Center for Retirement Research

Center for Retirement Research Working Papers

Boston College *Year* 2000

Self-employment and Labor Market Transitions at Older Ages

Donald Bruce Douglas Holtz-Eakin

Joseph Quinn

SELF-EMPLOYMENT AND LABOR MARKET TRANSITIONS AT OLDER AGES

Donald Bruce*
Douglas Holtz-Eakin
Joseph Quinn

CRR WP 2000-13
December 2000

Center for Retirement Research at Boston College
550 Fulton Hall
140 Commonwealth Ave.
Chestnut Hill, MA 02467
Tel: 617-552-1762 Fax: 617-552-1750
http://www.bc.edu/crr

* Donald Bruce is a Research Assistant Professor in the Center for Business and Economic Research and an Assistant Professor of Economics at the University of Tennessee. Douglas Holtz-Eakin is a Trustee Professor of Economics at Syracuse University and a Faculty Research Fellow and Research Associate for the National Bureau of Economic Research. Joseph Quinn is the Dean of the School of Arts and Sciences and a Professor of Economics at Boston College. The research reported herein was performed in part pursuant to grants from the National Institute on Aging (NIA) and the Social Security Administration (SSA). The SSA support was received through the Center for Retirement Research at Boston College (CRR) funded as part of the Retirement Research Consortium. The opinions and conclusions are solely those of the authors and should not be construed as representing the opinions or policy of the NIA, SSA or any agency of the Federal Government or of the CRR. The authors thank Kevin Cahill for tremendous research assistance, Esther Gray for her help in preparing the manuscript and the Center for Policy Research at Syracuse University for support.

About the Center for Retirement Research

The *Center for Retirement Research at Boston College*, part of a consortium that includes a parallel center at the University of Michigan, was established in 1998 through a 5-year $5.25 million grant from the Social Security Administration. The goals of the Center are to promote research on retirement issues, to transmit new findings to the policy community and the public, to help train new scholars, and to broaden access to valuable data sources. Through these initiatives, the Center hopes to forge a strong link between the academic and policy communities around an issue of critical importance to the nation's future.

Center for Retirement Research at Boston College
550 Fulton Hall
140 Commonwealth Ave.
Chestnut Hill, MA 02467
phone: 617-552-1762 fax: 617-552-1750
e-mail: crr@bc.edu
http://www.bc.edu/crr

Affiliated Institutions:

Massachusetts Institute of Technology
Syracuse University
The Brookings Institution
National Academy of Social Insurance
Urban Institute

1. INTRODUCTION

In ten years, the leading edge of the baby boomer cohorts will reach age 62, and the United States will begin a fundamental shift in the age distribution of its population and its workforce. The number of Americans aged 62 and over, nearly all eligible to claim Social Security old-age benefits, will double from about 40 million today to 80 million in the year 2030, while the proportion of the population in this age group increases by half, from 15 to 23 percent (U.S. Bureau of the Census [1992], Table 2.) Despite awareness of these dramatic demographic changes, researchers and policy makers are far from understanding their full implications.

One implication that has been well publicized is the impact of the population shift on Social Security finances. Under the current rules and the Social Security Trustees' intermediate assumptions, the annual expenditures of the old age, survivors and disability programs (OASDI) will exceed OASDI tax income (primarily the payroll tax) by the year 2016, and will exceed all sources of income (taxes and interest earned on Trust Fund reserves) by 2025. By 2037, the accumulated OASDI trust funds would be exhausted, and anticipated receipts would cover only about 70 percent of anticipated expenditures (Board of Trustees [2000], pp. 3, 179).

One possible response to this long run funding problem is a reduction or delay in future Social Security benefits.[1] In response to this, and to the increasing health and longevity of older Americans, future generations of workers may decide to remain in the labor force longer than do current workers, and to rely even more on earnings to maintain their economic well-being.[2] Data already suggest an end to the post-war trend of earlier and earlier retirement. After decades of steady decline, labor force participation rates for older men have been stable since the mid-1980s.

Participation rates of older women are on the rise, and the most recent statistics suggest that rates for older men may have begun to increase as well (Quinn [1999]).

Self-employment is an important feature of life-cycle labor supply in the United States. Self-employment among American workers rises steadily with age, with the most dramatic jump occurring at age 65 (see Figure 1). Nearly a quarter of all employed (nonagricultural) men aged 65 and older, and 13 percent of those aged 55 to 64, are self-employed, compared to only 8 percent of those aged 25 to 54 (U.S. Bureau of Labor Statistics [1999], Table 15). For women, the proportion self-employed is lower at every age, but still jumps from 6 percent among those aged 25 to 54 to 9 percent at ages 55 to 64 and then to 14 percent for employed women aged 65 or older.[3] These patterns appear quite stable over time. However, even if age-specific self-employment rates remain stable, we would expect the importance of self-employment to rise as the number of older Americans increases.

However, there are reasons to suspect that self-employment rates may rise. Considerable research has established that retirement is a process, not a single event. Many older workers utilize one or more "bridge jobs" between their career employment and complete labor force withdrawal, often combining earnings and the receipt of retirement benefits. The importance of these bridge jobs, including self-employment, is likely to increase in the future.

Recent Federal legislation has begun to encourage continued work among older Americans (Burkhauser and Quinn [1997], Burtless and Quinn [forthcoming]). For example, mandatory retirement was first delayed from age 65 to age 70, and then outlawed in the mid-1980s for the vast majority of American workers. In addition, work disincentives in Social Security are being eliminated. The earnings test has been eliminated for recipients who have reached the normal retirement age, so that they can now earn any amount without losing social Security benefits. Finally, the normal retirement age for Social Security benefits is currently being increased from 65

to 66, and is later scheduled to rise further from 66 to 67. This is the equivalent to an across-the-board benefit decrease, which will change the relative attractiveness of work and retirement.[4] This trend will likely continue: reform proposals include accelerating and extending the increase in the normal retirement age beyond 67, and even increasing the age of initial eligibility beyond 62. Compared to the present system, workers will be encouraged to remain in the labor force longer than they do now.

In the private sector, however, many defined-benefit employer pension plans continue to penalize work beyond a particular age (often the earliest age of pension eligibility) through benefit calculation rules under which the value of expected pension benefits declines with additional years of work on that job.[5] Many eligible workers would lose pension wealth (lifetime benefits) by continuing to work on these jobs, and thereby suffer a surreptitious pay cut (Kotlikoff and Wise [1989]; Quinn, Burkhauser and Myers [1990]). One solution to the simultaneous financial incentives to work more (from Social Security) yet depart early from their current jobs (from defined-benefit employer pensions) would be for workers to leave their career jobs when pension incentives dictate and then continue working elsewhere. Past experience suggests that many of these workers will turn to self-employment.

Thus, it is essential to understand labor supply decisions over the latter part of the life cycle—when and how older Americans leave the labor force. The purpose of this paper is to analyze the determinants of self-employment among older workers. We build upon previous research on retirement patterns and on entrepreneurship, and focus upon the roles of liquidity constraints and health insurance on the decision to become and to remain self-employed. Liquidity constraints may be less important impediments to self-employment among older workers than among the young because of life-cycle asset accumulation, either through personal savings or through institutionalized pension arrangements. In contrast, health insurance status, and the implications on coverage of

leaving a career job, may become increasingly important behavioral determinants as workers age, at least until 65, the age of Medicare eligibility.

In Section 2, we describe our data, the first three waves of the on-going Health and Retirement Study, and present some cross-tabular descriptions of the labor force transitions of interest. The next section describes the underlying empirical model, and some statistical issues in analyzing these data. Section 4 contains our results and interpretations, and we conclude with a summary and suggestions for future research.

To anticipate the results, we find little evidence that health insurance provisions have a significant role in the self-employment transitions of older workers. However, consistent with prior research, we find a significant role for credit market imperfections in determining entry and survival rates of the self-employed.

2. DATA AND OVERVIEW OF TRANSITIONS

2.1 Data

Our data are drawn from the Health and Retirement Study (HRS), an on-going survey of the health and labor force status of older Americans. The HRS surveys contain detailed data on the health status, current and prior employment status, wages and employee benefits, retirement plans (for those still working), living arrangements, income, wealth and demographic background of a sample of men and women born between 1931 and 1941 and their spouses.

In Wave I of the HRS in 1992, about 12,000 individuals in about 8,000 households were interviewed.[6] Nearly three-quarters of the sample were in the age-eligible range—aged 51 to 61 in 1992. Subsequent interviews were conducted in 1994 and 1996 (Waves II and III). Our analysis is based on these three waves (1992 through 1996).

2.2 Labor Force Transitions

In the HRS, respondents are asked about their current jobs, their last jobs (for those no longer employed), and prior jobs that lasted at least five years. In each case, they are asked whether they are (or were) self-employed or work(ed) for someone else, and how much they earned in regular salary or wages. For the current or last job, the self-employed are also asked whether they received all or some of the firm's earnings or profits, and how much that amounted to during the past (or last) year.

The focus of our study is the labor market transitions of these older workers. The basic dynamics are captured in Table 1, which shows the transitions that occurred between Waves I and III.[7,8] In Table 1 we begin by disaggregating the sample by their 1992 employment status—self-employed (12 percent), wage and salary workers (56 percent) and not employed (32 percent). Of those working at the time of the 1992 survey, about 18 percent were self-employed (22 percent of the men and 13 percent of the women). By the time of the third survey in 1996, about 25 percent of the 1992 wage and salary employees were not working, along with 20 percent of the self-employed (see the entries in rows 1 and 2 of column 3).

Some of those who were still working two years later, however, had changed sectors. Among the wage and salary sample, for example, 225 workers (about 4.0 percent) had become self-employed during the transition period; our focus below is on the determinants of these transitions. Among the smaller number of self-employed in 1992, about 13 percent (160 individuals) had moved to a wage and salary job.

There was even some movement among those not employed in 1992. About 15 percent of them were working in 1996, and of those re-entrants, nearly 30 percent had become self-employed.[9]

In Table 2, we disaggregate Table 1 by gender. We note that (as expected) a higher percentage of the women than the men were not employed in 1992—37 versus 26 percent, and that

self-employment is more important among the employed men (22 percent) than among the employed women (13 percent). Similarly, the transitions from wage and salary work in 1992 into self-employment in 1996 is higher for men (5.3 percent) than it is for women (2.8 percent). Among the job re-entrants, however, the proportion of men and women who returned as self-employed is almost identical.

In Table 3, we disaggregate the sample by their age in 1996, to differentiate between those who may have passed an important retirement threshold during the four-year transition period and those that have not. Thus, in Table 3a we focus on those still younger than age 62, in Table 3b we examine those aged 62 to 64, and in Table 3c we isolate those aged 65 and older. First, as one might expect, the percentage of the sample who are not employed in 1996 rises with age group from 33 percent to 57 percent and then to 70 percent. Second, the rate of transition from a wage and salary job to self-employment rises steadily from 3.7 percent to 4.9 percent. At the same time, the retirement rate from self-employment jumps sharply from 16 percent to 32 percent. The net effect of these forces leads the overall self-employment rate to fall modestly from 12 percent among those less than age 62 in 1996 to 10 percent among those aged 65 or older. More importantly, among those still employed, nearly one-third of this age group is self-employed, compared to 25 percent of those aged 62 to 64, and 18 percent of those still younger than age 62 in 1996. Self-employment becomes more important with age.

Table 3 also reveals an interesting pattern in retirement rates for wage and salary relative to self-employed workers. The retirement rates are very similar for those less than age 62 (15 percent versus 16 percent). However, for those crossing traditionally important retirement thresholds—26 percent versus 41 percent at age 62 to 64 and 32 percent versus 51 percent for those aged 65 and older. This is consistent with the notion (above) that private sector pensions provide incentives to depart from wage and salary jobs.

In Table 4, we turn away from documenting the general dynamics in our data and focus specifically on one topic of interest—the impact of health insurance coverage on labor market transitions of older workers. By analyzing the health insurance status and the source of the coverage for the 1992 workers in our sample, we can distinguish among those who have no insurance, those who have "portable" insurance that they would maintain if they changed jobs, and those who have non-portable health insurance that they would lose if they left their current employer.[10]

Consider first the rates of entry into self-employment from wage and salary jobs. Comparing the rates in Tables 4a-4c, one sees a pattern suggestive of the importance of "insurance lock" in preventing movement toward self-employment: entry rates are higher among those with no insurance (4.6 percent) and portable health insurance (4.0 percent) than those with non-portable insurance (3.7 percent). Similarly, we observe that the rate of retirement is considerably lower among those self-employed (and wage and salary workers) who would lose health insurance than among those who would not.

To close our preliminary look at the data, we perform a similar analysis focusing on liquidity issues. Previous empirical work on the impact of liquidity constraints on the decision to become an entrepreneur has been guided by a simple logic. Setting up a business requires initial capital. If the supply of funds to individuals in the credit market is perfectly elastic at the market rate (*i.e.* if individuals are price takers) then the decision to become self-employed should be independent of personal wealth. Of course, in a cross section a positive relationship between assets and self-employment may mean that people with more wealth become entrepreneurs, or equally that entrepreneurs accumulate more wealth. Thus, we focus on transitions to self-employment using variables—especially wealth—dated prior to the transition. Of course, even using wealth accumulated prior to the time of the entrepreneurship decision may not eliminate

endogeneity problems as individuals may accumulate wealth in anticipation of going into business.

Tables 5a and 5b show the labor market transitions when our sample is divided into "low wealth" (less than median wealth) and "high wealth" (greater than median wealth) subsamples. In the low-wealth group, about 3 percent of wage and salary workers turned to self-employment. In contrast, nearly 5 percent did so in the high-wealth subsample. The re-entry rate from out of the labor force to self-employment is much higher as well for the high-wealth group (4.9 percent versus 3.8 percent). Although not the focus of our study, it is interesting to note that the survival rate in self-employment rises with wealth as well (72 percent versus 57 percent). In short, the preliminary look at our data is consistent with the growing literature on liquidity constraints and entrepreneurship.

3. FRAMEWORK FOR ANALYSIS

To undertake a multivariate analysis of these issues, we require a design suitable for encompassing the wide range of labor market choices available to each individual. We model the decision-making process in two stages. In the first, each wage and salary worker must choose among three alternative types of labor market involvement: continued wage and salary employment (WS), self-employment (SE), and retirement (R). Retirement here means complete labor force withdrawal. Conditional upon the decision to remain active, the individual chooses an intensity of involvement, measured by their annual hours of work. In this way, the individuals determine their labor market earnings and, hence, the contribution of labor market experience to their economic welfare.

In choosing among alternatives, we focus on the income opportunities that they provide, while recognizing that these decisions are also influenced by the tastes of the individual and non-

pecuniary attributes of each option. Consider a career wage and salary individual contemplating the choice among these three options. The incomes available are given as follows.

Wage and Salary Employment. Let the individual's earnings potential as a wage earner be given by the hourly wage (w_i) and hours of work (h_i). If his or her personal assets are A_i and annual public and private pension benefits are B_i^w (given continued work), then the individual's income as a wage-earner is given by $Y_i^w = w_i h_i + rA_i + B_i^w$.

Individuals choose their hours of work in the standard fashion by trading off the increased income (which is in turn available for consumption) against the foregone leisure; that is, they choose their hours of work to maximize their utility subject to the income constraint:

Maximize $U(C_i, h_i)$ subject to $C_i = w_i h_i + rA_i + B_i^w$.

Self-Employment. Our modeling of the income potential of an entrepreneur follows closely the approaches in Evans and Jovanovic (1989) and Holtz-Eakin, Joulfaian, and Rosen (1994a). As a self-employed entrepreneur, an individual's gross receipts are $\theta_i f(k_i) h_i \varepsilon$, where $f(.)$ is a production function that depends upon the capital invested in the business (k_i), θ_i is the individual's ability as an entrepreneur, and ε is a random component reflecting business prospects (e.g., business cycles). For a career wage and salary individual, entrepreneurial ability (θ_i) is unknown, but will be revealed if the individual chooses self-employment.

The random component of business income, ε, has mean one and finite variance. Also, we assume that $f(0) > 0$—the firm can produce output even in the absence of capital input. This assumption conforms with the empirical fact that roughly 60 percent of new entrepreneurs have no depreciable capital (Meyer [1990]). Taken together, ability and the production process determine an hourly earnings ability for the self-employed individual; he or she must also choose the number of hours to devote to the activity.

Since A_i is personal assets, A_i - k_i is available outside the business to earn capital income. Also, the individual may receive pension benefits in the amount B_i^s. Thus, the individual's net income as a self-employed entrepreneur is given by $Y_i^s = \theta_i f(k_i) h_i \varepsilon + r(A_i - k_i) + B_i^s$. By definition, k_i - A_i is the amount of capital financed by borrowing. As noted earlier, there is substantial evidence that the amount of borrowing, and thus capital invested in the enterprise, is bounded by a liquidity constraint generated by the financial markets.[11] We parameterize this reality by letting the size of the constraint depend on the individual's net assets:[12] $k_i \le l_k(A_i)$, where $l_k'(A_i) > 0$.

An entrepreneur's optimal amount of capital, k_i^*, maximizes the expected value (where expectations are taken over ε) of Y_i^s. This maximization problem has three possible solutions. In the first, the self-employed entrepreneur employs capital and the liquidity constraint is not binding. In this case, the net rate of return equals the expected marginal product of capital: $\theta_i h_i f'(k_i^*) = r$, and k_i^* rises with both the entrepreneur's ability and intensity. The second possibility is that the liquidity constraint is again not binding, but the entrepreneur's ability or intensity (or both) is sufficiently low that the marginal product of capital is below the interest rate. Hence, $k_i^* = 0$. The final possibility is that the liquidity constraint is binding, so $k_i^* = l_k(A_i)$.

Because of the importance of assets to the decision, we trace the impact on the firm of changing A_i. The effect depends on whether the firm is liquidity-constrained. If it is, then

$$\frac{dk_i^*}{dA_i} = l_k'(A_i) > 0. \quad \text{Otherwise } \frac{dk_i^*}{dA_i} = 0.$$

In general, then, k_i^* is a function of r, θ_i, h_i (which is, in turn, endogenously determined) and A_i, as is total output of the firm. Thus, we can write the firm's revenues, R_i, as

$$R_i = \theta_i f(k_i^*) h_i \varepsilon = R(\theta_i, h_i, A_i, r, \varepsilon).$$

This expression embodies the prediction that an increase in the assets of a liquidity-constrained self-employed person increases the receipts of his enterprise. *Ceteris paribus*, higher assets lead to more capital, which generates greater output. For the same reasons, income in self-employment is also determined by these considerations. Because an increase in A_i enables a liquidity-constrained entrepreneur to move closer to his optimal capital stock, economic profit or entrepreneurial income rises when he experiences an increase in assets.

As with an individual in wage and salary employment, hours of work are determined by the process of trading off foregone leisure and additional resources available for consumption. Note that in this instance, however, the effective "wage" for a self-employed individual will be determined by both his ability as an entrepreneur and the amount of capital invested in his business. It is widely recognized that self-employment "earnings" may contain returns to both labor and capital. (This distinction is not central to our investigation of the impact of self-employment on economic welfare. However, to the extent that each component has a differential effect on individual decision-making we may wish to decompose the contribution of each to earnings.) One would expect that there would be considerable uncertainty regarding these factors at the time the decision is made.

Retirement. As before, if the individual's assets are given by A_i, the net rate of return on private assets by r, and private and public pension benefits available to the individual during retirement by B_i^R, then income available to the individual as a retiree is $Y_i^R = rA_i + B_i^R$.

We assume that the individual's choice among the three options is made along the lines suggested by Domencich and McFadden (1975). The individual compares the utilities of the options and chooses the option with the highest utility.

The Role of Health Insurance. Consider now the extension of the framework to examine the role of employer-provided health insurance in the decision process of a wage and salary worker. Considerable attention has focused on the role of (non-portable) employer-provided insurance in

affecting labor market flexibility (e.g., Madrian [1994]). In the instance of older-age transitions prior to age 65 (the age of Medicare eligibility), the greater likelihood of health problems raises the possibility of considerable influence on labor market decisions.

To undertake the analysis, we build upon the decision-making process outlined above. In the spirit of Holtz-Eakin (1994) and Madrian (1994), we express the outcome as the probability that an individual makes the transition to self-employment, modified to account for portable health insurance:

$$p(self\text{-}employed_i) = \phi(z_i)\beta_0 + \beta_1(Non\text{-}Portable_i)$$

where z_i is a vector of non-insurance variables relevant to the decision and $Non\text{-}Portable_i = 1$ indicates that the individual has non-portable employer-provided insurance on the wage and salary job. If so, we expect $\beta_1 < 0$ indicating a lower rate of transition into self-employment. There are many alternative scenarios: the individual could have portable insurance, the individual's spouse could provide insurance (making it *de facto* portable), or the individual could be uninsured. In any of these instances, we expect no effect.

Unfortunately, one could argue that the presence of non-portable, employer-provided insurance is really indicative of the fact that the individual has a "good job." If so, finding $\beta_1 < 0$ merely establishes that people are less likely to leave "good jobs" than "bad jobs," a result that tells us little about the importance of the insurance portability issue. In terms of our equations, the "good jobs" argument essentially says that $\phi(z_i)$ does not control completely for attributes of the job that are correlated with the presence of insurance. It is likely, then, that the coefficient on *Non-Portable*$_i$ is contaminated by these job-related attributes.

To get a cleaner estimate of the insurance effect, we can look for differences in behavior within the group of individuals who have non-portable insurance; i.e., within the group that has good jobs. To do so, we can use information on the degree to which individuals bear the cost of their

insurance. To see how, consider two individuals, both of whom have employer-provided plans, and only one of whom has to pay (in part) for insurance coverage. To the extent that insurance portability is a consideration in starting a new firm, then an individual who must pay should be more likely to make a transition to self-employment, *ceteris paribus*. Thus, one could augment the specification to include $No\text{-}Pay_i = 1$ to capture the extra incentive to stay on the wage-salary job in the presence of cheap, non-portable health insurance:

$$p(self\text{-}employed_i) = \phi(z_i)\beta_0 + \beta_1 (Non\text{-}Portable_i) + \beta_2 (No\text{-}Pay_i) + \beta_3 (Non\text{-}Portable_i \ x \ No\text{-}Pay_i).$$

However, one could imagine a scenario in which $No\text{-}Pay_i = 1$ reflects specific attributes of the job-match and compensation package. Thus, β_2 would be contaminated in a fashion similar to β_1. Thus, a concern is that β_1 reveals information about both insurance effects and good jobs. Similarly, β_2 reflects both insurance effects and specific types of compensation packages. However, the interaction $(Non\text{-}Portable_i \ x \ No\text{-}Pay_i)$ reflects only the common element: the health insurance effect. Thus, testing for health insurance effects involves testing whether the coefficient (β_3) on the interaction variable differs from zero. Intuitively, if health insurance has no effect on transitions, the impact of having an employer-provided plan should not depend on whether or not the worker must pay for the plan.

4. ECONOMETRIC SPECIFICATION

The preliminary findings in Section 2 are suggestive, but only so. To push further, we require a statistical model capable of analyzing the simultaneous choice among self-employment, wage-salary employment, and retirement. To construct one, recall that we assume that the individual compares the utilities of the three options and chooses the option with the highest utility. That is, let

V_i^k be the maximum expected utility for person *i* in activity *k*, where *k*=W, S, or *R*. In order to make this framework operational, the first step is to divide the utility attainable into deterministic and stochastic components, viz.:

$$V_i^k = x_i^k \beta^k + \mu_i^k$$

where the μ_i^k follow an extreme value distribution. (Note that we allow both the attributes of the activities to differ (i.e., the values of the *x*'s) and the parameters to differ across the activities. Restricting the former to be the same for all activities yields the multinomial logit model.)[13]

A key step in the process is to specify the set of explanatory variables for the multinomial logit. The decision clearly depends on A_i (because assets or wealth affect the income of each option), health insurance arrangements, and the personal attributes that affect the shape of his or her utility function; that is, the decision depends upon relative ability in each mode, resources, and tastes. Because our data contains extensive information regarding the individuals, we may employ a generous specification of the key variables.

Following the literature and Table 3, we include in our specification the individual's age, including dichotomous variables for whether the individual reaches the key ages of 60, 62, and 65 during the transition period. We also include education (measured in years) and its square, an indicator for whether or not the respondent has children living with him or her, indicators of racial heritage (black, Hispanic), gender (a dummy variable for females), and marital status. We include as measures of wealth an indicator variable for homeowners, the value of net assets and its square. Following the logic outlined in Section 3, we include an indicator for insurance that is not portable, insurance for which the employee must make no payments, and the interaction. Finally, for transitions of those initially in wage and salary jobs or self-employed, we include tenure on the job (capturing the impact of career jobs) and the log of wage earnings (which measures the opportunity cost of a transition).

5. RESULTS

The results of the multinomial analysis are shown Table 6. The first two columns of coefficients show the estimates for the transition from wage and salary jobs to self-employment and retirement by 1996, respectively. Columns 3 and 4 focus on the transitions for those who were self-employed in 1992, and the final two columns are devoted to the re-entry decisions of those who were not in the labor market in 1992.

Let us begin with the results for the impact of age on labor market transitions. As shown in column 2, the probability of retirement (relative to both wage-salary work and to becoming self-employed) rises with age, and sharply so for those who have reached the ages of 62 and 65. A similar pattern presents itself in column 4, showing the impact of age on transitions to retirement (relative to wage and salary work) for the self-employed. The final two columns show little effect in re-entry to the labor force.

Turning to other control variables, the table indicates that blacks and females are less likely to make a transition from wage and salary to self-employment (a finding that mirrors a large literature; see, *e.g.,* Meyer [1990]), more likely to retire from self-employment, and less likely to re-enter to a wage and salary job. Those with children (under age 18) at home are less likely to leave wage and salary employment for either self-employment or retirement, and are more likely to re-enter the labor market to a wage and salary job.

We turn next to the wealth and insurance variables. The wealth coefficients are jointly statistically significant and (since the linear term dominates) indicate that higher wealth is consistent with a higher rate of transition to self-employment. Note that this is true *relative* to retirement (compare the coefficients with their corresponding estimates in column 2). Since one would expect that the pure wealth effect would lead away from work and toward retirement, this is especially

strong evidence of the importance of liquidity constraints (see, *e.g.*, Holtz-Eakin, Joulfaian, and Rosen [1993]). This impression is reinforced in columns 3 and 4, where higher wealth leads to a lower rate of exit from self-employment (and, again, relative to the attractiveness of retiring). It is further enhanced by the results in the final columns, where greater access to financial capital increases the rate of entry directly into self-employment, but reduces the odds of taking on a wage and salary job. In sum, the estimates are consistent with the notion that liquidity constraints impede even older workers from pursing self-employment opportunities and raise the rate of self-employment failure.

In contrast, the results are a bit more mixed regarding the effects of health insurance. If one looks only at the coefficients on *NOPORT* in Table 6, there is some evidence that non-portable insurance slows the rate of transition from wage and salary jobs to self-employment (column 1) and to retirement (column 2). However, there is no evidence of statistically significant effects for the labor market transitions from self-employment and from non-working status.

As noted above, however, the *NOPORT* insurance variable may be a proxy for a "good" job, which workers would be reluctant to leave. In that case, one might prefer to focus on the final row of coefficients, where the interaction between *NOPORT and NOPAY* provides a difference-in-difference estimate of the health insurance effect. In this instance, none of the coefficients is statistically significant at conventional levels. Thus, our findings support other findings that health insurance is not a significant impediment to transitions to self-employment (Holtz-Eakin, Joulfaian, and Rosen [1993]).

5. CONCLUSIONS

Self-employment is an important aspect of the labor market activity of older workers and many wage and salary workers choose a period of self-employment before complete labor force

withdrawal. Our analysis of the HRS data indicates that the determinants of self-employment transitions among these workers reflect those of younger workers. In particular, there appears to be an important effect of credit market imperfections, but little impact of employer-provided health insurance.

In light of the demographic shift toward a relatively elderly population, these results suggest that the degree to which older workers utilize self-employment as a bridge to complete retirement will be more influenced by the distribution of wealth than by the private sector promise of medical insurance. Viewed from a research perspective, these results suggest the need for explicit modeling of joint life-cycle evolution of asset accumulation and the choice of working in the salaried and self-employed sectors.

In addition, our results emphasize the importance of viewing "retirement" as a process. In addition to transitions from wage and salary work to self-employment (and vice versa), there are interesting patterns of re-entry to the labor force, and to self-employment in particular, that merit further attention.

ENDNOTES

1. The age of eligibility for normal Social Security benefits has already been legislated to increase from age 65 today, to 66 for those turning 62 in 2005, and then, after a 12 year hiatus, to age 67 for those reaching age 62 in 2022. Several reform proposals recommend dropping the 12 year hiatus and increasing the normal retirement age beyond 67, and some have discussed raising the early retirement age, perhaps from 62 to 65 (Social Security Advisory Board, 1999).

2. In 1998, older Americans aged 65 years old or older derived 21 percent of their total cash income from earnings For those aged 65 to 69, 36 percent came from earnings (Social Security Administration, 2000, Table VII).

3. These BLS data count only unincorporated self-employed individuals. Incorporated individuals who work for themselves are technically "wage and salary" workers, because they are paid employees of a corporation, even if the individual is the only employee of the firm. Unpublished BLS data permit one to estimate the number (and proportion) of broadly defined self-employed, counting both the incorporated and the unincorporated self-employed. Among men, these numbers are about 50 percent higher than the unincorporated counts: about 21 percent of men 55 to 64, rising to 30, 34 and 39 percent for men aged 65 to 69, 70 to 74 and 75 or older. For women, the two series differ less. About 12 percent of those 55 to 64 are self-employed, as are 16, 19 and 23 percent of those in the three oldest categories.

4. Waiting longer for the same benefit (e.g., receiving "full benefits" at age 66 rather than at age 65) implies getting lower benefits at any given age of initial receipt.

5. In the past several decades, while the overall pension coverage rate of employees remained approximately stable, the mix of coverage types changes significantly. For example, the proportion of employer pension participants whose primary coverage is in a defined-benefit plan dropped from 87 to 58 percent between 1975 and 1997, while the proportion of those in a defined-contribution plan increased accordingly (EBRI 1997; Olsen and VanDerhei 1997: Table 2). Defined contribution plans are age-neutral by nature, and do not contain the age-specific retirement incentives that many defined-benefit plans do.

6. See Juster and Suzman (1995), and the other articles in that volume, for a more complete discussion of the HRS data.

7. The transitions are computed using unweighted data to make the sample sizes transparent. The HRS oversamples blacks and Hispanics, and sampling weights are available to make the age-eligible sample representative of the cohort of individuals aged

51 to 61 in 1992 in the United States. In practice, the decision makes little difference as the qualitative results are the same using weighted data.

8. Table 1 shows transitions between 1992 and 1996. Examination of transitions between 1992 and 1994, and subsequent transitions between 1994 and 1996 yielded qualitatively similar results.

9. As noted earlier, the retirement process may involve transitions from both career jobs into bridge self-employment, among bridge jobs, and into retirement. To shed light on this subject, we replicated the information in Table 1, but distinguished between career and other wage and salary jobs. Little difference, however, was found between the labor market dynamics of career jobs and the remaining wage and salary jobs.

10. Individuals are categorized as having portable health insurance if (a) they have coverage and (b) they would not lose that coverage if they were to leave their current job. Workers whose health insurance is provided either by the government or by their spouse's employer are assumed to have portable health insurance, as are those who have health insurance that is not tied to their own or their spouse's employer.

11. See Holtz-Eakin, Joulfaian and Rosen (1994a, 1994b) and the references therein.

12. We do not pursue here the source of these constraints. A number of papers have shown how liquidity constraints can emerge even in a model where all individuals optimize; e.g., Stiglitz and Weiss (1981).

13. One potential concern is that the multinomial logit model embodies the Independence of Irrelevant Alternatives restriction on the error terms. In effect, it requires that each of the alternatives be equally substitutable. At least on *a priori* grounds, one might suspect that self-employment and wage-salary work are closer substitutes than is retirement. In practice, however, for a fixed number of alternatives, there appears to be little difference between the multinomial logit and less rigid specifications of the error structure. See Alvarez and Nagler [forthcoming].

Table 1. Labor Market Transitions among Older Workers, 1992-1996[a]

	1996			
1992	Self-Employed	Wage and Salary	Not Employed	Total
Self-Employed	825 [0.669]	160 [0.130]	248 [0.201]	1,233 [0.120]
Wage and Salary	225 [0.039]	4,110 [0.715]	1,416 [0.246]	5,751 [0.559]
Not Employed	142 [0.043]	356 [0.108]	2,804 [0.849]	3,302 [0.321]
Total	1,192 [0.116]	4,626 [0.450]	4,468 [0.434]	10,286 [1.000]

[a]Entries show the number of observations in each cell. Numbers in brackets show the entries as a fraction of the number of observations in each row.

Source: HRS Waves I and III.

Table 2a. Labor Market Transitions among Older Men, 1992-1996[a]

	1996			
1992	Self-Employed	Wage and Salary	Not Employed	Total
Self-Employed	547 [0.723]	97 [0.128]	113 [0.149]	757 [0.164]
Wage and Salary	140 [0.053]	1,849 [0.696]	669 [0.252]	2,658 [0.576]
Not Employed	51 [0.042]	130 [0.108]	1,021 [0.849]	1,202 [0.260]
Total	738 [0.160]	2,076 [0.450]	1,803 [0.391]	4,617 [1.00]

[a]See Table 1.
Source: HRS Waves I and III.

Table 2b. Labor Market Transitions among Older Women, 1992-1996[a]

	1996			
1992	Self-Employed	Wage and Salary	Not Employed	Total
Self-Employed	278 [0.584]	63 [0.132]	135 [0.284]	476 [0.084]
Wage and Salary	85 [0.028]	2,261 [0.731]	747 [0.242]	3,093 [0.546]
Not Employed	91 [0.043]	226 [0.108]	1,783 [0.849]	2,100 [0.370]
Total	454 [0.080]	2,550 [0.450]	2,665 [0.470]	5,669 [1.00]

[a]See Table 1.
Source: HRS Waves I and III.

Table 3a. Labor Market Transitions among Older Workers
Individuals Aged Less Than 62 in 1996[a]

	1996			
1992	Self-Employed	Wage and Salary	Not Employed	Total
Self-Employed	561	110	123	794
	[0.707]	[0.139]	[0.155]	[0.120]
Wage and Salary	153	3,266	675	4,094
	[0.037]	[0.798]	[0.165]	[0.618]
Not Employed	93	252	1,389	1,734
	[0.054]	[0.145]	[0.801]	[0.262]
Total	807	3,628	2,187	6,622
	[0.122]	[0.548]	[0.330]	[1.00]

[a]See Table 1.
Source: HRS Waves I and III.

Table 3b. Labor Market Transitions among Older Workers
Individuals Aged 62 to 64 in 1996[a]

	1996			
1992	Self-Employed	Wage and Salary	Not Employed	Total
Self-Employed	162	28	67	257
	[0.630]	[0.109]	[0.261]	[0.125]
Wage and Salary	43	584	435	1,062
	[0.041]	[0.550]	[0.410]	[0.516]
Not Employed	23	49	659	737
	[0.031]	[0.059]	[0.894]	[0.348]
Total	228	667	1,161	2,056
	[0.111]	[0.324]	[0.565]	[1.00]

[a]See Table 1.
Source: HRS Waves I and III.

Table 3c. Labor Market Transitions among Older Workers
Individuals Aged 65 and Over in 1996[a]

	1996			
1992	Self-Employed	Wage and Salary	Not Employed	Total
Self-Employed	102	22	58	182
	[0.560]	[0.121]	[0.319]	[0.113]
Wage and Salary	29	260	306	595
	[0.049]	[0.437]	[0.514]	[0.370]
Not Employed	26	49	756	831
	[0.031]	[0.059]	[0.910]	[0.517]
Total	157	331	1,120	1,608
	[0.098]	[0.206]	[0.697]	[1.00]

[a]See Table 1.
Source: HRS Waves I and III.

Table 4a. Health Insurance and Labor Market Transitions:
No Health Insurance[a]

	1996			
1992	Self-Employed	Wage and Salary	Not Employed	Total
Self-Employed	202 [0.669]	40 [0.132]	60 [0.199]	302 [0.376]
Wage and Salary	23 [0.046]	330 [0.659]	148 [0.295]	501 [0.624]
Total	225 [0.280]	370 [0.461]	208 [0.259]	803 [1.00]

[a]See Table 1.
Source: HRS Waves I and III.

Table 4b. Health Insurance and Labor Market Transitions:
Portable Health Insurance[a]

	1996			
1992	Self-Employed	Wage and Salary	Not Employed	Total
Self-Employed	502 [0.655]	97 [0.127]	168 [0.219]	767 [0.215]
Wage and Salary	111 [0.040]	1,960 [0.700]	730 [0.261]	2,801 [0.785]
Total	613 [0.172]	2,057 [0.577]	898 [0.252]	3,568 [1.000]

[a]See Table 1.
Source: HRS Waves I and III.

Table 4c. Health Insurance and Labor Market Transitions:
Non-Portable Health Insurance[a]

	1996			
1992	Self-Employed	Wage and Salary	Not Employed	Total
Self-Employed	121 [0.738]	23 [0.140]	20 [0.122]	164 [0.063]
Career Wage and Salary	91 [0.037]	1,820 [0.743]	538 [0.220]	2,449 [0.937]
Total	212 [0.081]	1,843 [0.705]	558 [0.214]	2,613 [1.000]

[a]See Table 1.
Source: HRS Waves I and III.

Table 5a. Wealth and Labor Market Transitions:
Low Wealth[a]

	1996			
1992	Self-Employed	Wage and Salary	Not Employed	Total
Self-Employed	237	77	102	416
	[0.570]	[0.185]	[0.245]	[0.081]
Wage and Salary	88	2,158	675	2,921
	[0.030]	[0.739]	[0.231]	[0.569]
Not Employed	68	208	1,518	1,794
	[0.038]	[0.116]	[0.846]	[0.350]
Total	393	2,443	2,295	5,131
	[0.077]	[0.476]	[0.447]	[1.00]

[a]See Table 1.
Source: HRS Waves I and III.

Table 5b. Wealth and Labor Market Transitions:
High Wealth[a]

	1996			
1992	Self-Employed	Wage and Salary	Not Employed	Total
Self-Employed	588	83	146	817
	[0.720]	[0.102]	[0.179]	[0.158]
Wage and Salary	137	1,952	741	2,830
	[0.048]	[0.690]	[0.262]	[0.549]
Not Employed	74	148	1,286	1,508
	[0.049]	[0.098]	[0.853]	[0.293]
Total	799	2,183	2,173	5,155
	[0.155]	[0.424]	[0.422]	[1.00]

[a]See Table 1.
Source: HRS Waves I and III.

Table 6. Multinomial Logit Estimates of Labor Market Transitions

	From Wage-Salary to:		From Self-Employed to:		From Not Working to:	
	Self-Employed	Not Working	Wage-Salary	Not Working	Wage-Salary	Self-Employed
CONSTANT	-3.67	-5.73	1.98	-3.99	2.75	1.49
	(1.58)	(0.696)	(2.41)	(1.80)	(0.962)	(1.30)
AGE in 1992	0.006	0.094	-0.066	0.048	-0.103	-0.108
	(0.020)	(0.010)	(0.029)	(0.022)	(0.013)	(0.080)
AGE 60 by 1996	-0.056	0.020	0.677	-0.022	0.074	-0.085
	(0.184)	(0.082)	(0.278)	(0.223)	(0.157)	(0.247)
AGE 62 by 1996	0.279	0.602	0.115	0.547	-0.276	0.012
	(0.196)	(0.085)	(0.283)	(0.214)	(0.166)	(0.241)
AGE 65 by 1996	0.216	0.636	1.16	0.594	0.096	0.318
	(0.298)	(0.127)	(0.423)	(0.291)	(0.221)	(0.303)
EDUC	0.0795	-0.123	0.0963	-0.043	0.207	-0.015
	(0.161)	(0.053)	(0.257)	(0.175)	(0.101)	(0.120)
$EDUC^2$	-0.00019	0.00176	-0.00239	-0.00012	-0.00432	0.00359
	(0.00627)	(0.00226)	(0.01013)	(0.00728)	(0.00442)	(0.00545)
KIDS AT HOME	-0.252	-0.119	0.210	-0.233	0.218	-0.365
	(0.146)	(0.069)	(0.211)	(0.183)	(0.124)	(0.194)
BLACK	-0.556	-0.032	0.096	0.677	-0.487	0.132
	(0.259)	(0.097)	(0.368)	(0.294)	(0.188)	(0.275)
HISPANIC	-0.185	-0.018	-0.411	0.537	0.014	0.273
	(0.337)	(0.145)	(0.540)	(0.396)	(0.227)	(0.333)
FEMALE	-0.703	0.238	-0.154	1.23	-0.410	-0.380
	(0.163)	(0.077)	(0.250)	(0.202)	(0.138)	(0.206)
MARRIED	-0.140	-0.090	0.253	0.404	0.024	0.925
	(0.206)	(0.093)	(0.342)	(0.290)	(0.176)	(0.345)
HOMEOWNER	-0.210	-0.174	-0.722	-0.106	-0.0004	0.101
	(0.201)	(0.100)	(0.296)	(0.305)	(0.163)	(0.259)
LOG (WAGE)	-0.013	0.110	-0.130	-0.112	Na	Na
	(0.138)	(0.069)	(0.090)	(0.072)		
WEALTH	0.000589	0.000348	-0.000855	-0.000221	-0.001057	0.000650
	(0.000349)	(0.000222)	(0.000395)	(0.000377)	(0.000405)	(0.000371)
$WEALTH^2 \times 10^{-8}$	-2.41	-5.04	19.2	1.10	13.0	-8.79
	(7.21)	(6.25)	(7.55)	(12.0)	(14.2)	(9.53)
TENURE	0.00817	0.00462	-0.03529	-0.00123	Na	Na
	(0.00603)	(0.00287)	(0.00986)	(0.00740)		
NOPORT	-0.406	-0.277	0.249	0.155	-0.018	0.452
	(0.245)	(0.114)	(0.456)	(0.403)	(0.257)	(0.482)
NOPAY	0.128	0.041	0.076	-0.008	-0.548	0.587
	(0.221)	(0.105)	(0.308)	(0.254)	(0.165)	(0.341)
NOPORT x NOPAY	0.207	-0.026	-0.174	-0.770	0.757	-0.496
	(0.311)	(0.150)	(0.624)	(0.597)	(0.373)	(0.673)
N	5,685		1,024		3,278	

REFERENCES

Alvarez, R.M. and J. Nagler. Forthcoming. "Correlated Disturbances in Discrete Choice Models: A Comparison of Multinomial Probit and Logit Models," *Political Analysis*.

Board of Trustees of the Federal Old-Age and Survivors Insurance and Disability Insurance Trust Funds. 2000. *2000 Annual Report*. Washington DC: Social Security Administration.

Burkhauser, R. V. and J. F. Quinn. 1997. "Implementing Pro-Work Policies for Older Americans in the Twenty-First Century," Serial No. 105-7, *Preparing for the Baby-Boomers: The Role of Employment*.. Washington, DC: U.S. Senate Special Committee on Aging, pp. 60-83.

Burtless, G. and J.F. Quinn. Forthcoming. "Retirement Trends and Policies to Encourage Work among Older Americans." In Allan Hunt (ed.), *Ensuring Health and Income Security for an Aging Workforce*. Kalamazoo, MI: W.E. Upjohn Institute for Employment Research.

Clark, R. L . and J. F. Quinn. 1999. *The Economics Status of the Aged*. National Academy of Social Insurance Medicare Brief No. 4. Washington, DC: NASI, May.

Domencich, T. and D. McFadden. 1975. *Urban Travel Demand*. Amsterdam: North Holland Publishing Company.

Employee Benefit Research Institute. 1997. *EBRI Databook on Employee Benefits* Washington, DC: EBRI.

Evans, D. and B. Jovanovic. 1989. "An Estimated Model of Entrepreneurial Choice Under Liquidity Constraints," *Journal of Political Economy* 97: 808-827.

Holtz-Eakin, D. 1994. "Health Insurance Provision and Labor Market Efficiency in the United States and Germany." In R. Blank and R. Freeman (eds.), *Social Protection versus Economic Flexibility: Is There a Tradeoff?* Chicago: University of Chicago Press, pp. 157-187.

Holtz-Eakin, D., D. Joulfaian, and H. S. Rosen. 1993. "The Carnegie Conjecture: Some Empirical Evidence," *Quarterly Journal of Economics* CVIII(2) (May): 413-436.

Holtz-Eakin, D., D. Joulfaian, and H. S. Rosen. 1994a. "Entrepreneurial Decisions and Liquidity Constraints," *Rand Journal of Economics* 25(2) (Summer): 334-347.

Holtz-Eakin, D., D. Joulfaian, and H. S. Rosen. 1994b. "Sticking it Out: Entrepreneurial Survival and Liquidity Constraints," *Journal of Political Economy* 102 (February): 53-75.

Juster, F. T. and R. Suzman. 1995. "The Health and Retirement Survey: An Overview," *Journal of Human Resources* 30 (Supplement):S7-S56.

Kotlikoff, L. J. and David A. Wise. 1989. *The Wage Carrot and the Pension Stick*. Kalamazoo. MI: The W. E. Upjohn Institute for Employment Research.

Madrian, B.. 1994. "Employment-Based Health Insurance and Job Mobility: Is There Evidence of Job-Lock?" *Quarterly Journal of Economics* CIX (February): 27-54.

Meyer, B. 1990. "Why Are There So Few Black Entrepreneurs?" *National Bureau of Economic Research*, Working Paper No. 3537.

Olsen, K. and J. VanDerhei. 1997. *Defined Contribution Plan Dominance Grows Across Sectors and Employer Sizes, While Mega Defined Benefit Plans Remain Strong*. Employee Benefit Research Institute Issue Brief, No. 190, Washington, DC: EBRI.

Quinn, J. F. 1999. *Retirement Patterns and Bridge Jobs in the 1990s*. Employee Benefit Research Institute Issue Brief No. 206. Washington, DC: EBRI, February.

Quinn, J. F., R. V. Burkhauser, and D. Myers. 1990. *Passing the Torch: The Influence of Economic Incentives on Work and Retirement*. Kalamazoo, MI: W. E. Upjohn Institute for Employment Research.

Social Security Administration. 2000. "Income of the Population 55 or Older," SSA Publication No. 13-11871. Washington, DC: Social Security Administration, March.

Social Security Advisory Board. 1999. *Forum on Implications of Raising the Social Security Retirement Age*. Washington, DC: SSAB, May.

Stiglitz, J. and A. Weiss. 1981. "Credit Rationing in Markets with Imperfect Information," *American Economic Review* 71(3): 393-410.

U. S. Bureau of the Census. 1992. "An Aging World II." International Population Reports, P95/92-3. Washington, DC: U.S. Government Printing Office.

U.S. Bureau of Labor Statistics. 1999. *Employment and Earnings*. Washington, DC: U.S. Government Printing Office, January.