

## **Change in Retirement Adequacy, 1995-2001: Accounting for Stages of Retirement**

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### **Introduction**

Previous retirement adequacy studies have ignored the complexities of retirement stages. This research analyzes retirement adequacy with the 1995-2001 Survey of Consumer Finance (SCF) datasets considering multiple stages. For instance, if a worker plans to retire at 55, she might have to wait seven years until Social Security starts, so there would be two stages during retirement. Couple households might have more than two stages.

The purpose of this study is to clarify the concept of retirement adequacy and find the determinants of retirement adequacy. Based on the study of Yuh et. al. (1998), planned retirement age is an important determinant of retirement adequacy, however, they did not carefully consider the role of multiple retirement stages on retirement adequacy. This study we will examine the impact of having more than one retirement stage on retirement adequacy. The replacement ratio is used as a retirement adequacy indicator in this study. In addition, possible changes in retirement adequacy during the 1995-2001 period will be tested.

### **Related Literature**

Yuh, Montalto, and Hanna(1998) used the 1995 Survey of Consumer Finance(SCF) dataset to project retirement wealth and retirement needs. They defined retirement adequacy as being able to maintain the pre-retirement consumption level when retiring at one's planned retirement age. To project retirement wealth, the current asset portfolio was compounded based on historical investment returns, using lognormal projection. Individual investment components such as stocks and bonds were separately projected. Pension and social security were discounted to a retirement point within the life expectancy period. Retirement needs were assumed to be identical to pre-retirement consumption level, i.e. pre-retirement consumption is a proxy of retirement needs. Because the SCF does not contain expenditure data, they estimated expenditure prediction equations based on the 1994 Consumer Expenditure Survey. Their study concluded that only 52% of households were on track for an adequate retirement. In the logistic regression analysis, they found that planned retirement age was positively correlated to retirement adequacy.

Scholz et al., (2004) proposed an augmented model of life cycle saving hypothesis, based on a dynamic optimal programming method. They constructed this model to find optimal net worth in retirement, for which households maximize their utilities subjected to restricted resources, by using Health and Retirement Survey (HRS) data. They compared optimal net worth with actual net worth from the HRS, and found that about 80% of American households reached an optimal new worth level, and could be considered to have been well prepared for retirement.

### **Methodology**

This study uses the Surveys of Consumer Finances (SCF) datasets for 1995, 1998 and 2001. The sample selection method is similar to Yuh et al. (1998): Select households with an employed head aged 35 to 70, because workers under 35 are less likely to have stable employment, as they may change jobs frequently or be still studying in graduate school, or change marital status. Moreover, the Social Security benefit accumulation stops at age 70. The total number of households for the three SCF datasets is 5,214.

Our objective is to estimate the maximum feasible level of spending possible from non-investment income in each retirement stage plus from accumulated assets. An iterative procedure is used to find the maximum feasible income in each stage. For households with more than one stage, we try to find the maximum level of spending feasible that would be equal across all stages, though this might be possible only if the projected amount of retirement assets is sufficiently high. There are many possible scenarios of income patterns, and in order to simplify procedures, for households with more than two stages, we reduce the number of stages to two stages.

The replacement ratio is defined as retirement income divided by pre-retirement income. Retirement income includes social security benefit, part-time job wage, defined benefit pension plan, and feasible income from projected retirement assets.

### **Retirement Stages**

The retirement stage problem is related to cash flows in retirement period. Many scholars have assumed that individuals retire at age 62 or 65 and estimated the social security cash inflow each year during retirement. If an individual has a defined pension plan, the defined benefit pension cash inflow might be estimated each year during retirement. There are, however, many possible patterns, for instance, a worker might retire at age 60, but social security benefits would not start until age 62, and perhaps a defined benefit pension benefit might start at age 65. For many households, the real cash inflow in retirement might be expected to vary.

In this study, a retirement stage is defined as a period of time in retirement for which real income is constant. Consider an individual who plans to retire from all paid employment at 55 with no defined benefit pension, and will start collecting a Social Security pension at age 62. If he has no defined benefit pension, his retirement income other than from asset income would be zero for seven years, then his Social Security pension starting at age 62.

Stage counting starts from household head's planned retirement age, and ends when expected real non-asset retirement income levels off. Consider another example, a single worker who plans to retire from full-time work at age 55, work part-time for 4 years, then have no income for 3 years until a Social Security pension starts at age 62. He would have three retirement stages in terms of expected income: age 55-58 (4 years), age 59-61, and age 62 on, for his remaining life expectancy.

We assume that only part-time job wage, social security benefit and defined benefit pension plan could be the drivers of variation of stages. In the retirement period, those drivers are crucial to stage changes. In order to evaluate retirement adequacy, we developed an iterative procedure to find the highest feasible level of withdrawals from retirement assets to supplement other retirement income. If a household has only one retirement stage, the annual withdrawal is equal to the amount from a constant dollar life annuity. If a household has two retirement stages and has retirement assets, if feasible, highest annuity levels that would equalize total retirement income in each stage is found. Because of the complexities of equalizing total income for more than two stages, if a household has more than 2 stages, i.e., N stages, the first N-1 stages are combined into one new Stage 1. The followed simple example demonstrates how stages are combined from old stages. A household has 3 stages. The length of stage 1 is 3 years, stage 2 is 4 years and life expectancy is 30 years. First old stage 1 and old stage 2 are combined to new stage 1. The old stage 3 is new stage 2. Therefore the length of new stage 1 is 7 years (3+4 years). The length of new stage 2 is 23 years (30-7 years).

### **References**

- Yuh R., Hanna S. & Montalto C. P. (1998), Are Americans Prepared For Retirement? *Financial Counseling and Planning*, Vol. 9, No. 1
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