

Older Workers and the Labor Market/Labor Market Policies for the Older Worker

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1.0 Introduction

The Employment and Training Administration (ETA) is trying to determine the appropriate scope for labor market programs for older Americans. This report surveys the retirement and related labor market literatures to describe the role of older workers in the labor market. It then uses the available evidence to evaluate proposals for policy initiatives and recent arguments for expanding these programs.

This discussion is taking place against the backdrop of an expanding population of older Americans due to increasing life expectancy and the aging of the baby boom generation. As the baby boomers approach retirement, their exit will have major effects on the functioning of the labor market. The age at which they decide to exit will also be affected by the changing demographics of the U.S. population. Retirement of the baby boomers will create enormous pressure on under-funded social insurance programs. As the population ages, the number eligible for programs aimed at economically disadvantaged seniors will also increase substantially.

Aside from basic growth in current programs due to an increasing older population, a number of arguments have been made for expanding the programs for seniors offered by the ETA.¹ One line of argument would justify increasing program size as a response to “labor market shortages” and other problems the retirement of the baby boomers will create for labor markets. A second and related argument is that expanding ETA programs will increase labor supply and thereby alleviate financial problems facing Social Security, Medicare, and other income support programs for older Americans. A third set of justifications would expand labor market programs to eliminate perceived imperfections in the labor market for older workers. A task force document compiled for ETA (U.S. DOL/ETA 2003) recommends: expanding programs aimed at employers to encourage the retention of middle-aged and older workers; expanding programs aimed at workers to improve their skills and planning activities; and encouraging ETA to rethink its role in training, retraining, and placement services.

It would be a major mistake to proceed from a finding that outcomes are unsatisfactory, or that certain labor market failures are influencing market outcomes, or that the baby boom will create many problems, directly to the conclusion that one should expand labor market programs.

A first step is to understand the functioning of the labor market for older workers. Accordingly, much of this report will provide a foundation for policy analysis by discussing what we know about how that market works, and in particular, about the factors shaping outcomes, market trends, and likely sources of market failure. To predict which policies are likely to be effective, if any, we will need to understand how market outcomes are determined, model the role of market failures in generating outcomes, distinguish the effects of market failures from the effects of the normal operation of the labor market, and determine the effects of different policies on the transmission of influence from market failures to market outcomes.

Economists’ understanding of how the labor market for older workers functions rests on a large number of statistical studies. Panel data sets are a major resource. These data allow researchers to analyze the opportunities available to older workers and the choices they make

given the opportunities they face. The leading survey for analyzing behavior of those who are now around retirement age is the Health and Retirement Study (HRS). We will discuss these data, and many of the behavioral insights that result from statistical analyses of these data.

Before proceeding, it is useful to visit a set of issues around which there is some miscommunication and misunderstanding between economists and other aging specialists. Jobs are filled by older workers because older workers and firms find it to their mutual advantage to enter into an exchange. Employers find older workers to be productive on the jobs that they fill. Older workers enjoy their jobs and benefit from various aspects of their employment. The fact that many millions of older workers are employed and their employers find it advantageous to hire them implies that in a very large number of cases, this exchange is fruitful for both parties.² The fact that many employers wish to hire older workers does not mean, however, that older persons are underemployed and that too many are not working. Nor do testimonials from employers as to the value of older workers inform us of anything other than the fact that these employment arrangements have been voluntarily arrived at. Specifically, successful employment of older persons and detailed descriptions of why their employers are happy with them is not informative about whether policies should be adopted to increase the number of older workers in the labor market. More fundamentally, an argument that there are too few opportunities for older workers cannot be supported by the observation that firms now employing older workers value their older employees.

In addition, there are many reasons why one might wish to see an increase in the typical age of retirement and expanded labor market activity by older workers, including the approaching retirement of the baby boomers. But opportunities for older workers will increase as the baby boomers approach retirement. To justify implementing policies that might remedy market defects, one must establish that some type of market or regulatory failure or failures result in too few jobs being created for older workers. To justify expanding programs because of the approaching retirement of the baby boomers, one must demonstrate these defects are increasing in importance.

Moreover, another major step is required. Even if it can be established that market failures have reduced the number of jobs for older workers below optimal levels, it is also necessary to demonstrate that proposed policies will address these market failures and remedy them in a cost effective manner. Consequently, we will spend a portion of this report examining potential culprits that may have fostered the kinds of market failures that would justify policy initiatives; but we also will consider which policy initiatives might best address the market failures we identify. Most often, these are not labor market policies.

All this does not address the need for insurance against adverse events like job loss, unforeseen changes in pensions, or ill health. In the case of these events, even if the probability of occurrence within the market is known, individuals do not know if they will experience the adverse event. Thus, we have unemployment insurance, pension insurance, and disability insurance as programs meant to deal with such adverse outcomes. In the case of adverse employment outcomes, these programs are often supplemented by Department of Labor (DOL) training and employment programs.

There are special issues pertaining to older workers and the design and delivery of such insurance for older workers. A major issue that must be faced by programs providing transfers or stipends is moral hazard, since overwhelming numbers of older workers will be terminating their jobs in any case. Moreover, the short payback period to training means that training older workers will have a lower payoff than similar programs for younger persons who lost their jobs. Thus, the targeting of both insurance and labor market programs on older workers, or on older individuals who have lost their jobs or experienced other adverse events, will present special problems. None of these problems obviate a need within a segment of the population that truly experienced an adverse event. But they do present challenges to the efficient design and delivery of social insurance programs and similar programs providing a kind of insurance through job training and employment.

Section 2.0 of the report discusses retirement outcomes and employment in the labor market for older workers. Section 3.0 describes the basic microeconomic model of the retirement decision. Section 4.0 discusses institutional and demand side constraints governing the opportunity set facing older individuals and the effects of these constraints on retirement and labor market outcomes. Section 5.0 discusses additional considerations for retirement models pertaining to major instances of market failure. Section 6.0 briefly outlines more aggregated demand and supply models of the labor market for older workers. Section 7.0 presents the arguments used to justify expanding the array of policies aimed at older workers. Section 8.0 evaluates these arguments. Additional implications for policies aimed at older workers are discussed in section 9.0. Section 10.0 discusses issues to be faced in designing labor market programs for older workers. Section 11.0 concludes with policy recommendations for ETA.

2.0 The Dependent Variable—Retirement and Labor Market Outcomes for Older Individuals

Labor market outcomes are complex, involving a variety of flows among labor market states (Gustman and Steinmeier 1984a, 2000a; Blau 1994). Older individuals may still be in a job they held for a long time, they may be in a job held for a relatively short time; in either job they may be working full time or part time, their job may be less challenging or demanding than the job they held for most of their work life, or they may be unemployed or out of the labor force. Since retirement can be defined as leaving one or another state of employment, or by current work effort, there are very different definitions of who is retired, and what retirement entails. Moreover, one need not stay retired but can return to work after retirement.

As Hall (1982) emphasized, among employed workers many have substantial job tenure, and they will hold their jobs for many more years by the time they retire. Long-term employees have been trained by their employers, sometimes to impart general skills, sometimes to learn skills that are very specific to their current jobs. Specific training has special value to the current employer, and is one factor fostering a long-term employment relation. Substantial hiring costs also encourage long-term employment, as do monitoring costs. Although there is a literature that addresses whether the long-term employment relation is becoming weaker over time (Farber 2003), perhaps because of a changing mix of employment, most of those who reach their fifties have been with their firms for some time.

Compensation structures and retirement institutions are often designed in view of the long-term employment relation. Long-term employment relationships also lead to a variety of other institutions on the job, such as the internal wage structure and seniority rules. Eventually, a long-term implicit employment contract comes to an end. Institutions such as pensions are designed both to take advantage of special benefits under the tax laws and to facilitate retirement.

2.1 Retirement Patterns

Now turning to retirement, focus first on figure 1 (Gustman and Steinmeier forthcoming). There, data on levels of retirement by age show that for men in the HRS cohort, born from 1931 to 1941 and observed biannually from 1992 through 2000, half left full-time work by age 62. Three-quarters retired from full-time work by age 65. Partial retirement, the difference between retirement from full-time work and complete retirement, grows in importance with age, and after 65 is more important than full-time work.

Retirement rates by age over the period 1992 to 2000, as measured by the differences in the number retired from full-time work between adjoining ages, can be seen from the solid line in figure 2. The proportion retiring is somewhat less than 4 percentage points per year from ages 53 to 61. At 62 retirements peak at about 15 percent of the cohort per year, and fall after that to just below 8 percent per year, until hitting a secondary peak of about 12 percent per year at age 65.

Self-reported rates of full-time participation in the labor force (not retired status) by sex, race, and ethnicity are shown in table 1 for those in the first four waves of the Health and Retirement Study. These data indicate changes in full retirement outcomes from 1992 through 1998 for a sample that was 51 to 61 years old in 1992, and 57 to 67 in 1998. Using a self-reported definition of retirement status, in 1992 blacks and Hispanics are more likely to be retired than whites, and women are more likely to be retired than men. By 1998, whites, blacks, and Hispanics show roughly equal rates of full-time participation, while women, with the exception of black women, are less likely to be participating than men. These same patterns appear when full-time work is defined as greater than 1,200 usual hours per year. However, the differences in retirement status between men and women are much wider using the usual “hours” definition.

2.2 The Long-Term Trend Toward Earlier Retirement

Next we turn to retirement trends. Figure 3 reproduces a diagram from Costa (1999) spanning 150 years. As seen in the figure, to the extent that these historical data can be relied on, the trend to earlier retirement by men (as reflected in their labor force participation) is not a recent phenomenon.

Figure 2, discussed previously, also compares data from the changes in retirement rates between the 1970s and 1990s. Data for the 1970s from the Retirement History Study (RHS) is shown by the dotted line. The data for the 1990s from the Health and Retirement Study (HRS) is shown by the solid line. These figures show a clear shift in the spike in retirement activity over time, once again indicating a trend toward earlier retirement. In the 1970s, the peak retirement

age for men was 65, with a secondary peak at 62. In the 1990s, the peak in retirement activity is at 62, with a secondary peak at 65.

2.3 The Retirement Trend in Recent Years

Costa also notes there have been short periods when the trend stopped or reversed. This finding is relevant because the trend to earlier retirement for men seems to have leveled off in the late 1980s or early 1990s. Costa argues that based on long-term experience, it is too soon to tell whether the recent flattening of the trend, visible after 1990 in the figure, is a short-term or a long-term phenomenon. In figures 4a to 4d from Quinn (2002), the flattening of the retirement trend for men appears to have begun in the late 1980s. There is no evidence in these figures that the retirement trend for men is reversing and their retirement age is increasing.

In the case of women, figures 4e to 4h from Quinn (2002), the slight decline in the long-term trend in labor force participation clearly reverses and becomes a positive trend in the late 1980s. A trend to earlier retirement for all women workers, if present, is offset by increased labor force commitment on the part of women, a commitment that is strengthening greatly among younger cohorts.

2.4 Reasons for the Trend to Earlier Retirement and the Recent Leveling of the Trend

Costa and Quinn agree on the facts, but they disagree on the explanations and implications. Costa is not sure that the flattening in the trend to earlier retirement will continue. Quinn is more persuaded that the trend line has leveled off.

There may be a mechanical component of the recent leveling of the trend. Suppose the transition to retirement is most likely to take place between the ages 50 and 75. The trend to earlier retirement first exerted its influence at older ages. Thus, the probability of retirement for those over 65 increased, then for those 62 to 65, then for those between 60 and 62, and then for those in their fifties. After a while the number of older workers in a particular age bracket declines toward a lower limit. With very few workers left between the ages of say 65 and 70, there no longer is room for a continuing trend to increased retirement for those in that age bracket. Unless the trend would exert itself for those under the age of 50, eventually it must level out. Whether a lower limit constraint is the only reason for the leveling of the trend, it is certainly one reason.

There are many questions about what other factors may have caused the trend to earlier retirement, and then the recent leveling of that trend. Some causes can be ruled out. We know that changes in health status and increases in life expectancy should have encouraged later, not earlier, retirements. Thus, longer life expectancy would act to mitigate a trend toward earlier retirement. But there is no reason for longer life expectancy and improved health to have caused the recent leveling in the retirement trend, but not to have caused such a leveling or a trend to increased labor force participation in earlier years. Health status and life expectancy have been improving for many years. Why would such an effect be visible only in the last decade?

Other specifics about the timing of the trend could provide some clue as to cause. If the trend coincided with the broad adoption of Social Security and pensions, and the recent

flattening of the trend coincided with some changes in policy meant to encourage fewer retirements, that would suggest a strong causal relation due to retirement benefits. In contrast, if Costa's data provide an accurate picture of the course of retirement over the past 150 years, they raise many questions about the role of pensions and Social Security in explaining the trend to earlier retirement. If as the data suggests, the trend is more than a century old, it is very hard to attribute it to social policies adopted since the depression. Her view is that in addition to changes in wealth resulting from productivity improvements, increased retirements result from major changes in the costs of transportation and recreational activities which make leisure more attractive and less expensive. The fact that Costa finds a strong coincidence in the timing in retirement trends found in other countries with the trend in the U.S. supports her argument that particular features of pension and Social Security policies in the U.S. do not play an overriding role in shaping the retirement trend.

On the other hand, there have been changes in policies that do coincide with the changes in retirement outcomes. The numbers we have greatest confidence in show a decline in retirement age from the decades of the 1930s and 1940s, continuing with the enrichment of Social Security, adoption of Medicare, and the rise of retiree health insurance. The trend bottomed out in the late 1980s, coinciding with Social Security policies implemented since the late 1980s that were designed to encourage later retirement (Gustman and Steinmeier 1985a), the movement away from retiree health insurance, and the trend to defined contribution (DC) plans.

Perhaps a more systematic time series analysis would throw more light on the reasons for the trend to earlier retirement. The problem with general time series analysis of retirement and its causes, however, is that in addition to changes in pensions and Social Security, many other changes have taken place. Often, these changes are difficult to standardize for in a time series regression. They include changes in industry mix of output and employment corresponding to the rise and fall of particular industries causing changes in unions, demographic changes and associated changes in family structure, a changing health system, including changes in insurance and treatment, and many other factors. Moreover, certain changes in policies have differing effects on heterogeneous members of the population. We simply cannot be sure from time series evidence what exactly is the cause of the flattening of the trend to earlier retirement in the 1980s, and cannot determine if it is the result of Social Security policies (U.S. Social Security Administration 2003).

It is possible to estimate behavioral models from panel data, separating the effects of wages, pensions, Social Security and other factors reflecting market opportunities from those of individual preferences for goods over leisure and preferences over time. Then, based on the underlying estimate of preferences, one can introduce changes in pensions, Social Security, and other programs that reflect policy changes. This methodology allows estimation of the effects of policy changes on retirement trends. When Anderson, Gustman, and Steinmeier (1999) conduct such an analysis, they conclude that changes in pensions and Social Security account for roughly a quarter of the trend to earlier retirement through the late 1970s, and that in later years they reinforce the forces stabilizing this trend. Forces created by changes in pensions and Social Security appear to be too weak to have reversed the long-term trend to earlier retirement by themselves. Other factors that might have helped to reverse the trend to earlier retirement include campaigns by employers, unions, the Social Security Administration, the Department of Labor,

and others in the 1990s designed to foster greater awareness of the need for retirement saving and to promote retirement planning. The effects of these influences on the retirement trend have yet to be measured.

2.5 Partial Retirement

Figure 5 focuses more explicitly on the role of partial retirement, and thus provides a more complete picture of levels and trends in retirement activity (Gustman and Steinmeier 2000a). As seen by the lower most of the three solid lines, partial retirement increases with age, rising from about 10 percent of the population at age 58 to a fifth by age 65. Figure 5 also allows us to compare partial retirements in the 1990s Health and Retirement Study (shown by the solid line) with partial retirements in the 1970s Retirement History Study (shown by the dashed line). There we see that partial retirement in the 1990s occurred more often than it did in the 1970s. Indeed, throughout the age range from 60 to 63, the share of the male population in part-time work is half again as large in the 1990s as it was in the 1970s. In the figure, in the 1990s the line indicating the fraction partially retired crosses the line indicating the fraction not retired around age 65, with partial retirement becoming more important than not retired status about a year earlier than was the case in the 1970s.³

Only a minority of workers experience partial retirement on the way to full retirement. Our earlier work (Gustman and Steinmeier 1984a, 1984b) suggested that only about a third of the population passes through partial retirement. Moreover, most people partially retire on a job other than a long-term job held for most of their work life. The reason is that workers are not free on most jobs to reduce their hours of work and phase into retirement (Gustman and Steinmeier 1983). Rather, they are constrained by employment conditions to work full time or not at all. Most people do not simply transfer to a part-time job outside of their career job. They are dissuaded from doing so by a big penalty in their wage (Gustman and Steinmeier 1985a). On their career job, they had a great deal of specific human capital created by training and experience. They are much less suited to new part-time jobs, and thus many of these jobs demand fewer skills. There also are additional problems for some among those whose employers would allow partial retirement in their main job. Those who have pensions are often not allowed to collect benefits while they continue working for their employer, even if they work only part time (Fields and Hutchens 2002; Even and Macpherson 2002; Penner, Perun, and Steuerle 2002).

Quinn (1999, 2002) and Ruhm (1990) have written about the jobs held in partial retirement which they label bridge jobs. According to Ruhm, a bridge job is the job following the longest job held. Using this definition, in many cases it is straight forward to identify a bridge job. However, there are cases when it is not easy to distinguish a bridge job from other jobs. For example, a person can work from ages 25 to 40 on one job, and if all jobs held after that date are shorter, according to this definition, all subsequent jobs are all bridge jobs. Similarly, for those who are allowed to reduce hours on a job they have held for many years, their previous main job is a bridge job.

Tables 2 and 3 (from Gustman and Steinmeier 2000a) show the sensitivity of the frequency of retirement status to the definition used. The first table provides alternative definitions of retirement. The second measures retirement status using the alternative definition.

The fraction of the population partially retired can vary from 10 percent to over 25 percent depending on the definition used, with the highest number partially retired when the “main job” is defined as a job held for 10 or more years (this is the definition adopted by Quinn, Burkhauser, and Myers (1980)). Moreover, Gustman and Steinmeier (1984b) show that parameters estimated in retirement models are very sensitive to how the partially retired are treated in a retirement analysis.

2.6 Retirement Dynamics

Tables 4 and 5 (Gustman and Steinmeier 2000a) indicate the frequency of various flows among retirement states observed in the Health and Retirement Study between 1992 and 1998 when the population ranges between ages 51 and 67. Table 4 uses self-reported retirement data to show flows among states. For example, from column 1, row 2, between any two waves of the survey (taken 2 years apart), 5.2 percent of the population in the HRS flows from a state of not retired to partially retired. As seen in column 2, row 2, 4.3 percent of the flows represent continuation in the state of partial retirement from one wave to the next. Among those who are partially retired in any given year, as seen in the second panel, column 1, row 2, 45 percent came from being not retired; while from the second panel, column 2, row 2, 37 percent continued in the state of partial retirement from the previous wave.

There also is some evidence of reversals in status. Two percent of the relevant population went from less work to more work by returning from a state of completely retired to either being partially retired or not retired (top panel, column 3, rows 1 and 2). As seen in the top panel, column 2, row 1, 1.8 percent of the population in any year moved from being partially retired to not retired.

Table 5 provides more detail on the retirement sequences most often chosen. The sequences in that table represent 88 percent of all the observed sequences. These figures suggest that between 1992 and 1998, about 19 percent of the HRS sample (who ranged in age from 51 to 67) experienced partial retirement during one of the four waves of the survey. The data also suggest that 17 percent of the sample experienced some type of reversal during these first four waves, moving from a state of lesser to greater labor force activity.

3.0 Framework for Thinking about Retirement

Microeconomic econometric models of retirement analyze the labor market behavior of a representative sample of individuals over time. Retirement outcomes are observed to differ with incentives from pensions, Social Security, and other factors allowing the estimation of the effects of retirement programs on retirement outcomes. The basic economic model posits a structure in which retirement or work results from maximizing behavior, where the individual chooses between work and retirement by weighing the value of leisure against rewards from work.⁴ These rewards span the current and future periods. Such a model is typically estimated with data from a longitudinal data set, where the same person is interviewed over a number of years. Following the same people over time allows the analyst to model the behavior of a cohort as it transits through the retirement process. With enough information about earnings, pensions,

Social Security, health, and other key measures, one can separate the effects of market opportunities on retirement from the effects of individual preferences.

Once estimated, these models can also be used to simulate the effects of changes in policies. Taking the preferences estimated in view of past behavior, the researcher changes the representation of retirement programs to reflect the new or contemplated policies; e.g., the changes in pension and Social Security rules. The parameters already estimated for those who have recently retired, together with the budget sets for the new programs, yield an estimate of how behavior would change under the different sets of rules. For the period of the 1970s through mid-1980s, this approach suggests only a modest role for Social Security and pensions in shaping retirement trends. For example, as noted previously, Anderson, Gustman, and Steinmeier (1999) find that changes in pensions and Social Security in the 1970s and 1980s did encourage earlier retirement, but that these changes explain only about a quarter of the trend to earlier retirement over this period. Consistent with findings in Anderson, Gustman, and Steinmeier, Friedberg and Webb (2003) project that changes toward defined contribution (DC) plans will lead to postponed retirement.

3.1 An Overview of the Retirement Literature⁵

Until 1970, the standard explanation for retirement was layoffs or ill health (Quinn, Burkhauser, and Myers 1990). There was little attention paid to modeling economic incentives created by our Social Security and pension systems and thus, little understanding of the role that incentives from these programs play in shaping retirement and saving behavior. Most analyses were descriptive, focusing on the answers to questions about the main reason a person retired. They are very reminiscent of today's simple, descriptive studies concerning the views of firms about older workers, or the views of older workers about reasons for working or retiring when there are multiple reasons governing work and retirement. Our analytical capabilities are very different today.

Today's models of retirement are complex, fitting economic explanations in which forward looking consumers take account of known incentives—such as changes in compensation as they qualify for or postpone receipt of Social Security and pension benefits—in which they plan for and react to a host of uncertainties, including adverse health events that may affect job offers and ability to work, potential job loss or wage changes, and changes in family circumstances. These econometric models allow for differences among individuals in their behavior. They integrate saving behavior with retirement outcomes and include restraints on choices created by firms. Many people are limited to work full time or not at all at the jobs they have held for many years, so that to find a job that is less physically demanding or offers part-time work, they must move to a job offering a lower wage.

In each of these models, health status plays a central role. A bout of ill health on average has the same effect as aging another 3 or 4 years. These models have the important attribute of not confounding the effects of adverse health and various economic incentives.

Behavioral models that capture the major forces shaping retirement are useful not only for understanding the factors that have determined behavior in the past but for analyzing the likely effects of major changes in policy. Today, adoption of a system of individual Social

Security accounts, drug benefits, and Medicare reform are at center stage of the policy agenda; in the last administration, it was employer provided health insurance and retiree health policies. By explicitly incorporating saving into the analysis, it is possible to foresee the effects of policies and potential future events on labor market activity, and importantly on economic status in retirement.

The modern longitudinal survey is an important innovation supporting the development of the modern econometric model of retirement. The Retirement History Survey (Social Security Administration 1969–79) and the National Longitudinal Survey (U.S. Department of Labor 1966–1981) were pioneering efforts that collected information on retirement behavior, health status, income, and wealth. Undertaken in the late 1960s and 1970s, they surveyed nationally representative samples of older individuals. Longitudinal surveys continue to evolve. Thus, in addition to the many innovations and insights from these earlier surveys, today's National Institute on Aging (NIA) supported Health and Retirement Study (Juster and Suzman 1995) incorporates such important innovations as a set of detailed pension plan descriptions that reflect sharp changes in the reward to work once one has reached the early retirement age. It also allows more accurate measurement of wealth, introducing new bracketing and random anchoring techniques, and other innovations (McFadden et al. 1998). Innovations in computer technology allow estimation of dynamic, nonlinear models of retirement, taking full advantage of advances in survey design.

Developments in retirement analysis are the product of a number of years of research. The literature began to progress with simple cross sectional relationships—from regressions with a measure of retirement status on one side, and a list of economic, health and additional non-economic factors on the other. These studies, together with basic theoretical analyses, suggested the importance of economic factors in shaping retirement. The measurement of the economic factors became more sophisticated over time, recognizing the sharp decline in pension and Social Security benefits once normal retirement age had been reached (Boskin and Hurd 1978).

One recent study (Gustman and Steinmeier 2001/2002) uses the Health and Retirement Study to explore a simple reduced form relation between full retirement as the dependent variable and a list of causal variables. Age is held constant. Those factors significantly raising the probability of full retirement include higher salary, being in fair or poor health, higher years of service, pension coverage, and having been laid off from an initial job. Factors significantly associated with a reduced probability of full retirement include higher accrual of future benefits if the person continues at work, being married, having a higher share of earnings in the household due to the person in question being self-employed, and having the opportunity to reduce hours of work on the job. Broad industry and occupation group were not significant once the other covariates were introduced. In earlier work using a structural approach (Gustman and Steinmeier 1986b), blue collar workers were found to retire significantly before white collar workers.

A major breakthrough by Gordon and Blinder (1980) and Zabalza, Pissarides, and Barton (1980), among others, separated the influence of the opportunity set, the reward to continued work from wages, pensions, Social Security, and other elements of compensation from the influence of preferences. Once having estimated a set of preferences for a representative sample

of the population, it became possible to ask how the population would respond to changes in incentives brought about by changing economic policies.

Detailed analysis of the opportunities facing individuals, and in particular of the nonlinear rewards from pensions, can be traced to work by Burkhauser (1979) which focused on the auto industry. Nationally representative studies of the diverse and very sharp incentives in pension plans were conducted by Kotlikoff and Smith (1983) and Kotlikoff and Wise (1985, 1987). Employer provided pension plan descriptions were married with descriptions of earnings histories for a nationally representative sample in Gustman and Steinmeier (1989). Understanding the sharp incentives created by pensions was important when defined benefit (DB) plans were the dominant plan type, explained by the implicit pension contract between workers and firms (Lazear 1979). An argument, following on the work of Lazear (1979, 1983) is that the pension is a mechanism for terminating a delayed compensation contract. Workers are paid a lower wage than their productivity in early years of employment but more than their productivity in later years. The pension allows that contract to be concluded by reducing the reward for work after normal retirement. Consequently, the worker is no longer receiving compensation in excess of productivity and leisure value and is willing to end the contract voluntarily. This hypothesis has less force today since EEOC (Equal Employment Opportunity Commission) and related rules require that credit be given for accrued service and earnings after normal retirement age, or that benefit adjustments after normal retirement be actuarially fair.⁶ In the case of defined contribution (DC) plans, the requirement is that older and younger workers be treated similarly, so that contributions continue after normal retirement age. The effects of these changes can be seen in pension accruals in defined benefit (DB) plans from the early 1990s (Gustman and Steinmeier 2000c), and are in sharp contrast to the sharp negative accruals found in the pensions of the early 1980s (Gustman and Steinmeier 1989). Thus, although the defined benefit pension was once a useful device for terminating an implicit contract, where in the final years of employment the wage exceeded productivity, today, that is no longer the case. Nevertheless, despite the trend to defined contribution plans, defined benefit plans remain important (Clark and McDermed 1990; Gustman and Steinmeier 1992; Ippolito, 1995; and Poterba, Venti and Wise 1998), covering half of those in the Health and Retirement Study, a cohort that either just transited through retirement, or is on the verge of retiring. Moreover, it remains important today to bear in mind the role of defined benefit plans as we attempt to understand the implications for retirement of the controversial adoption of cash balance plans by many large firms, and the continuing political arguments for and against such plans. These issues continue to hold up full implementation of cash balance plans.

Using data from one or a few firms, Fields and Mitchell (1984), and Stock and Wise (1990a and b) estimated structural retirement models that included in the budget constraint the exact nonlinear reward structure created by pensions. Stock and Wise also incorporated an important insight from Lazear and Moore (1988) that emphasizes the future value or option value of the pension. Using personnel data, they incorporated information on earnings history and measured retirement as exit from the firm.

Gustman and Steinmeier (1986a and b) estimated a full structural model using the nationally representative Retirement History Survey that followed workers outside of the firm, and introduced lower limit constraints on hours of work that explained why only a third of

individuals partially retired, having left their highly paid long-term jobs, while most went directly from full-time work to complete retirement. Very few partially retired on their main job. Later work by Ruhm (1990) further explored the role of partial retirement jobs, which as noted previously, he labeled as bridge jobs. Rust (1989, 1990) and Berkovec and Stern (1991) introduced stochastic disturbances that could explain why some people retire and then return to work. Blau (1994) expanded the analysis of the dynamic structure of retirement. These studies did not have the benefit of matched employer provided pension plan descriptions but were based on nationally representative samples.

The question of how retiree health insurance affects retirement outcomes is also a major but still contentious issue. Some researchers find large effects of retiree health insurance on retirement, while others find small effects (Gustman and Steinmeier 1994; Rust and Phelan 1997; Blau and Gilleskie 2001).

A related literature has analyzed the relation between disability insurance (DI) and labor supply. Again the literature began with reduced form and time series relations, these driven by a coincidence between declining labor force participation and rising disability roles (Parsons 1980a and b). Disability analysis requires allowance for a very complicated application and appeals structure with a number of delays built into the process. John Bound (1989) analyzed what happened to those who applied to disability programs and were turned down, showing that they were unlikely to return to work. More recent work by Benitez-Silva et al. (1999) has attempted to model the full process of adjustment to unforeseen illness, exit from the labor force, application for DI benefits, acceptance or turn down, appeal and eventual labor market adjustment, or more likely, complete withdrawal. Stapleton and Burkhauser (2003) contains a series of papers discussing reasons for the decline in employment of people with disabilities over time. They point to public policy changes as a leading explanation.

Other work has analyzed the interdependence of retirements within the family. Pioneering reduced form work was conducted by Clark and Johnson (1980) and by Michael Hurd (1990). More recent work has estimated structural models of family retirement (Gustman and Steinmeier 2000b). Structural studies of the joint determination of retirement have added considerably to our knowledge. Blau and Gilleskie (2001) pay a great deal of attention to the dynamic structure of the dependent labor market status measure. Maestas (2001) attempts to distinguish the effects of correlated preferences from those of bargaining power within the family. She introduces information from the HRS on the relative influence of each spouse on decision making within the family. Other studies (Blau 1998; Michaud 2003) add to the complexity of the assumed error structure. Blundell et al. (2001), in a model of joint labor supply, considers the relative weight in the decision process given to each spouse. Family retirement models not only show the coordination of retirements in two-earner families, but estimates indicate that the coordination of retirement blurs the spike in retirement rates at normal peak ages of 62 and 65 for two-earner but not for one-earner couples (Gustman and Steinmeier 2004a). This work allows us to understand not just the behavior of individual family members but also the sources of interdependence within a family context, and emphasizes the importance of preferences rather than market opportunities in shaping a coincidence in retirements by husbands and wives. These models also allow estimation of the likely effects of the rules determining Social Security spouse and survivor benefits on retirement outcomes.

There also are important efforts underway to extend these analyses internationally. Gruber and Wise (1999) and their colleagues find that differences in retirement ages across countries appear to be explained by differences in implicit tax rates from their pension and Social Security programs around whatever retirement age the program selects. Axel Boersch-Supan and Arie Kapteyn are leading a major international project called The Study of Health, Aging and Retirement in Europe (SHARE). Their aim is to duplicate the HRS across a number of European countries with a similar study supported by NIA, The English Longitudinal Study of Aging, underway in Great Britain. These data will allow comparisons of retirement models across settings in which the market opportunities differ very sharply.

Most of these structural models did not explicitly consider the joint determination of retirement and wealth. With the exception of an early study by Diamond and Hausman (1984), Kahn (1988), and more recent work by French (2002), saving was something that went on in the background of a retirement study.

Without considering saving, it is difficult to devise a convincing story for the findings in figure 2. There we have seen that retirements peak at two ages, 62 and 65. Moreover, over time the major spike in retirements has shifted from a peak at age 65 to a peak at age 62. It is not possible to base an explanation for these retirement peaks, their changing importance over time, and the emergence of the age 62 peak as dominant on benefit structures that are roughly actuarially fair, as is Social Security.

One explanation allows for very different preferences in the population for current over future goods. As a result, for those with a strong preference for current goods, that is high-time preference rates, incentives provided by Social Security and pensions are not actuarially fair, at least from the viewpoint of the individual. Those with a high-time preference rate who are considering retiring at age 62 will see the loss of current benefits clearly, but they will devalue the increase in future benefits even though the increase is actuarially fair. The loss of current benefits will be perceived as a reduction in net compensation and will create an incentive to retire at age 62. The problem with assuming that everyone has a high-time preference rate to explain a retirement peak at 62, however, is that it nullifies the explanation of the peak at age 65. Until very recently when the earnings test was abolished for employment after age 65, starting at age 65, continued work reduced present benefits and resulted in an increase in future Social Security benefits at a less than actuarially fair rate. Those with a low-time preference rate would perceive this as a reduction in net compensation and would be induced to retire. Those with a high-time preference rate, though, would not care whether increases were actuarially fair or not, since they sharply discount future benefits in any case. Consequently, they would have little incentive to retire preferentially at 65.

Thus, a structural model attempting to explain the retirement peaks at ages 62 and 65 is faced with a quandary. A low-time preference rate will explain the peak at age 65 but not at age 62, and a high-time preference rate can explain the peak at age 62 but not at age 65. Using a single-time preference rate, as is invariably done in existing empirical structural models, it is very difficult to explain both peaks in the observed distribution of retirements. But if the model is made sufficiently flexible to allow some people to have high-time preference rates and others to have lower-time preference rates, and the data indicate that indeed time preference rates

estimated from accumulated wealth differs substantially within the population, then it is possible to explain both retirement peaks simultaneously.

The NIA supported Health and Retirement Study has been designed to support joint research on retirement and saving. Consistent with the preceding discussion, Venti and Wise's (1999) research on saving using the HRS suggests there are broad differences within the population in preferences for saving. In a single model, Gustman and Steinmeier (forthcoming) marry the analysis of retirement and saving while allowing for wide differences in the willingness to save among the population. The procedure estimates time preference rates from the observed distribution of wealth, and then uses the time preference rates estimated on the basis of wealth to estimate differential responsiveness of retirement to actuarial adjustments in benefits. The substantial heterogeneity in the population's preferences for saving affects their retirement response to rewards for future work. Roughly 40 percent of the population discounts future income using a discount rate of 5 percent or less, while about a third of the population has a discount rate of 15 percent or more, with the rest in between (Samwick 1998; Gustman and Steinmeier forthcoming). Those with high discount rates are likely to be much less responsive to incentives encouraging postponed retirement embedded in pensions and Social Security. Those with low discount rates are likely to be more responsive to these incentives. These differences in discount rates also mean—consistent with our observations of the distribution of wealth among those approaching retirement age—that some will be well prepared for retirement and others poorly prepared. A significant fraction of the population (perhaps a third) has a very high internal discount rate that causes them to disregard the adjustments in future benefits from postponed retirement. These individuals will accept retirement benefits at the earliest age they are offered because they deem the adjustments in future benefits to be inadequate, explaining the most prominent feature in the age-retirement relation, the spike in retirements induced by the Social Security early entitlement age at 62.

All of this work assumes fully informed rational decisionmakers. Bernheim (1988, 1989, 1990) raised questions both about how well people understand the formulas governing their Social Security and pension benefits and the role of expectations in shaping retirement. The Health and Retirement Study has raised further questions about how well informed people are about their market opportunities and how they evaluate future opportunities, and has set the stage for specifying models of how people learn about and make decisions when faced with complex market opportunities. For example, building on earlier work by Mitchell (1988) and Gustman and Steinmeier (1989), Gustman and Steinmeier (2004b) compare respondent descriptions of their pensions and Social Security with employer provided plan descriptions and results from Social Security earnings records. They find respondents are poorly informed about plan type, age of eligibility for benefits, the benefits they will receive from pensions and Social Security, and actuarial adjustments in benefits for postponed retirement. Other research strongly suggests that saving (Bernheim 1994) and participation in 401k pension plans (Clark and Schieber 1996) is strongly influenced by planning sessions run by the firm and by the default option offered by the pension at the time of hire (Madrian and Shea 2000; Choi et al. 2001, 2003). A central concern is whether some people postpone saving or other future oriented activities, even though they understand the consequences, because they do not have the self-control to proceed with them (Laibson 1997). Another is how people respond to risk (Poterba et al. 2003) and whether they understand risk (Barsky et al. 1993, 1997; Dominitz, Manski and Hinz 2003; Lillard and Willis

2001; Poterba et al. 2003). These are among the issues that are now being addressed as the structural analysis of retirement continues to evolve.

3.2 Elements of an Ideal Retirement Model

To summarize, the modern behavioral model of retirement includes the following features:

- 1) Saving and retirement are jointly explained.
- 2) The model is structural, including separately the preferences and constraints guiding individual behavior.
- 3) The analysis is dynamic, following retirement outcomes from full-time to part-time work and/or retirement, and reversals where appropriate, and following saving over the life cycle.
- 4) People are forward looking in their decision making, although time preference is distributed heterogeneously. This means that the response rates to future rewards from wages or from postponing Social Security or pension claiming differ among the population.
- 5) The analysis is stochastic. Some outcomes will surprise people, and some of the surprises, including those pertaining to employment opportunities, will be adverse. People may reduce their work effort over time, then subsequently increase it as health status or other circumstances change, some events foreseen, others not, or as they realize they have made an error. Thus, some people return to the labor force after retiring fully, or increase their hours of work after partially retiring.
- 6) The saving and retirement decisions of married couples are interdependent. Married individuals choose their retirement dates cognizant of the fact that their choice may affect the retirement decisions of their spouses.
- 7) Different measures of retirement should be used, blending self-reports of retirement status and of hours.
- 8) Many jobs typically held in the prime working years and paying higher wages require full-time work or none at all. On these jobs, partial retirement is not allowed. For example, in the first wave of the Health and Retirement Study, only a third of all workers reported that their employers would allow them to partially retire on the jobs they currently held (Gustman, Mitchell, and Steinmeier 1995, S79). The literature explaining the hours requirements of different jobs focuses on the technology for supervising workers, the need for coordination in activities among different employees, e.g., workers on a production line, fixed hiring and training costs which decline per hour as hours of work increase, and other factors (Gustman and Steinmeier 1983; Hurd 1996). The resulting minimum hours constraints should be

incorporated in the analysis. They are very important since most partial retirement takes place outside of the full-time job (Gustman and Steinmeier 1984).⁷

- 9) The wage offer depends on tenure and on hours of work. Earnings on a part-time job secured after leaving a lifetime job will be significantly below what was earned on the lifetime job (Gustman and Steinmeier 1985b). However, wages for part-time employment at the same firm, holding the same job the individual worked at on a full-time basis, may be comparable to the pay rate for full-time work (Even and Macpherson 2002).
- 10) Linked administrative Social Security data and employer provided pension plan descriptions should be used in calculating the opportunity set. Regulations restricting pensions when partially retired on the current job should be reflected in the opportunity set.
- 11) Saving and retirement should be modeled on the assumption that one cannot borrow on future income or Social Security. Thus, liquidity constraints should be incorporated in the analysis. These will be binding on those who heavily discount the value of future earnings or income. Those with high-time preference will not have sufficient assets available to support them if they quit work before payment of Social Security and pensions become available. They will have to wait for their pension or Social Security payments to become available.
- 12) Market conditions will be reflected in the specification of the opportunity set. Employment opportunities at one's long-term employer vary with market conditions. Most obviously, unfavorable market conditions for employers result in layoffs. More generally, workers are aware of and report when there is pressure to retire on the job. (In the baseline HRS, 18 percent report feeling such pressure; Gustman, Mitchell and Steinmeier 1995, S79.)
- 13) Other conditions of work affect retirement. These include effort and other demands of the job. Some broad indicators of difficulty of work include employment type; e.g., whether the job is blue collar versus white collar. The HRS asks about other narrower indicators of difficulty of the required tasks. These include physical demands of the job such as whether the job requires physical effort, heavy lifting, stooping, and good eyesight. Other demands include the need for concentration, dealing with people, computers, the need to analyze information, to keep up with a pace, whether the work is repetitive or requires one to learn new things, whether one has the freedom to make certain decisions, and whether the work environment is friendly. Job characteristics include whether the worker needs training, whether the job is becoming more difficult over time, whether the worker needs a good memory, whether the job involves stress, whether work influences pay, whether the boss likes youth, and whether there are pressures to retire. These measures are summarized for respondents to the Health and Retirement Study in Gustman, Mitchell, and Steinmeier (1995) and reproduced in table 6. Other nonwage benefits include pensions, health insurance, other employee benefits, the presence of temporary windows, and others. Finally, there are the other

- aspects of employment that encourage retirees to work even on a voluntary basis—enhancing socialization, maintaining a reason to leave the home, and keeping the retiree active and busy.
- 14) Workers differ in their valuation of leisure. As a result, retirement models should allow for differences in tastes for consumption goods relative to leisure time, as well as for the differences in time preferences described above. Where information is directly available, these factors should be measured from characteristics reported in surveys. Where such information is not available, models should be sufficiently flexible to allow for differences among individuals in these important taste parameters.

- 15) There are many issues related to how imperfect information and knowledge may affect retirement behavior. Chan and Stevens (2003) suggest that those who are aware of the constraints provided by their Social Security and pension benefits respond to the actual constraints created by these programs, while those who are poorly informed about their pensions and Social Security behave as if they are guided by the incorrect assumptions as to the incentives underlying their pensions.

4.0 Representing the Effects of Aging and Constraints on Choice in the Standard Retirement Model

4.1 Wages and Age

In a retirement model, aging affects both labor market opportunities and preferences. For many older workers, their greater tenure on the job and labor market experience gives them a major boost in productivity. In contrast, older workers who are not receiving a continuous stream of general and specific training on the job may find their skills deteriorating. This may lead to lower wage growth and perhaps to greater danger of layoff. Thus, Hirsch, Macpherson, and Hardy (2002) find that steeper wage profiles in an occupation are associated with fewer older workers and fewer older hires, and a lower ratio of older hires to incumbent older workers. To the extent that many of the employees of firms in a declining industry are older, their skills as a group may deteriorate. If younger workers with less seniority are most likely to be laid off, over time, the workforce in traditional but stagnant industries will age further still. To the extent that jobs in new industries require computer and other skills that have not been learned by older workers, or higher levels of schooling than older workers typically have, older individuals will be at a disadvantage in competing for new jobs (Friedberg and Owyang 2002). Similarly, industries that are subject to heavy import competition may close those plants or firms that are oldest, employ the least skilled, and thus are less able to compete. It is not always the traditional manufacturing or other blue collar industry that experiences declining employment. For example, the recent recession has been said to have resulted in extensive layoffs of white collar and mid-level managerial workers.

An important issue in estimating wage offers concerns the effects of selection bias. Those workers who continue to work full time may differ systematically from those who have retired. Another issue is the importance of distinguishing between wage rates and earnings. Some have

argued that the wage profile peaks in one's fifties and then declines. It is not clear that the wage for full-time work declines with age. What many analysts have focused on is the decline in the average wage for all individuals because with age, a greater fraction choose to work part time or to work on a job that is less physically demanding or demanding in other ways but which pays a lower wage than the person received while working on a job held for many years. Thus, retirement models consider wages for more than one type of market opportunity: a wage offer for those that remain on their main job; and a second wage offer for those that move into partial retirement or some other type of job (Gustman and Steinmeier 1985b).

Up until age 65, full-time employment is more important than part-time work. For those over 65, partial retirement is as important as full-time work. As seen in figure 1, after turning 65, 20 percent of the male labor force remains at full-time work, and 20 percent remains in part-time work. As in any market with voluntary exchange, when older workers are employed, both parties must be sufficiently satisfied to keep the employee in the slot offered by the employer. Clearly the jobs held by older workers are such that the value of their contributions exceeds their wage. Moreover, part-time jobs are usually obtained from employers other than the one who provided a job for many decades. This implies that hiring of older workers is not uncommon. Nevertheless, older workers are going to face barriers when searching for a new job.

4.2 Layoffs and Age

Layoffs are adverse events for older workers just as they are for younger workers. Even if a new job is located, a permanent layoff results in lower wage for the individual. This decline in opportunities is typically modeled as a reduction in the wage offered for full-time work. The loss in wage is associated with a reduction in job tenure and any specific human capital accumulated on the job. With a lower wage, leisure becomes more attractive, especially if there are relatively few years of worklife left.

In the case of temporary layoffs, an older person with greater seniority may have an advantage in securing recall. Indeed, if benefits are high enough, the older person may prefer to take the layoff as long as return is certain.

Sometimes, permanent layoffs will be unexpected. At other times, it is obvious to an employee that the fortunes of the company are declining, and that the probability of a layoff is increasing. While there will be some lead time after it is clear that the company has suffered a financial turn for the worse, or the extent of some major reorganization becomes apparent, from the long-term perspective, the layoff on a long-term job may be an unexpected event that was not allowed for in precautionary saving.

To handle the problem of layoff, the model of labor force participation and retirement has to be sophisticated enough to allow reoptimization of future work, consumption, and thus saving in the face of unexpected shocks. If the model does a good job of evaluating risks, it also may incorporate any precautionary behavior undertaken in contemplation of the possibility of layoff.

4.3 Hires and Age

If the layoff is permanent, an older person may have much more difficulty than a younger one in finding a new job. Since the remaining worklife of an older individual is shorter, older workers will be less willing to expend funds in extensive job search. Moreover, if there are fixed costs of hiring or training with a shorter payback period, firms may be less willing to hire an older individual than a younger one. These are two of the reasons why Chan and Stevens (1999, 2000) find that layoffs of older workers often precede exit from the labor force. Moreover, Hirsch, Macpherson, and Hardy (2000, 5) note that older workers who change jobs are likely to remain in the same occupation where they have already acquired the necessary skills, or will enter jobs where not much training is required. “Employers are not likely to hire older workers in jobs requiring substantial firm investment in worker training.”

Hirsch, Macpherson, and Hardy (2000) find substantial barriers to entry for older workers as measured by the age of those with 5 or fewer years of tenure. They have greater difficulty securing jobs in occupations with steep wage profiles, pension benefits, union coverage and computer usage. Many of these barriers reflect the smaller return to hiring and training costs that, other things the same, will be realized from the hire of older workers.

Consider why firms may be less willing to train an older new hire than a younger one. The firm, as well as the individual contemplating an educational or training investment, will have less time to recoup both hiring and training costs the older the worker (Hutchens 1986, 1987). For example, if returns to training are 10 percent per year, it will take over 7 years just to recoup the original cost of training. Indeed, whether the training is specific, so that the firm pays for the training; the training is general, so that the worker pays for the training, perhaps through a reduced wage; or the training is paid for by the government, the payback period is still over 7 years. That means an investment made in a 65-year-old will just break even after 7 years, leaving no time for a positive return until after age 72. Of course, the number of years in which the positive return will be realized is much lower for an older worker. Indeed, one of the first tasks of human capital theory was to explore why formal schooling takes place at the beginning of the worklife. The answer is that greater returns are realized the longer the period over which the payback may be realized.

A similar calculation by a person who has been laid off will show that an older person will enjoy a smaller return to any expenses incurred in locating a new job. Thus, an older person may be less willing to incur direct expenditures associated with an intensive job search process and may be less willing to incur expenses of relocation for purposes of employment. If expenses associated with reemployment are so high as to discourage reemployment, then the older person may experience a shorter spell of unemployment, proceeding quickly from having been employed to being out of the labor force.

Most models of retirement do not include reemployment costs or job search costs commonly found in the literature on Unemployment Insurance. However, these activities can also be modeled. For example, Michaud (2003) structures his analysis of labor force participation of older individuals around unexpected shocks. But his model highly simplifies

many of the features discussed above, combining into single coefficients of his reduced form approach many of the influences that are analyzed separately in a structural model.

Policies related to Unemployment Insurance cut a number of ways. There is a long literature explaining the conflicting effects of Unemployment Insurance on employment. On the one hand, paying people to allow them time to locate a suitable job will result in higher pay and longer attachment on subsequent jobs. On the other hand, paying people not to work will encourage fewer people to work, at least until the benefits run out. Requiring those receiving Unemployment Insurance benefits to engage in extensive job search will reduce the number of people on UI roles. What analysts are not so sure of is the size of these conflicting effects for older workers.

To the extent that the cost to establish eligibility for collecting UI benefits is a declaration that the individual is participating in the labor force, there will be an incentive for older workers to transit through unemployment when leaving the labor force, especially if one's employer is willing (experience rating is not raising benefit costs too much) and if job search requirements are not too burdensome (Hamermesh 1980). With this problem in mind, offset rules have been adopted to deal with those who have pension incomes and are on UI. These rules also require dollar for dollar reductions in UI benefits for Social Security payments. To the extent that dislocated workers are disproportionately older workers, they may be more likely to remain on UI until they exhaust their benefits. O'Leary and Wandner (2000) provide further discussion of these and related issues.

The more one wishes to focus on the specific case of older workers when considering labor market search, reservation wages, arrival rate of employment offers, and the distribution of market wage offers, and on UI and other programs conditioned on the duration and severity of unemployment, the greater the modification in standard retirement models that will be required. These modifications are feasible, but they will involve a considerable amount of work.

4.4 Many Jobs Are Available to Older Individuals

To the extent that firms follow rules of thumb and simply avoid hiring all older workers, they may turn away older individuals whose skills would warrant hiring. Other firms may realize and take advantage of this mistake and concentrate their hiring on older workers. In some cases, the older workers hired will be former executives with considerable leadership skills. In other cases, the older worker will bring other attractive features to the job. Thus, there are newspaper stories about particular cases where companies are seeking older workers ("Aged to Perfection? More Companies Seek Older Leaders," *Wall Street Journal*, December 2, 2003). Nevertheless, whatever their basis, as seen in Hutchens (1986) and Hirsch, Macpherson, and Hardy (2000), the behavior reflected in these stories, preferential hiring of older workers, is not predominant in the economy.

A view that many older persons are hired is also supported by other case studies. One example is an article on the web site of the magazine *Workforce Management* (www.workforce.com) that reports on policies adopted by the Federal Bureau of Investigation (FBI), CVS, and others, noting programs where efforts to hire older workers were particularly valuable to their firms.⁸ In another example, the *Wall Street Journal* of Feb. 6, 2004 reports on a

program instituted by Home Depot and the American Association of Retired People (AARP) to recruit older workers. As these articles suggest, certain employers will find it to their advantage to focus hiring for particular needs on older workers. They also hint that there may be economies of scale in focusing recruiting on a particular age group. Moreover, over time, as the size of the older cohort increases and retirements rise, shortages at current wages will create wage pressures which in turn will raise the advantage of hiring older workers or encourage them to delay their retirements.

The basic message conveyed by stories about particular employers who hire older workers—that these workers are producing a product that is at least equal in value to their wage—is the same story the statistics are telling us about older worker employment in full-time and part-time jobs. Nevertheless, the number of older individuals who remain in the labor market declines with age, and older individuals have a great deal of difficulty finding jobs at wages paid in their long-term employment should they change employers. This suggests that these anecdotes are not representative of hiring policies with regard to older workers for full-time jobs typical of those held by those in prime working age. Nor do they necessarily imply that employers who are not exerting strong efforts to hire or retain older workers are making major errors in their employment policies.

4.5 Constraints on Availability of Part-Time Work Created by Benefits

Certain pension plans and pension rules place older workers at a disadvantage. Because benefit payments will occur after a lapse of fewer years for an older than for a younger hire, defined benefit pensions are more expensive to employers for older than for younger workers (Barnow and Ehrenberg 1979). Similarly, health insurance payments are likely to be more expensive when older workers are hired, as will any retiree health benefit plans that an older hire might become eligible for.⁹ One can outlaw efforts to discriminate at hiring time on the basis of pension or health insurance costs, but such rules are difficult to enforce. For job losers, that means the compensation offer is less likely to include these benefits. It also may make layoff of older individuals more likely.

One ERISA (Employee Retirement Income Security Act) rule reduces the prospect of having a part-time work opportunity available on a job where the individual has been covered by a pension for many years (Fields and Hutchens 2002; Even and Macpherson 2002; Penner, Perun, and Steuerle 2002). A person cannot continue working as a regular but part-time employee, and at the same time collect a partial benefit from the pension. Thus, one cannot make up for the loss in earnings when work falls from full time to part time. A way around this problem is through contracting. But the firm has to be willing to allow such a contracting arrangement. This exception aside, the opportunity set for part-time work on the job held for many years might include a higher part-time wage, but that same individual is not permitted to collect a pension payment. When one leaves and works elsewhere on a part-time basis, it is possible to work part time and collect the pension, but typically the part-time wage will be reduced, usually considerably. This is an issue that is not directly under the purview of the Employment and Training Administration, but these rules may discourage part-time work by older individuals.¹⁰ If ERISA rules were changed, some additional workers would face a higher wage offer for part-time employment. As a result, fewer than the two-thirds of workers observed

in the past to move directly from full-time work to full retirement will choose that path. More workers will transit through partial retirement on the job held while working full time.¹¹

When part-time employment is not available on the long-term job, the person faces the choice of leaving the main job and the labor force, or leaving the main job and working on another job on a part-time basis, or remaining full time on the long-term job.

To the extent that health insurance is provided on an all-or-nothing basis, that will further increase the cost of part-time employment to the firm. That is, spreading the cost of a health insurance policy over fewer hours of work raises the value of compensation to the worker and the costs to the firm. If the wage can be reduced to compensate, this will mitigate the cost increase. Otherwise, health insurance may raise the cost of part-time workers.

4.6 Other Institutional Constraints on Partial Retirement

Interdependence of production on the job, such as required in team production, also limits the availability of part-time employment opportunities. Such jobs require many workers to be present on the job during the same block of time. Just as with limitations on pension collection, the effect is to depress the amount of part-time work undertaken, and to lengthen attachment to lifetime jobs and the duration of full-time work before retiring, but to reduce the overall time spent in the labor force. Even and Macpherson (2002) estimate a model with HRS data in which the dependent variable is the employer's willingness to allow part-time work, where the population is full-time employees in the first wave of the HRS. As suggested in the previous section, compared to those with no pensions, those with defined benefit (DB) plans have about a 7 percent lower probability of having an employer who would allow reduced hours, while the probability is about 3 percent lower for those with a defined contribution (DC) plan. Union members, those with longer tenure, those working in clerical and administrative support jobs, as mechanics, in construction, in precision production, operating machines, and some others are less likely to have an employer who would allow them to reduce their hours. Those in sales, services, and health services have more flexible hours.

4.7 The Long-Term Employment Relation and Changing Labor Market Opportunities for Older Workers

There is a literature that explores the long-term relationship between workers and firms. Both human capital theory and the theory of the implicit contract suggest that the firm and worker have a joint interest in determining the terms of employment. Firms can use a wage premium to substitute for supervision costs on the theory that workers will value their jobs if they pay higher wages, and will avoid shirking for fear if caught they will lose a good job. Since the contract is over many years, wages in any year need not match productivity. Similarly, when demand is slack, firms may lay some workers off temporarily rather than permanently separating them from the firm. Lazear's implicit contract theory (1979 and 1983) suggests that, at first, firms pay workers below their productivity, but as retirement is approached the wage will be above productivity. This tilt in compensation maintains the incentive to work even when the remaining employment period is short. Because the wage exceeds productivity at the end of the life cycle, there must be some mechanism for terminating employment. Initially, it was held to be mandatory retirement. Once mandatory retirement was abolished, a defined benefit pension

played the same role, providing a bonus to maintain work incentives until retirement age is reached and reducing compensation once the individual reaches normal retirement age.

Changing legislation and new events in the labor market mitigated or offset some of the special features at the end of the employment contract that were so useful in ending that contract. First, there was elimination of mandatory retirement (1978 and 1986 Amendments to the Age Discrimination in Employment Act). Then age discrimination legislation and associated court decisions also required firms to credit work after normal retirement age toward pensions, raising benefits with additional work by continuing to credit wage and service growth, or raising benefits on an actuarially fair basis. These had the effect of eliminating the very sharp negative change in the pension accrual value once normal retirement age had been reached. For some time, retirement incentives were maintained by enhancing the value of early retirement payments. Early-out windows also encourage early retirement, although they are of limited value in providing recurring rather than one-time incentives. Moreover, for a variety of other reasons, defined benefit plans began to decline. With fewer workers covered by defined benefit plans and the rise of defined contribution plans, pensions create weaker incentives for early retirement.¹²

These legislated changes may have reduced the value to firms of long-term attachment of workers. The evidence on this issue is mixed. There is considerable uncertainty about the roles of trend and cycle (Jaeger and Stevens 1998; Neumark, Polksky, and Hansen 1999; Chan and Stevens 2002; Friedberg and Owyang 2002; Neumark and Reed 2002; Farber 2003). Moreover, there are other reasons for the possible decline in the long-term contract. Nevertheless, even if long-term job attachment has been reduced by a fraction over recent years, long-term attachment is still the norm. To the extent that regulatory changes have weakened the long-term employment relation, and that was a productive relation to maintain, there will be some costs from the changing regulatory environment.

Note that some of the theories of the implicit contract do not always accord with observed behavior, and so some caution should be exercised here before these events become the basis for designing policy. As has been indicated, to encourage early training to facilitate supervision and job organization, it is posited that many workers may agree to a pattern of compensation where early in the employment relation wages fall below productivity, while wages paid later in the career are above productivity. Although the contract has been arranged so pay and worker productivity balance by the time the contract is terminated, at the time of retirement, the wage is posited to exceed productivity. This would encourage some to try to postpone retirement. Yet we have no evidence that most individuals are postponing retirement. In fact, retirement age has leveled off but never increased despite a series of Federal Government policies that should have had that effect were many people in a position where their wage exceeded their productivity at the end of the life cycle. Thus, when mandatory retirement was abolished, when age discrimination laws required continuing contributions to pensions, continued crediting of wage and service increases, or actuarially fair adjustments in the pension for postponed retirement, and Social Security was made actuarially fair, one should have seen increases in retirement age. Instead throughout most of the period, retirements continued to decline. Perhaps other features, such as adoption of very early retirement ages and enhanced early retirement bonuses, allowed the continued decline in retirements, and these have started to evaporate with the movement to defined contribution plans. But if many people wanted to retire

later, and the law was changed to the extent it was permitting later retirement, we should have seen more action in that direction.

In the authors' studies of the pension outcomes in the Survey of Consumer Finances and the Health and Retirement Study, a great deal of time was spent considering the relation of the findings to the predictions of the pension literature. Thus, in Gustman and Steinmeier (1989) we found that the accrual profile peaks in accordance with age of hire, complicating Lazear's interpretation that the pension helps to offset the effects of wage premia at older ages. In addition, it is not the slope of the wage profile that generates a situation at the end of the worklife where the wage exceeds productivity. Our findings in Gustman and Steinmeier (1993a, 1995) suggest that compensation on jobs offering a generous pension is higher than on alternative jobs even at young ages, a finding that is much more consistent with an efficiency wage story or a story of union rents than with a human capital story. For the Lazear model to generate a motivation for a defined benefit plan, it must be that workers defer wages early in their tenure in exchange for wages that exceed productivity later on. That is simply not consistent with the wage data. Indeed, many researchers have found a positive sign on pension value when including the pension as an explanatory variable in an hedonic wage equation, even in equations where the pension is instrumented. (For a survey of these findings, see Gustman, Mitchell, and Steinmeier 1994). Also inconsistent with the Lazear model, the findings in the Gustman, Mitchell, and Steinmeier analyses of pensions and mobility suggest that defined contribution (DC) plans reduce mobility by the same amount as defined benefit (DB) plans. Yet if DB plans were the terminal feature of an employment contract that is designed to reduce turnover of workers and thus permit firms to provide specific training without losing their investment, DB plans should be associated with a greater reduction in turnover than DC plans.

4.8 Health Problems and Older Workers

Older persons are more likely to experience health problems. Health problems affect both market opportunities and preferences for work. In retirement models, adverse health is found to have the same effect on the probability of retiring as about 3 additional years of age (Gustman and Steinmeier 1986a, forthcoming). Adverse health, which is more likely at older ages, is modeled as affecting both the wage offer and the disutility of work.

Similarly, because health problems are more likely for older workers, they will be more likely to take advantage of firm disability policies and the Federal Disability Insurance (DI) Program. All those struck with severe illness have great difficulty in reentering the labor market, and major bouts with ill health are more likely for older individuals. (Nevertheless, there is no sharp increase in entry onto DI roles at older ages.) At one point, the Social Security Administration experimented with programs designed to return some of those on the disability roles to work.

4.9 Difficulty of Work with Age

For many people in many types of jobs, work becomes more difficult with age. Thus, a mainstay of structural retirement models is a relationship in the preference function where the value of leisure increases relative to other goods as one ages, effectively making work less pleasant with age. It is straight forward to model the effects of aging both on the willingness of

individuals to work and on the wage offer. Additional years of age increase the disutility of work, and the disutility of work increases over time in some regular fashion. Certain characteristics of the job have also been found to interact with age as some jobs become more difficult to perform at older ages than others. One estimate suggests that those holding blue-collar jobs find them sufficiently difficult so that they retire about 3 years earlier than white-collar workers, holding the wage and all other relevant factors constant (Gustman and Steinmeier 1986b). Thus, Haider and Loughran (2001) find that the proportion who report their job requires lifting heavy loads, stooping, kneeling or crouching, and good eyesight decline with age between 50 and 79.

To be sure, colleagues at the Department of Labor remind us of the human element of older workers, their future contribution to society and employers, the qualities they bring to the workplace, and the value employers place on hiring older workers.

Haider and Loughran (2001) summarize some of the major factors associated with employment by older workers. They find that among older workers, employment is concentrated among those with the greatest amount of education, the wealthiest, and those in the best health. Yet they have relatively low wages, especially for work after the age of seventy. This wage is not reflective of their wage in prime age but is a matter of choice in old age, and is accompanied by greater flexibility on their job as they age. This leads Haider and Loughran to conclude that nonpecuniary concerns dominate the decision to work at older ages.

No one doubts the human element of older workers—that their employers value their contributions to work and that they contribute to their jobs and to society when they work. Moreover, they may have higher productivity not only because of their direct contribution in producing output, but because they provide leadership, stability, a sense of history, loyalty, and mentoring, and in other ways contribute to the firm. With millions of older people at work, there are millions of stories about the value of their contributions. All of those older workers are employed because the value on all dimensions of what they contribute to the firm exceeds the value of their compensation. Nevertheless, other things the same, older workers are more likely to find certain requirements of the job to be more onerous than do younger workers.

4.10 Modeling Risk and Uncertainty

Many retirement models are specified as if individuals have perfect foresight. If one wishes the model to handle adverse events, a much more complex structure is required. Dynamic programming models have been estimated to handle unforeseen events and their consequences, or events when the risk of an adverse event is known, but realization of that adverse outcome depends on the luck of the draw (Rust and Phalen 1997; Benitez-Silva et al. 1999; Gustman and Steinmeier 2002). The older the individual, the less time he or she has to recover from adverse events. Thus, the adverse effects of the stock market bubble, a temporary bout with ill health, a layoff, and wage loss for some period, can be mitigated if the person is young enough to decide to work a bit longer, or to adjust consumption or saving to economize over a longer term. When the remaining worklife is very short, the consequences of an adverse event will appear in these models, as in real life, to have greater consequences on welfare in retirement. If the adverse

event is strictly financial, the individual who experiences this event close to retirement age will simply have to choose between working longer or consuming less.

Thus, when it comes to insuring older workers against adverse events, there are two important and conflicting considerations. On the one hand, an older person is more in need of insurance than is a younger person. It is much harder for the older person to recover from the adverse shock. On the other hand, as we will see with so many older people choosing voluntarily to retire, it is much harder to distinguish those older persons who have experienced an unexpected shock from those who are voluntarily reducing their work, or leaving as a result of some implicit contract that has long been in effect; an issue turned to next.

5.0 Additional Considerations for Retirement Models

5.1 Imperfect Information Held by Workers

In contrast to the assumptions of simple life cycle models of saving and retirement, recent evidence strongly suggests that many people are poorly informed about their pensions and Social Security. But we do not know why some people are well informed and others are not. Nor do we know how imperfect information actually affects retirement and saving behavior over the life cycle.

More specifically, despite many advances in life cycle modeling, recent studies have identified aspects of behavior that are not predicted by the standard life cycle approach to modeling retirement and saving. The standard life cycle model assumes fully informed agents who make retirement and saving decisions so as to maximize a well defined utility function. Yet many people respond they “don’t know” when asked about key features of the pensions and Social Security, including the value of the plans. When values are provided, respondents often refer to one or another measure of central tendency, but not necessarily the mean (Bernheim 1988; Dominitz, Manski, and Heinz 2003; Molinari 2002). Or, when in doubt, respondents may report focal point measures (Lillard and Willis 2001). Comparisons of respondent reports and administrative records suggest that many respondents are very wide of the mark (Gustman and Steinmeier 2004b). There also is other evidence to suggest that some (many?) people are not acting in their own best interest. For example, data from firms shows that people often rely on default values offered at enrollment rather than selecting plans that by any measure are clearly superior to the default (Madrian and Shea 2001; Choi et al. 2001, 2003).

In descriptive work (Gustman and Steinmeier 2001a) using the 1992 HRS, we find that 27 percent of respondents estimated their Social Security benefits within plus or minus 25 percent of the figure that can be calculated from the earnings records. Fourteen percent estimated less than 75 percent of the calculated figure, 10 percent estimated more than 125 percent of the calculated figure, and 49 percent responded that they did not know.

In the 1992 HRS, only 16 percent of respondents estimate their pension benefits to within 25 percent of the amount computed from employer provided plan descriptions (Gustman and Steinmeier 2001a). A quarter of all respondents underestimate their likely benefits by 25 percent or more, 17 percent are too optimistic by 25 percent or more, and the remaining 41 percent are unable to give a value. To the degree that the calculations from the pension plan documents are

too high for defined contribution plans with voluntary contributions, the numbers of individuals understating and overstating their benefits may be more nearly equal. Given the wide differences between the reported and calculated values, however, it appears unlikely that the percent of respondents estimating to within 25 percent of the true values would be substantially greater than 16 percent.

5.2 The Value of Obtaining Information and Planning

Some believe the reason that saving and related behaviors diverge from what would be observed under strict maximization is that the problem to be solved is too complex, that the channels of information are very imperfect, and that there are other behavioral reasons.¹³ Essentially, it is argued that successful planning and the discipline required to plan and execute life cycle saving is beyond many in our population. Certainly Social Security and pension plans have been found to be sufficiently complex to cause confusion among covered individuals.¹⁴ A number of studies discuss one or another implication of imperfect foresight, imperfect planning or failure to plan, or the inability to fully maximize. Although the implications of various imperfections have been explored, there is no complete model of retirement and saving that allows for the effects of imperfect information and other than maximizing behavior.

If people are imperfectly informed, misunderstand incentives or are otherwise incapable of engaging in fully maximizing behavior, retirement expectations may diverge from realizations, even if all contingent outcomes result in expected realizations.¹⁵ In addition, any relations estimated between measured incentives created by Social Security or pension rules and outcomes of interest, such as retirement or saving, may not represent the relation that conventional theory visualizes.

Researchers who believe these issues are important may, and often do, modify the approach they take to analyzing saving and retirement. One area of research relates measures of engagement in planning activities to outcomes such as saving (Lusardi 1999). Policymakers who hold similar views worry that it is those with lowest incomes who are least well informed, and thus most poorly prepared for retirement. Consequently, they may encourage the spread of programs designed to increase the information available to those covered by Social Security and pensions and to foster increased availability of tools for planning retirement.¹⁶ At least at the level of the firm, such tools seem to be effective in increasing plan participation (Clark and Schieber 1996).¹⁷ Policymakers who are concerned that workers do not fully understand their pensions have encouraged increased educational activities by firms offering pensions.

An alternative view is that respondents have only a limited idea of the value of their benefits because many of them have little need to obtain a precise answer, especially if they expect their Social Security benefits, or Social Security and pensions together, to provide an adequate retirement income replacement rate. They may choose not to plan because they know their benefits will be adequate. Around retirement time, they respond to whatever incentives are relevant. Some who want higher replacement rates are free to save, but many need not consider their replacement rates in detail. In support of this view, data from the Health and Retirement Study suggest that many of those approaching retirement can expect an adequate replacement rate, as judged by standard rules of thumb for an acceptable ratio of post retirement to

preretirement income (Gustman and Steinmeier 1999a).¹⁸ Moreover, because Social Security covers a larger share of the income of those in the lower part of the distribution, it is not only high-, but low-income families that might rationally choose to forego planning activities, expecting their replacement rates from Social Security will be adequate.

For it to be worthwhile to learn about one's pension and Social Security, a covered worker should be aware that there is a body of knowledge to be explored, and that improving one's knowledge will have important rewards.¹⁹ Once one is aware of the benefits of gathering information, as long as the benefits of gaining knowledge exceed the costs, knowledge will be accumulated, at least until marginal benefits and costs are equalized (Lusardi 1999, 2001). Since benefits are realized in the future, among the determinants of perceived benefits is the rate of time preference. A further hurdle is created by a person's analytical abilities. One requires either a good deal of help or analytical tools to understand how to evaluate retirement benefits and retirement planning. In addition—even if one has the skills—if future benefits are discounted heavily due to a high discount rate (hyperbolic discounting²⁰), inertia, or other behaviors, one may heavily discount future benefits and forego activities that create knowledge about retirement.

Firms and unions have an incentive to make individuals aware of their pension benefits and of the value of planning for retirement. Firms are spending on nonwage compensation, and to the extent possible, they would like to have pensions valued on a par with wages by their workers.²¹ To the extent that pensions are undervalued, even given their favorable tax treatment, it is in the firm's interest to increase the share of the compensation package devoted to wages. Moreover, firms offering defined benefit pensions often have special early retirement incentives built into the plans. It is in their interest to have workers aware of these incentives. Unions also have a strong motivation to keep their members informed and appreciative of pension benefits. Unions take credit for bargaining for fringe benefits with pensions one of the most tangible rewards to union membership. Similarly, the Government has become increasingly aggressive about providing information about Social Security.

Despite efforts to educate workers, how much they understand about their pensions and Social Security is another matter. Most fundamentally, their knowledge depends on how much information they have gathered and processed; an activity that depends in turn on the perceived benefits and costs of gaining additional knowledge. Here the problem is a bit circular. To understand the need to save and make preparations for retirement, one must pay attention to the flow of information about retirement benefits and retirement planning, and digest that information. But one will pay attention if the perceived benefit exceeds the costs, and until one does pay attention, the perceived benefits are more vague than the costs. So there is some bias toward postponing the relevant calculations.

If pensions change over time, that is another reason to postpone attaining knowledge. There is evidence that pensions have changed a great deal over time, even for those who remain on the same job (Gustman and Steinmeier 1999b). Moreover, if wages are growing very rapidly early in the life cycle, one may postpone saving until the earnings profile flattens.

To the extent that extra effort by unions, firms, and the Government attract the attention of the covered worker, there is greater likelihood they will engage in further exploration of their retirement benefits.

Basic questions we must face include: Are people rationally or irrationally ignorant? When is the optimal time to obtain knowledge and to plan? What is the role of exogenous versus endogenous knowledge?

There are approaches which conceptually would allow one to include imperfect information in standard retirement models, but no models currently incorporate the effects of imperfect information. One such approach would incorporate indicators of imperfect knowledge directly into retirement models. Some of the indicators of imperfect knowledge are qualitative. These include indicators of whether or not the respondent could answer questions about the estimated value of Social Security and pension benefits and whether the respondent correctly indicated the type of pension plan—defined benefit or defined contribution—in which he or she was covered. Other indicators would be continuous, relying on comparisons between what respondents report about their pensions and Social Security and what their employers report.

One can also treat the process of information gathering as a jointly determined outcome in a life cycle model of retirement and saving. The value of information can be modeled as a function of the difference between optimal consumption were preferences and the value of saving fully appreciated from the outset of the worklife, compared to the path that would be chosen if the value of early saving for future retirement were not appreciated. Estimation of such a model is currently feasible.

5.3 Inadequate Information Held by Firms

Firms may be inadequately informed on a number of dimensions. They may not fully understand how productivity varies with age; or, they may find it in their interest to engage in statistical discrimination. If monitoring and supervisory costs are high, or penalties to output severe, such firms may design policies that encourage older workers to retire at a certain age, without trying to distinguish which older workers remain highly productive and which ones are subject to falling productivity.

There have been some studies both of perceptions of firms as to worker productivity and how it varies with age, and perceptions of the ability of older workers to absorb training. A standard argument is that firms overstate the decline in productivity with age (Committee for Economic Development 1999). However, there is no hard evidence representative of the labor market measuring the relation of age to worker productivity. Nor do we know how the relative productivity of older workers varies between and within the workforces of various firms and industries. Nor is there evidence on the additional monitoring costs that may be incurred should the firm have to determine which workers are experiencing sharp declines in productivity as they age and take appropriate action. That is, as an increasing share (albeit possibly a small share) of older workers find their productivity falling below acceptable levels, major changes may be required in supervision costs and in measurement undertaken to identify these individuals, and to justify any involuntary job changes that may be required. Increasing variation in worker productivity with age will be a particularly important problem on jobs in which worker

productivity is interdependent through team production or other linkages. On the other hand, there are case studies demonstrating that older workers are cost effective in particular firms (Hogarth and Barth 1991; McNaught and Barth 1991; McNaught and Barth 1992). Moreover, as we have emphasized throughout this report, a significant minority of older individuals continue to be employed even after age 65, with half of 65-year-olds who are employed working on a full-time basis.

5.4 Age Discrimination

Some older members of the labor force experience labor market discrimination because of their age. Age discrimination may take many forms. It is often difficult to measure directly.²²

Age discrimination is readily incorporated into retirement models, although the effects must be explicitly specified and estimated. Discrimination may take the form of lower wage offers, greater probability of layoff, pressures on the job, or hiring constraints based on age and thus longer duration of unemployment after a layoff, or may generate other adverse outcomes. Although basic retirement models easily accommodate such effects, actually determining the extent of age discrimination is quite difficult. It may be possible to represent the effects of age discrimination in greater layoffs or lower wages, but the problem is to define a credible counterfactual situation so that the extent of age discrimination can be isolated from the normal decline in work and earnings with age.²³ Where the behavior of the company is calculated but targeted, we may not be able to fully identify the effects of age discrimination without prior knowledge of the exact mechanism being used by the company. For example, one corporation (Continental Can) settled a suit alleging it had an algorithm for targeting plants for closure that focused on those plants with a disproportionate share of older workers who were about to vest in special retirement benefits. A model may be able to catch a glimpse of the effects of such behavior if it is pervasive but certainly will not distinguish among various idiosyncratic schemes.²⁴

Although not directly discriminatory, there is an additional issue facing older workers. Older workers, for reasons we have noted, are less mobile than younger workers. Accordingly, they cannot respond to changes in the employment contract by simply quitting their jobs. This added vulnerability of older workers increases the power of the firm, at least in the short run. In the long run, a firm that is abusive of its older workers will not be considered to be a good long-term employer. It is questionable, however, whether younger workers have the foresight to adjust their availability in a way that would encourage such a firm to improve their treatment of older workers. But it will be difficult to distinguish those who have suffered because of increased vulnerability in older age from those who are not subject to age discrimination.

6.0 Modeling Labor Market Demand and Supply for Older Workers and Outcomes at the Level of the Market

The retirement of the baby boomers and aging of the population may foster an increase in the retirement age. With the retirement of the baby boomers, firms face a decline in the relative availability of younger workers, making employment of older workers more attractive. This in turn will raise the reward to continued work through higher wages, changing fringe benefits,

mitigation of pressures and programs encouraging later retirement, and adoption of policies and programs (such as greater accommodations to older workers' needs) encouraging later retirement.

Most of the available econometric analyses pertaining to retirement and training utilize models in which the decisionmaker is the worker. So they are rooted in the supply side of the labor market. However, the demand side plays a role by shaping the opportunity set facing the individual. These analyses can be used to predict the first order effects of major market or policy changes on retirement behavior. They allow individual workers to alter their choices in view of whatever new incentives are created by the policy change. A large literature explores the effects of changing Social Security and pension policies, as well as the effects of trends in pensions on retirement. Most often, analyses of the effects of changes in Social Security and pension policies do not consider the consequences of further market adjustments to the policy change.²⁵

Most retirement analyses do not focus on the demand side of the market. One reason is that while data are readily available at the level of the household, data of comparable quality are not available at the level of the firm. Most importantly, to understand the role of pensions in employment and to model the retirement decision, demand side models would have to be specified to allow for long-term attachment of workers to firms. Typically, labor demand analysis assumes a spot market rather than long-term attachment of workers to firms. But only in a model which allows long-term attachment can we relax the assumption that wages always equal productivity, can we model pension programs that offer spikes in benefit accrual that might be equal to the value of a year of work, and only in such models can we appreciate the role of training on the demand for workers. To fully model the determination of the path of compensation and programs offering special retirement incentives, it would require information both on firms and on their employees. There is an effort underway at the Census Bureau to produce and make available such data, but no work on the effects of labor market policies on retirements has yet been undertaken with those data.

One can aggregate individuals and proceed to analyze reduced form outcomes at the level of individual markets, positing interactions of supply and demand curves for labor of different ages. However, retirement policies are not commonly analyzed at the market level. One problem is that we don't have very simple stories to distinguish the demand for workers by age. Also, in reduced form analyses, it is not possible to identify the key parameters required for policy analysis of particular retirement initiatives. Another problem is that workers move among sectors. Keeping track of mobility within a multisector model of supply and demand is a challenge that has not yet been met, even under the assumption of a spot labor market. We do not have sufficient understanding of the attachment of workers to firms in the context of models of inter-sector mobility of workers to undertake related policy analyses of the types of labor market policies for older workers that ETA might adopt.

An alternative approach to this problem might begin not at the level of the market, but at the level of the economy. For example, it is possible to represent aggregated firm demand at the level of the economy by a production function. In this type of analysis, the number of younger workers and older workers would be considered as separate classes of labor inputs, which

together with different types of capital would determine output. This type of approach is often used in analyzing issues related to economic growth.

A major problem in trying to apply this approach to the analysis of retirement policies is that one does not really know how to aggregate different types of labor working in different industries. Indeed, many of the differences among workers discussed above must be ignored as the number of units of labor are added. In addition, these models are not suitable for an analysis of long-term job attachment by workers. With some exceptions, the standard production function analysis typically behaves as if the labor market is a spot market where, in each period, the wage equals worker productivity. That view is not consistent with most models of long-term job attachment. By the very nature of a specification in which older and younger workers are included as different classes of workers, but the market is assumed to clear each period, it is difficult to include those factors that shape retirement incentives and retirement behavior.

None of these complications argues that there would be no benefit from knowledge of supply and demand for older and younger workers in different markets. Surely a clearer picture would be had of the potential effects of policies if we could consistently aggregate across these markets. But because workers are attached to firms for a prolonged period, this has been a very difficult task for analysts. Moreover, the programs that ETA would be most interested in, such as the supply of training to older workers by firms, require the behavioral analysis to include features that are typically missing from these models. That means these models will not be suitable for judging the likely response in the market to the introduction of employment and training policies for older workers.

Other analysts have considered the basic effects of changes in supply and demand for older workers across markets, but they do so in the context of more descriptive analyses. Disney (1996) discusses the market effects of aging of the labor force.

Some analysts believe that demographic changes are already exerting an influence on pension plans. On the firm side, one set of recent studies has focused explanations for changing pensions on demographic factors related to the age structure of the workforce and the emerging willingness of firms to retain older workers in the face of a declining supply of new workers (Nyce and Schieber 2001; Lofgren, Nyce, and Schieber 2002). Clark and Schieber (2001, 2002) take the emergence of the cash balance plan as a sign that firms no longer wish to subsidize early retirements, again reflecting the changing demography of the labor market. Cash balance plans are more neutral with regard to the retirement incentives they create, so that conversion of defined benefit (DB) to cash balance plans encourages later retirement. In contrast, Friedberg attributes the decline in DB pensions to technological change such as increased computerization which increases the demand for younger workers who have more computer skills and makes them more mobile (Friedberg 2001; Friedberg and Owyang 2002). These two hypotheses generate the same prediction for pension changes—DB plans should be disappearing. But they generate the opposite prediction for retirements. If firms demand more older workers, retirement rates will decline. If firms want more computer literate workers, retirement rates will increase.

Recent developments with pensions raise further questions about the nature of demand for older workers and the role of the implicit contract. Firms have always had the opportunity to

violate the implicit pension contract.²⁶ They are obliged under the law to pay a defined benefit pension based only on the wage earned to date. That is, they are obligated to use only the current wage in a formula that bases yearly retirement benefits on the wage, years of service, and a generosity coefficient, rather than using the wage projected to retirement age in the benefit formula (Ippolito 1986). That means, at any time, firms could have taken a significant fraction of pension assets from workers by terminating DB pension plans, so that benefits for 40- and 50-year-old covered workers would be calculated using their current wage rather than the wage they will be paid at retirement. There were notorious instances of firms violating the implicit pension contract, either due to bankruptcy or explicit calculation, that led to the passage of ERISA. The first systematic and widespread evidence we have that firms are failing to deliver on the promise of paying benefits based on projected pay is the emergence of the cash balance plans. Cash balance plans were first designed in 1982 and implemented in 1984. In the 1990s, they spread among the largest firms in the U.S. Under cash balance plans, except for workers on the cusp of retiring, firms prohibit continuing workers from opting for the old DB plan.

Effectively, for most workers, the firm abrogates the implicit DB pension contract by terminating the plan and calculating benefit obligations using the current wage in the benefit formula. Thus, the emergence of cash balance plans signifies more than a changing demand for older workers. It signifies the willingness to break the kind of implicit contract posited by Lazear. The reason this is a surprising development is not just that firms have always had the ability to break the implicit pension contract and for the most part have not been willing to do so, but that they have gone out of their way to keep the implicit contract whole. The most obvious evidence of this is when, during periods of unexpected high inflation, firms made large adjustments in benefits paid to already retired former workers to mitigate large, unexpected increases in the cost of living (Gustman and Steinmeier 1993b). Another sign of the unraveling of the pension contract is the emergence of lump sum payments for holders of DB plans that fell well below the value of the annuity they were replacing. Dallas Salisbury suggests these began with the oil industry plan amendments in the 1975 to 1978 period.

One possible attraction of defined contribution (DC) plans and cash balance plans is that they would encourage workers with high-time preference rates to leave the firm early. Ippolito (1997) argues these are the least productive workers. If this explanation has merit, one can ask why firms did not do this sooner. Defined contribution plans have been available for many decades and always provided the opportunity to allow high discounters to voluntarily separate from the firm.

7.0 Arguments Presented to Justify Expanded Labor Market Policies for Older Workers

To this point, behavior in the market for older workers and available models of that behavior has been discussed. This analysis of behavior provides a framework for determining the validity of certain arguments in favor of adopting an array of labor market policies designed to increase the number of older workers. It will allow us to assess the need for employment and training policies aimed at seniors. It also will help in assessing the likely effects of particular proposals.

In this section we turn to arguments that have been made to justify adoption of particular labor market policies aimed at older workers.

7.1 Concerns Fostered by the Looming Retirement of the Baby Boomers

Much of the ETA's increased interest in older workers is stimulated by the looming retirement of the baby boomers and increase in life expectancy. A common justification given for adopting labor market policies to increase the number of older workers is that these demographic changes will foster shortages in the labor market. Moreover, it is argued that human capital is wasted when those with still viable skills retire prematurely, with the implication that employment and training programs should be extended to preserve human capital that would otherwise be lost through retirement.

In addition, the aging of the baby boomers means that a larger population is affected by particular flaws in the market for older workers. Furthermore, as the size of the population at or near retirement age increases, the benefit-cost ratios for some policies may increase making more programs cost effective. This occurs as the fixed costs of a program are spread over a larger affected population, reducing the fixed cost per treated individual.

Another justification offered for extending labor market programs to older workers is that the poor financial condition of our social insurance programs can be improved by adopting labor market policies that encourage later retirement. The reasoning goes something as follows. There is a great deal of evidence that the retirement of the baby boomers will adversely affect the financial status of Social Security and Medicare (Trustees Report 2003).²⁷ If the baby boomers could be encouraged to delay their retirements, and if somehow they were made more productive in their jobs, that would postpone the day of financial reckoning for Government programs, especially for Social Security.²⁸ A 1-year delay in retirement would spread benefits that would otherwise have been paid in the first year of retirement over the remaining years of the persons' lifetime in the form of actuarial adjustments to future benefits. Accordingly, differences in payroll tax payments aside, a delay in retirement would not save any money in the long term for an actuarially fair program like Social Security, but it would have favorable effects on the flow of funds, postponing the day of reckoning.

7.2 Labor Market Imperfections as a Motivation for Labor Market Policies Aimed at Older Workers

A second line of argument for expanding labor market policies for older workers is based on a number of imperfections that may inhibit the proper functioning of the labor market for older workers, some of which were discussed above. Workers may be imperfectly informed about the functioning of the labor market or about market opportunities—some may be incapable of planning adequately for retirement. Also, firms may be mistaken in their view of the productivity of older workers. Some argue that downturns in the business cycle adversely affect older workers even more severely than younger workers, job search costs may be substantial for older workers, certain fringe benefits are more expensive the older the hire, and age discrimination may adversely affect older workers.

7.3 Technological Change Has Been Very Rapid and Is a Special Problem for Older Workers

This line of argument cites both the rapid rise of computers and the significant differences in formal education between generations. With many older workers unable to meet the demands of technically sophisticated jobs, they are more at risk of layoff, or subject to forced retirement at younger ages than they would prefer.

7.4 Policies Aimed at Both Younger and Older Workers May Also Have To Be Expanded in View of the Growing Older Population

Many of the imperfections in the labor market for older workers parallel those in the overall labor market. For this reason, the rationale for public policies in the general market will also apply to older workers.

Labor market programs that are targeted on the general population include employment and training programs designed to improve the prospects for low-wage workers. Some current labor market programs attempt to mitigate the effects of the business cycle. These include Unemployment Insurance and Government employment programs or job placement programs that often are in greater use when unemployment is high.²⁹

Other labor market programs, many outside the purview of ETA, provide a regulatory structure constraining hiring, firing, employment conditions, and pay in the labor market. For example, regulatory policies: create a legal structure for handling union-employer relations; address the question of how to handle unsecured promises of future compensation from pensions; regulate health, safety, and employment conditions in the labor market; and provide mechanisms for dealing with discrimination in the labor market. Other programs may address particular sectors of the labor market. For example, Trade Adjustment Assistance is meant to compensate the losers when free trade policies are adopted. Still other policies are aimed at mitigating problems for troubled workers in the labor market. Typically, the target population includes those who have trouble earning a living much above the poverty level. In addition to the employment and training programs mentioned above, minimum wages are aimed at improving the status of those with low earnings, as is the Earned Income Tax Credit.

7.5 Older Workers Require Insurance Against Unexpected Events, Including Policies to Allow Them to Continue in the Labor Market

Many of the events mentioned above—including layoff due to changing product demand, technological change, unexpected decline in the value of an individual's skills, abrogation of the implicit pension contract, and terms of the pension—may be unexpected or may occur only with a few years warning. They certainly are not foreseen at the beginning of an employment relation. One policy response to these adverse events is to provide insurance. To the extent that these events are uninsurable in private markets—in that appropriate insurance programs will not work at reasonable costs—this may be treated as a form of market failure. The next question is whether public insurance programs will work, and if so, at what cost. Another approach is to provide full or partial insurance through labor market programs, enhancing training and employment opportunities, allowing some older individuals to adjust to adverse events by retiring later, but

from better jobs than they would otherwise attain. Again, there are the questions of practicality which are discussed below. To the extent that providing insurance through the job market involves very significant additional expenses in the case of older workers, it may be very imperfect and perhaps even impractical.

8.0 Evaluations of Arguments for Policy Interventions in the Labor Market for Older Workers

A number of questions suggest themselves about the arguments presented above to justify adoption of labor market policies for older workers. A first question is: What does it mean to judge some labor market outcome as good or bad per se? Almost all the data cited in the ETA planning documents are descriptive. They describe numbers employed, retired, partially retired by industry or occupation where available, and expected trends resulting from changes in the population. Numbers of unemployed or numbers of those who would like to work part time but cannot find a job (at some unspecified wage) are more persuasive, but as we have seen, they leave many questions unanswered. Descriptive statistics by themselves will not provide a justification for policy intervention.

Justifying policy on grounds of market failure requires more than descriptive numbers. One must demonstrate the existence of the market failure, assess its impact, and show that there are policies that address the market failure in a cost effective manner.

Other questions have to do with the practicality of any proposed policy. We would like to know not only whether conceptually some type of policy intervention is justified, but if some intervention is justified, whether the appropriate intervention is a labor market policy. Is an outcome of concern itself caused by other government policies? If so, should these policies be modified rather than introducing a new labor market policy? If a labor market policy can be found to generate the desired effect, can it do so on a cost effective basis? Turning to proposed policies, when it comes to evaluating particular policies, can the targeted population be identified and distinguished easily from the flood of retirees who are leaving their jobs during the course of retiring? That is, are we going to find that many who are not subject to an inefficiency receive the treatment in any case, while others who are subject to an inefficiency do not receive a treatment?

There are many distinct segments in the causal chain linking labor market policies to labor market outcomes of concern. Sometimes the market forces causing these outcomes will be too strong to be influenced by any policy. Sometimes, the outcome of concern will have been caused by other policies which will also be more effective in modifying the outcome of interest. These and other factors affecting the efficacy of policies aimed at older workers are discussed in this section. They are presented together with evaluations of the arguments from the previous section which are used to justify labor market policies.

8.1 Policies May Be Too Weak to Overcome the Major Demographic and Economic Forces that Shape Outcomes in the Labor Markets Employing Older Workers

As can be seen from the previous discussion, an array of labor market forces shapes the workday, workweek, workyear, and portion of the lifetime spent at work. These are major forces and cannot be counteracted by a modest array of government labor market programs.

8.2 Market Adjustments Reallocate Resources to Areas of Shortage

Although the current array of demographic and market forces are creating further problems for the economy, market adjustments will also help to improve the allocation of resources. Although market adjustments will not offset the effects of demographic and other labor market changes, they will help to mitigate some of the adverse effects created by retirement of the baby boomers. For example, if a relative scarcity develops for certain skills or workers with particular levels of experience, the prices for this type of labor will increase. This will cause firms to economize on these skills, while also inducing later retirement by older workers who have the scarce skills, as well as entry into that segment of the labor market by younger workers. Changes in compensation will arise to encourage later retirement. As the baby boomers leave the labor market, we can expect many programs designed to induce earlier retirements to disappear; e.g., early retirement windows or pension incentives that encourage early retirement. Along with changes in relative wages, these reactions to the aging of the baby boomers will encourage some to delay their retirements from their lifetime jobs. Job conditions will also change to accommodate older workers, so that many older workers will find work that makes delayed retirement more attractive. Suppose an important issue is the availability of well-paid part-time work, so that the quantity of human capital would not move abruptly and discontinuously from some amount at age 60 directly to zero. Part-time work will become more available in a time of labor shortage, and conditions and wages in part-time employment will improve.

Returning to demographic trends, perhaps the human capital held by older workers is becoming more valuable due to a perceived labor market shortage, and while workers do not see this, the Government does. The case for this view might be made, but it will not be made by simple reference to foregone human capital. There are too many unanswered questions. Once again, what prevents the market from reaching the appropriate solution? If retirement of the baby boomers will foster a labor market shortage, won't firms raise wages and change employment conditions to encourage people with types of human capital in short supply to postpone retirement? Won't they pursue wage and nonwage policies that make it easier for older workers to continue on their jobs?

The bottom line is that arguments presented to date and available evidence thus far do not justify using labor market policies in an attempt to turn back the demographic tide. Moreover, they are unlikely to be successful in that regard.

8.3 Many Outcomes That Are Perceived by Some Policy Designers To Be Wasteful, Such as Loss of Human Capital with Retirement, Are Not a Sign of Market Failure

Suppose that, as some within the Department of Labor argue, retirement implies the waste of human capital. Why do we frequently see early retirement?

An obvious answer is that people want to divide their lifetimes between work and leisure, just as they divide their workweek between work and leisure. Work becomes harder as the body ages. So when the Government views retirement as an activity that wastes human capital, it is analogous to saying that the 40-hour workweek wastes human capital. Whenever a person takes leisure, that is a waste of human capital. But the division of the time allotted to us between work and leisure is an economic decision made by weighing the value of leisure or difficulty of work on the one hand against the reward for work on the other.³⁰ Indeed, Costa (1998) attributes a portion of the trend to earlier retirement to innovations that increase the efficiency with which we use leisure time.

The retirement decision is not different in outline from the decision between work and leisure over the day, week, month, or year. A context for considering an argument that retirement wastes human capital is the trade off taken between labor and leisure. Because it is impossible to separate the work-leisure choice from downtime for human capital, an advocate of regulating retirement to avoid waste of human capital should show that there is some distortion or market failure that is causing workers to retire too early. An argument that retirement age should be postponed simply because, from the perspective of the economy, human capital is being wasted, is an argument for extending the workday, the workweek, or the workmonth. Human capital can only generate a return in the form of earnings when one is at work.³¹

There are other ways of trying to justify a governmental effort to economize on human capital. One may argue that the Government should have or does have a lower discount rate than workers, or that older workers undervalue their human capital and are too willing to surrender it to retirement. But why is this so?

8.4 Differential Treatment of Older Workers Is Not Necessarily the Result of Market Failure

In sections 6.4 and 6.5, we have documented a number of instances of market failure in the labor market for older workers. Nevertheless, differential treatment of older workers is not necessarily a sign of market failure. Most prominently, the lifecycle of labor force participation comes to an end after a lengthy period of participation, and this end occurs when the worker is older. Institutions have evolved to support retirement, and these have a differential impact on older individuals.

Pensions have special features and rewards that are designed to encourage early retirement. Often they are there because both the firm and the worker find early retirement to be attractive. As a result of these provisions, the defined benefit pension accrual profile peaks in value at the early retirement age specified by the firm. This is a perfectly legal feature of pension plans. It should not be and is not considered to be a regulatory failure. Indeed, the Supreme Court has rejected an interpretation that benefits made available to older workers must also be made available to younger workers, even if both groups are in a protected class in that they both are over the age of 40.

Certain economic calculations depend on age, and so outcomes naturally vary with age. For example, a 63-year-old has many fewer years to pay back an investment in schooling than does a 30-year-old. Most importantly, with a shorter payback period, the older individual will

find it less in his or her interest to invest in schooling or other forms of human capital formation. Indeed, one of the first lessons of human capital theory as it was developed in the 1960s emphasized that schooling should be concentrated as early in the lifetime as possible to allow human capital to be used in a continuing process of reinvestment, to minimize the opportunity cost of investment, and to allow as long a payout period as possible. For similar reasons, an older individual will be treated differently by firms when deciding whether to engage in extensive investments in training (Hutchens 1986, 1987). Similarly, government policies that base decisions on cost-benefit analysis will have different benefit-cost ratios for older and younger workers. An unemployed 63-year-old with a very limited work horizon will benefit much less from an extensive government training program than would an unemployed 40-year-old. When it comes to investments that do not break even for a number of years, it makes sense to treat older and younger workers differently. Nevertheless, this is a slippery slope. When does recognition of a shorter work horizon turn into discrimination against older individuals based on stereotypes of what they can learn, and when is recognition of a shorter work horizon justified and held to be in the interest of both the worker and the firm, because time horizon matters and workers are the subject of investment? Wherever one draws the line, it is clear that an argument that investment in older workers is less justified than an investment in younger workers is not necessarily discriminatory. It may in part be based on reality, driven by the life table.

Or consider a particularly difficult problem related to the limited availability of high paying part-time employment. It is well known that full-time jobs pay more than part-time jobs. The organization of work on the job or fixed costs of employment both to the worker and to the firm strongly encourages full-time work and reduces the wage for part-time work. The labor market is organized so that most of the jobs held in prime age and paying good wages must be held on a full-time basis, or not at all.

Yet fixed costs of employment notwithstanding, some older workers may find it in their interest gradually to phase out of their long-term jobs while receiving a constant hourly wage in reflection of their experience. They would prefer to have their hours of work decline gradually, rather than moving abruptly from full-time work to full-time retirement, while their wage is maintained or reduced modestly from earnings during their peak years of employment. But many employers may find that efficiency in production requires full-time workers. Because of demands of team production, complementarities in work, fixed costs of employment, or for other reasons related to the organization of production within the firm, some firms are either unwilling to employ part-time workers, or are willing to employ them only at wages substantially below what they pay their full-time employees. They find it inefficient to pay the full-time wage to part-time employees. In these circumstances, older workers approaching retirement may find it in their interest to prolong their full-time work and then fully retire, even though they would prefer a smoother transition from full-time work into well-paid part-time work into retirement. The fact that some people would wish to, but cannot continue working on the jobs they already have held for many years, at their higher wage paid to full-time employees, but working on a part-time basis, is not a signal of market failure. Nor is it necessarily a sign of employer discrimination.

Similarly, if they cannot work part time on the job they previously held as a main job, others would like to continue working on a part-time basis after leaving the firm, even if for another employer. They too would, of course, prefer continuing to receive the wage paid when

they were working full time in a job held for many years. Some who cannot receive a higher wage while working part time will again choose to proceed directly from full-time work into complete retirement. When asked about their preferences, such workers will say they want part-time opportunities. Yet lack of availability of part-time work at their old wage is not a sign of labor market failure. They could work part time at a wage below what they were paid for full-time work, but choose not to.

Other differences in the behavior of younger versus older workers also may not be the result of some particular market failure that applies with special force to older workers. They may simply reflect differences in the stage of the life cycle. Older workers are more likely to have accumulated wealth to finance their retirement. This accumulated wealth may discourage later work. In addition, the wealth effects of pensions and Social Security further reduce work incentives for older individuals. Even when it appears that there is a market failure that differentially affects older individuals, careful analysis is required before one can justify particular policy interventions on behalf of older workers.

8.5 Differential Outcomes Among Individuals Are Not Necessarily a Sign of Market Failure

Individuals differ widely in their choice of retirement age and retirement path. These choices are shaped by the opportunity set facing each individual, which in turn is shaped by the interaction of supply and demand side forces, and by their idiosyncratic characteristics. The age profile of productivity differs among jobs, as does the perceived difficulty of work with advancing age. Much of retirement activity takes place from ages 55 to 65, but there also is considerable retirement activity in earlier and later years. Sports figures may retire in their twenties or thirties. Professors of math or physics may hit their peak productivity much earlier than do professors of philosophy or history. More generally, blue collar workers have a stronger preference for leisure, holding their health and market opportunities the same (Gustman and Steinmeier 1986b). Findings that there are differences in outcomes among individuals, among those in different industries, or among generations does not establish the existence of any market failure. To the extent that differences in retirement outcomes among individuals reflect market forces as well as individual choices, why should they be overturned by policy?

8.6 Adverse Consequences of Government Policies on Employment of Older Workers

Sometimes failure in the labor market for older workers is the result of ill-designed policies. In years past, Social Security or pension formulas, sometimes unintentionally, other times as a result of deliberate policy, created disincentives for work. Thus, it was common for Social Security and pension programs to fail to adjust future benefits when an individual who had qualified for benefits postponed retirement. Since a year's worth of Social Security or pension payments were lost by continued work, the net wage is reduced to the current wage minus the foregone benefit. Unless future benefits are adjusted adequately, the net effect once one reaches retirement age is to reduce the reward for work, sometimes substantially. Often these disincentives were very strong and encouraged much earlier retirement.

To be sure, there is evidence that the trend to earlier retirement began many years before the advent of Social Security (Costa 1999). Nevertheless, there also is good reason to believe that Social Security has been directly affecting retirements in the last half of the twentieth century.

Similarly, pension policies provide special tax benefits to pension plans. The resulting pensions in turn facilitate retirement by some who would not otherwise have the will power to save for retirement. In the case of pensions, however, there is no feature of current law that mandates or favors one age of retirement over another. Pensions, especially defined benefit pensions, influence retirement age. But the features of pensions generating particular retirement ages are determined in the market.

The Federal Government has been very aware that increasing the labor force activity of older individuals would be an important step toward mitigating the problems created by the retirement of the baby boomers and an under-funded Social Security system. They have done their best to remove many of those side effects of Social Security and pension policies that encourage early retirement. Among the policies meant to remove a policy failure, the Social Security benefit formula has been changed to make it more actuarially neutral with regard to incentives for delayed retirement, raising yearly benefits for those who postpone the date of claiming. Some aspects of the 1986 Social Security legislation, notably the introduction of actuarially fair adjustments in benefits through the increase in the delayed retirement credit, are likely to have encouraged later retirement (Gustman and Steinmeier 1985a, 1991). The abolition of the earnings test for those over normal retirement age (by the Senior Citizens Freedom to Work Act of 1999) may have a similar effect. This is not just because of any actuarial incentives which encourage earlier retirement by those with a high-time preference rate, but because many people are unaware of or misunderstand the adjustments that are made in future benefits when benefits are lost to the earnings test. Analogously, age discrimination rules now require firms to continue making contributions to defined contribution (DC) plans, to credit work and service accruals after normal retirement age, or to adjust pensions on an actuarially fair basis when retirement is delayed, so that those who postpone retirement are not unduly penalized. On other fronts, the Age Discrimination in Employment Act abolished mandatory retirement and implemented other provisions.

One can argue that for more subtle reasons, Social Security is encouraging earlier retirements in the U.S. For example, those in the population with a high discount rate will not save enough for retirement. Yet when funds become available at their early retirement age, they will be encouraged to leave the labor force, whereas in the absence of Social Security, they would not have saved enough to do so. Nor will they find the benefit adjustment from postponed retirement to be adequate, again encouraging them to leave as soon as Social Security benefits become available. Thus, the spike in retirements at age 62 seems to be the result of Social Security rules (Gustman and Steinmeier forthcoming), and those who retire at 62 would have retired at a later age in the absence of Social Security.³²

A current instance where pension regulation may affect retirement has been mentioned above. Pension regulation often inhibits partial payment of the pension to someone continuing to work at the firm. This is a legal requirement for some types of pensions. In this case, even if the firm is willing to pay the same hourly wage for part-time and full-time work, a person who

partially retires cannot draw some of his/her pension to offset the lower earnings from a part-time commitment. If other savings are unavailable, lack of liquidity would then discourage partial retirement.

Given the rising popularity of 401(k) plans, it might be possible to allow withdrawals from 401(k)s on the same basis that withdrawals are permitted from IRAs at age 59½. On the one hand, this would mitigate the problem for those over this age who wish to retire partially on a job held for many years, allowing them to supplement their incomes with partial pension benefits. On the other hand, making lump sum withdrawals available at age 59½ for holders of 401(k) plans might encourage retirements by those with high-time preference rates at age 59½. Allowing lump sum payouts at earlier ages would have analogous effects.

8.7 Changes in Social Security and Pension Regulations Are Likely To Be More Effective than Labor Market Policies in Influencing Retirement and Employment by Older Workers

Given the role of certain government policies in causing or contributing to outcomes of concern, changing those policies may help to alleviate the problems. Certainly changing Social Security and pension policies are likely to be most effective in raising the age of retirement, and many of these policy changes have no up front costs.

Raising the early entitlement age for benefits above the current age of 62 is one obvious change in Social Security that would delay retirements (Gustman and Steinmeier forthcoming).³³ By itself, given the actuarial structure of Social Security benefits, it would also be necessary to raise the normal retirement age if large financial benefits are to be realized. An increase in normal retirement age is equivalent in its effect to reducing the rate of increase in benefit growth, as proposed by the President's Commission to Save Social Security (2002). Some other benefit changes proposed by the Commission; e.g., increasing the actuarial reward to postponed retirement, would also encourage later retirements. While there are additional costs, these costs would not be realized for many years. These changes could also be viewed as eliminating or repairing flawed policies that exacerbate the adverse effects of the baby boom on social insurance programs.

Similarly, pension policies could be changed to allow payment of benefits to those who retired from a pension plan but continued to work on their pension-covered job on a part-time basis (Penner, Perun, and Steuerle 2002). However, even if new part-time positions were created, one must ask how many new partial retirees would come from the ranks of those who otherwise would continue to work full-time, rather than from those who would otherwise retire?

Analogously, if the age of eligibility under Medicare is shown to have encouraged earlier retirement (current evidence is ambiguous on this issue), that age could be increased to accord with the extension of the Social Security normal retirement age.³⁴ Some of the unwanted side effects of these policy changes could be dealt with by the Disability Insurance (DI) and Supplemental Security Income (SSI) Programs.

This still leaves us very short of reasons to turn to labor market policies to remedy perceived defects in our social insurance programs. It remains unsupported that a policy mistake

is best remedied by adopting another completely unrelated policy that may have unforeseen consequences, rather than remedying the inappropriate policy in the first place. It will take a great deal of new evidence to establish that if Social Security provides encouragement to leave the labor force at too young an age, these distortions should be fixed by adopting a massive set of new labor market programs.

8.8 The Potential Failure of the Insurance Market May Provide a Justification for Government Intervention to Support Older Persons Against Bad Outcomes from Random Events

The argument made in the previous section—that unforeseen adverse events, or events with known distributions once realized may adversely affect older workers—remains a central concern. Those experiencing layoff, other unemployment, loss of expected pension, and other adverse, unexpected events may be covered by current government programs. But the cost of the adverse event may in some instances be greater for the older worker. Moreover, with a shorter remaining worklife, older individuals are less able to adjust labor force activity and saving to offset the adverse event. For example, those who lose their jobs before reaching their expected retirement age may have great difficulty in securing new employment. For similar reasons, they will find training less available than will younger workers. This suggests that with the aging of the workforce, it would be possible to aim additional resources at current programs due to the expected future increase in burden from older workers.

8.9 The Current Menu of Labor Market Policies Does Have Some Well Known Problems

The current menu of labor market policies—those not specifically targeted on older workers—is not free from controversy. The effects of these programs depend on complex adjustments in the labor market to the perceived problem and on the labor market adjustments the programs themselves induce. Debates continue about the effects of Unemployment Insurance on unemployment, the cost effectiveness of job training programs (at least within some narrow population groups), and about the effectiveness of other programs. For many of these programs, analytical tools or statistical indicators are still not adequate to determine with certainty whether the benefits from the programs outweigh the costs. In some cases, there are questions about whether the programs meet their stated purposes at all. Nevertheless, there is an extensive literature dealing with each of these programs, and our charge is to focus on issues of special interest to older workers.

Aside from resolving outstanding questions with regard to labor market programs, there is another task suggested by ETA's potential interest in older workers. The nature of the employment relation, the benefits of training, the calculation of the value of job search, and many other relevant calculations will be different between older and younger workers. In some cases, these differences will be large enough to justify separate analyses of the likely effects of current and contemplated policies on older workers. This will require an extension of ETA's evaluation efforts. It is also plausible that in a number of cases, it might be beneficial to modify general labor market policies as they apply to older workers, although this effort would have to

be carefully designed to avoid any adverse impact on older workers consistent with age discrimination.

It is beyond the scope of this report to reevaluate DOL's ongoing programs to identify any differential impact on older individuals and to suggest changes in policy design. However, this would be a worthwhile research and evaluation effort for ETA to undertake.

8.10 Other Motivations for Labor Market Policies

Of course, some policy interventions are not remedies for market failure or adopted to offset unpleasant side effects of other policies. They are designed to redistribute income. The purpose of the social safety net is to limit instances of poverty. Some older individuals were very poorly prepared for the labor market to begin with, having a poor educational experience due to low levels of school quality in low-income areas, the influence of family background when parents were not well educated, and other factors. To remedy poverty in retirement for those who were poor during their working lives, we would argue that there must be a very specific reason for adopting a labor market policy rather than modifying tax, transfer, or social insurance programs. Moreover if redistribution is the goal, the older the individual, the harder it is to justify choosing a labor market policy over one of these social insurance alternatives.

Other goals, such as improving the finances of Social Security, will require more than simply postponing the retirement age. With benefits adjusted on an actuarially fair, or better than actuarially fair basis, postponing retirement by itself will not reduce Social Security's benefit obligation. Differential tax contributions by those who have already worked the required 35 years aside, when we say that raising the retirement age will help the finances of the Social Security system, much of the assumed benefit is due to an implicit reduction in benefits thought to accompany the increase in the retirement age, where each 1 year increase in retirement age would be associated with a 7 percent or slightly greater benefit reduction at the current normal retirement age.

9.0 Further Complications for Labor Market Policies

9.1 Target Efficiency Is a Major Issue in Designing Labor Market Policies for Older Workers

When one considers adopting public policies, a fundamental issue is target efficiency. Consider market failure in the insurance market. Older persons may know they face some probability of experiencing an adverse event, and they may wish to insure against it. If the major adverse events facing older workers are ill health, job loss, wage and pension loss, and other work- or home-related adverse events, proper insurance will require the ability to identify those who had an adverse experience due to bad luck and to distinguish them from others who would like to qualify for a payment, subsidized training, or a subsidized job without having experienced the adverse event. Even if there is a problem that might justify policy intervention, such intervention may be impractical if the target population is not easily identified and separated for treatment from those who are not meant to be covered by the policy. In the case of older individuals, it sometimes is very difficult to distinguish those older persons suffering from market failure from others. Indeed, there may be no bright line separating those who have

experienced the adverse event from those who have not, but the adverse experience may differ along a continuum in terms of severity.

There is a prominent literature dealing with the question of separating those who experience adverse events from those who do not. The disability insurance literature has demonstrated the sensitivity of the number of qualifying disabled, not only to the application decision, screening tests, and appeals process, but to the business cycle. There are similar issues with regard to Unemployment Insurance (UI). Unemployment, especially long-term unemployment resulting from involuntary termination, may be a signal of trouble. But in the absence of appropriate job search requirements, older workers who are retiring have the incentive to claim UI benefits as they exit from the labor force (Hamermesh 1980), and many would have the incentive to claim other payments aimed at troubled seniors.

There is a great deal of activity in the labor market for older individuals. Most of it looks bad from the perspective of employment and earnings. Employment, wages, and hours are declining. After decades of attachment to the labor market, careers are being terminated. But in the vast majority of cases, this is not the result of some market failure. It is a change that has been foreseen and planned over many years, although more successfully for some than for others. Retirement is a normal part of the lifetime employment cycle. Careers are normally concluded between the ages of 50 and 70.

More fundamentally, when the market is functioning well, we still may find that recent retirees report that they would like to continue working on a full-time or on a part-time basis on the job they have just left. Nevertheless, they happily accepted a lifetime contract at their accustomed wage, often knowing they would be expected to retire at what, given the wage premium on their job, they now consider to be too young an age. This dilemma is addressed by Lazear's theory of the implicit contract which we discussed previously. That theory posits that older individuals are paid more than their productivity at the end of their work years, just as they were paid less than their productivity in the early years of the employment contract. The idea is to provide incentives for the worker to avoid shirking, thus lowering supervision costs for the firm. Thus, despite the unhappiness at the time of retirement, there may be no surprise. The lifetime employment relation reflects a contract voluntarily arrived at by all parties. If Lazear has correctly characterized the long-term contract, a normal signal of labor market distress, a person expressing a wish to continue working after leaving the labor force does not reflect market failure. Similarly, labor market research suggests that many jobs in large firms, for union employers and elsewhere, pay a rent to a worker. Such a worker may wish to continue on the job, but termination of employment is not necessarily a sign of market failure. Nor does the fact that some workers would like to continue working on a full-time or part-time basis at the wage paid near the end of the worklife suggest a need for government training, Unemployment Insurance, job search, or other labor market programs.

Thus, in a market where retirement programs facilitate reduction of labor market activity on a voluntary basis, it is very difficult to identify appropriate targets for employment or wage subsidies, training, or other of the traditional labor market policies. When the vast majority of an age group is leaving long-held jobs voluntarily, it is especially difficult to distinguish instances of market failure from the wave of declining activity sweeping the cohort as its members retire.

A major impediment to the sure and successful application of labor market policies is this difficulty of distinguishing those whose course has been influenced by market failure from the much larger group that is simply following the natural course of labor market activity and withdrawing from the market. In this situation, where most older individuals are not in need of any such assistance, efforts to assist a subgroup on the basis of standard indicators of labor market distress can be enormously difficult to target, and without efficient targeting, can be quite wasteful.

9.2 In the Case of Programs Designed to Redistribute Incomes, in the Case of Senior Citizens, It Is More Difficult to Determine Eligibility for Labor Market Assistance on the Basis of Who Is Economically Disadvantaged

As the baby boomers mature, the number of people in the older population eligible for labor market programs targeted on the disadvantaged will increase. But it is a difficult task to determine who, exactly, is a troubled worker. Although current labor market policies may screen eligible populations based on current income, current income is going to be a less reliable indicator of need for older than for younger people. Those who have left the labor market have zero current earnings, whatever their previous earnings. Those who are in partial retirement jobs have lower current earnings than they had in the past. But most of those with low current earnings will not have been in the bottom part of the income distribution throughout most of their worklives. Incomes, in turn, will also depend on pensions, Social Security benefits, and earnings on assets, and there will be funds to support retirement as assets are cashed in. Thus, by screening on current income, employment services, training, and perhaps even a job might be made available to a person who has had a relatively high lifetime income. Moreover, such persons may have adequate retirement wealth to support themselves through retirement. When eligibility is based on current income, benefits may accrue to many who would not be considered to be economically disadvantaged, were income judged from a lifetime perspective or were pension and nonpension wealth included in the calculation.

There is no easy answer here as to what an appropriate income criterion is. On the one hand, one would not want to provide job services meant for a person who is needy to someone who is voluntarily phasing into retirement after a lifetime of enjoying incomes well above poverty level. On the other hand, one would not want to eliminate from such services an older person who has experienced an adverse event. Thus, a person with a history of high earnings may have used up assets due to an unexpected illness of a spouse. For these reasons, eligibility screening is going to be very complicated in the case of older workers.

9.3 Labor Markets Will Adjust to Mitigate the Effects of Policies Designed to Affect Labor Market Outcomes

It also should be recognized that some market adjustments will mitigate the effects of any labor market policies. This is a problem that will affect policies of large scope and expenditure. If they have a significant effect on market outcomes, the market itself will adjust to at least partially offset the effects of the policy change or to raise the cost of reaching a final goal. For example, if pension regulations pertaining to part-time work and benefit receipt were to be relaxed so that the supply of workers to part-time jobs increased, then wages will be reduced for

those in part-time work mitigating some of the effect of the policy change. Similarly, if the market problem is a shortage of older workers, programs that would provide part-time jobs to older workers may be counterproductive. Government-provided jobs may simply attract some older workers from full-time work or from part-time jobs they would otherwise hold in the private sector. Similarly, training programs reduce the time spent at work.

9.4 The Timing of Expenditures Under Labor Market Policies Will Exacerbate the Government's Cash Flow Problems

Labor market policies are particularly unsuited to the goal of offsetting the adverse financial effects of the retirement of the baby boomers on our social insurance programs. An obvious question is: Why resort to labor market policies that require more up front expenditures to encourage later retirements, when later retirements are desired to reduce up front expenditures? Social Security policies that would delay payment of benefits for a year do not necessarily reduce the present value of benefits paid. But such policies delay payments until the end of the life cycle, thereby improving the government's cash flow over the period of retirement. In contrast, payments for labor market policies that would affect retirement outcomes must all be made up front. The effect is to exacerbate the cash flow problems for Government that have been fostered by the pay-as-you-go Social Security system.

9.5 What Age Defines an Older Worker?

Most of the discussion of the rationale for policies aimed at older workers is not very specific about the age of the target group. The ETA planning document (U.S. DOL/ETA 2003) finds many different break points used to distinguish older from younger workers—ranging from those in their forties to those in their sixties. Before concluding any discussion of policies aimed at older workers and their rationales, it would be useful if ages of concern were defined. The discrimination laws provide special protection to those over age 40. Most retirements do not begin until a person reaches their early fifties. Some discussions concern those who are well past their retirement age and would like to return to the labor market for part-time work. We recognize that if the ages of those adversely affected by a particular market imperfection differ, the ages of the group targeted for policy intervention will differ. Nevertheless, it would help to focus discussions of policy alternatives if a target age were selected by those policymakers who would like to provide special help for older workers, or if there were a different target age specified for different policies.

10.0 How Should Policies Targeted on the Labor Market for Older Workers Be Designed?

10.1 Need To Identify Problems that Can Be Solved on a Cost Effective Basis

A number of tasks face those who believe there is a set of new policies that can effectively address the labor market problems of concern. If the problem is due to a market failure, they should demonstrate the area of concern results from a true market failure, determine the size of the adverse effect of this market failure, formulate a policy that is meant to address the shortcoming in the market, and analyze the likely effects of such a policy by using available

behavioral models, such as those we have described earlier, together with appropriate data. It is also necessary to determine that a program will be target efficient and will not generate massive spillovers to many older workers who are not suffering the effects of the market failure. Also, the policy needs to be sufficiently potent that it generates an acceptable benefit-cost ratio. Moreover, the problem of concern should not be a side effect of another policy that can be remedied through changes in the causal policy. And, of course, there should be no other policies that can remedy the problem at lower cost than that required for a labor market policy.

10.2 As an Example, Consider a Program to Foster Part-Time Jobs for Older Workers

Right now the Employment and Training Administration (ETA) offers a very modest program for older workers called the Senior Community Service Employment Program (SCSEP). It essentially is a program providing 100,000 part-time jobs. To participate in the program one must have an income below poverty level. The Department of Labor thinks of this as an economic program that provides some social benefits rather than as an antipoverty program. Whether or not this program is cost effective—evaluations have yet to be done—it is much too small to have a significant effect on the labor market for older workers.

To structure our discussion, suppose that neither Social Security nor pensions account for what is demonstrated to be a clear short fall in the number of part-time positions at each specified wage. Suppose researchers identify some real impediment to the generation of part-time jobs for older workers, one that they find has substantial effects. Moreover, suppose that it is not a result of real costs, such as fixed costs of work either to the employee or to the employer, or of interdependence in production that requires workers to be present on the job at the same time. Further suppose that the market failure at the heart of this undesired outcome falls directly within the purview of the ETA; for example, it is decided that ETA should provide part-time jobs for older workers who prematurely lost a long-term job due to the business cycle or pressures from new international trade agreements. A next step, which may turn out to be a monumental task, is to identify those employees who are most affected by whatever market failure is found, and to distinguish them from the many individuals who would accept a subsidized part-time job if it were offered, but would have left their full-time job at this time in any case, and thus are not adversely affected by these sources of market failure.

Finally, one must determine whether whatever employment and training policy is proposed will be cost effective. For example, simply creating more part-time jobs for seniors, as discussed by the Committee for Economic Development (1999), may have ambiguous effects. While some who would otherwise leave the labor market may be encouraged to work, once part-time employment is more readily available, others will be encouraged to leave full-time work sooner than they might otherwise do so. Moreover, as noted, the jobs vacated by seniors to move into specially created jobs may not be filled by other seniors, but by other workers who desire part-time jobs. This would dampen any job creation efforts.

10.3 What Can We Learn from the Health and Retirement Study that Will Help in the Design of Policy?

It is a major challenge to fully understand the likely effects of policies aimed at older workers. Our review of the retirement literature has shown that one must understand all of the

forces shaping the retirement decision before one can hope to design policies that would reshape retirement outcomes. Once a fully specified model is available, policies can be simulated. New methodologies are being developed that will help with this task. Longitudinal data sets are available to provide an empirical basis for modeling key aspects of retirement behavior, the influence of institutions on work and retirement, and to represent the effects of a number of policies. These tools will also facilitate the planning process.

All of the basic relationships discussed above are reported in the Health and Retirement Study (HRS).³⁵ Thus the HRS data contain complete work histories, both from respondent self-reports and from attached Social Security earnings histories. A great deal of information is collected on incentives that the firm uses to encourage earlier retirement. These have been described previously. There is some information on the education and experience required for different jobs.³⁶ In addition, the respondent is closely questioned about attitudes toward older workers on their job, whether the job is becoming more difficult for the respondent to perform over time, whether the firm has policies to accommodate older workers, whether there have been layoffs, as well as specific questions about own disabilities, illnesses, accommodations for them at work, health benefit coverage, and related firm policies. Some descriptive statistics on these variables are reported in table 6. There also is direct information on the possibilities for reducing hours of work, whether the individual is employed as a consultant on the job, desires for part-time work, searches for other employment, detailed reasons for leaving a long-term employer, reservation wages for returning to work, and other actual and desired outcomes.³⁷ Information about health status concerns both detailed information about specific diseases as well as ADLs (Activities of Daily Living) and IADLs (Instrumental Activities of Daily Living), indices of ability to perform a number of specified tasks. Moreover, during the first 12 years of the study, detailed information has been collected on plans for retirement, pension expectations, and other anticipated factors that may or may not correspond to the realizations observed in the data. Haider and Loughran (2001) provide descriptive statistics on some of these variables. Detailed descriptions of the data on the HRS are provided in Juster and Suzman (1995) and in the articles in the special issue of *Journal of Human Resources* where Juster and Suzman appears.

John Abowd is leading a Census Bureau project providing panel data on firm employment histories. These firm-level data can be merged with HRS data to provide a data set capable of analyzing both demand and supply side policies, providing special insight into the relation between labor market dynamics and outcomes for older workers.

10.4 Econometric Models Can Be Used to Test Suggested Policies for the Labor Market for Older Workers

Very sophisticated econometric models have been used to evaluate many ETA policies. The work on employment and training programs by Nobel Prize winner James Heckman and his colleagues is world-renowned. The analyses of Unemployment Insurance Programs and related alternatives have made excellent use of behavioral models and careful econometric design. In the case of older workers, structural models have been constructed to isolate the effects of Social Security, disability and proposed innovations, pension policies, and changes in labor market regulations. Once estimated, these models can be used to simulate the effects of various proposed policies before these policies are put in place. They can help to target the areas where there is

market failure and where policies can be most efficient. These simulations can also be used to analyze policies aimed at redistribution.

Although the models are available, there is very little work exploring the potential effects of labor market policies for older workers. This type of work could provide a baseline for identifying policies that would be effective in remedying various types of market failure, of determining the affected population, and for identifying the major pitfalls that a particular policy will face. For example, retirement models such as those discussed in section 6.3 could be used to determine the relevant number of individuals who would work part-time should restrictions on pension payouts to part-time workers be relaxed. Similarly, it would be possible to estimate the likely effects of relaxing the Social Security earnings test for work between 62 and normal retirement age.

10.5 Experience in Other Countries Can Be Informative

It is beyond the scope of this report to conduct a survey of experiences with various types of programs in other countries. However, our understanding is that a wide variety of labor market programs have been aimed at older workers in other countries. One program, for example, mandates that workers, once employed, should be allowed to reduce their workweek with no reduction in their rate of pay. France has a long experience with job sharing. A survey of foreign experience can be informative about both the strengths and pitfalls of such programs.

A very useful cross-country analysis of demographic differences and implications for retirement programs is provided by Schieber and Nyce (2004).

11.0 Recommendations for ETA

There is a sharp contrast between the rhetoric used to describe problems facing older workers in the labor market and the very modest list of specific programs discussed in the ETA planning document (U.S. DOL/ETA 2003). The problems cited as justifying major expansions in ETA programs are of very wide scope, reflecting economy-wide trends such as retirement of the baby boomers and related financial problems for Social Security and the labor market. The list of activities cited under the title “Draft Proposed Older Worker Strategy Investments” (U.S. DOL/ETA 2003) is very modest. Perhaps \$5 million or \$6 million in expenditures are suggested.

Because there would have been no need to commission the present document to justify the very narrow list of programs in the ETA planning document, the following suggestions for ETA assume that broader policy initiatives are under consideration (Poulos and Nightingale 1997, a paper prepared for the Employment and Training Administration). Thus, we take the discussion of economy-wide issues to mean that economy-wide solutions are being contemplated.

- There are major issues facing any large program ETA might institute to address problems arising from the retirement of the baby boomers. A broad-based effort to introduce new labor market policies aimed at mitigating the labor market effects of demographic trends is in our judgment likely to be expensive, to have only minor effects on the course of outcomes in the labor market, to be very difficult to target

efficiently, to have a low benefit-cost ratio among targeted workers, and to exacerbate the flow of funds problems facing the Federal Government as the baby boomers retire.

- Some additional labor market policies for older workers might be justified as remedies for market failures. Failure in the insurance market may justify programs aimed at older workers who experience adverse events but who were unable to insure against them. As ETA's planning document recognizes, some potential areas of market failure worthy of greater scrutiny include the effects of imperfect information by workers and firms, difficulties facing individuals in planning for retirement, and identifying and helping those who are victims of age discrimination.

But caution is required here, also. Market failure is not the cause of many of the outcomes in the market for older workers that are perceived to be undesirable. Moreover, many labor market policies crafted to meet particular market failures will not provide cost effective remedies. A major problem faces targeted policies. It is going to be very difficult to distinguish appropriate subjects for policy intervention from the flood of retirees who are reducing their labor market activities.

- All policy initiatives should be coordinated with other agencies. In many cases, other agencies have more powerful policy tools for affecting outcomes in the labor market for older workers that are of interest to ETA. Retirement incentives and availability of part-time opportunities are influenced by current law, the policies of the Social Security Administration, the Employee Benefits Security Administration, and Internal Revenue Service. On the other hand, it is useful for ETA to identify policies of other agencies that are causing undesired side effects and work with these agencies to change those policies. It would be useful for older workers to have a sophisticated advocate within the policy establishment that is focused on how the policies of these and other agencies affect employment and retirement of older workers.
- Older workers with short remaining periods of employment are vulnerable to unannounced changes in their implicit employment contracts. However, it is unlikely that ETA can distinguish those older employees whose implicit contracts have been violated from those whose implicit contracts have not been changed. There also appears to be little room for effective policy intervention by ETA to help older workers who remain on their long-term job, but under less favorable conditions than they were led to expect. These issues may be further explored, but given the current state of knowledge, they should not be used as a basis for new policy initiatives.
- Only a sophisticated and targeted approach to policy design has a chance of working in this market. Therefore, ETA must understand the operation of this complex market. It must also document the market imperfections and failures that lead to adverse outcomes, as well as the major pitfalls facing many well-meaning policy initiatives. This will require an internal and external research effort. Cooperation is recommended with research efforts on the Economics of Aging at the National Institute on Aging, the Social Security Administration through its research arm and

through its Retirement Research Centers, and the Employee Benefits Security Administration—the leading agencies supporting this research.

- ETA should become involved in the use and development of state-of-the-art data sets examining the labor market behavior of older workers. The leading data set of this type is the Health and Retirement Study. Refocusing some questions on labor market issues will allow ETA to shape the course of research on older workers toward behavioral and policy issues of direct relevance to ETA. The effort at the Census Bureau to match data on firms and their employees should be investigated for relevance to ETA interests. Some of the benefit consulting firms, e.g., Watson Wyatt World Wide, have personnel data from large numbers of firms. It would be useful to foster cooperation to allow investigation of issues related to employment and training at the firms in their data bases. In addition, there is a need for other detailed data with sample sizes large enough for analysis of population and employment of older workers by narrow population group, industry, occupation, and geographical area. Samples based on households are readily available. What is missing is data that will allow firm policies to be analyzed. Such data can be used to project likely populations at risk, as well as behavioral responses to policy changes.

We strongly recommend that careful analyses of the need for particular policies and their likely effects should be pursued before adopting new policy designs and implementations for older individuals. Use of econometric modeling with modern longitudinal data sets can help avoid a number of costly mistakes and can point the way to policy designs that are most likely to be effective at acceptable cost-benefit ratios.

It would be possible to use these data sets together with retirement models to ask questions such as: What would be the change in partial retirement if firms were in a position to relax constraints on partial retirement on main jobs? Knowing the relevant population at risk would help to estimate the likely effects of policy changes such as allowing pensions to be paid to partial retirees on pension covered jobs.

- A wide array of current labor market programs provided by DOL apply to older as well as to younger persons. Descriptive data in U.S. DOL/ETA (2003) suggest older workers exhibit different outcomes in many of these programs, but there is little analysis of the underlying mechanisms. When designing Unemployment Insurance, job search, and training programs, it is useful to consider explicitly the different effects of current DOL programs on older versus younger workers and to consider whether these programs may be designed differently for those in different age groups. ETA may play a leading role in this effort.
- Evaluation is going to be a major challenge. If evaluations are going to be valid, it will be important to select valid control groups. For relatively modest programs, there is no need to worry about market-wide impact of the policies. If the market failure affects a large number of workers, there are going to be market consequences, and evaluation must take the market mechanism into account. That will complicate the

problems of selecting an adequate control group. For larger programs, such as those that would change the early retirement age or make a significant dent in the availability of part-time work, evaluation must be based on fully functioning models of the labor market for older workers and of retirement behavior.

Endnotes

¹ In addition to the aging of the baby boomers and longer life expectancies, a list of reasons for ETA to rethink its labor market policies for older workers presented in Employment and Training Administration (2003) includes technological changes, declining birth rates, growing immigration, growing pressures on public and personal resources, and inadequate retirement saving.

² According to the *Annual Statistical Supplement of the Social Security Bulletin* (2002) over 35 million jobs are filled by workers over 50, and 12 million by workers over 60. The number of workers older than age 50 employed in 1999, by age, in millions, are as follows: 50 to 54, 13.4; 55 to 59, 9.4; 60 to 61, 2.8; 62 to 64, 3.1; 65 to 69, 3.1; 70 to 71, 0.8; 72 and older, 2.1.

³ For additional discussion, see Friedberg (1999).

⁴ These models may be modified to incorporate nonmaximizing behavior, where individuals have imperfect knowledge or understanding of incentives, are unwilling to make hard tradeoffs in the short run and defer saving or other unpleasant tasks to a future date which is consistently postponed. There are analogous models in which individuals do not react to various risks in the simple manner visualized by many models.

⁵ This overview of the retirement literature is reproduced with some changes from a document prepared by Alan Gustman for the National Institute on Aging under the title: "Story of Discovery: Econometric Estimates of Life Cycle Models of Retirement," 2003.

⁶ Neumark and Stock (1999) nevertheless conclude that age discrimination laws encourage implicit contracts that are terminated through adoption of enhanced incentives from pensions.

⁷ In Gustman and Steinmeier (1984) it was found that almost a fifth of those between 65 and 69 were partially retired, with roughly a sixth of those who were partially retired having partially retired on a long-term job held in prime age. In the 1994 HRS, roughly 30 percent of employees reported that not counting overtime, they could reduce their hours of work in their regular work schedule.

⁸ There are many case studies reporting employers who have positive perceptions about hiring older workers. For example, see "They Don't Retire Them, They Hire Them."

<http://www.workforce.com/section/06/feature/23/56/56/index.html>.

⁹ To the extent that child bearing raises health insurance costs for younger women, there may be less of a difference in health insurance costs for older women compared to younger women than for older men compared to younger men.

¹⁰ As noted earlier, an increase in the supply of opportunities for part-time work will not necessarily increase total time at work by older individuals. Currently, some of those who cannot obtain part-time employment on their main job instead postpone the date of retirement from full-time work. After working longer on a full-time basis, they then retire directly from full-time work without engaging in any part-time employment. Thus, should the Employment and Training Administration decide to increase the number of part-time jobs, they may not increase total employment before retirement. Even though they might prolong the age of retirement, defined as age of exit from the labor force, the net effect may not be to increase total hours worked over the lifetime. Even if such programs are effective in increasing total hours worked over the lifetime, it would still be necessary to weigh the costs of job creation against the additional product and other benefits from employment to determine the worth of such a program.

¹¹ Rules affecting retiree health insurance cut two ways. These rules require firms to provide health insurance to all full-time workers on the same basis, but they leave the firm free to deny health insurance to part-time workers, even if full-time workers have this benefit. The effect is to discourage an older worker from switching from full-time to part-time work. On the other hand, such rules encourage firms to hire older workers on a part-time rather than full-time basis. As noted above, to the extent that health insurance is provided on an all or nothing basis, and the wage cannot be reduced to compensate, that will discourage offers of part-time jobs by the firm.

¹² Most of those who were in their sixties at the turn of the century typically were covered by defined benefit plans. 401(k) plans began to spread in the mid- to late 1980s, so by the year 2000, most only had a decade or a little more to accumulate balances in those plans. Even today, half of those in the HRS sample who are at work and with a pension are covered by a defined benefit plan.

¹³ For example, see the arguments in Thaler (1994).

¹⁴ For example, Blinder, Gordon, and Wise (1980) find a disconnect between the actual incentives created by Social Security and what they perceive as the popular understanding of the rules.

¹⁵ Bernheim (1988, 1989, 1990) examines the reasons for divergence between retirement expectations and realizations. See also Disney and Tanner (1999).

¹⁶ Bernheim (1994), when discussing public policies to raise economic literacy and information so as to encourage saving, noted the importance of having the Social Security Administration mail financial statements to covered individuals. Such a program has since been adopted. The Social Security Administration has also made available a retirement planner on their web site. Similarly, the U.S. Department of Labor is engaged in a number of efforts to understand the extent of the information problem, and to increase participant information about pensions and about the need for retirement saving.

¹⁷ There is little systematic evidence on the efficacy of these and related programs instituted by the Social Security Administration and by the Department of Labor.

¹⁸ Additional evidence that most families have prepared adequately for retirement is presented in a literature review by the Congressional Budget Office (2003). Nevertheless, what is an adequate replacement rate remains a disputed issue, partly because there are different definitions of adequacy. For example, Moore and Mitchell (2000) find that to replace 100 percent of preretirement consumption, a number of HRS families on the verge of retirement would have to engage in very high rates of saving. To be sure, the closer one is to retirement age, the harder it is going to be to make up any gap, even one that would have required only a modest increment saving from a young age. However, some would argue that 100 percent replacement rate is too high, especially with children out of the home. Consequently, adequacy is in part in the eye of the beholder. A similar debate concerns the reasons for the decline in consumption that many experience just after retirement.

¹⁹ There is no behavioral mechanism forcing individuals to be well informed about the need for retirement saving. The survivor principle provides a strong justification for expecting firms in competitive industries to behave as rational profit maximizers. The idea is that adoption of nonmaximizing behavior will eventually cause bankruptcy or take-over, so that those who continue in business, the survivors, are selected to be those who adopt an efficient paradigm. The same is not true for individuals. Unlike firms, individuals are not subject to the survivor principle. A person who does not plan well for retirement does not face exit from the market. Rather, he or she will have fewer resources to support consumption in retirement, and may perhaps work longer than contemporaries who do a better job of planning. Thus, for any given level of lifetime earnings, there is a wide distribution of wealth (Venti and Wise 1999).

²⁰ Hyperbolic discounting, as posited by Laibson (1997), is a behaviour in which there is a very high discount rate between the current period and the next. From the next period on into the future, discounting occurs at more modest rates. But as time moves on, the very high discount rate then applies to the next period after the current one. Thus, there is a much lower discount rate between say 2005 and 2006 if one is viewing the tradeoff from the perspective (base period) of 2003 than if one is viewing the tradeoff from the perspective (base period) of 2005. This model has been used to explain the simultaneous holding of credit card debt and assets, excess sensitivity of consumption to income, and other seeming anomalies not explained by the standard life cycle model. Not only will very different behaviors result, but "sophisticated" hyperbolic discounters will choose institutions, such as pensions, that prevent them from behaving like hyperbolic discounters in future years.

²¹ See Gustman, Mitchell and Steinmeier (1994) for a review of the firm's motivation for offering pensions.

²² Neumark (2001) surveys the literature on age discrimination. The author describes the many motivations for age discrimination and the forms that age discrimination has taken. The author's evidence is persuasive that certain types of age discrimination exist. The author also discusses the difficulties in trying to measure the extent of age discrimination in each of the forms that it takes.

²³ In terms of the case study literature, Barth (2000) suggests that while older workers have a number of strengths relative to younger workers, they are weaker on just those traits that employers value most, including flexibility, adaptability to change, and capacity to exercise independent judgment. To the extent that these factors affect

productivity, differential treatment of older workers on account of demonstrated differences in contributions to output would not involve age discrimination per se, but would be based on productivity. It is difficult to determine the extent to which these judgments are based on unfounded impressions as opposed to representing a true reflection of actual productivity. A measure of true discrimination should reflect differences in treatment of older workers that are not related to differences in their productivity.

²⁴ A policy and legal debate currently rages as to whether cash balance plans involve age discrimination.

²⁵ Most simulation models used for policy analysis focus on adjustments made on the supply side of the market. For a review of the major models, see a paper prepared by Anderson for the Society of Actuaries (Anderson 2001).

²⁶ Of course, the implicit contract is just that: an implicit arrangement. With employment-at-will, firms remain free to break such a contract. The notable exception is when, for example, in the case of retiree health insurance, the firm made the promise of a future benefit explicit.

²⁷ Efforts to pre-fund Social Security and Medicare Programs have been either inadequate or nonexistent. Instead, these programs have functioned on a pay-as-you-go basis, with small trust funds that cannot cope with the increasing costs from the retirement of the baby boomers. Social Security and Medicare cannot deliver promised benefits without undergoing major changes in their structure or funding. Where the financial structure of a program has been poorly designed, and the retirement of the baby boomers stretch the finances of the program to the breaking point—policy redesign is inevitable. There also is concern about the financial status of defined benefit pensions and pension insurance.

²⁸ Delaying retirement would also result in additional payroll tax contributions. But that would provide only modest rather than major relief for the old age insurance programs.

²⁹ According to the ETA planning document (U.S. DOL/ETA 2003), “8.6 percent of all exiters in the regular Dislocated Workers Program were older workers, and 13.5 percent of National Emergency Grant participants were older workers. Among UI claimants in 2001, 12.7 percent were aged 55 and over. In 2001 older workers represented 8.3 percent of those registered with the Employment Service; the number of older registrants totaled over 1.5 million in 2001. During the last year of JTPA, approximately 36,000 older workers were served. Under WIA in 2000, 17,500 workers were served.” (p. 3). Overall statistics on older worker participation are summarized in section 7.0 of that document.

³⁰ It also may be argued that there are two types of human capital: leisure human capital (e.g., from investment that has developed skills in playing golf) and work human capital. Presumably, the returns to these two types of human capital are equated, and any movement away from this equilibrium reduces welfare.

³¹ Thus the inability to generate a return to human capital should an individual stop working is a fundamental reason why young people cannot obtain private sector loans to finance higher education and consumption in school based on their higher prospective earnings from investment in human capital. It is why the government must play such a prominent role in guaranteeing such loans. To realize the higher earnings resulting from investment in human capital requires not only that the investment is made, but also that the individual provides the required labor which will bring the human capital to the production process.

³² Other features of Social Security, such as better than actuarially fair adjustments when one first becomes eligible for Social Security benefits, may encourage delayed claiming of benefits (Gustman and Steinmeier 2001/2002), but not necessarily encourage a longer work life. On the other hand, automatic benefit recomputation, where as one works, years of higher earnings may replace years of lower earnings in the calculation of Average Indexed Monthly Earnings, may encourage some to postpone retirement.

³³ Raising the Social Security early retirement age would create additional pressures on the Disability Insurance (DI) Program to support those in ill health at age 62. However, it is possible to bound the effects that changes in disability insurance participation might have should the age of early retirement be increased from say 62 to 64. To do this, first consider the number of men who enter the disability rolls at each age, as given by the *Annual Statistical Supplement to the Social Security Bulletin* for 2000 and 2001, table 6A4:

<u>Age</u>	<u>1999</u>	<u>2000</u>
55	16,500	13,300
56	13,400	14,100
57	14,800	15,800
58	13,100	12,300
59	15,700	13,800

60	14,300	14,600
61	15,500	15,400
62	13,500	13,900
63	7,300	9,000
64	7,200	6,900

It is important to note that these entries are individuals, not thousands or millions of individuals. In both years, the number of new disability beneficiaries appears to be about 15,000 individuals at each age between 55 and 61. The trend of these numbers by age up to and including 61 appears to be relatively flat; there certainly does not appear to be any evidence that the number of awards is increasing precipitously as the Social Security early entitlement age approaches. After the attainment of the early entitlement age, there appears to be a slight tail-off of awards, on the order of perhaps 1,500 at age 62, and a further tail-off of 7,000 to 8,000 at ages 63 and 64. Since the relevant population is about 925,000 per year of age, these figures amount to 0.16 percent at age 62 and 0.81 percent at age 63.

³⁴ It can be argued that raising the age of eligibility for Medicare might also increase the DI roles. In addition, raising the age of eligibility for Medicare may encourage full-time work by some who would otherwise work part time, in that full-time work would allow them to obtain health insurance benefits.

³⁵ Other sources of longitudinal data pertaining to the labor market for older workers are available, including the National Longitudinal Surveys, the Survey on Income and Program Participation, and the Panel Study on Income Dynamics. The Social Security Administration has a simulation model based on a set of reduced form equations that they use to understand the distributional effects of their current programs and proposed changes in Social Security on the operation of the labor market for older workers, but the model is not very well suited for analyzing changes in behavior, or the long-run implications of policy changes for incomes in retirement. The National Institute on Aging is continuing to support the HRS, and has an extensive research program to better understand the operation of the labor market for older workers and the effects of policies on those in this market. The Census Bureau has been merging data on individuals and firms, including some descriptions of pensions and their incentives which they obtain by merging their data with data from the Labor Department's Form 5500 data file.

³⁶ Specifically, there is a question that asks: G105a. (For someone with this much formal schooling) About how much experience do you think it would take to become good at your job?

³⁷ Specific information collected includes the following. Using question numbers from wave 1 of the HRS, we have: F4, industry; F5 and F6, occupation; F10, weeks usually worked; F17, could you reduce the number of hours in your regular work schedule?; F19, If you wanted to work half time or less on this job, would your employer allow you to do that? Would your pay be cut in proportion to your hours, more or less? Would your health insurance be reduced? Would your pension eligibility be affected? Additional information is also collected pertaining to demands of the job. Does the job require: F82a, lots of physical effort?; F82b, heavy lifting?; F82c, stooping, kneeling and crouching?; F82e, intense concentration; F82g, work with computers?; F82h, analyze data or information?; F82j, keep up with the pace set by others?; F82m, require that I learn new things?; F82p, I have a lot of freedom on my job. My job requires: F83b, me to do more difficult things than it used to?; F83c, a very good memory?; F83d, involves a lot of stress?; F85c, In decisions about promotion, my employer gives younger people preference over older people. F85d, My coworkers make older workers feel that they ought to retire before age 65. F85e, My employer would let older workers move to a less demanding job with less pay if they wanted to. These questions were updated for those continuing work in wave 4 and wave 5, and were updated upon job change. New questions were also added in later waves, inquiring about whether the firm was downsizing, for example. Among those who left their last job, respondents are asked why they left (business closed, laid off, poor health, family care, better job, quit, retired). In H43 and H44, there are a series of questions detailing the specifics of early out windows. Finally, in section J, those with current disabilities are asked whether their employer accommodates the disability.

Appendix A: Tables

Table 1. Percentage Not Retired By Sex, Race, and Ethnicity in the Health and Retirement Study

	Retirement status is self reported			Retirement status is based on usual hours per year																																												
	Wave 1 1992		Wave 4 1998	Change	Wave 1 1992		Wave 4 1998	Change																																								
	All	Males	Females	All whites	White males	White females	All blacks	Black males	Black females	All Hispanics	Hispanic males	Hispanic females																																				
71.5	77.1	66.6	72.4	78.0	67.4	66.0	67.6	64.9	67.9	78.6	58.8	42.3	-30.3	-27.9	-30.3	-31.3	-29.0	-24.7	-25.5	-24.1	-24.5	-26.2	-22.3	60.1	72.2	49.6	61.6	74.3	50.4	53.2	58.7	49.2	50.2	65.7	37.0	40.0	-20.1	-22.8	-17.1	-21.3	-24.6	-17.9	-16.5	-15.2	-16.6	-12.6	-14.7	-9.8

Note: Not retired is defined as those working 1,200 hours or more per year.

Source: Gustman and Steinmeier (2000a).

Table 2. Alternative Definitions of Retirement

Retirement definition	Retirement status		
	<i>Not retired (F)</i>	<i>Partially retired (P)</i>	<i>Completely retired (R)</i>
Self reported	Self explanatory	Self explanatory	Self explanatory
Usual hours/weeks	25+ hours	1-24 hours	Not employed
Usual hours/year	1200+ hours	1-1199 hours	Not employed
Left 10+ year job	Still in 10+ year job held after age 45	Working in another job	Not employed
Left 20+ year job	Still in 20+ year job held after age 45	Working in another job	Not employed
Hourly wage	Usual wage 60%+ Of maximum	Usual wage <60% Of maximum	Not employed
Weekly earnings	Usual earnings 60%+ Of maximum	Usual earnings <60% Of maximum	Not employed
Social Security receipt	Not receiving social security	Not relevant	Receiving social security

Source: Gustman and Steinmeier, 2000a.

**Table 3. Retirement Outcomes By Wave Under Alternative Definitions of Retirement
(Percent of Sample in Each Retirement Status)**

Retirement measure	Retirement status									Sample size with complete data	
	Not retired (F)			Partially retired (P)			Completely retired (R)				
	Wave 1 1992	Wave 4 1998	Change	Wave 1 1992	Wave 4 1998	Change	Wave 1 1992	Wave 4 1998	Change	Wave 1 1992	Wave 4 1998
Self reported	71.5	42.3	-29.2	6.3	12.7	6.4	12.3	27.3	15.0	9297	7307
Usual hours/weeks	61.9	41.0	-20.9	7.0	9.9	2.9	31.1	49.0	17.9	9297	7266
Usual hours/year	60.1	40.0	-20.1	8.1	10.6	2.5	31.8	49.4	17.6	9297	7221
Left 10+ year job	59.9	28.4	-31.5	21.7	26.0	4.3	18.3	45.6	27.3	5204	3612
Left 20+ year job	63.8	27.6	-36.2	17.9	23.6	5.7	18.2	48.8	30.6	2720	1825
Hourly wage	57.7	35.9	-21.8	9.9	11.8	1.9	32.3	52.3	20.0	9172	6795
Weekly earnings	56.1	33.1	-23.0	11.5	14.5	3.0	32.3	52.3	20.0	9172	6795
Social Security receipt	94.9	60.0	-34.9	n.a.	.n.a.	n.a.	5.1	40.0	34.9	9226	7265

Note: Definitions of retirement outcomes are presented in table 2. Sample exclusions for each table and wave are reported in appendix 1. All results are weighted using the weights from wave 1. Percentages not retired, partially retired, and fully retired do not sum to 1.0 due to inclusion of those answering not relevant in the population base.

Source: Gustman and Steinmeier (2000a).

Table 4. Retirement Transitions Between Adjoining Waves, Self-Reported Data

Final state	Initial state				Row total
	Not retired	Partially retired	Completely retired	Question not relevant	
Frequency of indicated transition					
Not retired	0.488	0.018	0.005	0.018	0.529
Partially retired	0.052	0.043	0.015	0.005	0.115
Completely retired	0.061	0.024	0.129	0.022	0.236
Question not relevant	0.028	0.009	0.033	0.050	0.120
Column total	0.629	0.094	0.182	0.095	1.000
Entry rates from indicated initial states					
Not retired	0.922	0.034	0.009	0.034	1.000
Partially retired	0.452	0.374	0.130	0.043	1.000
Completely retired	0.258	0.102	0.547	0.093	1.000
Question not relevant	0.233	0.075	0.275	0.417	1.000
Exit rates into indicated final states					
Not retired	0.776	0.191	0.027	0.189	
Partially retired	0.083	0.457	0.082	0.053	
Completely retired	0.097	0.255	0.709	0.232	
Question not relevant	0.045	0.096	0.181	0.526	
Column total	1.000	1.000	1.000	1.000	

Source: Gustman and Steinmeier, 2000a

**Table 5. Most Common Self-Reported Retirement Sequences
(Percentage of Respondents Who Reported in Each Wave)**

Rank	Sequence	Frequency	Rank	Sequence	Frequency	Rank	Sequence	Frequency
1	FFFF	35.43%	19	FPRR	0.80%	37	PPPR	0.36%
2	FFFR	5.44	20	PRRR	0.70	38	RXXX	0.34
3	RRRR	4.97	21	RRXR	0.68	39	FFPX	0.33
4	FFRR	4.32	22	FXXX	0.68	40	FPFP	0.32
5	FFFP	3.68	23	FFRP	0.65	41	FRRP	0.32
6	FRRR	2.99	24	FPFF	0.62	42	PRRX	0.32
7	FFPP	2.50	25	XRXX	0.62	43	XXRR	0.32
8	XXXX	2.00	26	FFXF	0.55	44	XXRX	0.30
9	RRRX	1.88	27	XRRX	0.53	45	FFXR	0.29
10	FFFX	1.38	28	FPPF	0.49	46	PPFF	0.29
11	FFPR	1.38	29	FPPR	0.49	47	RPRR	0.29
12	FFXX	1.22	30	XRRR	0.49	48	PFPP	0.27
13	PPPP	1.08	31	FXFF	0.49	49	XFRX	0.27
14	FPPP	1.05	32	XFFX	0.43	50	PPFP	0.27
15	XFXX	1.02	33	XFFF	0.40	51	XPXX	0.27
16	FFPF	0.98	34	RRXX	0.40	52	FPRX	0.26
17	FFRX	0.96	35	PPRR	0.39	53	XXXR	0.26
18	FRRX	0.95	36	PFFF	0.37			

Notes:

Self-reported retirement status, HRS 1992 to 1998

F: Not retired

P: Partially retired

R: Completely retired

X: Not relevant

Source: Gustman and Steinmeier, 2000a

**Table 6. Job Requirements, Job Characteristics, and Attitudes
Toward Work of Full-Time HRS Workers**

	Men				Women			
	Almost all or all the time	Most of the time	Some of the time	None or almost none of the time	Almost all or all the time	Most of the time	Some of the time	None or almost none of the time
Job requirements								
Physical demands								
Physical effort	21	20	30	30	21	18	28	33
Heavy lifting	10	10	32	49	8	7	25	60
Stooping	15	15	37	34	11	13	40	36
Good eyesight	46	41	9	4	61	31	5	2
Other Demands								
Concentration	47	38	13	2	52	35	11	2
Dealing w/people	57	27	13	3	70	20	7	3
Computers	14	9	21	55	28	11	17	43
Analyze info.	24	20	22	33	26	17	23	35
Keep up pace	25	24	20	31	38	23	15	24
Repetitive work	30	27	30	13	43	27	23	7
Learn new things	25	27	38	9	29	24	37	10
Freedom to decide	38	37	16	9	35	34	18	13
Friendly work env.	42	45	11	1	49	41	9	1

Source: Gustman, Mitchell and Steinmeier, 1995, table 8.

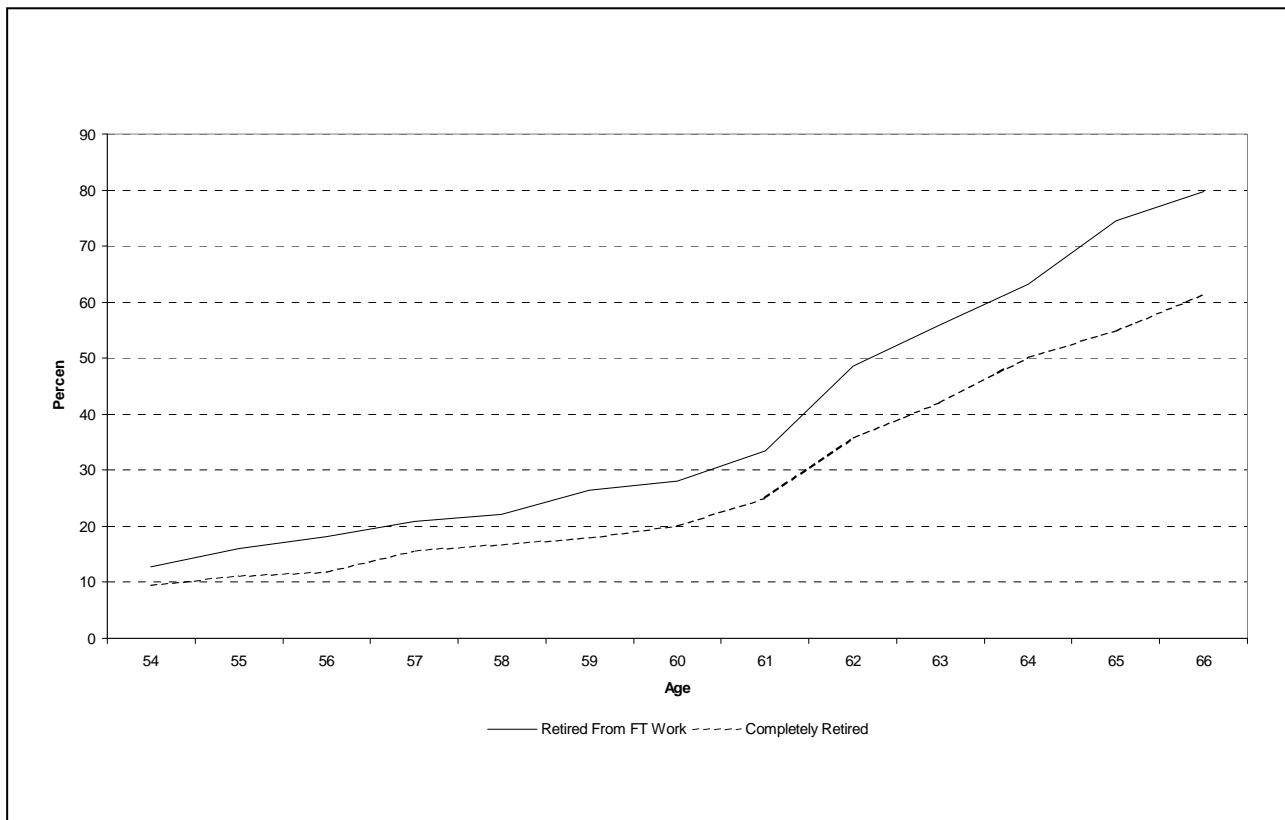
**Table 6. Job Requirements, Job Characteristics, and Attitudes
Toward Work of Full-Time HRS Workers (continued)**

Job Characteristics and Worker Attitudes	Men				Women			
	Strongly agree	Agree	Disagree	Strongly agree	Strongly agree	Agree	Disagree	Strongly disagree
Job characteristics								
Need training	10	38	40	12	11	34	45	11
More difficult	12	44	38	6	13	40	41	6
Need good memory	29	65	6	1	32	60	7	1
Involves stress	19	45	32	3	23	45	28	4
Attitudes toward work								
Retire if lost job	8	20	50	22	8	24	44	24
Don't work for \$	14	54	24	9	13	55	24	8
Want joint retirement	12	45	37	6	13	42	38	7
Employee attitudes								
Pay is fair	14	67	16	4	13	60	21	7
Work influences pay	10	33	48	10	6	29	52	13
Boss likes youth	4	15	67	13	4	11	66	19
Pressure to retire	3	15	68	15	2	12	65	21
Can partially retire	2	32	55	10	2	30	55	13

Note: Figures given are fractions of relevant sample. First panel of table 6 includes self-employed workers; second panel excludes them. Table percentages calculated using survey weights including only age-eligible HRS respondents (age 51-61 in 1992) from the HRS Alpha release of May 1993.

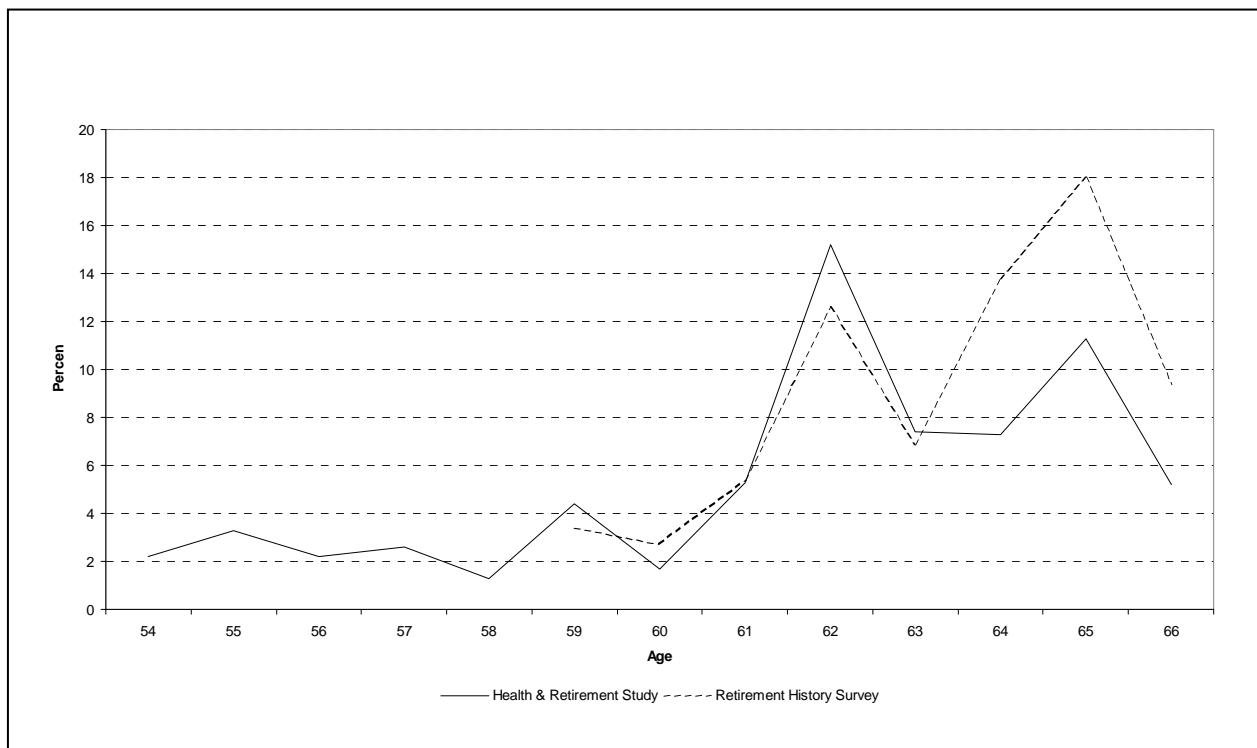
Appendix B: Figures

Figure 1. Observed Retirement Patterns in the health and Retirement Study (HRS)



Source: Gustman and Steinmeier (forthcoming).

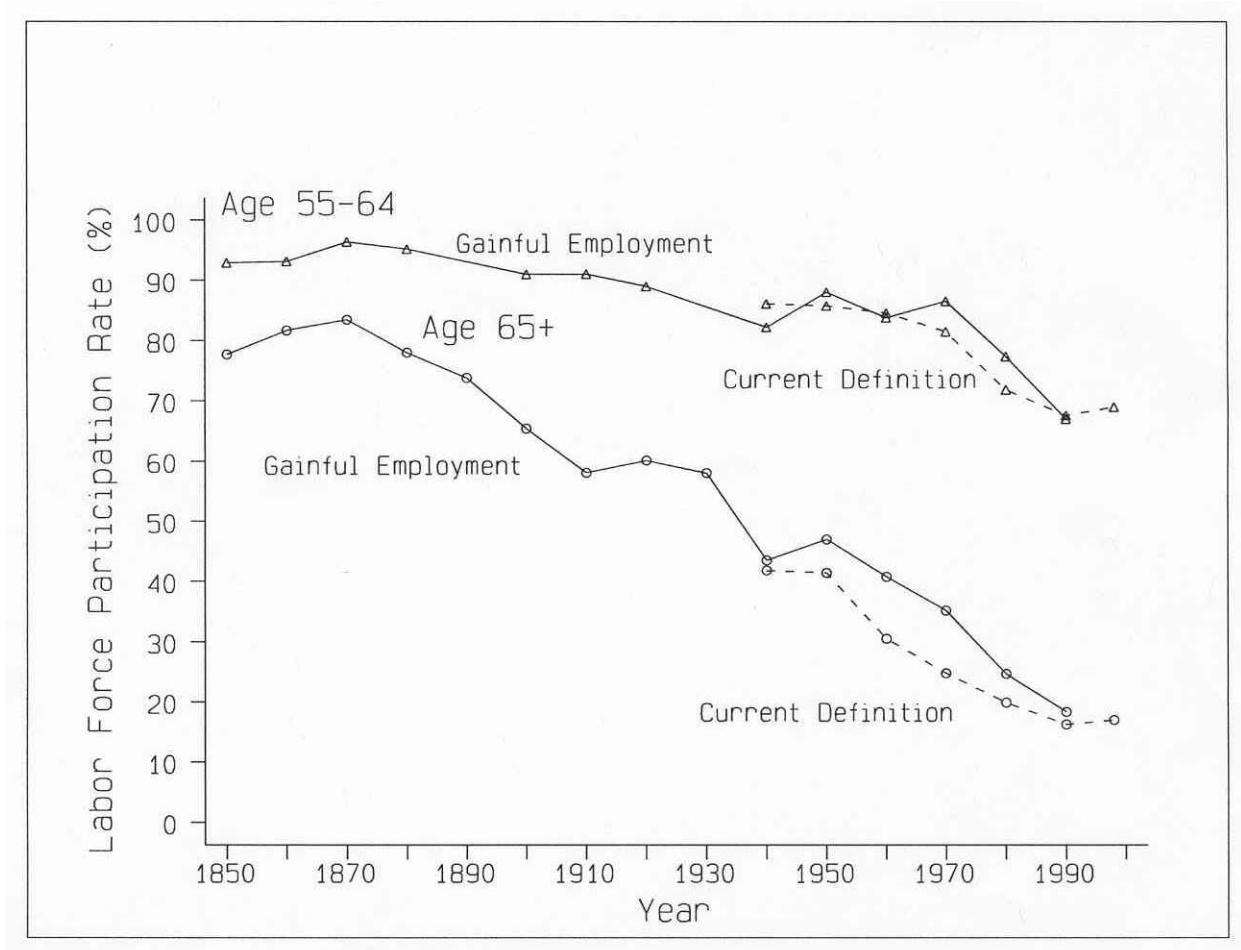
Figure 2. Retirements from Full-Time Work



Note: These are pseudo retirements. They record the difference in the proportion retired between adjoining ages. The Health and Retirement Study is from data for those born from 1931 through 1941 and observed biannually from 1992 to 2000. The Retirement History Study data pertain to the cohort born from 1906 through 1911 and observed biannually from 1969 through 1979.

Source: Gustman and Steinmeier (forthcoming).

Figure 3. Historical Retirement Trend



Note: The gainful employment definition of the labor force is based upon having had an occupation in the past year. The current definition of the labor force is based upon having worked during the survey week.

Source: Costa (1999), Ruggles and Sobeck (1998), Series LFU604901 and LFU606501, Bureau of Labor Statistics,
<http://stats.bls.gov>

Figure 4a. Labor Force Participation, Males, Aged 55-59

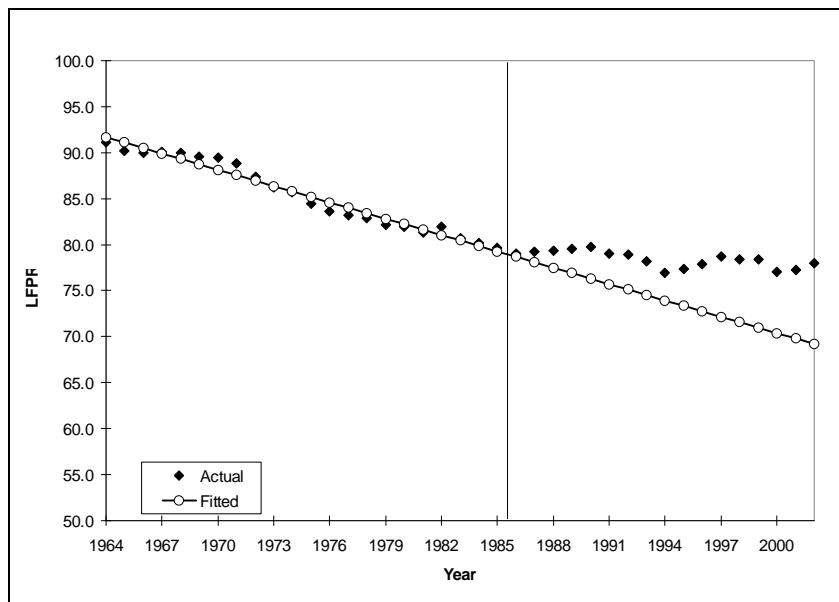
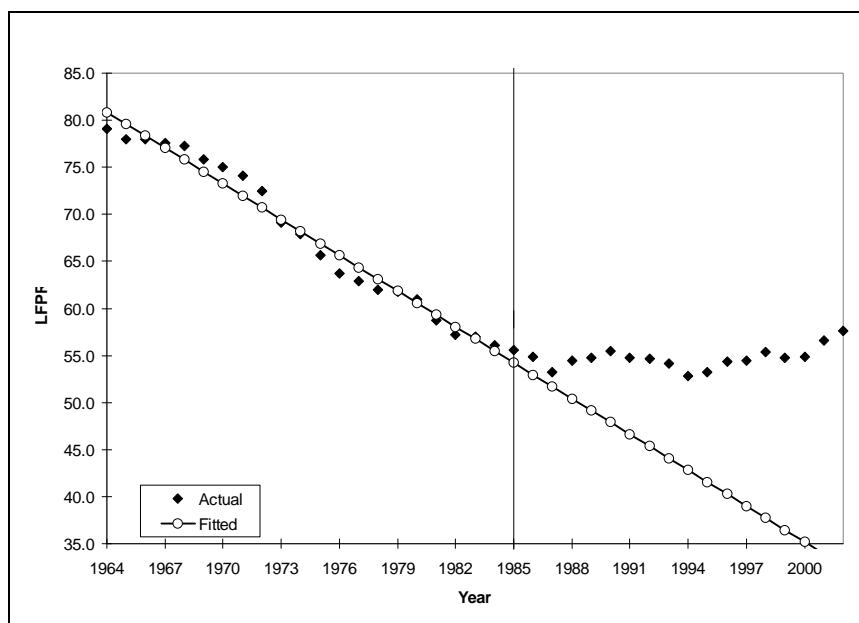


Figure 4b. Labor Force Participation, Males, Aged 60-64



Note: LFPR — Labor Force Participation Rate in percent.

Source: Figures 4a to 4h were generously provided by Joseph Quinn and are from Quinn (2002).

Figure 4c. Labor Force Participation, Males, Aged 65-69

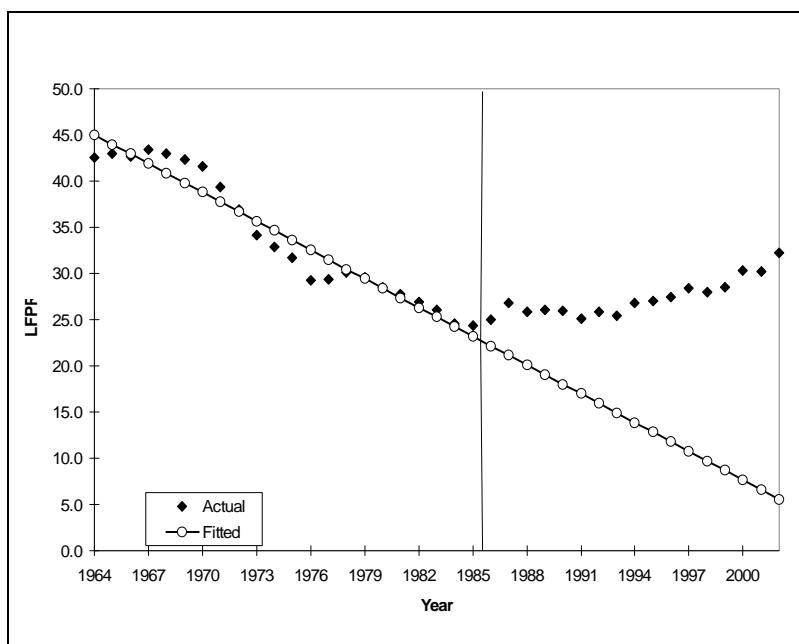


Figure 4d. Labor Force Participation, Males, Aged 70+

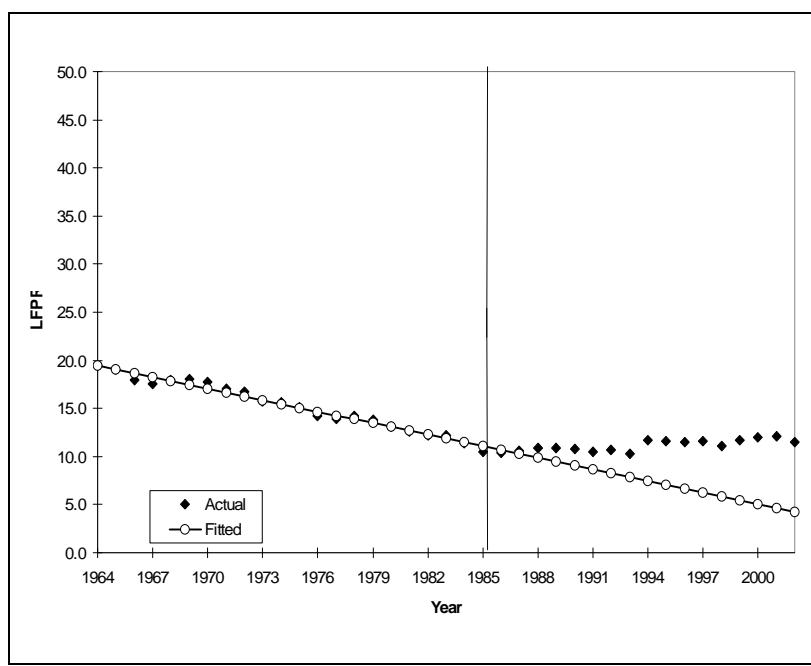


Figure 4e. Labor Force Participation, Females, Aged 55-59

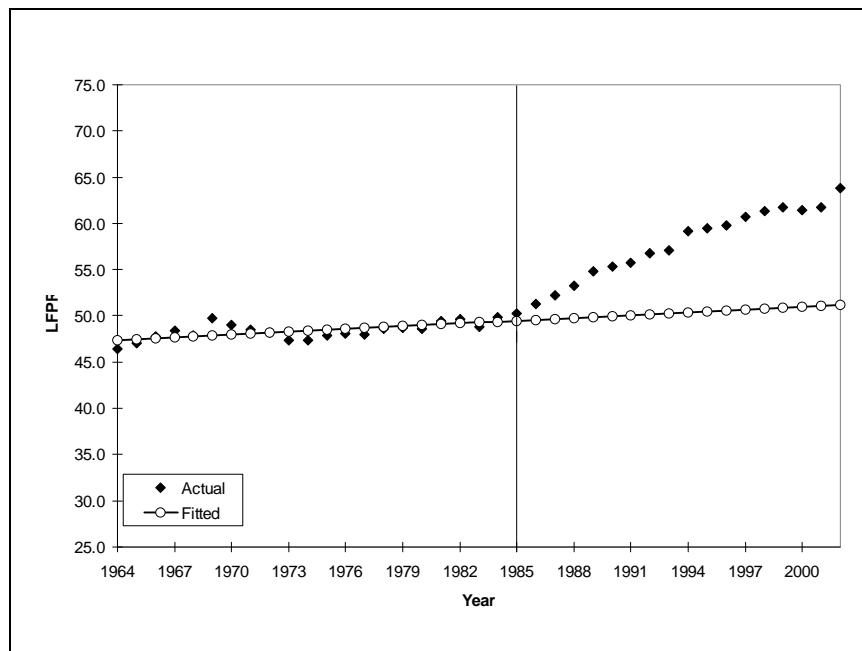


Figure 4f. Labor Force Participation, Females, Aged 60-64

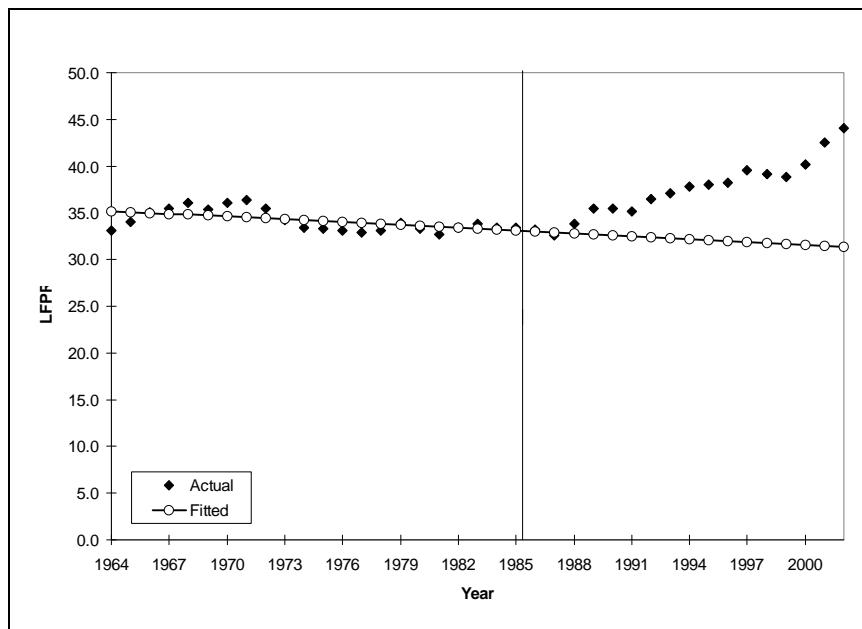


Figure 4g. Labor Force Participation, Females, Aged 65-69

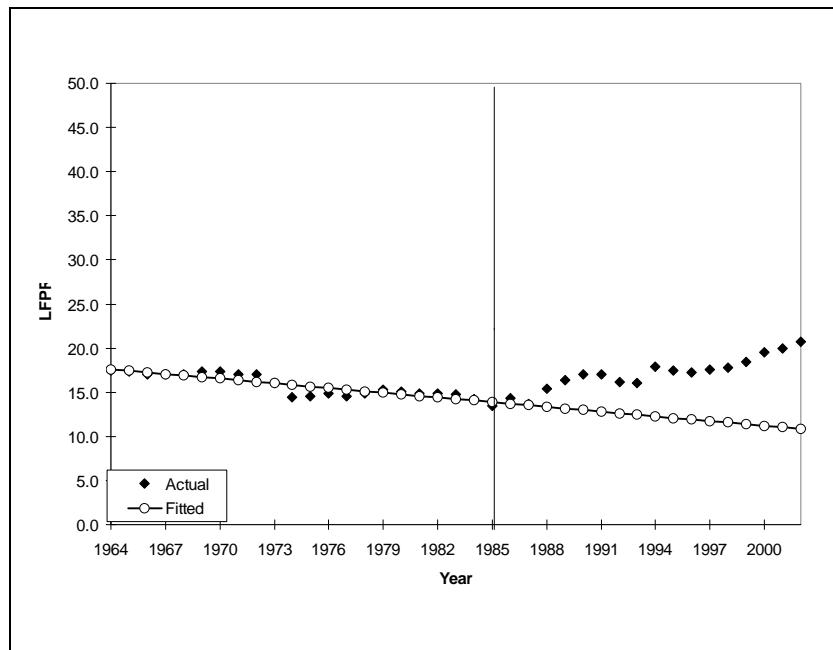


Figure 4h. Labor Force Participation, Females, Aged 70+

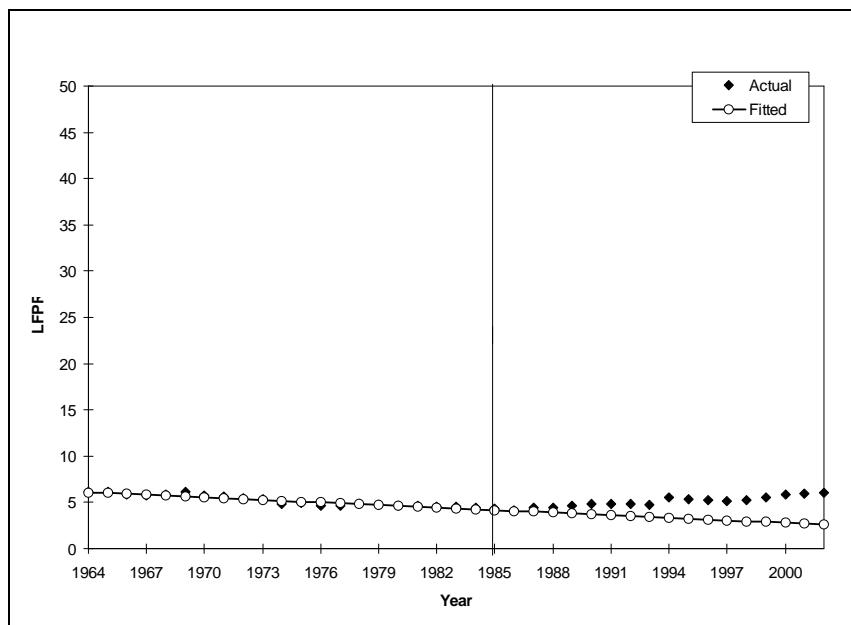
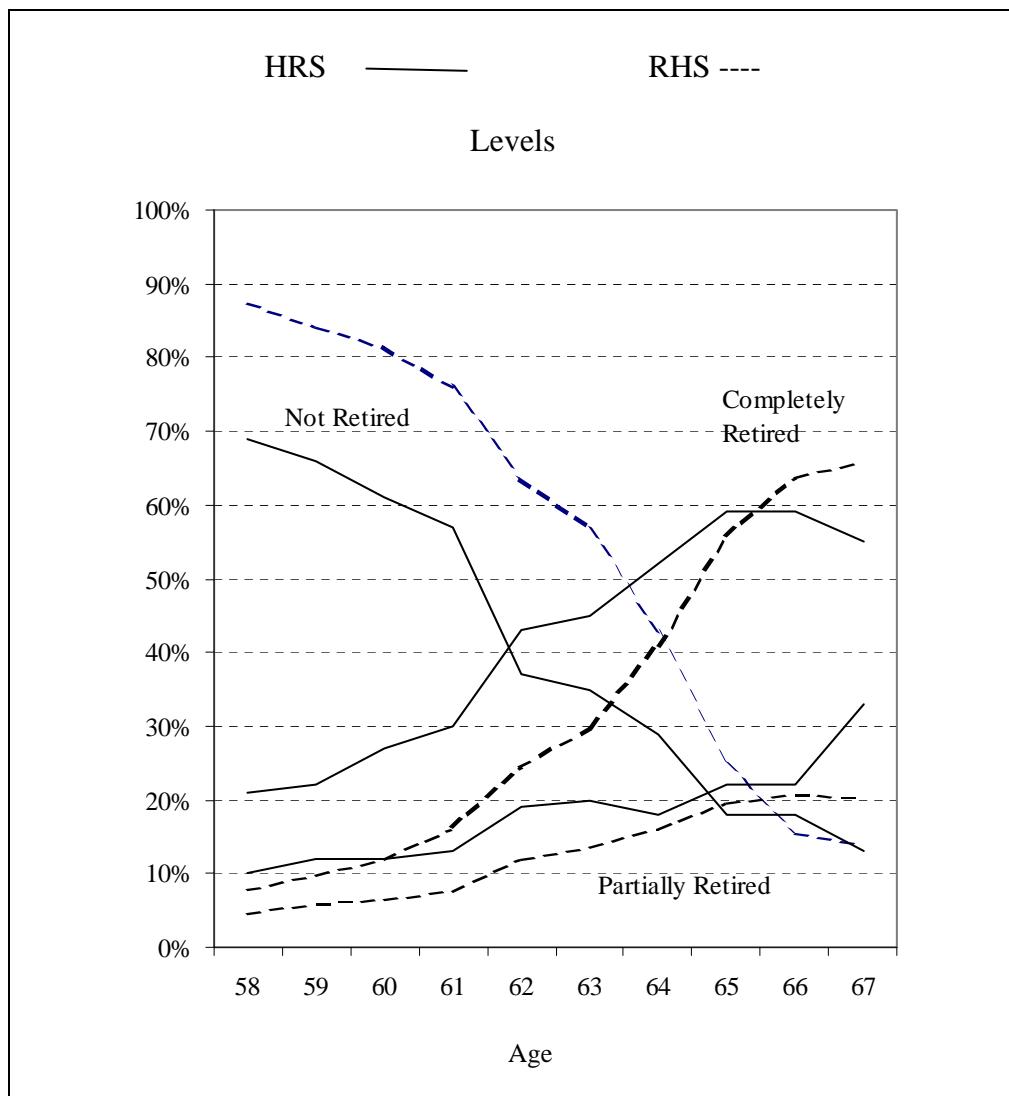


Figure 5. Comparison of the Retirement History Survey (RHS) and the Health and Retirement Study (HRS)



Source: Gustman and Steinmeier (2000a)