as well. In our examination of tenants and homeowners, this approach would suggest that the same underlying preference for asset accumulation may be reflected both in choosing to rent and in a diminished desire to save for retirement. The current study thus extended the approach of Disney et al. (2002), both in using data from the U.S. and in exploring the validity of applying the same principal to renting households rather than homeowners only.

### **Methods**

#### ***Data***

Data for the present study were from the Interview component of the Consumer Expenditure Survey (CE). Between 1995 and 1998, the CE included data from approximately 5,000 households per quarter, and since 1998, has included approximately 7,500 households per quarter. Households were expected to participate in the survey for five consecutive quarters, although not all did. Each quarter, 20% of the sample rotated out, having completed their fifth interview, and a new 20% rotated in. Certain questions regarding financial investments critical to the current study were asked only in the fifth interview. Consequently, in order to avoid attributing a single set of responses to multiple interviews, this study examined only the responses from fifth interviews. Unweighted fifth interviews occurring from the second quarter of 1995 through the first quarter of 2005 were used, and for simplicity, all data reported in quarterly amounts were annualized. Examining results from such an extended period of time permitted the accumulation of less common cases such as high-income married renters with children. Additionally, this longer time frame encompassed several different investment market conditions, helping to insure that our results did

not reflect behavior limited to the extremes of any one particular investment market scenario.

The CE was unique in offering data on household expenditure patterns as well as on household income and assets. This expenditure data allowed us to control for the percentage of expenditures absorbed by housing costs for both renters and owners. Although the CE did not provide as much detail on the components of savings and investment as did the Survey of Consumer Finances, it did provide data on aggregate investment in individual retirement accounts (IRA) and Keogh accounts, retirement-related payroll reductions, and savings contributions.

In order to ensure an analysis based upon accurately reported information, the sample was limited to homeowners and renters who did not refuse to answer questions regarding the key financial variables of interest. The sample was further limited to include only those households with a reference person in the age category of "near retired," age 55-64, or "pre-near retired," age 45-54. This division examined those in the two decades leading up to the traditional retirement age of 65. The specific examination of retirement-related behavior using the age group of 55-64 has been common in previous research (Casey & Laczko, 1989; Poterba, Venti, & Wise, 1994), as has been the examination of the younger 45-54 age decade (Yuh, Montalto, & Hanna, 1998). The introduction of the younger 45-54 age group expanded the 55-69 age category used in Disney et al. (2002) by examining behaviors of those who are somewhat further from retirement. Examining this younger age category could have been particularly helpful in excluding the effects of those who may have left homeownership to become renters as part of early retirement and planned disinvestment. Finally, excluding those under age 45 eliminated those in a younger life cycle stage where the need to accumulate retirement savings may be less pressing. The Appendix includes a discussion of the complete sample selection process and an analysis of the related potential for bias.

#### ***Sample Characteristics***

Table 1 provides descriptive statistics for renters and owners aged 45-54 and aged 55-64. Results of a *t*-test that measured differences between renters and owners within each age class were reported. Results indicated that renters have significantly less income and liquid assets. Renters in both age groups were more likely to be unmarried and have relatively lower levels of education. These results lend support to the idea that renters face greater finan-

cial constraints than do homeowners. Consequently, any examination of investment behavior must control for these differences.

### ***Hypotheses and Outcome Variables***

The current study examined the investment and retirement savings behaviors of homeowners and renters as they near retirement age. Questions of interest included

- (a) Are renters more or less likely than homeowners to contribute to retirement savings?
- (b) Among renters and homeowners who contribute to retirement savings, do renters hedge

against lack of housing equity by making proportionately larger levels of investment in financial assets?

- (c) Are renters who save more or less likely than homeowners to prefer sheltered retirement instruments over other financial products?

The three theoretical models described provided different predictions concerning homeownership and retirement investment. Under the traditional life cycle model we would expect, all else being equal, that renters' lack of home equity would have driven them to invest in other

**Table 1. Descriptive Statistics for Pre-Retirement Renters and Owners**

Variables	Age 45-54		Age 55-64	
	Renters (n = 1799)	Owners (n = 4641)	Renters (n = 962)	Owners (n = 3039)
Before-tax income	\$34,920.98*** (\$30,539.94)	\$77,880.98 (\$61,220.45)	\$28,008.26*** (\$29,735.94)	\$64,442.35 (\$57,685.73)
Liquid assets	\$9,809.16*** (\$68,879.85)	\$69,904.89 (\$235,274.42)	\$16,135.93*** (\$102,239.57)	\$113,720.38 (\$363,484.99)
Age	49.11 (2.88)	49.25 (2.84)	58.96* (2.91)	59.21 (2.88)
Family size	2.31*** (1.58)	2.89 (1.47)	1.92*** (1.4)	2.34 (1.28)
Married	30.79%***	68.41%	27.55%***	67.95%
Single male	27.96%***	12.52%	27.86%***	9.81%
Single female	41.25%***	19.07%	44.59%***	22.24%
White	70.76%***	87.14%	71.10%***	86.05%
Urban	95.44%***	88.24%	95.32%***	86.77%
< High school education	21.96%***	10.06%	34.93%	16.52%
High school education	28.63%*	26.05%	27.65%	29.02%
Some college	30.52%	30.02%	23.91%	25.50%
Bachelor graduate	13.40%***	19.22%	9.15%***	15.00%
Graduate education	5.50%***	14.65%	4.37%***	13.95%
Housing as share of total expenditures	42.31%*** (15.59%)	33.37% (14.72%)	44.88%*** (15.68%)	32.67% (15.74%)
Currently retired	0.78%***	1.55%	10.91%*	16.32%
All savings changes in prior 12 months	\$551.67*** (\$14,336.17)	\$7,932.12 (\$73,187.02)	\$2,253.55 (\$40,544.44)	\$5,937.41 (\$90,322.23)
IRA contributions in prior 12 months	\$209.57*** (\$1,395.19)	\$1,243.36 (\$4,755.91)	\$256.35*** (\$1,693.54)	\$1,122.91 (\$4,711.29)
Payroll deduction retirement savings	\$318.24*** (\$1,156.41)	\$1,838.94 (\$4,040.24)	\$306.72*** (\$1,361.38)	\$1,215.24 (\$3,427.37)

*Note.* Table reports means (standard deviations) for the variables. Two-tailed *t*-tests of the difference between renters and owners in the same age class were performed with the data from the CE 1995(q2)-2005(q1) from the fifth interview for those participants who reported their complete income.

\**p* < .05. \*\**p* < .01. \*\*\**p* < .001.

assets such as retirement savings. Under a mental accounts model, renters' lack of home equity may not have had any affect on saving in other asset categories. Finally, under a self-selection model, renter status may have reflected an underlying time preference (and savings preference) that resulted both in a lack of homeownership and in a lack of savings in other long-term investment categories. Thus, in the following analyses we were primarily concerned with the statistical impact of renter status on various investment outcomes.

The first outcome of interest was the presence of active contribution to retirement savings. For these purposes, contribution was defined as making new retirement contributions during the previous 12 months. Retirement contributions were divided into two types: payroll deduction contributions and individual retirement plan contributions. Payroll deduction contributions included private pensions, government pensions, and railroad retirement but excluded mandatory Social Security payments. Individual retirement plan contributions referred to money placed in any IRA or Keogh type plans during the previous 12 months.

The second outcome of interest was the level of contribution to retirement savings among those who are actively contributing. Here the outcome variable was the dollar amount of contributions made either through payroll deduction contributions or, alternatively, to IRA or Keogh type plans. Following a method proposed by Cragg (1971), the analysis used a maximum likelihood truncated regression. This approach allowed an examination of the impact of housing tenure on the amount of retirement contributions among those households that were making contributions to retirement plans.

The final regression model compared new retirement contributions during the previous 12 months with growth in convenience accounts (checking or savings) and securities holdings occurring during the same period. The previous models focused on the probability of making a retirement contribution and the level of that contribution. However, those analyses did not reveal whether the lack of a retirement contribution was due to the lack of savings in general or due to a preference for other, non-retirement savings instruments. To address this question, we created an outcome variable, ranging from 0 to 1, that reflected new retirement contributions as a proportion of the positive growth in other savings instruments. Here the numerator was the total new retirement contributions during the previous 12 months, and the denominator was the sum of

new retirement contributions, positive growth in convenience accounts, and positive growth in securities accounts during the same 12 month period. Thus, a higher ratio indicated a preference for shifting assets towards retirement savings. Similarly, a preference for convenience accounts was measured by a separate outcome variable where the numerator was the total positive growth in convenience accounts. Finally, a preference for securities was measured by another outcome variable where the numerator was the total positive growth in securities holdings. Cases where the denominator was zero due to a lack of positive growth or contributions in any category were excluded from the analysis, as we would, in those cases, be unable to ascertain preference among investment types. This proportional approach, controlling for pre-existing levels of savings, may have helped to reveal preferences for retirement sheltered savings as compared to other savings options.

### ***Control Variables***

Previous research has shown basic socio-economic characteristics to be significantly associated with investment and savings decisions (Bhargava & Lown, 2007; DeVaney, Anong, & Yang, 2007). Such socio-economic characteristics used as controls in previous research included age, race, education, marital status, income, homeownership, and household size (Bhargava & Lown, 2007; DeVaney et al., 2007). We included these as control variables and introduced an additional control variable for urban status, as urban locations are often associated with a higher proportion of rental housing (JCHS, 2006).

We also found justification for the use of these control variables from the characteristics of our current dataset. As demonstrated by Table 1, renters and owners in our two age categories were significantly different in a variety of socio-economic variables. Because of these underlying differences, it was important to introduce control variables into our regression analyses. In the absence of such control variables, we may have attributed characteristics to tenure status that were in fact resulting from differences in things such as education levels or family size. (Failing to control for a socio-economic characteristic known to be significantly associated with our characteristic of interest would have created unnecessary confusion in interpreting resulting coefficients.) Because of this, we included controls for each of the socio-economic variables found to be significant in Table 1. As a result we included control variables for income before taxes, proportion of total household expenditures devoted to housing costs, total liquid assets

(checking, savings, and securities holdings), age of the reference person (measured as a continuous variable), marital status (widowed, divorced, never married, separated, and married as the reference category), family size (measured as a continuous variable), race (1 if White, 0 if non-White), and urban residence (1 if living in a metropolitan statistical area or other area of 2,500 or more persons, 0 otherwise). In addition, dummy variables for each individual calendar year were included but not reported. These individual year dummies absorbed fixed effects related to occurrences in each specific year. The analysis of investment allocation also controlled for the sum of all increases in checking accounts, savings accounts, and securities, as well as all retirement plan contributions during the previous 12 months.

Introducing a control variable for total household expenditures devoted to housing costs insured that changes in investment behavior by renters were not being driven by differences in housing costs. If, for example, renter status altered the remaining resources available for investment or non-housing expenditures, then an association between renter status and investment choice that did not control for this may have produced spurious results. Housing costs were defined using the CE total housing expenditures variable from the consumer unit characteristics and income file. The CE did not include principal payments for mortgages in housing expenditures. Principal payments represented a reduction of debt, rather than a payment for housing services or payment for the use of money. Homeowners could choose to obtain the identical level of housing services without making significant principal payments either by using an interest-only mortgage or through serial refinancing. Thus, principal payments were not part of expenditures for housing services. To the extent that excluding principal payments overstated the remaining funds available for homeowners to invest, it could have caused a negative association between homeowner status and retirement savings. The total expenditures denominator in the housing cost control variable consisted of the sum of all expenditure category subcomponents used in the CE (food, alcoholic beverages, housing, apparel, transportation, health, entertainment, personal insurance and pensions, personal care, reading, education, tobacco, miscellaneous expenditures, and cash contributions).

## Findings

### *Retirement Contribution Participation*

Retirement contribution participation of renters versus homeowners was examined from three perspectives:

participation in IRA contributions, participation in retirement related deductions from pay, and overall participation in either form of retirement savings. Table 2 reports the results of these probit analyses.

### *Participation in making individual retirement*

*contributions.* The CE asked participants about the “amount of money placed in an individual retirement plan, such as an IRA or Keogh by all [household] members in the past 12 months” (U.S. Department of Labor, 2006, p. 74). We first considered this type of retirement savings separately because it required a more strictly voluntary and conscious decision than some forms of payroll deduction retirement contributions. In some cases, payroll deduction retirement savings may have been mandatory, or at least required effort in order to opt out of the choice, and thus may not have reflected individual intentions as closely as voluntary contributions to individual accounts.

After controlling for income, liquid assets, race, marital status, age, and family size, both near retirement (age 55-64) and pre-near retirement (age 45-54) renters were significantly less likely to make contributions to IRAs. In addition, we controlled for the percentage of total expenditures spent on housing costs. This insured that the difference in contributions was not being driven by relatively higher housing costs for renters. Converting these probit coefficients to predicted probabilities through the standard normal distribution showed that similarly situated homeowners with sample mean characteristics in the 45-54 age range were more than twice as likely as renters (8.6% vs. 3.4%) to have made individual retirement plan contributions in the preceding 12 months. Homeowners in the 55-64 age range were almost 75% more likely (14.0% vs. 8.0%) than similarly situated renters to have made these types of contributions in the previous 12 months.

### *Participation in retirement-related deductions from pay.*

We saw similar results when examining participation in retirement-related deductions from pay. Pre-near retirement homeowners were 71% more likely to have pay deducted for retirement contributions than similarly situated renters with sample mean characteristics. Near retirement homeowners were 45% more likely than similarly situated renters to do so.

*Overall participation.* Combining these two types of retirement savings revealed that homeowners had a 75% greater probability of making retirement contributions than similarly situated renters during the pre-near retirement years

and a 47% greater probability of making such contributions during the near retirement years.

**Level of Retirement Contributions Among Participants**

By any measure, renters were less likely to participate in either form of retirement savings than were similarly situated homeowners. But, what effect did tenant status have on the level of contributions made by those households that were making retirement contributions? To

answer this question we used a truncated regression that examined the level of contributions among contributing households. We examined the natural log of the dollar level of contributions in each category transformed by \$1 and excluded all zero values (non-participants) from the analysis. Table 3 reports the results from this analysis.

Beyond the negative impact of tenant status on the likelihood of participating in retirement contributions, it ap-

**Table 2. Probit Analysis of Renter/Homeowner Retirement Contributions During Previous 12 Months**

Variables	All retirement savings		IRA/KEOGH		Payroll reduction	
	Age 45-54 (n = 6440)	Age 55-64 (n = 4001)	Age 45-54 (n = 6440)	Age 55-64 (n = 4001)	Age 45-54 (n = 6440)	Age 55-64 (n = 4001)
Renter	-0.4911*** (0.0462)	-0.2972*** (0.0666)	-0.4516*** (0.0598)	-0.321*** (0.0837)	-0.4355*** (0.0488)	-0.2381** (0.0714)
Income	0.0494*** (0.0039)	0.0653*** (0.0054)	0.0325*** (0.0039)	0.0458*** (0.0054)	0.0307*** (0.0037)	0.0433*** (0.005)
Liquid assets	0.0011 (0.0009)	-0.0014 (0.0008)	0.0028*** (0.0009)	0.0009 (0.0007)	-0.0007 (0.0008)	-0.0052*** (0.001)
% Expenditures to housing	-1.3914*** (0.1241)	-1.5094*** (0.1659)	-1.0294*** (0.1482)	-0.9329*** (0.1655)	-1.2578*** (0.1282)	-1.4314*** (0.1786)
White	0.1199* (0.0501)	0.2113** (0.0672)	0.262*** (0.0648)	0.3109*** (0.0854)	0.0376 (0.0516)	0.0926 (0.0703)
Age	-0.0006 (0.0062)	-0.0444*** (0.0082)	0.0132 (0.0072)	-0.0231* (0.0095)	-0.0006 (0.0063)	-0.0453*** (0.0087)
< High school	-0.5257*** (0.0706)	-0.3511*** (0.0762)	-0.4357*** (0.0959)	-0.3075** (0.0998)	-0.4507*** (0.0736)	-0.3481*** (0.082)
Some college	0.1992*** (0.0455)	0.1805** (0.0604)	0.1808*** (0.0551)	0.2527*** (0.0715)	0.172*** (0.0472)	0.1426* (0.064)
Bachelor degree	0.3319*** (0.0531)	0.2358** (0.0731)	0.3271*** (0.0612)	0.3483*** (0.0822)	0.2488*** (0.0544)	0.1527* (0.0769)
Grad school	0.3756*** (0.0609)	0.3732*** (0.0788)	0.3697*** (0.0676)	0.4789*** (0.0857)	0.2925*** (0.0613)	0.2245** (0.0824)
Family size	-0.0964*** (0.0142)	-0.0704*** (0.0212)	-0.0732*** (0.0172)	-0.0629* (0.0258)	-0.0654*** (0.0145)	-0.037 (0.022)
Widowed	-0.2458* (0.1006)	-0.096 (0.0849)	-0.2721* (0.1298)	-0.2519* (0.1091)	-0.254* (0.105)	0.0275 (0.089)
Divorced	-0.1469** (0.0494)	-0.0467 (0.066)	-0.1726** (0.0598)	-0.104 (0.0777)	-0.1329** (0.0508)	-0.0344 (0.0697)
Separated	-0.3272** (0.1063)	-0.0877 (0.1555)	-0.2416 (0.139)	-0.2728 (0.2161)	-0.3825*** (0.1153)	0.0585 (0.1586)
Never married	-0.1586* (0.0681)	0.0012 (0.1046)	0.0387 (0.079)	0.1387 (0.1162)	-0.2149** (0.0711)	-0.1141 (0.1159)
Urban	0.1568** (0.0597)	0.2149** (0.0754)	0.1197 (0.0713)	0.2558* (0.0924)	0.1221* (0.0614)	0.1457 (0.0802)
Intercept	-0.0492 (0.3404)	2.032*** (0.5199)	-2.0432*** (0.404)	-0.0416 (0.6026)	-0.0775 (0.3478)	1.9629*** (0.5545)
Renter probability	22.93%	19.86%	3.44%	8.03%	20.00%	12.57%
Owner probability	40.13%	29.14%	8.57%	13.96%	34.24%	18.17%

*Note.* Data are from the CE 1995(q2)-2005(q1) from the fifth interview for those participants who reported their complete income. Individual year dummies were included but not reported. Renter and owner probabilities for each outcome were based the probit coefficients applied to households with sample mean characteristics.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

peared that tenant status also depressed the dollar level of contributions made by those households participating in active retirement savings. After controlling for income, liquid assets, and various demographic factors, tenant status continued to be associated with reduced levels of retirement savings among contributors in both the near

retirement and pre-near retirement categories. This was also true specifically with regard to payroll reduction retirement savings in both age categories. However, the negative relationship was insignificant with regard to IRA/Keogh contribution levels (except in some alternate sample selection specifications described in the Appendix).

**Table 3. Level of Retirement Savings Among Contributing Households, MLE Truncated Regression**

Variables	All retirement savings		IRA/Keogh		Payroll reduction	
	Age 45-54 ( <i>n</i> = 6440)	Age 55-64 ( <i>n</i> = 4001)	Age 45-54 ( <i>n</i> = 6440)	Age 55-64 ( <i>n</i> = 4001)	Age 45-54 ( <i>n</i> = 6440)	Age 55-64 ( <i>n</i> = 4001)
Renter	-0.2889*** (0.0645)	-0.2153* (0.0926)	-0.1216 (0.1256)	-0.1000 (0.1536)	-0.2690*** (0.069)	-0.2509* (0.1074)
Income	0.0627*** (0.0038)	0.0652*** (0.0051)	0.0567*** (0.0061)	0.0426*** (0.0063)	0.0598*** (0.0042)	0.0883*** (0.0072)
Liquid assets	0.0029*** (0.0008)	-0.0021* (0.0008)	0.004*** (0.0012)	-0.0006 (0.001)	0.0006 (0.0009)	-0.0006 (0.0015)
% Expenditures to housing	-0.9842*** (0.1566)	-1.1045*** (0.1698)	-0.9474*** (0.2821)	-1.5985*** (0.3102)	-0.7211*** (0.1678)	-0.5562** (0.1906)
White	0.2373*** (0.0648)	0.1027 (0.0882)	0.2192 (0.1327)	0.0068 (0.149)	0.2472*** (0.0668)	0.0849 (0.0983)
Age	0.0115 (0.0071)	-0.0163 (0.01)	-0.0072 (0.0126)	-0.0193 (0.0152)	0.0049 (0.0076)	-0.0085 (0.0119)
< High school	-0.0945 (0.11)	-0.4186*** (0.1126)	-0.0658 (0.2249)	-0.3566 (0.1974)	-0.1028 (0.1112)	-0.3391** (0.1287)
Some college	0.1748** (0.0558)	0.2859*** (0.0747)	-0.0127 (0.1055)	0.3363** (0.1179)	0.2116*** (0.0588)	0.1139 (0.0874)
Bachelor degree	0.3925*** (0.0605)	0.5516*** (0.0825)	0.1202 (0.11)	0.4775*** (0.1254)	0.4542*** (0.0647)	0.4282*** (0.1001)
Grad school	0.4395*** (0.0654)	0.6134*** (0.0851)	0.2636* (0.1172)	0.6082*** (0.124)	0.4208*** (0.0695)	0.332** (0.1051)
Family size	-0.102*** (0.0171)	-0.1014*** (0.0269)	-0.0728* (0.0324)	-0.1484*** (0.0409)	-0.1208*** (0.0177)	-0.1068*** (0.0313)
Widowed	-0.3123* (0.132)	-0.2457* (0.1142)	-0.4248 (0.2553)	-0.3782 (0.1946)	-0.1569 (0.1426)	-0.1912 (0.1281)
Divorced	-0.1391* (0.0595)	-0.1859* (0.0801)	-0.0214 (0.112)	-0.3061* (0.1228)	-0.1631** (0.0629)	0.0011 (0.0963)
Separated	-0.2702 (0.1538)	0.1241 (0.2185)	0.0621 (0.2925)	0.5076 (0.3991)	-0.3929* (0.1725)	-0.1246 (0.2313)
Never married	-0.1871* (0.0835)	0.085 (0.1301)	-0.0979 (0.1435)	-0.103 (0.1794)	-0.2343*** (0.0901)	0.2602 (0.1681)
Urban	0.2534*** (0.0722)	0.1825 (0.097)	0.2134 (0.1334)	0.3079* (0.1542)	0.3211*** (0.0749)	0.0937 (0.1123)
Intercept	7.078*** (0.3979)	8.5642*** (0.6343)	7.5937*** (0.74)	8.9855*** (0.972)	7.2268*** (0.42)	7.9117*** (0.7594)
$\sigma$ (disturbance <i>SD</i> )	0.9663*** (0.0139)	0.9287*** (0.0188)	1.1547*** (0.0249)	0.9921*** (0.0279)	0.0147*** (59.38)	0.8935*** (0.0223)
Truncated <i>n</i>	2404	1222	1073	634	1763	801

*Note.* The MLE truncated regression used the natural log of category saving amount (+\$1). Individual year dummies were included but not reported. Data were taken from the fifth interview of the CE 1995(q2)-2005(q1) for those participants who were complete income reporters.

\**p* < .05. \*\**p* < .01. \*\*\**p* < .001.



### Savings Allocation

It seemed clear that tenants were participating less frequently and, when participating, were contributing overall smaller amounts to retirement plans than homeowners. It was quite feasible that tenants, either due to personal preference or unobserved financial constraints, simply did not save as frequently or as much. The observed effects may not have reflected a particular bias against retirement savings, but rather a tendency away from saving

in general. We attempted to control for this possibility by comparing retirement contributions with the growth in other savings instruments where investment growth was taking place. Because it was quite likely that investment mix will vary systematically with the total amount invested, we added a new control variable in this analysis for the total amount of growth in checking accounts, savings accounts, and securities, as well as all retirement plan contributions during the previous 12 months. We

**Table 4. Proportion of Positive Contributions Allocated to Different Investment Categories (Tobit)**

Variables	Any retirement		Checking/saving		Securities	
	Age 45-54 (n = 6440)	Age 55-64 (n = 4001)	Age 45-54 (n = 6440)	Age 55-64 (n = 4001)	Age 45-54 (n = 6440)	Age 55-64 (n = 4001)
Renter	-0.1607*** (0.0296)	-0.0453 (0.0475)	0.2787*** (0.0426)	0.0857 (0.0618)	-0.3499*** (0.0666)	-0.2433** (0.0932)
Total new investments in prior 12 months	-0.0098*** (0.0012)	-0.0118*** (0.0017)	0.0079*** (0.0019)	0.002 (0.0018)	0.0149*** (0.002)	0.0151*** (0.002)
Income	0.006** (0.0019)	0.0177*** (0.0028)	-0.0107*** (0.003)	-0.0111** (0.004)	0.0119*** (0.0034)	-0.0041 (0.0047)
Liquid assets	-0.0024*** (0.0004)	-0.0028*** (0.0005)	-0.0004 (0.0007)	-0.0005 (0.0006)	0.004*** (0.0007)	0.0035*** (0.0007)
% Expenditures to housing	-0.4047*** (0.0744)	-0.5062*** (0.0938)	0.286** (0.1101)	0.1478 (0.1227)	0.2409 (0.1452)	0.2825 (0.1828)
White	-0.0971** (0.0315)	-0.044 (0.0475)	0.1229* (0.0484)	-0.031 (0.0633)	0.2782*** (0.0717)	0.321** (0.0982)
Age	-0.0006 (0.0035)	-0.0153** (0.0053)	-0.0062 (0.0053)	0.0065 (0.0072)	0.0142* (0.0069)	0.0179 (0.0095)
< High school	-0.0688 (0.0509)	-0.0949 (0.0574)	0.2074** (0.0732)	0.136 (0.0746)	-0.4688*** (0.1352)	-0.3941** (0.135)
Some college	0.0079 (0.0272)	-0.0776 (0.04)	0.0091 (0.0412)	-0.0016 (0.0537)	0.0272 (0.0556)	0.3256*** (0.0757)
Bachelor's	-0.0013 (0.0298)	-0.0705 (0.045)	-0.0121 (0.0455)	-0.0364 (0.0616)	0.141* (0.0586)	0.4159*** (0.0826)
Graduate school	0.0153 (0.0327)	-0.0389 (0.0478)	-0.0143 (0.0502)	-0.0688 (0.0662)	0.1408* (0.0626)	0.4182*** (0.0863)
Family size	-0.0171* (0.0084)	-0.0131 (0.014)	0.0201 (0.0127)	0.0019 (0.0185)	-0.0258 (0.0171)	0.0082 (0.0265)
Widowed	-0.05 (0.0629)	-0.0866 (0.0587)	0.1152 (0.0931)	0.0978 (0.0768)	-0.3455* (0.149)	-0.0643 (0.1099)
Divorced	-0.0536 (0.0288)	-0.0375 (0.0427)	0.0595 (0.0432)	0.0898 (0.0568)	-0.0362 (0.0581)	-0.0963 (0.0782)
Separated	-0.1108 (0.0686)	-0.0887 (0.1104)	0.033 (0.0998)	0.1791 (0.1395)	0.1091 (0.1363)	0.1552 (0.1927)
Never married	-0.0797* (0.0404)	0.0692 (0.0718)	0.0488 (0.0602)	-0.0429 (0.0981)	0.0655 (0.0789)	-0.1274 (0.1342)
Intercept	0.0588 (0.0352)	0.0268 (0.0509)	-0.0997 (0.0526)	-0.0849 (0.0671)	0.0933 (0.0724)	0.2199* (0.0981)

*Note.* Tobit analysis among households making investments in at least one category during the prior 12 months. Individual year dummies are included but not reported. Data from the CE 1995(q2)-2005(q1), fifth interview complete income reporters.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

excluded households with no additions or growth in any of these savings categories. However, because most households did not invest in every category of savings, our data still contained a high number of zero observations, so we employed a Tobit analysis throughout. Table 4 reports the results of this analysis.

Strikingly, the Tobit analysis revealed that tenants aged 45-54 were significantly less likely to direct their investments into retirement savings. This finding was critical. It indicated that beyond the issue of the ability or preference for saving, tenant status in this younger age group was associated with distinct investment choices. Those tenants were favoring other forms of investment over retirement savings. In particular, these tenants significantly favored low-return convenience holdings such as checking and savings accounts. It appeared that in these age groups tenant status was associated with a significant tendency towards assets with the highest ease of access, like checking accounts, and away from investments with barriers, such as retirement savings and, to a lesser extent, securities.

## **Discussion**

### ***Financial Planning Theory***

Three theories were presented to associate renter status and its consequent lack of housing equity with non-housing investment behavior. A traditional life cycle approach suggested that households without housing equity would be driven to substitute other forms of assets, such as increased retirement savings. A mental accounts approach suggested that the absence of housing equity may not impact other investments. Finally, a self-selection model suggested that an underlying time preference may drive both tenure choice and non-housing investment choice. Among the three explanations presented for the association of housing tenure and investment behavior, the suggestion that an underlying time preference is driving both tenure choice and non-housing investment choice seems most consistent with the current results. The tenant households in our sample are clearly not compensating for lack of housing equity by engaging in other forms of retirement savings. The fact that tenant savers, controlling for total amount being saved, save differently than homeowner savers indicates that there are some issues of preference beyond financial constraints that limit saving behavior in general. It thus seems quite feasible that both tenant status and lack of retirement savings are driven by the same underlying preference.

One contrary argument is that the analysis may be capturing older households where individuals have retired early, sold their home, and are now renting as part of either an overall plan of dissaving or to gain access to assisted living services. Such behavior could then be consistent with a traditional life cycle model. However, three factors weigh against this explanation. First, we see the same general tendencies in the younger group, age 45-54, where early retirement would be unlikely to have a significant effect, as in the older group, age 55-64. Second, the descriptive statistics of Table 1 indicate that renters in both age groups are significantly less likely to be retired. In addition, studies of housing mobility have found that, in general, individuals do not leave their homes to downsize until they are well into advanced age. Thus, housing mobility continues to fall with age until well past the ages analyzed here (Feinstein & McFadden, 1989; Megbolugbe, Sa-Aadu, & Shilling, 1997; Sheiner & Weil, 1992). Consequently, although we might see housing mobility as a factor with a much older group of seniors, we would not expect this to be common in the current analysis.

### ***Retirement Policy and Renters***

Despite the increased vulnerability of renters due to a lack of housing equity, renters do not appear to be taking the same steps to secure their financial future during retirement as are otherwise similarly situated homeowners. Many renters may fall far short of having enough to cover their retirement needs, suggesting the importance of targeting renters as a demographic group when conducting outreach efforts aimed at encouraging retirement savings. This need becomes especially critical when considering the comparative resources of renters and homeowners as revealed by income, education, and asset levels shown in the descriptive statistics of Table 1. In sum, these renters appear to be avoiding the two largest tax-advantaged investments available to Americans—homeownership and qualified retirement accounts. Tax policy allows the sheltering of personal residence capital gains or qualified plan capital gains. However, both of these well-intended tax incentive programs appear to be having a disproportionately weak impact on this most vulnerable community.

### ***Financial Education and Renters***

Nearly one third of the nation's households live in rented housing. For financial counselors and educators who work with renters nearing retirement age, the results of the present study may provide helpful insights. Some results suggest that renters and homeowners nearing retirement

may view life in fundamentally different ways. Renters were less likely to contribute to retirement savings and, when they did, contributed less than similar homeowners. Analysis of where investment growth was taking place suggests a preference among renters aged 45-54 for short-term, non-retirement convenience accounts.

Taken together, the findings in this study suggest that both housing tenure and retirement contributions may be the result of underlying time preferences. Given that financial counselors and educators may not have information about the underlying time preference of an audience or a group of clients, tenure status may serve as one indicator. In addition, the most successful attempts to provide effective financial counseling to renters may have to address the underlying time preference issue. The challenge for financial education in this area may then become one of expanding the client's financial planning time horizon.

Whether or not increased financial knowledge can bring about this change is still unsettled. Evidence from Hilgert, Hogarth, and Beverly (2003) showed that greater financial knowledge in such areas as savings, credit use, and investments was associated with greater long-term financial orientation. Despite these associations, precisely defining the extent to which financial education can change underlying time preference is more challenging (Lyons, Palmer, Jayaratne, & Scherpf, 2006). Nevertheless, financial counselors and educators who work with renters may do well to target the core issue of time preference and savings behavior before moving to more advanced portfolio issues.

## References

- American Association of Retired Persons. (2003). *These four walls: Americans aged 45+ talk about home and community*. Washington, DC: AARP.
- Apgar, W. C., & Di, Z. X. (2005). *Housing wealth and retirement savings: Enhancing financial security for older Americans*. Cambridge, MA: Joint Center for Housing Studies of Harvard University.
- Bhargava, V., & Lown, J. (2007). Preparedness for financial emergencies: Evidence from the Survey of Consumer Finances. *Financial Counseling and Planning*, 17(2), 17-26.
- Brueckner, J. K. (1997). Consumption and investment motives and the portfolio choices of homeowners. *Journal of Real Estate Finance and Economics*, 15(2), 159-180.
- Casey, B., & Laczko, F. (1989). Early retired or long-term unemployed? The situation of non-working men aged 55-64 from 1979 to 1986. *Work, Employment & Society*, 3(4), 509-526.
- Cocco, J. F. (2004). Portfolio choice in the presence of housing. *The Review of Financial Studies*, 18(2), 535-567.
- Cragg, J. G. (1971). Some statistical models for limited dependent variables with applications to demand for durable goods. *Econometrica*, 39, 829-844.
- DeVaney, S. A., Anong, S. T., & Yang, Y. (2007). Asset ownership by black and white families. *Financial Counseling and Planning*, 18(1), 33-45.
- Disney, R., Henley, A., & Stears, G. (2002). Housing costs, house price shocks and savings behavior among older households in Britain. *Regional Science and Urban Economics*, 32, 607-625.
- Fan, J. X., & Abdel-Ghany, M. (2004). Patterns of spending behavior and the relative position in the income distribution: Some empirical evidence. *Journal of Family and Economic Issues*, 25(2), 163-178.
- Feinstein, J., & McFadden, D. (1989). The dynamics of housing demand by the elderly. In D. Wise (Ed.), *The economics of aging* (pp. 9-48). Chicago, IL: University of Chicago Press.
- Flavin, M., & Yamashita, T. (2002). Owner-occupied housing and the composition of the household portfolio. *The American Economic Review*, 92(1), 345-362.
- Garner, T. I., & Blanciforti, L. A. (1994). Household income reporting: An analysis of U.S. Consumer Expenditure Survey data. *Journal of Official Statistics*, 10(1), 69-91.
- Hilgert, M. A., Hogarth, J. M., & Beverly, S. G. (2003, July). Household financial management: The connection between knowledge and behaviour. *Federal Reserve Bulletin*, 309-322.
- Hu, X. (2005). Portfolio choices for homeowners. *Journal of Urban Economics*, 58, 114-136.
- Joint Center for Housing Studies. (2006). *America's rental housing: Homes for a diverse nation*. Cambridge, MA: Joint Center for Housing Studies of Harvard University.
- Joint Center for Housing Studies. (2007). *The state of the nation's housing: 2007*. Cambridge, MA: Joint Center for Housing Studies of Harvard University.
- Levin, L. (1998). Are assets fungible? Testing alternative theories of life cycle saving. *Journal of Economic Behaviour and Organization*, 36(1), 59-83.
- Lueckett, S. (2001). *Did you know? Homes account for 44% of all wealth: Findings from the SIPP*. Washington, DC: U.S. Census Bureau.

- Lyons, A. C., Palmer, L., Jayaratne, S. U. K., & Scherpf, E. (2006). Are we making the grade? A national overview of financial education and program evaluation. *Journal of Consumer Affairs*, 40(2), 208-235.
- Megbolugbe, I., Sa-Aadu, J., & Shilling, J. (1997). Oh, yes, the elderly will reduce housing equity under the right circumstances. *Journal of Housing Research*, 8(1), 53-74.
- Milligan, K. (2005). Lifecycle asset accumulation and allocation in Canada. *Canadian Journal of Economics*, 38(3), 1057-1106.
- Miller, C. J., & Montalto, C. (1998). Comparison of economic status of elderly households: Nonmetropolitan versus metropolitan residence. *Family Economics & Nutrition Review*, 11(4), 19-31.
- Modigliani, F. (1986). Life cycle, individual thrift, and the wealth of nations. *American Economic Review*, 76(3), 297-313.
- Modigliani, F., & Brumberg, F. (1954). Utility analysis and the consumption function: An interpretation of cross-section data. In K. K. Kurihara (Ed.), *Post-Keynesian economics* (pp. 388-437). New Brunswick, NJ: Rutgers University Press.
- Office of Federal Housing Enterprise Oversight. (May 31, 2007). *U.S. house price appreciation rate remains slow, but positive: OFHEO House Price Index shows four-quarter declines in two states*. Washington, DC: Author.
- Ostrovsky, Y. (2004). Life cycle theory and the residential mobility of older Canadians. *Canadian Journal on Aging*, 23, 388-436.
- Paulin, G. D., & Duly, A. L. (2002). Planning ahead: Consumer expenditure patterns in retirement. *Monthly Labor Review*, 125(7), 38-59.
- Poterba, J. M., Venti, S. F., & Wise, D. A. (1994). Targeted retirement saving and the net worth of elderly americans. *The American Economic Review*, 84(2), 180-185.
- Scholz, J. K., Seshadri, A., & Khitatrakun, S. (2004). *Are Americans saving 'optimally' for retirement?* (NBER Working Paper No. W10260). Cambridge, MA: National Bureau of Economic Research.
- Sharpe, D. L., & Abdel-Ghany, M. (1999). Identifying the poor and their consumption patterns. *Family Economics & Nutrition Review*, 12(2), 15-26.
- Shefrin, H., & Thaler, R. (1988). The behavioral life-cycle hypothesis. *Economic Inquiry*, 26, 609-643.
- Sheiner, L., & Weil, D. (1992). *The housing wealth of the aged* (NBER Working Paper No. 4115). Cambridge, MA: National Bureau of Economic Research.
- Thaler, R. (1990). Saving, fungibility, and mental accounts. *Journal of Economic Perspectives*, 4(1), 193-205.
- Thaler, R. (1994). Psychology and savings policies. *American Economic Review*, 84(2), 184-192.
- U.S. Department of Labor, Bureau of Labor Statistics. (2002). *2004 consumer expenditure interview survey public use microdata documentation*. Washington, DC: U.S. Department of Labor, Bureau of Labor Statistics.
- U.S. Department of Labor, Bureau of Labor Statistics. (2006). *2004 consumer expenditure interview survey public use microdata documentation*. Washington, DC: U.S. Department of Labor, Bureau of Labor Statistics.
- Venti, S., & Wise, D. (1990). But they don't want to reduce housing equity. In D. Wise (Ed.), *Issues in the economics of aging* (pp. 13-32). Chicago: University of Chicago Press.
- Venti, S., & Wise, D. (2001). *Aging and housing equity: Another look* (NBER Working Paper No. 8608). Cambridge, MA: National Bureau of Economic Research.
- Yang, F. (2005). *Consumption along the life-cycle: How different is housing?* (Working Paper No. 635). Minneapolis, MN: Federal Reserve Bank of Minneapolis.
- Yao, R., & Zhang, H. H. (2005). Optimal consumption and portfolio choices with risky housing and borrowing constraints. *The Review of Financial Studies*, 18(1), 197-239.
- Yuh, Y., Montalto, C. P., & Hanna, S. (1998) Are Americans prepared for retirement? *Financial Counseling and Planning*, 9(1), 1-13.

## Appendix

### Data Selection

The sample used for the previous analyses were selected on the basis of the following criteria:

1. Including only complete income reporters
2. Including only fifth interview reports
3. Excluding households reporting an invalid non-response not consistent with other data (CE flag “B”) or either refusing to answer or not knowing the answer (CE flag “C”) for the following variables:  
savings account assets, securities assets, checking account assets, change in checking account assets during the previous 12 months, change in savings account assets during the previous 12 months, change in securities assets during the previous 12 months, amount of government retirement deducted from last paycheck, amount of after tax income during the previous 12 months, amount of before tax income during the previous 12 months, amount of money placed in an individual retirement plan (such as an IRA or Keogh) during the past 12 months, estimated amount of income contributed to Social Security by all CU members in past 12 months, amount of private pensions deducted from last pay annualized for all CU members, or amount of Railroad Retirement deducted from last pay annualized for all CU members.
4. Excluding those non-owners classified as “occupying without payment of rent” because they were neither renting nor owning and outside of the categories of examination.

Although not a selection criteria, certain potentially sensitive data from the CE for income and asset variables were top-coded to prevent revealing information that could potentially identify the reporting household.

### Reasons for Exclusion and General Potential for Bias

#### *Complete Income Reporters*

The CE described the complete income reporter designation as follows: “The distinction between complete and incomplete income reporters is based in general on whether the respondent provides values for major sources of income, such as wages and salaries, self-employment income, and Social Security income. Even complete income reporters may not provide a full accounting of all income from all sources” (U.S. Department of Labor, 2002, p. 331). It was possible that some of the incomplete income reporter households did choose to report contributions to retirement plans or other savings instruments. Nevertheless, these results were excluded from the original analysis.

The complete income reporter designation has been used since the 1972, based in part on an early finding that the income distribution of complete income reporters was similar to that found using the Current Population Survey (Garner & Blanciforti, 1994). The use of complete income reporters in analyzing CE results was well established in previous literature (Miller & Montalto, 1998; Paulin & Duly, 2002; Sharpe & Abdel-Ghany, 1999). Nevertheless, complete income reporting has been found to be significantly related to age, race, education, marital status, and income but was not significantly related to housing tenure status (Garner & Blanciforti, 1994). To a large extent, these variables were controlled for in the current regression models, suggesting that the ultimate conclusions may be robust to changes in the complete income reporter specification. Further, as explained by Fan and Abdel-Ghany (2004), “most past studies using the CE data have used the CE complete income reporter definition. Following this tradition can allow comparison of our results with results from previous studies” (p.177). This excluded category represented 19.7% of the original observations prior to exclusion.

#### *Fifth Interview Reporters*

Some of the financial information used in the present analysis, such as change in savings accounts, change in checking accounts, and change in securities, was collected only during the fifth interview in the CE. Other relevant variables were collected only during the second and fifth interviews. Limiting the analysis to only fifth interview reports prevented the introduction of observations containing multiple identical records for a particular variable, based not upon multiple reports but upon replications of a single report. As expected, the excluded second through fourth interview observations represented about three quarters (74.8%) of all CE observations over this period, given that the first quarter observations were used only to establish baseline characteristics for later quarters. (The first interview is not on the public files. It is a bounding interview that used only 1 month of information, whereas the other interviews cover a 3-month expenditure period.)

### ***Refusal or Invalid Non-Response***

The analysis excluded households with members responding to savings related questions either by refusing to answer the question or by providing an invalid response not consistent with other data given. These invalid responses may have been an active indication of concealment of information. Because we were unable to ascertain the level of savings activity being concealed, these responses were excluded as incomplete. This excluded category represented 11.7% of the original sample prior to exclusion.

### ***Non-Owner “Occupied Without Payment of Rent”***

This category of occupant neither owned nor paid rent. Hence, these individuals did not fall into either of our two categories of interest: renters or owners. As such, they were excluded from the analysis. This excluded category of occupant represented 1.13% of the original sample prior to exclusion.

### ***Top-Coding of Values***

For the three quarters of data from 1995, the CE truncated certain income and asset component values at a \$100,000 maximum. In subsequent surveys, the CE instead top-coded extreme values with the average of all reported values above the critical level. From the original sample, 7.20% of all households had some savings or investment response top-coded, and 0.12% were top-coded under the 1995 rules.

### **Results from Alternate Specifications**

To examine the potential for bias based upon sample selection, Table 5 reports the regression coefficients for our variable of interest—renter status—under a number of different sample selection scenarios. In all cases, the control variables were the same as those presented in the preceding tables. Table 5 demonstrates that the general conclusions drawn from the original analyses are quite robust to a variety of different sample selection specifications.

**Table 5. Renter Status Coefficient Under Alternative Sample Selection Approaches**

Model	Original sample results reported earlier	Original sample + incomplete income reporters	Original sample + non-fifth interview reports	Original sample + observations including invalid nonresponses	Original excluding observations with top-coded values
<b>Probit all retirement</b>					
Age 45-54	-0.4911*** (0.0462)	-0.4650*** (0.0452)	-0.3898*** (0.0196)	-0.3689*** (0.0373)	-0.3878*** (0.0498)
Age 55-64	-0.2972*** (0.0666)	-0.2784*** (0.0649)	-0.2550*** (0.0277)	-0.2377*** (0.0522)	-0.2186** (0.0717)
<b>Probit IRA</b>					
Age 45-54	-0.4516*** (0.0598)	-0.4436*** (0.0585)	-0.3275*** (0.0245)	-0.3564*** (0.0471)	-0.3606*** (0.0654)
Age 55-64	-0.321*** (0.0837)	-0.3081*** (0.0813)	-0.3376*** (0.0349)	-0.2992*** (0.0649)	-0.3028** (0.0925)
<b>Probit payroll reduction</b>					
Age 45-54	-0.4355*** (0.0488)	-0.4119*** (0.0478)	-0.3337*** (0.0211)	-0.3245*** (0.0401)	-0.3591*** (0.0526)
Age 55-64	-0.2381** (0.0714)	-0.2216** (0.0701)	-0.1526*** (0.0301)	-0.1530** (0.0571)	-0.1254 (0.0766)
<b>Truncated MLE all retirement</b>					
Age 45-54	-0.2889*** (0.0645)	-.2796*** (.0641)	-.2479*** (.0299)	-.3340*** (.0553)	-.1588** (.0655)
Age 55-64	-0.2153* (0.0926)	-.2356* (.0920)	-.2715*** (.0435)	-.2254** (.0806)	-.1402 (.0905)

**Table 5. Renter Status Coefficient Under Alternative Sample Selection Approaches (Continued)**

Model	Original sample results reported earlier	Original sample + incomplete income reporters	Original sample + non-fifth interview reports	Original sample + observations including invalid nonresponses	Original excluding observations with top-coded values
Truncated MLE IRA					
Age 45-54	-0.1216 (0.1256)	-0.1310 (0.1241)	-0.2521*** (0.0534)	-0.2086* (0.0977)	0.0761 (0.1345)
Age 55-64	-0.1000 (0.1536)	-0.1512 (0.1513)	-0.1958** (0.0739)	-0.0794 (0.1328)	-0.1633 (0.1600)
Truncated MLE payroll reduction					
Age 45-54	-0.2690*** (0.069)	-0.2530*** (0.0690)	-0.2035*** (0.0324)	-0.3071*** (0.0610)	-0.1464* (0.0694)
Age 55-64	-0.2509* (0.1074)	-0.2552* (0.1075)	-0.2145*** (0.0485)	-0.2286** (0.0894)	-0.0982 (0.1046)
Tobit retirement share					
Age 45-54	-0.1607*** (0.0296)	-0.1625*** (0.0296)	-0.0539*** (0.0077)	-0.1479*** (0.0237)	-0.1620*** (0.0314)
Age 55-64	-0.0453 (0.0475)	-0.0317 (0.0474)	-0.0373** (0.0121)	-0.0514 (0.0367)	-0.0658 (0.0519)
Tobit checking/saving share					
Age 45-54	0.2787*** (0.0426)	0.2804*** (0.0416)	0.3525*** (0.0495)	0.2914*** (0.0422)	0.2485*** (0.0464)
Age 55-64	0.0857 (0.0618)	0.0743 (0.0609)	0.2124** (0.0714)	0.1012 (0.0612)	0.0975 (0.0673)
Tobit securities share					
Age 45-54	-0.3499*** (0.0666)	-0.3472*** (0.0653)	-0.2417** (0.0739)	-0.2800*** (0.0666)	-0.2278** (0.0701)
Age 55-64	-0.2433** (0.0932)	-0.2522** (0.0926)	-0.1223 (0.1003)	-0.1456 (0.0911)	-0.1783 (0.1008)

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .