The Concept of Desired Wealth at Retirement

Labor supply theory is used in conjunction with the Life-Cycle Income Hypothesis to generate a model of retirement where the individual compares available lifetime consumption with desired lifetime consumption. Available lifetime consumption is referred to here as "per-period wealth" or "actual wealth," desired lifetime consumption is referred to here as "desired wealth at retirement" or "reservation wealth". A Strategy for estimating reservation wealth is outlined, and is implemented using the 1992 Survey of Consumer Finances. Diagnostics are used to examine with what precision the reservation wealth model predicts retirement behavior, and some implications of the model for individuals and families planning for retirement are discussed.

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Over the next 20 years, the world's population will become older and older. The aging of the world's population, perhaps the most significant demographic event in recorded history, will bring many new challenges. In the United States, as well as in other countries, two of these challenges will be near the top of the list. The first is how the country will manage the dramatic changes in the labor market, which will undoubtedly occur as the 1945-1960 birth cohort, known as the baby boom, begins its collective exit from the labor force. If this cohort behaves as recent ones, this mass exodus will occur during the years 2010-2020, when most of the "boomers" will be in their 60's. The second major challenge is to figure out how resources will be set aside to support this cohort. Even today society spends considerable amounts of resources, particularly health care resources, on individuals nearing the end of life. Once the baby-boom reaches these older ages, difficult questions regarding the extent to which the relatively small number of working Americans can support the elderly will need to be addressed.

One major parameter which is extremely relevant to any of these discussions is commonly referred to as retirement. Understanding when and why individuals decide to exit the labor force, collect a public or private pension, or enter a nursing home, is of vital importance to understanding the constraints society faces in the next 50 years. In this dissertation, we will try to better understand why so many people exit the labor force in their 60's, and why they never return. It will be maintained here that retirement is essentially a consumption-driven decision, and is consistent with the Life-Cycle Income Hypothesis. We will introduce the concept of *reservation wealth*, the wealth at which an individual is indifferent between retiring and not retiring. We will use economic theory to hypothesize as to the determinants of an individual's reservation wealth. We will develop a strategy for estimating reservation wealth using a cross section of retired and non-retired individuals, and we will implement this strategy, simultaneously testing the reservation wealth model and economic theory.

The dissertation I have written goes as follows. Chapter two is a comprehensive description of the retirement phenomenon. The chapter begins with a survey of retirement's many possible definitions, supplemented with data on age specific labor-force participation, income, and pension patterns which help to characterize the dynamics of retirement. This part of the chapter can be thought of as an overview of "the demography of retirement." Next, the chapter surveys the literature on retirement decision making and retirement well-being, begging the question "why do people retire?" The chapter ends with a brief review of the non-economic literature on the determinants of post-retirement well-being.

Chapter three is an introduction to the methods that economists have used to explain retirement behavior. It starts with the earliest and most basic models used and ends with those most up to date and complicated. It is both a brief primer on the theory of static and inter-temporal labor supply and a review of the literature on the economics of retirement decision making. Most of this literature comes from the realm of labor supply and is empirical in nature. Nevertheless, one can see that much of this literature is model-driven, and complements the theoretical introduction quite nicely (hence the intertwining of the modeling and literature review sections into one chapter). We shall also see that our understanding of retirement is enhanced greatly by a few important labor demand considerations.

Chapter three concludes with the following thesis: retirement is essentially a consumption issue: it occurs when individuals and families feel as though they could consume sufficient amounts without having to work. The

following three chapters are concerned with conceptualizing this sufficient level of wealth, or "reservation wealth," hypothesizing as to the determinants of reservation wealth, and estimating reservation wealth for individuals.

Chapter four outlines a definition of wealth. This definition attempts to capture all relevant and dynamic aspects of "lifetime consumption," including length of lifetime, future prices, interest rates, and the uncertainty inherent in these variables. The procedure for this new calculation of wealth has two steps. First, using contingent claims modeling techniques, the present value of assets, liabilities and future entitlements will be calculated. This present value can be interpreted as the "conventional" measure of wealth. The second step uses these same contingent claims pricing techniques to calculate the expected per period stream of income that a household could afford itself per year until termination, given the random processes of death, interest rates, and inflation. This per period stream is analogous to the coupon rate of a fixed income security, and serves as an age-standardized measure of wealth. Procedures will also be taken to account for the size of the household and its relationship to income needs. Intuitively, this definition serves not only as the criterion for retirement, but also as a measure of household well-being. Chapter 4 concludes with an application of the model. Using the 1992 Survey of Consumer Finances (SCF), two distributions of wealth for American households are compared: the distribution using the new age-standardized definition of wealth outlined here, and the distribution using the standard definition of wealth. We will also test the robustness of the model by examining the sensitivity of the results to assumptions about prices, interest rates, Social Security policy, life expectancy, and household economies of scale.

Chapter five uses economic models of time allocation to hypothesize the minimum wealth (wealth, as defined in Chapter four) a neoclassical utility maximizer would need to voluntarily cease participation in the labor force, with the intent of not returning. Again, this is what we are calling reservation wealth. First, a conceptual model of desired wealth at retirement is presented. Next, economic theory is used to analyze theoretically the determinants of reservation wealth. In these models, the utility maximizer may have a spouse, other dependents such as young children or older parents, or both; therefore, all such cases will be examined to see how characteristics of other household members, if any, impact upon the decision of how much wealth the household must have for the individual to retire.

Chapter five also includes a digression on a "buyout" model of labor force exit, which examines how much wealth one would have to give an individual in exchange for termination of their employment at a specific job, given, among other things, their expectations about wages offered elsewhere. This secondary model, while somewhat similar to the reservation wealth model, takes two major points into consideration. The first is that an individual who finds utility in work would never voluntarily retire, and so reservation wealth as we have defined it does not exist, yet this "buyout wealth" should theoretically exist for all individuals. The second is that for an employer, this latter model would certainly be of more importance that the former, and this second model seems to address many of the demand-driven aspects of the retirement phenomenon alluded to in Chapter two.

Chapter six proposes a strategy for estimating reservation wealth using a strategy similar to Heckman's (1974) strategy for estimating reservation wages. The result of Chapter four is a specification for wealth (or "offered wealth," similar to Heckman's "offered wage"). The result of Chapter five is a specification for reservation wealth (analogous to Heckman's reservation wage, or "shadow price of time"). A maximum likelihood technique for estimating the coefficients in the reservation wealth equation is used on households from the 1992 SCF (for whom wealth has already been calculated in Chapter four). The reservation wealth estimates are compared to the hypotheses in Chapter five regarding reservation wealth. Chapter seven represents the commitment on the part of the author to extend any benefits of the research found in the previous six Chapters to any individual or household planning for retirement. After a brief survey of the popular literature on how to save and invest for retirement, the findings from chapter six will be compared to conventional wisdom regarding income needs during retirement. This will be an opportunity to compare the "positive analysis" done here with the "normative analysis" of retirement planners. Furthermore, the validity of the results from Chapter six will be tested by examining what proportion of the retired individuals in the 1992 SCF the model predicts to be retired and what proportion of the working individuals the model predicts to be working.

Endnotes

1.   Assistant Professor, Department of Housing and Consumer Economics. This is a summary of my dissertation entitled "A Model of Desired Wealth at Retirement, an Estimation Strategy, and Evidence from Cross-Section Data." It is available in mimeograph from the Cornell University Library.