

The Labour Market, Retirement and Disability

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Introduction

One of the most important labor market phenomena in the post-war era has been the dramatic decrease in the labor force activity of older men. This early retirement trend is found throughout the industrialized world. **Table 1** shows employment rates in 16 OECD nations, from 1970 through 1991, for men aged 55 to 59, 60 to 64, and 65 or older. With the single exception of the youngest group of Japanese men, employment rates have dropped in each of these age groups in every country, and in many cases, have dropped precipitously.

The United States was no exception to this trend. Labor force participation rates for older men were falling steadily during the post-war period (and for decades before that -- see below), and considerable research effort has gone into explaining these trends. Economists have emphasized financial factors to explain these labor supply decisions -- the increasing wealth of the nation, financial incentives to retire imbedded in many American public and private pension plans, and, more recently, the role of health insurance coverage both on the job and during retirement. This research effort has been aided by the existence of two outstanding longitudinal data sets, both designed specifically to help researchers analyze the nature and determinants of the retirement process -- the Retirement History Study (RHS) of the 1970s and the new and ongoing Health and Retirement Study (HRS), which commenced in 1992.

Since the mid-1980s, however, the early retirement trend among older American men has come to an abrupt halt. As we will see below, labor force participation rates have been flat since 1985 and in some cases appear to be increasing. It is certainly true that many more older men (and women) are working today than the earlier trends would have suggested.

Several other OECD countries have experienced similar changes in trend, and several others have not. This suggests that retirement patterns are not set in stone. Rather, evidence indicates that workers respond to the incentives they face, and that changes in the relative attractiveness of work and retirement can influence individual decisions, and therefore, aggregate labor supply patterns.

This paper will focus on the American experience.¹ The early retirement trend in America has generated considerable attention and research effort, and scholars have had the data necessary to analyze the determinants of individual retirement decisions. The recent reversal of this long term trend has received considerably less attention. Many are not even aware that it has happened, and we know less about why the change has occurred.

In the sections below, I will first document the early retirement trend in the United States and its demise, and illustrate the experiences of several other OECD countries just to show their variety. I will then discuss some plausible explanations for the post-war trend and its recent reversal. In section III, I will attempt to summarize what we know about the influence of incentives on individual retirement decisions, focusing on Social Security (our primary public retirement program), employer pension plans, health insurance, and disability programs. A short summary concludes the paper.

I. The Early Retirement Trend and Its Demise

Men. **Figure 1** shows labor force participation rates from 1964 through 1985 for two important groups of American men -- those aged 60 to 64, which includes the earliest age of eligibility for Social Security old-age benefits (62), and aged 65 to 69, which includes the statutorily defined normal retirement age of 65.² Both graphs illustrate strong and persistent trends, noted by the trend lines included in the graphs. For men aged 60 to 64, participation rates dropped from 79 to 56 percent, well over one percentage point per year, and a decline of almost one-third in only two decades. For the older men, rates declined from 43 to 24 percent, almost one point per year, and a 40 percent decline over 21 years. Similar patterns are observed for men at slightly younger (55 to 59) and older ages (70 and older) (see Quinn, 1997).

The same trends can be seen in **table 2**, which shows participation rates for men by individual ages, going even further back in time. In 1950, for example, nearly three-quarters of all 65-year old men were working or looking for work. Their participation rate fell by

over 20 points by 1970, and by nearly another 20 points by 1985. In 1985, fewer than one-third of all 65-year old men remained in the labor force, a decline of nearly 60 percent.

About 80 percent of American men aged 62 were in the labor force in 1950 and in 1960. In 1961, Congress lowered the age of eligibility for Social Security old-age benefits from 65 to 62 (as it had for women in 1956), and a steady decline in participation rates began. By 1975, the age-62 rate was below two-thirds, and by 1985, it had dropped to one-half -- a decline of nearly 40 percent in only 25 years.

Even larger percentage declines between 1950 and 1985 occurred for older men -- drops of about two-thirds for those aged 68, 70 and 72. Declines are also observed below the age of Social Security eligibility, but they were much more modest -- about 16 percent at age 60 and 8 percent at age 55.

According to Dora Costa (1998: table 2A1), the retirement trend in America has been underway for over a century. Using Census samples well back to into the 19th century and a different definition of labor supply, she argues that the employment rates of older men have been declining steadily for 110 years, from 78 percent (in 1880) to only 18 percent (1990) for men aged 65 or older, and from 95 to 67 percent for men aged 55 to 64 over the same time period.³

Women. The experiences of older women between 1964 and 1985 were very different from those of the men, as is seen in **figure 2** for women aged 55 to 59 and 60 to 64. Here, two important demographic phenomena were at work -- the early retirement trend and the dramatic influx of American women into the labor market. Among older women, these two phenomena largely offset each other, and we observe either gentle increases in participation at younger ages (ages 55 to 59) or gentle decreases at older ages (ages 60 to 64 and older) (Quinn 1997).

The end of an era? Since 1985, retirement trends in the United States have changed dramatically. As seen in table 2, after years of decline, participation rates for men aged 62

and older are higher today than they were in 1985. Published data on five-year age cohorts tell the same story.

In **figure 3**, the 1964-1985 trend lines for men that were shown in figure 1 are extrapolated to the present, and compared to the actual labor force participation rates since 1985. Participation rates have flattened out since the mid-1980s and have actually increased over the past few years. Whether these modest increases represent a new upward trend remains to be seen. What is clear, however, is that the recent participation rates are much higher than the pre-1986 trend would have predicted -- nearly 16 percentage points higher by 1997 for men aged 60 to 64, and nearly 18 points higher for men aged 65 to 69. The same is true for men aged 55 to 59 and 70 or older, although the gaps are smaller (*ibid.*).

Although the participation trends of older women were very different from those of older men between 1964 and 1985, the break in the old pattern is very similar. As seen in **figure 4**, older women's participation rates have increased substantially since 1985, and, like those of the men, are now much higher than the pre-1986 trends would have predicted. For those aged 55 to 59, the gap between actual and predicted in 1997 is 10 points, and for those aged 60 to 64, about 8 points. A similar divergence is observed for women aged 65 to 69 (*ibid.*).

The similarity of the break points in the retirement patterns of American men and women is striking. Something is very different today than it was only 15 years ago.

Some international comparisons. **Figure 5** illustrates the variety of experiences in other modern industrialized countries.⁴ According to OECD statistics on participation rates for men aged 55 to 64, similar breaks in trend have occurred in Australia, the Netherlands, Norway and (perhaps) in Portugal, all during the mid- to late-1980s. In contrast, recent participation rates have been close to those predicted by pre-1986 trends in our neighbor, Canada (where no change in trend has been observed); Portugal's neighbor, Spain; the Netherlands's neighbor (if you ignore Belgium!), France (where the rate of decline seems to

have slowed); and in one of the strongest economies in Europe, Ireland (where participation rates may have flattened out in the mid-1990s).

Current research by Jonathan Gruber and David Wise (1997) and an international team of researchers is establishing that these international patterns are influenced heavily by the details of the countries' domestic social security programs; in particular, by the ages of eligibility for early and (to a lesser extent) normal retirement benefits, and by the implicit financial incentives (described by Gruber and Wise as implicit tax rates) imbedded in these public income transfer systems.

II. Explanations of American Retirement Trends

Explaining the post-war decline. What might explain the dramatic declines in older Americans' labor force participation rates in the post-war period, and the equally dramatic change in these patterns in recent years? A brief summary of the factors that have been proposed will provide an outline for the topics to be addressed in more detail in the rest of the paper.

The simplest explanation for the long-run decline in the labor supply of older American workers is wealth. The United States has grown richer over time. Real per capita GDP has more than doubled since 1960, increasing at about 2 percent per year. Some of this increased wealth has been used to purchase more leisure. Americans stay in school longer than we used to, enter the labor force later, work fewer hours per year and leave the labor force earlier.

For many current retirees, this general national prosperity has been augmented by windfall gains from two sources -- a strong real estate market and large and unexpected increases in Social Security benefits. Because of increases in Social Security coverage during the 1950s and 1960s and real benefit increases in the late 1960s and early 1970s, past and current cohorts of retirees have received and are still receiving lifetime Social Security

benefits far in excess of what their and their employees contributions would have earned in an alternative low-risk investment (U.S. House 1991; Steuerle and Bakija 1994).⁵

Research suggests that workers do respond to windfall gains by retiring earlier than they had planned (Anderson, Burkhauser and Quinn 1986). Some researchers have attributed most of the decline in the labor force participation of older men to Social Security's generosity (Hurd and Boskin 1984), while others have attributed about one-third of the decline (still a very important contribution) to increases in Social Security wealth over time (Hausman and Wise 1985; Ippolito 1990).⁶

Economists have also examined the details of Social Security benefit calculation rules, and have found substantial financial penalties for those who worked too long (Quadagno and Quinn, 1997). Some employer retirement policies created similar penalties. Defined-benefit employer pensions often contain the same type of age-specific work disincentives (or retirement incentives) that Social Security did (Kotlikoff and Wise 1989). As discussed below, many workers who stay on the job too long suffer a surreptitious pay cut that reduces the reward to work, and this change affects their labor supply behavior. Samwick (1998) concludes that postwar extensions of pension coverage might account for about a quarter of the decline in labor force participation. Anderson, Gustman and Steinmeier (1997), focusing on the 1969-1989 period, attribute about a quarter of the reduction of full-time work of men aged 60 and 62 to changes in employer pensions and Social Security together.

In summary, considerable research by many scholars suggests that increasing levels of wealth and the financial incentives imbedded in public and private pension plans have combined to induce many older workers out of the labor force at earlier and earlier ages. Why has this changed in recent years?

Explaining the recent demise. There are two types of explanations about what has caused the change in trend in recent years. One hypothesis is that permanent changes in the retirement environment have encouraged additional work by older Americans, and that the era

of earlier and earlier retirement is over. The other is that temporary cyclical factors are responsible, and as we move through the cycle, the inevitable long-run declines will resume.

Several important changes have occurred that support the first argument. Some are specific policy initiatives whose intent is to encourage more work late in life. For example, mandatory retirement has virtually been eliminated in the United States. In the early 1970s, about half of all American workers were covered by mandatory retirement provisions which obligated the workers to leave the firm at a particular age, usually age 65. In 1978, the earliest legal age of mandatory retirement was increased from 65 to 70, and in 1986, these provisions were outlawed altogether for the vast majority of American workers. This not only increased the options open to those who wanted to remain on their jobs, but also sent an important message to society about the appropriate age to retire.

In addition, Social Security rules are changing to make work late in life more attractive. The amount of income a recipient can earn before losing any Social Security benefits has been increased, and the benefit loss for each dollar earned over the exempt amount has been reduced for recipients between 65 and 69. Social Security is also increasing the reward for delaying initial benefit receipt past the normal retirement age, which is currently 65. Instead of penalizing work beyond age 65, Social Security is becoming more age-neutral.

Important changes are also occurring in the private sector. There has been an increase in the relative importance of defined-contribution (DC) pension plans, and a decline in the relative importance of defined-benefit plans.⁷ DC plans are age-neutral by design, and therefore have none of the age-specific work disincentives that DB plans often contain.

These changes in the retirement environment suggest that the future will not look like the past. The relative attractiveness of work and retirement has been altered in favor of work, and older Americans appear to be responding accordingly.

The counter-argument to the “end of an era” hypothesis is that cyclical factors -- the strong American economy -- have temporarily delayed the inevitable decline in elderly

participation rates. The civilian unemployment rate in the United States declined from nearly 10 percent in 1983 to about 5 percent in 1989, and is now below 5 percent for the first time since 1973. Strong labor demand creates employment options for older Americans who want to keep working. When this economy falters, it is argued, the long run early retirement trends will continue.⁸

To test this hypothesis, I included a simple proxy for the business cycle, the civilian unemployment rate, in regressions for the labor force participation rates of eight age-gender groups (aged 55 to 59 up through 70 and older, for men and women). The regression results suggest that the trend explanation has some merit (Quinn 1998b). In seven of the eight equations, the unemployment coefficient has the expected negative sign (that is, a tighter labor market -- lower unemployment -- increases participation), and the coefficients are significantly different from zero in three of the groups likely to be contemplating retirement -- men aged 60 to 64 and 65 to 69, and women aged 55 to 59. The differences between actual and predicted rates seen in figures 3 and 4 are moderated slightly by the business cycle effect, but large differentials remain after 1985, and the qualitative conclusion is unaltered. The rate of change of the labor force participation rates of older American men and women increased dramatically in the mid-1980s, even after a rough measure of the influence of the economy has been taken into consideration.⁹

Although the strong economy has been important, I believe that there is also a new attitude toward work late in life, encouraged by public policy initiatives that have changed the incentives facing older Americans. These incentives work. They worked to induce older Americans out of the labor force earlier, and I believe they are influential now in inducing some older workers to stay in the labor force longer. In section III below, I will describe in more detail the nature of the incentives arising from our public and private retirement plans (Social Security and employer pension plans), health insurance plans and provisions for the disabled.

III. Labor Supply Incentives Facing Older American Workers

A primary contribution of economists in the retirement literature in the United States has been their analyses of the financial incentives to retire (or equivalently, the financial disincentives to work) that are imbedded in the American retirement income system. Some of these incentives are subtle, and analysts debate whether individuals actually understand the trade-offs they face. Empirical research suggests that they do, however, since these factors are often found to be significant explanators of labor supply behavior late in life.

Social Security. Old-Age, Survivors, Disability and Health Insurance (OASDHI) is the largest and most important social insurance system in the United States, and is by far the largest item in the Federal budget.¹⁰ The old-age, survivors and disability components are usually called Social Security, and the health insurance part is known as Medicare. In this paper, I will be concerned with the old-age (retirement) and disability components.

Social Security is a mandatory program that covers nearly all workers in the United States.¹¹ Employees and their employers each contribute 6.2 percent of taxable earnings (the first \$68,400 of earnings in 1998), and each contribute another 1.45 percent on all earnings to Medicare. Self-employed workers pay both halves of the tax. In calendar year 1997, payroll tax contributions were received from about 147 million workers and their employers, and OASDI benefits totaling \$362 billion were sent to 44 million recipients. Of this expenditure, about 87 percent went to retirees and survivors, and the other 13 percent went to disabled beneficiaries (Board of Trustees 1998: p. 2 and tables II.F.1 and II.F.2).

The normal retirement age in the United States is 65. Since 1956, for women, and 1961, for men, insured workers have been able to claim early retirement benefits at age 62.¹² Benefits first claimed at the normal retirement age of 65 equal one's Primary Insurance Amount (PIA), which is an increasing non-linear function of one's average indexed covered earnings over the best 35 years of the covered earnings history. A spouse at age 65 is eligible to receive an additional 50 percent of the worker's benefit, unless he or she is entitled to a larger amount based on his or her own earnings history.

The benefit structure of OASDI is progressive, in that it replaces a higher percentage of final earnings for those with poor earnings history than it does for those at the top. For example, Social Security retirement benefits would replace about 60 percent of the prior earnings of someone earning only \$8,000 per year, about 40 percent for a worker with average earnings (about \$27,000 in 1997), and about 25 percent of the covered earnings of a worker who always earned at or above the maximum amount covered (Mercer 1997: 12).

Workers who claim benefits before age 62 receive less per month than they would have at age 65, and those who delay initial receipts until after the age 65 receive more per month. The financial incentives facing workers contemplating retirement are determined by the details of these penalties and rewards. The key to understanding these incentives is the concept of Social Security wealth, the present discounted value of the future benefits that one can expect to receive under a particular retirement scenario.

Workers who claim retirement benefits at the earliest allowable age of 62 receive 80 percent of the age-65 amount (80 percent of their PIA), a reduction of 6.67 percent per year of early receipt. Viewed from the perspective of the 80 percent benefit at age 62, there is a 25 percent reward (or 8.33 percent per year) for delaying to age 65.¹³

Although Social Security is not explicitly means-tested, it is a retirement program and therefore has an earnings test. Recipients aged 62 to 65 lose \$1 in benefits for each \$2 they earn over the exempt amount, which is \$9,120 in 1998 (Mercer 1997: 19.) For those aged 65 to 69, the rules are more lenient, and recipients lose \$1 in benefits for each \$3 they earn over \$14,500 (in 1998). These exempt amounts are indexed to average earnings, although special legislation will increase the exempt amount for older beneficiaries (aged 65 to 69) to \$30,000 by the year 2002. Workers aged 70 or older are exempt from the earnings test, and may earn any amount without loss of retirement benefits.

Pensions. It is much more difficult to summarize the details of employer pension plans, because there are hundreds of thousands of them, each with its own rules and regulations.¹⁴ The plans of interest are the defined-benefit plans, which still provide primary

coverage for the majority of American workers participating in an employer pension plan. Like Social Security, defined-benefit plans base retirement benefits on a formula, usually a function of average earnings near the end of the work career and years of tenure with the firm.¹⁵ Also like Social Security, many pensions permit receipt prior to the “normal retirement age,” and impose a reduction on monthly benefits for those who choose this option. As we will see below, many of these plans implicitly subsidize receipt prior to the normal retirement age, or, equivalently, penalize those who remain on the job to or beyond the normal retirement age.

The nature of the retirement income incentives. A worker who is eligible to receive a defined-benefit pension (for example, from Social Security or from an employer defined-benefit plan) and who is contemplating claiming that benefit or continuing to work for one more year (for example) faces a complicated choice. The choice is not just between claiming or not claiming pension checks for that next year, but rather choosing between two different streams of pension benefits, one beginning now, and another beginning a year from now, but with higher annual benefits. (The benefits will be higher because of one less year of “early retirement penalty” or one more year of “delayed retirement reward,” and also because average earnings and tenure with the firm are both likely to increase.) How does one compare the value of these two potential income streams? Which is worth more?

Since both streams involve future incomes, with dollars coming at different times, they are best summarized by their present discounted values -- the stock of wealth today which, if invested, could provide the promised benefit stream.¹⁶ For example, with a 5 percent annual interest rate, an asset of \$100,000 can provide an income flow of \$5,000 per year, forever. The stock of \$100,000 and the flow of \$5,000 per year are equivalent, and by lending or borrowing, one can transform either one into the other. An asset of less than \$100,000 could provide \$5,000 for a finite number of years (for example, the expected life span of the retiree), because the capital can be consumed too. Any stream of future incomes over any time span can be summarized by its present discounted value (its asset or wealth

equivalent) today. A major advantage of this description is that alternative streams, with different amounts coming at different times, are easy to compare once they are summarized in today's dollars -- the larger amount is worth more.

When a worker delays receipt of retirement benefits by working another year after the age of eligibility, two things happen, one good and one bad. The bad news is that the worker foregoes pension income during that year. The good news is that future benefits are likely to be higher because of the delay in receipt and the additional year of work. Which stream is worth more depends on whether the future increments (the increases in future benefits caused by the delay and the additional year of work) are sufficient to compensate for the initial year of benefits foregone. If the increments in the future just compensate for the benefits lost in the first year, then the present discounted values are the same, and the pension rules are called "actuarially fair." In this case, from a pension perspective, it does not matter whether the benefits are first claimed now or a year from now, since the present values of the amounts expected over the remaining lifetime are the same. If, on the other hand, the future increments exceed the initial benefits foregone, then one gains twice by working another year, once through the paycheck and once through the increase in pension or Social Security wealth (called pension accrual). But if the future increments are worth less than the benefits initially foregone, then pension accrual is negative (the present discounted value declines) and one loses expected lifetime retirement income by continuing to work.

In this last case, the worker has suffered a pay cut. The worker's compensation for the year of work (the sum of the paycheck and the (negative) change in pension wealth) is less than it appears to be; it is less than the paycheck by the amount of the wealth loss incurred. In the United States, such an age-specific pay cut would violate age discrimination laws if it appeared explicitly in the paycheck. Through the subtleties of the benefit calculation rules of a defined-benefit pension, however, the same impact can be achieved, and legally.

Considerable research has shown that this last scenario describes many American retirement plans, including Social Security. At some age, many workers in defined-benefit

pension plans who stay on the job begin to lose retirement wealth and therefore suffer a subtle pay cut. For Social Security, this occurs for the average worker at age 65, when the delayed retirement credit falls from about 8 percent per year of delay (which it is between aged 62 and 65, based on the “80 percent” age 62 benefit) to something less than 8 percent.¹⁷ Prior to 1972, the 8 percent dropped to zero -- there was no reward for delayed receipt beyond the normal retirement age, except via the recalculation of average lifetime earnings. In 1972, a reward of 1 percent per year of delay after 65 was introduced, and that was increased to 3 percent in 1977, but this was still far less than actuarially fair given the average 65-year old’s life expectancy. One would never recover all the Social Security benefits foregone. Currently, the 3 percent is slowly being increased in 1/2 point increments every two year, until it reaches 8 percent in the year 2005 (Social Security Administration 1996: table 2.A20). At 8 percent, the actuarial adjustment will be close to actuarially fair for the average worker at age 65, implying that Social Security will be close to age-neutral, and will no longer penalize the average worker who decides to remain in the labor force beyond the normal retirement age.

It is worth noting that most workers are not “average” workers. A benefit calculation rule that is age-neutral or actuarially fair, on average, can still provide strong financial incentives to retire to workers with life expectancies less than average, since they do not expect to live long enough for the future increments to make up for what the benefits they gave up by working another year.

It is obviously more difficult to generalize about employer pensions, since they are so many and varied, but research suggests that the asset (or present discounted) value of defined-benefit pension streams often peak at the earliest age of eligibility. After that, pension wealth often declines for those who stay on the job, encouraging workers to leave the firm (but not necessarily the labor force) and claim benefits before that happens.

Lawrence Kotlikoff and David Wise (1989) studied the accrual patterns of nearly 1,200 defined-benefit private pension plans, and found that "Typical plan provisions provide

a strong incentive for retirement after the age of plan normal retirement, and a large percentage of plans provide a strong incentive for retirement after the age of early retirement...for a large proportion of the plans the accrual rate after this age is a sizable negative number. Thus it would not be unusual for the reduction in pension benefit accrual after the age of early retirement to be equivalent to a 30 percent reduction in wage earnings (p. 54).” Olivia Mitchell (1992: 187) estimates that in 1989 two thirds of those workers whose benefits were reduced for early retirement faced reduction factors that were less than actuarially fair. This is equivalent to saying that the rewards for continuing work were less than actuarially fair (too small to compensate for the benefits forgone), and therefore that the rules encouraged workers to claim benefits as soon as they became eligible.

Do these retirement income incentives work? Casual inspection of the frequency distributions of retirement ages suggest that retirement income factors are important. As seen in **figure 6**, male retirement probabilities show large spikes at ages 62 and 65, which are important ages for Social Security and for many employer pensions.¹⁸ Why else would the rates be so much higher at 62 than at 61 and 63, and higher at 65 than at 64 and 66? Equally interesting, there was no spike at age 62 in 1960, prior to the introduction of early retirement eligibility for men at age 62.

In 1990, the labor force exit rate at age 62 was higher than that at age 65, which is consistent with Social Security data on initial benefit receipt. In 1995, 67 percent of new male beneficiaries claimed benefits before age 65, and nearly 50 percent did so at age 62. For women, the numbers are even higher: 72 percent prior to age 65 and 55 percent at age 62 (Social Security Administration 1996: table 6.B5).

The spike at age 65 is entirely consistent with the incentive hypothesis argued above, since the delayed retirement credit at age 65 has traditionally been well below actuarially fair (it was only 3 percent per year of delay in 1990), and is only now being increased slowly to 8 percent. The incentive argument is less compelling at age 62, since the credit then is close to actuarially fair, on average. Of course, the rules will still provide a work disincentive for

those whose own life expectancies are less than average, and liquidity constraints before age 62 (the inability to obtain Social Security benefits before age 62 or to borrow against anticipated benefits) may induce some who would like to retire even earlier than 62 to wait until that earliest age of eligibility.¹⁹ The availability of early retirement benefits may also send an important societal message about the appropriate age to contemplate retirement.

Leora Friedberg (1998) has also found striking graphical evidence of the impact of Social Security rules by analyzing the earnings of Social Security recipients who face different exempt amounts under the earnings test. She finds a remarkable bunching of earnings just below the appropriate exempt amount, and notes that the bunchings increase as the exempt amounts do, and disappear entirely when the beneficiaries reach age 70, and the earnings test no longer applies.

A major contribution of economists in this field has been to go beyond these graphical regularities, and to analyze the determinants of the individual retirement decision, especially the role of financial incentives. Researchers in the 1970s and 1980s were aided immensely by the existence of the Retirement History Study, a 10-year longitudinal study of about 8,000 older Americans aged 58 to 63 in 1969 (and their spouses), which was sponsored by the U.S. Social Security Administration. Respondents were re-interviewed every other year from 1969 until 1979. Extensive data were gathered on the work status and work histories, income sources, health and pension status, attitudes towards work and retirement, living arrangements and the wealth of respondents, and the individuals' official Social Security earnings records were appended to the data. This permitted researchers to calculate to the dollar the Social Security benefits that recipients would receive if they retired at various ages, and to compare the present discounted values of different future benefit streams. An interesting methodological point arises when the researcher studying the decision knows more about the value of an explanatory variable than the person making the decision does!

Considerable research using the RHS has established that workers do behave as though they understand and respond to both Social Security and pension incentives. With a

great deal of sophisticated econometric work, analysts have shown that the larger the retirement benefits and the larger the wealth losses suffered from continued employment (or the lower the true net wage), the more likely workers are to leave their jobs and often the labor force as well (see Hurd 1990; Quinn, et al. 1990, chapter 3; or Leonesio 1996 for an extensive discussion of this literature).

The Social Security effects, although well established, appear to be modest in magnitude. Politically plausible changes in Social Security regulations (for example, an increase in the normal retirement age from 65 to 67, or an increase in the delayed retirement credit from 3 percent to 8 percent -- both of which have already been legislated, and one of which is already underway) are predicted to increase the average retirement age on the order of months, not years.²⁰ In contrast, an increase in the early retirement age from age 62 to something higher (a less likely policy change) would probably have a substantial effect on labor supply decisions between age 62 and the new early retirement age, just as the introduction of the early retirement age at age 62 did (see figure 6). The direct defined-benefit pension effects are probably more important than the direct Social Security effects for individuals eligible for both, although the indirect effects of Social Security rules and regulations, through societal attitudes about the appropriate age of retirement and through their effects on private pension retirement ages, are undoubtedly very important.

The influence of employer-based health insurance. Unlike many industrialized countries, the United States does not provide national health insurance. Rather, most (but certainly not all) Americans workers receive health insurance coverage as part of their employer's compensation package. Recently, researchers have focused on the impact of employer-provided health insurance on labor supply decisions in general, and on the retirement decision in particular.

In 1995, 72 percent of American workers between the ages of 18 and 64 had health insurance coverage through an employment-based plan, either from their own employer or through the coverage of a family member. Some other workers have coverage through

public provision (like the means-tested Medicaid program) or through privately-purchased policies, leaving about 18 percent of American workers uninsured.

Employment-based coverage is highest in the public sector (where 87 percent of workers are covered through their own employers), lower among the self-employed (25 percent) and part-time workers (20 percent), and increases steadily with the size of the firm, from only 26 percent of those in firms with fewer than 10 workers, to almost 70 percent of those in firms of more than 1,000 workers (EBRI 1997: tables 27.1 and 27.5).²¹ Coverage also increases dramatically by level of earnings, from only 17 percent of those earning under \$10,000 in 1995 to near or above 80 percent of those earnings \$30,000 or more (*ibid.*: table 27.3).²²

Some employers continue health insurance coverage to their employees even after they leave the firm. In 1995, of those full-time employees in medium and large firms with health coverage on the job, 46 percent also had retiree health coverage under age 65, and 41 percent had retiree coverage at ages 65 and over (*ibid.*: table 37.2).²³ Because of the aging of the work force, increases in medical costs, increasing longevity, and an important change in accounting rules, the percent of employers offering post-retirement health coverage is on the decline, and some who do continue to offer it are requiring retirees to pay more of the costs (*ibid.*: 305).²⁴

Workers with health insurance on the job who would lose it if they left have an obvious incentive to remain on the job, at least until age 65, the earliest age of Medicare eligibility. Those with post-retiree benefits have less incentive to remain, although how much less depends on how the insurance costs after retirement are shared between the employer and employee.²⁵

As with Social Security, the empirical evidence is strong that health insurance status before and after retirement has an important influence on individual retirement decisions. For example, Alan Gustman and Thomas Steinmeier (1994), using a sample from the old Retirement History Study and several other data sets, analyzed the effect of retiree health

insurance on retirement status, and found effects similar in nature to those of pension plans. The decision to leave the firm was first delayed by the potential of retiree health benefits, up to the point when the individual became eligible for them. After eligibility, the post-retirement coverage encouraged earlier retirement. Because of these partially offsetting effects (first discouraging departure, then facilitating it), the net impact of employer-provided retiree health insurance on the average retirement age was modest, on the order of 1 to 4 months.

Brigitte Madrian (1994) used data from another large microeconomic survey, the Survey of Income and Program Participation (SIPP), and found large and statistically significant effects of post-retirement health insurance coverage on retirement behavior. She estimates that the availability of this coverage reduces the age of retirement by between 5 and 16 months, with her best guess being a decline of about 1 year. Simulations suggest that the increased availability of retiree health insurance explains between 10 and 20 percent of the decline in the labor force participation rates of men aged 55 to 64 over the past three decades.

Using the new Health and Retirement Study (HRS) mentioned above, David Blau and Donna Gilleskie (1997) analyzed labor market transitions between the first two waves (1992 and 1994) of the survey. They found that the presence of retiree health benefits on the job increase the probability of departure by between 2 and 11 percentage points per year, depending on the age of the worker and on the cost sharing arrangement between the employer and the employee. With three waves of the HRS (1992, 1994 and 1996), Quinn (1998b) estimated that both men and women on career jobs in 1992 were 8 to 10 percentage points less likely to leave that job (either by moving to another job, or by stopping work altogether) if they would lose health insurance coverage by doing so.

Estimating the exact magnitude of these health insurance effects is difficult. Favorable compensation components, such as pensions, wage rates and health insurance, tend to come together, and, in a behavioral equation, any one of them can pick up the effects of the others that are either excluded from the equation or are not specified correctly. In addition, some of these benefits may be endogenous, if, for example, workers who anticipate

retiring early choose employers with retiree health benefits. In this case, the coefficients estimated for these benefits will exaggerate the true impact of the insurance coverage on the retirement decision.

Despite these econometric issues, Janet Currie and Brigitte Madrian (1998: 42), in a recent overview of the literature on health insurance and labor supply, conclude that with “a variety of estimation techniques and several different types of datasets, almost every examination of the topic has found a...significant impact of health insurance on retirement.” As in the retirement income literature, workers behave as though they understand and respond to financial incentives that alter the relative attractiveness of work and retirement.

The influence of disability programs. In the United States, there are two primary public programs that cover the disabled, and that potentially might be used as a route to “retirement” benefits prior to the normal retirement age. The most important is the Disability Insurance (DI) component of the Social Security program, which was added to the old-age and survivors components in two stages -- in 1956, for workers aged 50 to 64, and in 1960 for workers under age 50 (U.S. House 1998: 6). Workers who are fully insured for old-age benefits (which generally requires 40 quarters of coverage) are also covered by disability insurance if they have at least 20 quarters of coverage during the 40 quarters immediately prior to the onset of the disability (*ibid.*: 12).²⁶ In 1996, DI benefits totaling \$44 billion were paid to 6 million disabled beneficiaries and their dependents. Both expenditures and recipients equal about 13 percent of corresponding OASDI totals (*ibid.*: tables 1-8 and 1-9).

Disabled workers may also receive benefits under the Supplemental Security Income (SSI) program, which is a federally administered, means-tested public assistance program for aged, blind and disabled persons.²⁷ SSI guarantees a national minimum income for eligible recipients, and in many cases, acts as a supplement to Social Security benefits. The federal payments are financed by general revenues, rather than by a payroll tax. Individual states have the option of supplementing the federal SSI payments, and 43 of the 50 states do so, to differing degrees (*ibid.*: 281).

The definition of disability under the Social Security statutes is a tough one. Disability is defined as “the inability to engage in ‘substantial gainful activity’ by reason of physical or mental impairment. The impairment must be medically determinable and expected to last for not less than 12 months, or to result in death” (*ibid.*: 13). It is not enough to demonstrate that one cannot work in one’s profession or in one’s geographic area. Rather, it must be demonstrated that one cannot do any kind of work that exists in the national economy, taking into account one’s age, education and work experience. Since 1990, an individual who is earning \$500 or more per month has shown an ability to engage in substantial gainful activity (*ibid.*, 14).

Actual disability determinations are made by state agencies, acting under contract with the federal government, using an extremely complicated procedure (Bound and Burkhauser 1998: 13-15). Initial denials and terminations can be appealed to an administrative law judge, and many unfavorable decisions by the Social Security Administration are overturned in this way.²⁸ Despite federal guidelines, the results of the determination process can differ from state to state.

Beginning five months after the onset of the disability, disabled workers who are deemed eligible receive 100 percent of their Primary Insurance Amount -- the amount a retired worker would receive if benefits were first claimed at age 65. In other words, there is no reduction in benefits for recipients under age 65. For this reason, a worker aged 62 to 64 (and therefore eligible for old-age benefits) would be better off as a disabled recipient than as an old-age recipient. At age 65, all disabled recipients are transferred to the old-age rolls.

Supplemental Security Income (SSI), the welfare component, has the same medical eligibility criteria as does Disability Insurance, but also includes a family means test, which has very complicated earned and unearned income and asset components (U.S. House 1998: 267-272). In 1997, the maximum SSI benefit threshold for an individual equaled about 77 percent of the individual poverty threshold, and the maximum couple’s benefit equaled 92 percent of the threshold for a two-person family (*ibid.*: tables 3-9 and 3-10).

Over the years, the Social Security Administration has issued a series of decrees and interpretations designed to relax or to tighten the initial eligibility and continuing eligibility processes. These changes, along with changes in benefit amounts, outreach efforts and the strength of the economy, have led to large swings in acceptance rates to the programs and to awards per 1,000 workers. For example, in 1975, nearly half (46 percent) of all new DI applicants were granted benefits, leading to 7.1 new awards for every thousand workers covered.²⁹ Administrative controls were then tightened (mainly through changes in the nature and frequency of continuing eligibility reviews, and through some incentives for recipients to return to work), and by 1982, the acceptance rate was under 30 percent, and the ratio of new awards per 1,000 covered workers was reduced to 2.9. After public pressure mounted against these policy changes, legislation was passed and guidelines amended to favor beneficiaries, and by 1992, the acceptance rate was back up to 48 percent (even higher than it was in 1975), and the award ratio had risen to 5.2 (Bound and Burkhauser 1998: table 11).

The same gyrations can be seen in the statistics on the absolute numbers of new adult disability insurance (DI) awards, which peaked at nearly 600,000 in 1975, plummeted to only 300,000 in 1982, and then rose to nearly 650,000 in 1992 and 1993. New adult SSI disability awards followed an almost identical pattern with local peaks and troughs in exactly the same years (Rupp and Stapleton 1995: chart 1).

Considerably less is known about the effects on labor supply of public disability programs than is the case with public and private retirement programs. In contrast to the retirement literature, disability researchers do not even know what sample to study. Who in the population might be contemplating an application for disability benefits? It is relatively easy, for example, to discern if an individual has reached age 62 and has sufficient quarters of coverage to be eligible for old-age benefits, and what those retirement benefits would be. (Both the old RHS and the new HRS contain this information.) Even information about eligibility for employer pension benefits is relatively straightforward to obtain with a survey

instrument. Individuals eligible for retirement benefits then face a choice between claiming them or staying on the job, and the researcher can study who does what, and why.

In contrast, it is very difficult to know, *ex ante*, who might be eligible for disability benefits in the United States. For many potential recipients, the decision to apply for DI or SSI is complicated and far from costless, since one cannot be engaged in “substantial gainful activity” when one applies, or the application is immediately denied. Once one does apply, then there are all the uncertainties surrounding the medical screening tests and (perhaps) the subsequent appeals process. If a person is in poor health but still employed, should s/he quit the job in order to seek disability benefits, knowing s/he might end up without a job and without benefits if an unfavorable eligibility decision is reached? Who is it who is contemplating these choices? Whose behavior and responses to incentives should the researcher be studying? In many cases, we do not know.

Despite considerable methodological problems, there is a growing literature in the United States on effects of disability programs on labor supply behavior. Does the existence of disability programs such as DI and SSI induce workers out of the labor force? How many? If DI and SSI did not exist, would most of those currently receiving disability benefits be employed (implying a large impact of the programs on labor supply), or would most still be out of work and destitute (implying that the programs have little effect on labor supply, but a large impact on the economic well-being of the disabled)? Do disability programs provide a surreptitious route for early retirement, prior to the earliest age of eligibility for old-age benefits?

Casual empiricism suggests that there may be a labor supply effect among older workers. As seen in **figure 7**, for men aged 55 to 59 and aged 60 to 64, increases in the percent of men out of the labor force over time have been mirrored by increases in the percent of men the same age receiving Social Security disability benefits, although the former is much larger than the latter. This implies, at minimum, that other factors are at work.

John Bound and Timothy Waidman (1992) have used time series data to study the impact of the growth of disability programs on the labor force behavior of older American men, and to discern what proportion of those receiving disability benefits would be working if the benefits were not available. Their research strategy is straightforward. If current recipients really cannot work, then their counterparts (i.e., those reporting themselves disabled) should be observed out of the labor force (but without disability benefits) in the 1950s and 1960s, before the rapid growth of disability programs. If, on the other hand, many current recipients could be working, then their counterparts would have been working in the 1950s and 1960s, and many fewer men would be observed disabled and out of work in the earlier decades (*ibid.*: 1397).

The authors found the proportion of men who described themselves as disabled was relatively constant in the 1950s and 1960s, but then rose dramatically in the 1970s and leveled off in the 1980s. (This increase in self-reported “disability” during the 1970s did not seem to correspond to any general decline in the health of older workers; if anything, medical advances and improvements in personal habits and workplace conditions were probably increasing the average health of the working population (*ibid.*: 1402-1405).) For men aged 45 to 54, the increase in the number of self-defined “disabled” closely matched the decline in the number in the labor force, suggesting, but certainly not establishing, a causal link between the availability of benefits and labor supply decisions. For men aged 55 to 64, however, the decline in the number of workers was much larger than the increase in the number of the “disabled.” This is not surprising, since other important changes (for example, in public and private retirement programs) were underway.

Bound and Waidman study several other potential causal factors, such as earlier detection and diagnosis of certain conditions (i.e., more people in the earlier cohorts were in bad health; they just didn’t know it!), and declines in the demand for older less-skilled workers. While they do present evidence that these other factors were important, they argue persuasively that earlier accommodation of health problems through the growth of disability

programs remains an important influence.³⁰ They estimate (as an upper bound) that disability policy can account for about 80 percent of the (relatively small) decline in labor force participation among American men aged 45 to 54 in the 1970s, and about a third of the much larger decline among those aged 60 to 64 (*ibid.*: 1415). Most of those whose departure from the labor force was induced or facilitated by the existence of disability income transfers, however, did suffer from disabling conditions. Health and disability are far from dichotomous, and what the public policy changes during the 1970s did was change the health margin at which those in less than perfect health could afford to leave the labor force.

Bound and Burkhauser (1998:59) summarize their extensive review of the disability literature by concluding that “comparisons between countries and within countries across time suggest that these changes (in the access to and generosity of publicly provided income transfer programs for those with disabilities) have had significant effects on both the economic well-being and the work force attachment of those individuals whose health limits their capacity for work,” and that “there remains a tremendous amount of uncertainty regarding the behavioral effects of disability insurance programs.”

Although disability programs do have an impact on retirement patterns in the U.S. and, in some cases, provide an early retirement route, their importance appears to be modest compared to their influence in several other countries. Gruber and Wise (1997: 19) report that in Belgium and France, about one-fifth of the men aged 59 (a year younger than their social security early retirement age) are receiving disability or unemployment benefits, as about a quarter of the 59-year-olds in the Netherlands and Sweden, a third in the United Kingdom and 37 percent in Germany. In contrast, in the United States only about 12 percent of the men are receiving either disability or unemployment benefits at that age.

IV. Summary

This paper has made two broad points, one at the macro, aggregate level, and one at the micro, individual level. The first is that labor force participation trends are not set in stone. Despite the remarkably similar retirement trends observed during the post-war era in many industrialized nations (the earlier and earlier labor force departure of older men), the trends have varied just as remarkably since the mid-1980s. In some countries, including the United States, the early retirement trends seems to have come to an abrupt halt. In others, the trend has continued unabated into the 1990s.

The literature on the labor force participation decisions of older American workers can be summarized succinctly: incentives work. This is most clear in the research on public and private pension programs, which have the largest and richest literature. But in two other areas of more recent research -- health insurance and disability coverage -- the same qualitative conclusions emerge. People behave as though they understand and respond to the incentives they face. Changing the incentives changes behavior. Although there remains uncertainty and debate about the exact magnitudes of these behavioral effects, few doubt that these programs influence individual retirement decisions, and therefore aggregate retirement trends.

These incentives may influence not only when people retire, but also how they do. In the United States, many older workers leave the labor force in stages, utilizing bridge jobs between their full-time career jobs and complete labor force withdrawal (Quinn 1998a; 1998b). These bridge jobs are sometimes full-time jobs of short duration or, very often, part-time jobs, often in a new line of work. One hypothesis for the popularity of these gradual retirement patterns is that workers are responding to conflicting signals from the public and private sectors -- from a public system, Social Security, which is becoming more and more age-neutral ("go on, keep working"), and from a private system, in which employer-sponsored, defined-benefit pension plans still penalize workers who remain with that firm too long ("but not here, you don't"). A logical response by someone not yet ready to leave the world of work would be to

leave the career job when the pension incentives dictate, but then continue to work on a new, perhaps part-time, job.

There is much more to the retirement decision than the financial incentives emphasized in this paper. Individual choices depend on mental and physical health, attitudes toward work and retirement, job characteristics and the non-pecuniary aspects of employment, living arrangements, the preferences of family members and expectations of the future. But financial incentives are important, and therefore worthy of study, and they also provide policy tools with which societies can influence the retirement patterns of their citizens.

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¹ Parts of this paper are drawn from "New Paths to Retirement," a paper forthcoming in Forecasting Retirement Needs and Retirement Wealth (edited by Brett Hammond, Olivia Mitchell and Anna Rappaport) and "Retirement Patterns and Bridge Jobs in the 1990s," a forthcoming Policy Brief for the Employee Benefit Research Institute in Washington, DC.

² The labor force in the United States includes both those employed, and those unemployed and actively searching for work.

³ Prior to 1940, labor force attachment was measured by the concept of gainful employment, defined as the "proportion of individuals who claim to have had an occupation in the year before the census was taken." (Costa 1998: 6) In 1940, the time period was changed from the prior year to the survey week, and the concept of labor force participation was introduced to include those who were looking for work. Because of the nature of the questions asked in the decennial Census surveys, currently defined labor force participation rates can be estimated only back to 1940.

⁴ For more detail on international labor force withdrawal patterns, see Smeeding and Quinn (1998).

⁵ Initially, Social Security covered only workers in business and industry. During the 1950s, regularly employed farm and domestic workers were included, as were members of the military, the self-employed, some state and local workers and some employees of non-profit organizations (Social Security Administration 1996: table 2A1).

⁶ Social Security cannot explain the retirement trends in the pre-World War II period, since it did not exist. Costa (1998: chapter 2) attributes the earlier trends to long-term increases in income from other sources (the wealth effect mentioned above), occupational shifts from agriculture and the growth of the entertainment and tourism industries, which provided alternative uses for retirees' time.

⁷ The proportion of employer pension participants whose primary coverage is defined-contribution increased from 13 to 42 percent between 1975 and 1993. Including secondary plans, which are nearly all defined-contribution, the proportion of participants in DC plans doubled from 26 to 52 percent over this same time period (EBRI 1997: table 10.2).

⁸ There is some graphical support for this hypothesis. Observe in figure 1 the actual participation rates of men aged 65 to 69 during the late 1960s, when the unemployment rate was under four percent for four consecutive years (1966 to 1969). Their participation rates were flat then, just like they are now, but they plummeted along with the economy in the 1970s.

⁹ I also included a piece-wise linear specification (available from the author) that permitted the time trend to change after 1985, the year in which the eyeball suggests the new era may have begun. In all eight cohorts, even after including the impact of the business cycle, the change in trend is positive and significantly different from zero. For men aged 60 to 64, the trend increased from -1.18 percentage points per year to -0.12, and for men aged 65 to 69, it rose from -0.86 to + 0.17 points per year. For women aged 55 to 69, the increases

in trend after 1985 are all in the one-half to two-thirds of a point per year range, and net increases in participation rates (upward trends) since 1986 are observed for all four groups of older women.

¹⁰ In fiscal year 1998, Social Security and Medicare expenditures will total over one-third of the federal budget -- about 23 percent for Social Security and about 12 percent for Medicare (U. S. President 1998: table B-80).

¹¹ The major exceptions to universal coverage are most federal government workers hired before 1984, about one fifth of state and local government workers and railroad workers covered under an alternative program (Mercer 1997: 5).

¹² To be fully insured and eligible for retirement benefits, a workers must have 10 years of covered employment.

¹³ In addition, benefits would increase if these additional years of earnings raised the individual's average earnings, and therefore the PIA.

¹⁴ The Employee Benefit Research Institute estimates that there were about 700,000 private sector pension plans in the United States in 1997. The vast majority of these (92 percent) are defined-contribution (DC) plans, but since they tend to be smaller than defined-benefit (DB) plans, the DC plans contain only about half (53 percent) of the participants. These statistics count individuals more than once if they have both a DB and a (usually, a supplementary) DC plan. In 1997, 58 percent of active participants in an employer pension plan still had their primary coverage in a DB plan, down from 87 percent in 1975 (Olsen and VanDerhei 1997: table 2).

¹⁵ According to Mitchell (1992: tables 9.6 and 9.9), about two-thirds of workers participating in defined-benefit plans in 1989 had their benefits based on "terminal" earnings. For almost 80 percent of these, terminal earnings were defined as the average of the highest five or the highest consecutive five years of earnings.

¹⁶ This section is drawn from Quadagno and Quinn (1997).

¹⁷ Gruber and Wise (1997: table F14) argue that the implicit Social Security tax on earnings is close to zero at age 62 (i.e., the actuarial adjustment is close to fair, on average), but that it increases to about 20 percent at age 65, when the delayed retirement credit declines, and approaches 50 percent at ages 68 and 69.

¹⁸ These retirement rates are defined as the change in the labor force participation rate between ages $x-1$ and x , divided by the participation rate at age 55. In other words, the denominator in the ratio is the same each year.

Gruber and Wise (1997) illustrate equally distinctive spikes in retirement probabilities at key public policy ages in Germany, France, Belgium, the Netherlands, and Spain.

¹⁹ This hypothesis is supported by the work of Kahn (1988), who divides his sample of workers into high-wealth and low-wealth subgroups. It turns out that only the low-wealth subgroup displays the double-peaked pattern seen in figure 6, with the highest peak at age 62. Among the high-wealth group, presumably with less of a liquidity constraint, there is only one prominent peak -- at age 65.

²⁰ For example, Burtless and Moffitt (1984) estimate that making the delayed retirement credit actuarially fair would increase the average retirement age by less than 5 months.

²¹ Some of those without health insurance from their firms are covered under the policies of another family member. For example, about 50 percent of employees in the smallest firms have employment-based coverage, but half of it is through another person's policy (EBRI 1997: table 27.1).

²² Among those earning under \$10,000, 30 percent have no health insurance coverage at all, from any source. Among those earning \$40,000 or more, less than 5 percent are uninsured (EBRI 1997: table 27.3).

²³ At age 65, workers become eligible for Medicare, which is less generous than the typical employer plan (Currie and Madrian 1998: 42). Among other differences, Medicare does not cover dependents, which many employer plans do. Nonetheless, continued employer coverage becomes less important once a worker reaches age 65, and even more so when the worker's spouse reaches age 65 (Madrian and Beaulieu 1998).

²⁴ Prior to December, 1992, firms were not obligated to list unfunded future health benefit liabilities on their balance sheets. For all fiscal years after this date, however, they are required to do so, and this has caused many firms to reexamine their commitment to employee health insurance, both before and after retirement. Between 1993 and 1996, the percentage of large firms (over 500 employees) offering post-retirement health insurance has declined from 46 to 40 percent (EBRI 1997: table 37.3).

²⁵ In 21 percent of large employer plans that offered retiree health benefits in 1995, the employer paid for the entire cost of the plan. In 34 percent, the retiree paid all, which is still much less expensive than buying an individual plan without the group discount. In the remaining 45 percent of the plans, the costs was shared by the employer and employee (EBRI 1997: table 37.3).

²⁶ Workers disabled prior to age 31 are required to have quarters of coverage equal to half the number of quarters that have elapsed since they reached age 21, and a minimum of 6 quarters of coverage in any case (U.S. House 1998: 12).

²⁷ The SSI program was established in 1972, and became operational in 1997. The disability component of SSI replaced the Program of Aid to the Permanently and Totally Disabled, a set of state programs (with federal matching funds) for indigent disabled begun in 1950 (U.S. House 1998: 262).

²⁸ In 1996, about two-thirds of the initial eligibility denials that were appealed were overturned, as were about 40 percent of the terminations of disabled beneficiaries (U. S. House 1998: table 1-25).

²⁹ This summary and these data are taken from the excellent review of disability programs by Bound and Burkhauser (1998; pp. 18-28 and table 11). See also Rupp and Stapleton (1995) for a discussion of the determinants of the growth of SSA disability programs.

³⁰ Rupp and Stapleton (1995: 51-52) also report significant effects of the business cycle (measured by the unemployment rate) on DI applications and awards. They found that the effect of a change in unemployment begins in the year of the change, but peaks two years later.

Table 2

Male Labor Force Participation Rates (%) by Age, 1950 to 1997

Year	Age						
	55	60	62	65	68	70	72
1950	90.6	84.7	81.2	71.7	57.7	49.8	39.3
1960	92.8	85.9	79.8	56.8	42.0	37.2	28.0
1970	91.8	83.9	73.8	49.9	37.7	30.1	24.8
1975	87.6	76.9	64.4	39.4	23.7	23.7	22.6
1980	84.9	74.0	56.8	35.2	24.1	21.3	17.0
1985	83.7	71.0	50.9	30.5	20.5	15.9	14.9
1990	85.3	70.5	52.5	31.9	23.4	17.1	16.4
1995	81.1	68.9	51.3	33.5	22.4	20.6	16.0
1997	83.4	68.3	52.6	32.4	22.4	21.7	17.3

Source: Burkhauser and Quinn (1997: table 1), updated by the author

Table 1

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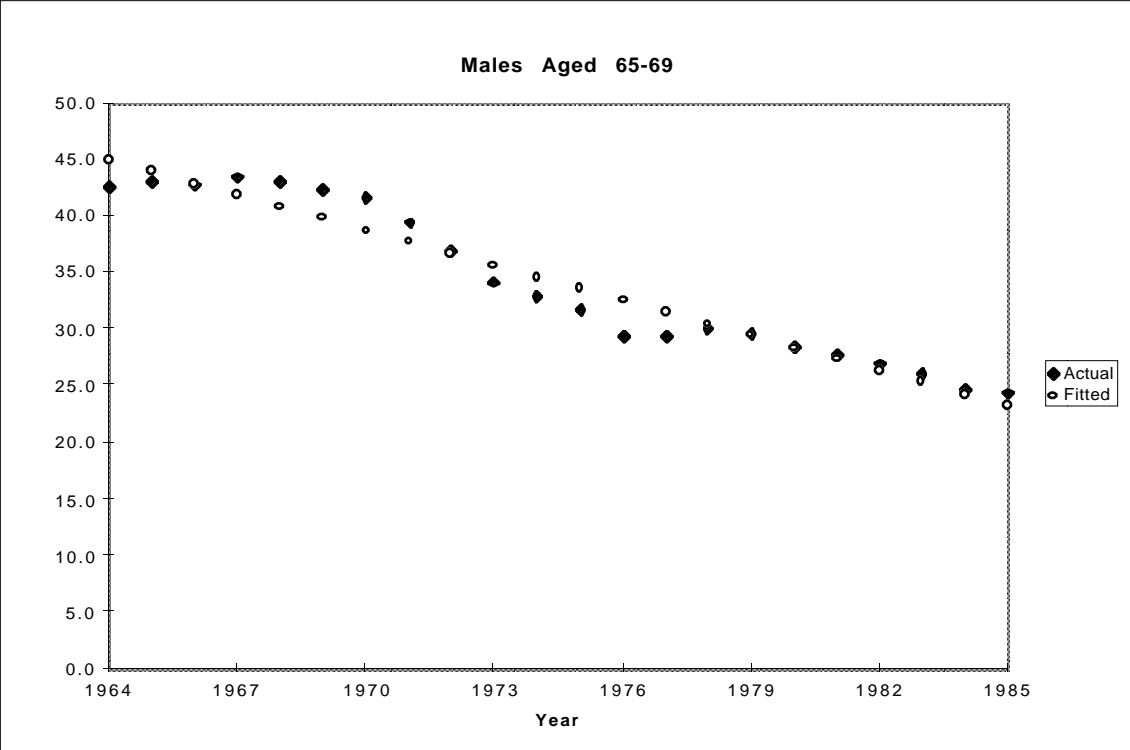
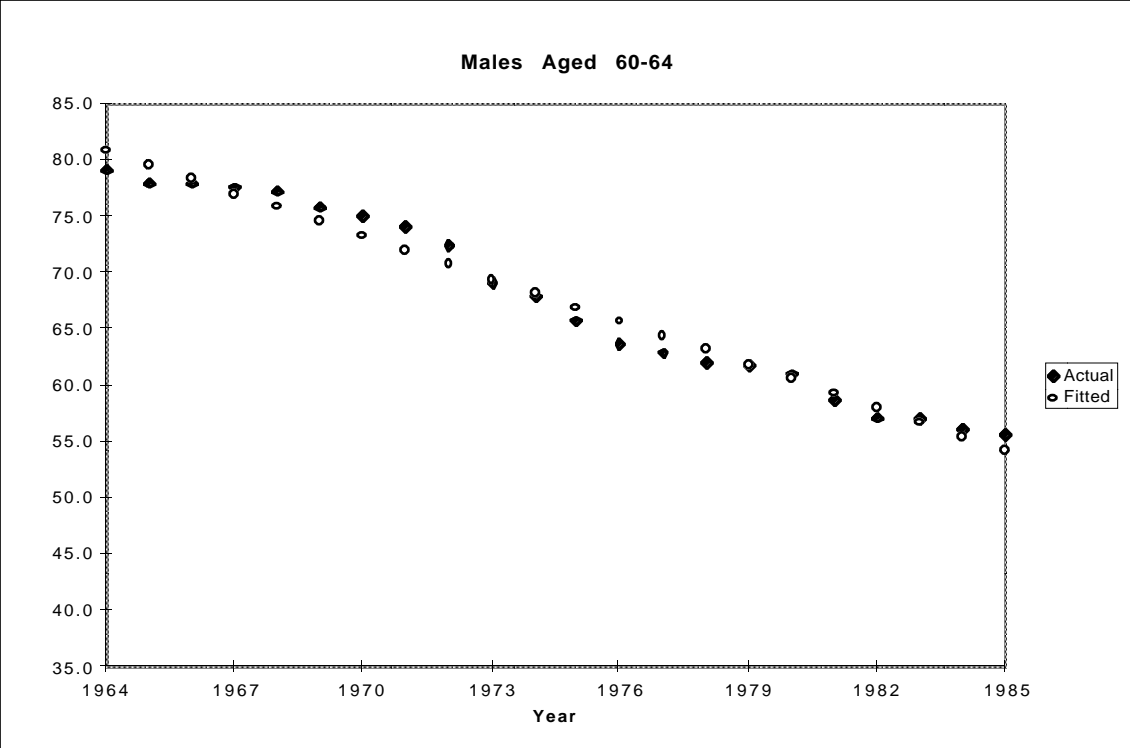
Employment Rates of Older Men, 1970-1991

	1970	1975	1980	1985	1990	1991	% point change 1975-91
Aged 55-59							
Australia	90.3	85.8	81.3	71.1	72.4	65.6	-20.2
Canada	n.a.	83.6	80.9	74.8	72.2	69.4	-14.2
Finland	79.3	74.2	65.2	59.4	59.3	57.4	-16.8
France	81.5	81.3	77.4	62.6	62.9	64.2	-17.1
Germany	87.5	82.7	78.3	70.7	70.2	n.a.	-12.5
Ireland	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Italy	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Japan	89.2	89.3	88.4	86.8	89.9	91.7	+2.4
Netherlands	85.5 ^b	76.8	72.8	60.3	63.5	60.6	-16.2
New Zealand	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Norway	87.8	86.6	85.0	89.1	82.0	81.2	-5.3
Portugal	n.a.	80.4	82.1	71.3	73.3	73.9	-6.5
Spain	n.a.	84.4	79.4	68.9	69.6	68.9	-14.5
Sweden	89.7	88.9	86.8	85.6	86.8	85.0	-3.9
United Kingdom	92.5	89.7	84.7	68.2	73.8	71.6	-18.1
United States	85.7	79.8	78.3	75.5	76.0	74.4	-5.4
Aged 60-64							
Australia	76.8	66.1	47.8	39.3	46.3	43.4	-22.7
Canada	n.a.	67.9	62.9	52.3	48.7	44.3	-23.6
Finland	65.0	55.1	41.4	35.6	28.2	28.0	-27.1
France	66.6	55.1	44.9	29.4	22.0	19.1	-36.0
Germany	70.1	55.2	41.4	31.7	31.9	n.a.	-23.3 ^c
Ireland ^d	82.4 ^b	76.1	72.2 ^d	64.7	59.1	60.2	-15.9
Italy	47.8	42.1	39.0	38.2	35.4	34.4	-7.7
Japan	79.8	76.8	74.2	67.4	69.2	70.6	-6.2
Netherlands	72.3 ^b	62.3	46.3	26.7	22.0	20.8	-41.5
New Zealand ^e	n.a.	n.a.	n.a.	66.0 ^e	53.9	53.3	n.a.
Norway	79.4	76.9	73.4	71.3	64.2	62.2	-14.6
Portugal	n.a.	73.7	65.3	57.6	56.2	58.1	-19.6
Spain	n.a.	68.6	60.2	48.0	43.6	43.0	-25.6
Sweden	78.0	72.3	67.4	61.7	62.3	62.9	-9.4
United Kingdom	80.2	74.6	60.6	50.5	52.5	51.0	-23.6
United States	69.9	61.6	57.7	52.7	53.0	52.0	-9.6
Aged 65 and over							
Australia	21.9	16.6	11.0	8.6	8.3	9.0	-7.6
Canada	21.7	17.5	14.5	12.1	11.2	10.9	-6.8
Finland	41.0	29.4	17.0	10.6	7.9	7.1	-22.3
France	19.1	13.6	7.5	5.2	3.7	3.5	-10.1
Germany	17.2	10.6	6.8	5.1	4.4	n.a.	-6.2 ^c
Ireland	41.1 ^b	27.4	23.1 ^d	15.2	15.3	16.5	-10.9
Italy	9.0	7.3	8.4	5.2	5.0	5.2	-2.1
Japan	49.1	43.6	40.1	36.2	36.0	37.6	-6.0
Netherlands	11.3 ^b	8.0	4.8	3.5	n.a.	n.a.	n.a.
New Zealand	n.a.	n.a.	n.a.	14.5 ^e	10.3	9.4	n.a.
Norway	43.1	37.6	34.3	26.4	25.0	19.2	-18.3
Portugal	n.a.	36.0	27.8	19.5	20.0	22.2	-13.8
Spain	n.a.	18.6	12.4	5.8	3.7	3.6	-15.0
Sweden	28.1	19.1	14.2	10.9	12.2	14.7	-4.4
United Kingdom	20.0	15.6	10.2	8.3	8.6	8.4	-7.2
United States	24.9	19.5	17.7	14.7	15.3	14.7	-4.8

Notes: a) aged 55-64 b) 1971 c) over 1975-90 d) 1981 e) 1986.

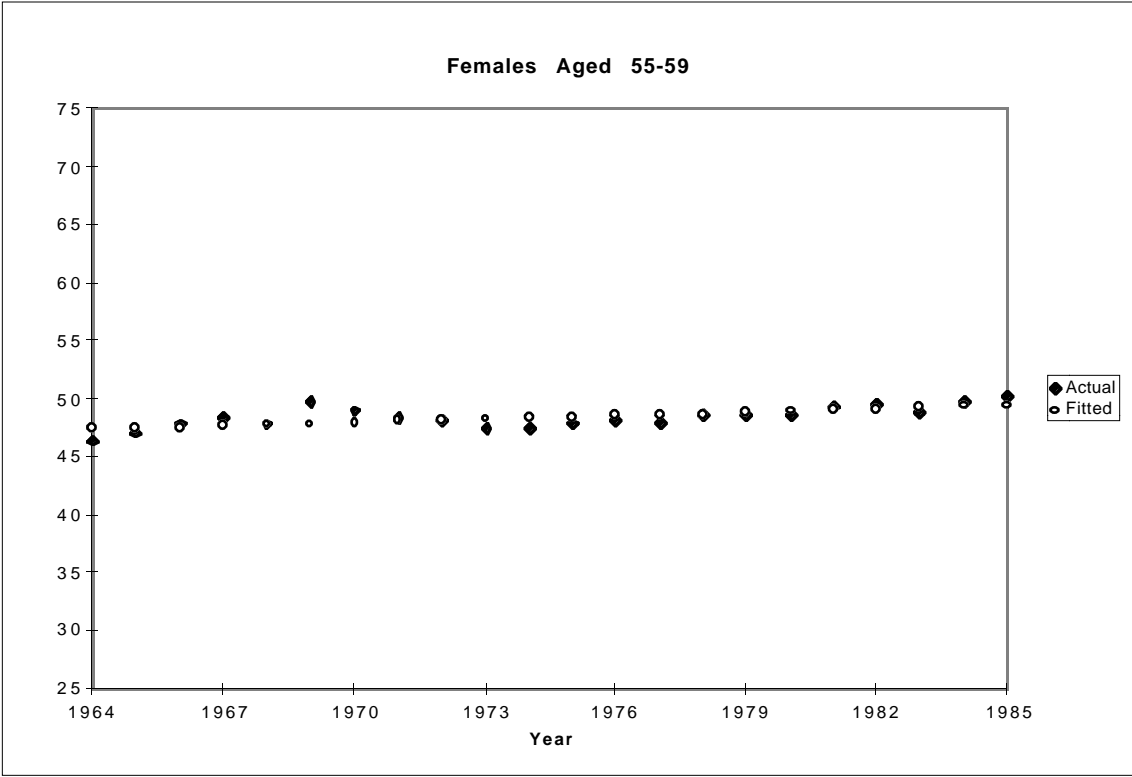
Source: OECD (1995: table 2.1a)

Figure 1
Labor Force Participation Rates,
Males Aged 60-64 and 65-69
1964 to 1985



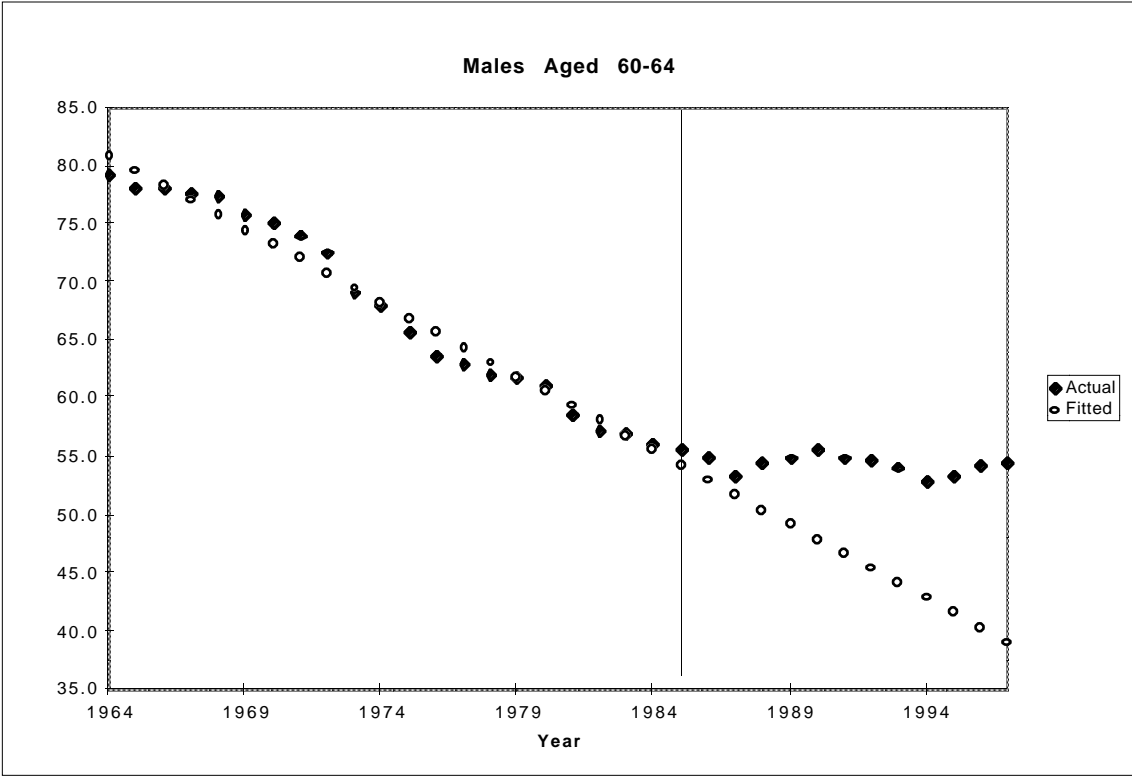
Source: U.S. Bureau of Labor Statistics, Employment and Earnings, January Issues

Figure 2
Labor Force Participation Rates,
Females Aged 55-59 and 60-64
1964 to 1985



Source: U.S. Bureau of Labor Statistics, Employment and Earnings, January Issues

Figure 3
Labor Force Participation Rates,
Males Aged 60-64 and 65-69
1964 to 1997



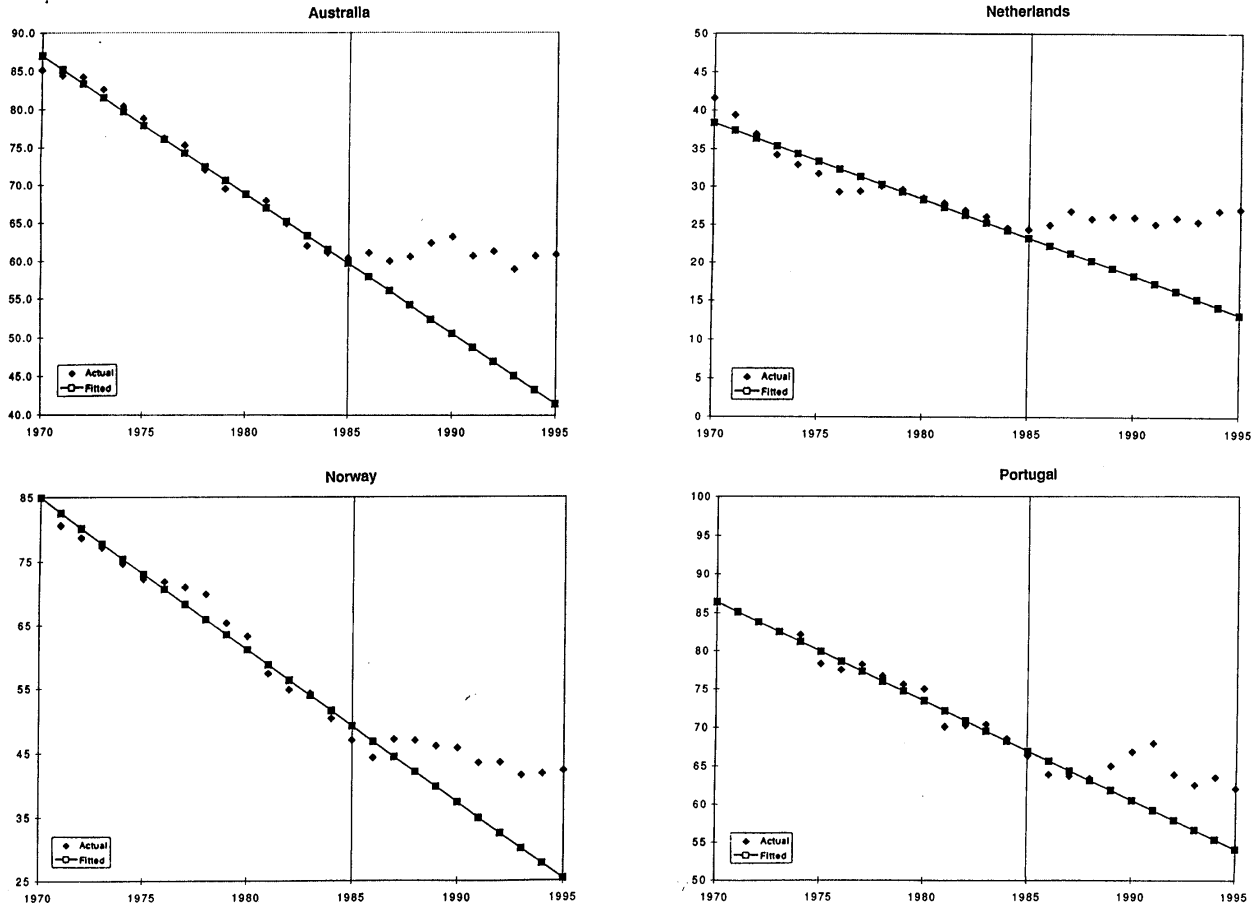
Source: U.S. Bureau of Labor Statistics, Employment and Earnings, January Issues

Figure 4
Labor Force Participation Rates,
Females Aged 55-59 and 60-64
1964 to 1997



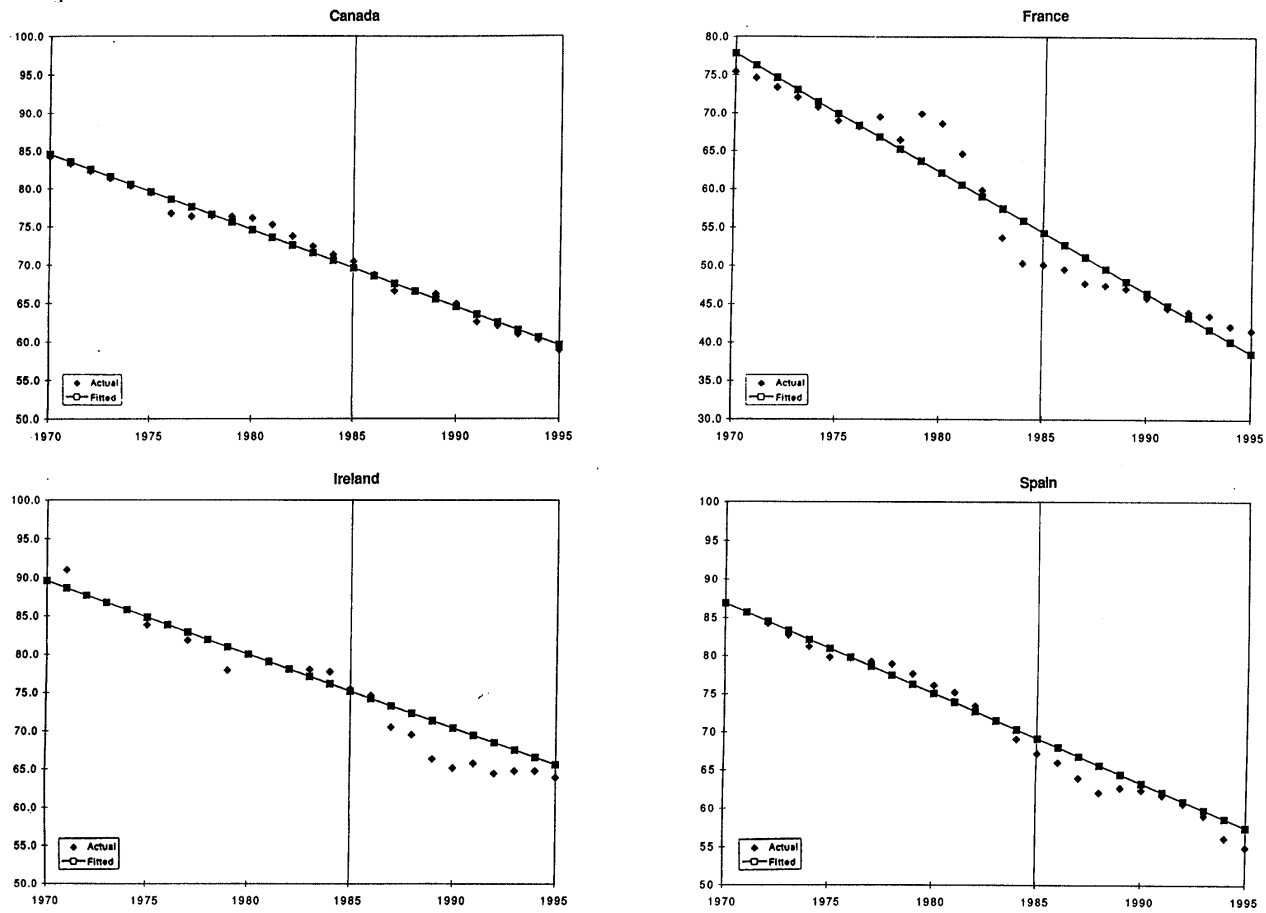
Source: U.S. Bureau of Labor Statistics, Employment and Earnings, January Issues

Figure 5
Labor Force Participation Rates, Males, Aged 55-64, by Country



Source: OECD labor force statistics

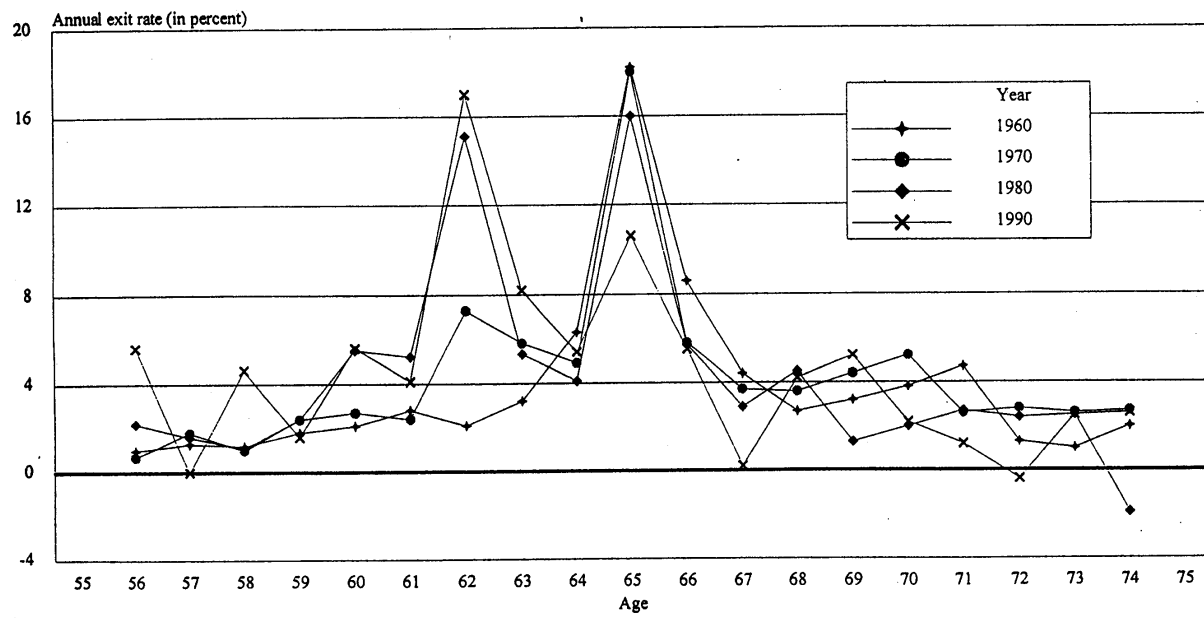
Figure 5 (cont.)
Labor Force Participation Rates, Males, Aged 55-64, by Country



Source: OECD labor force statistics

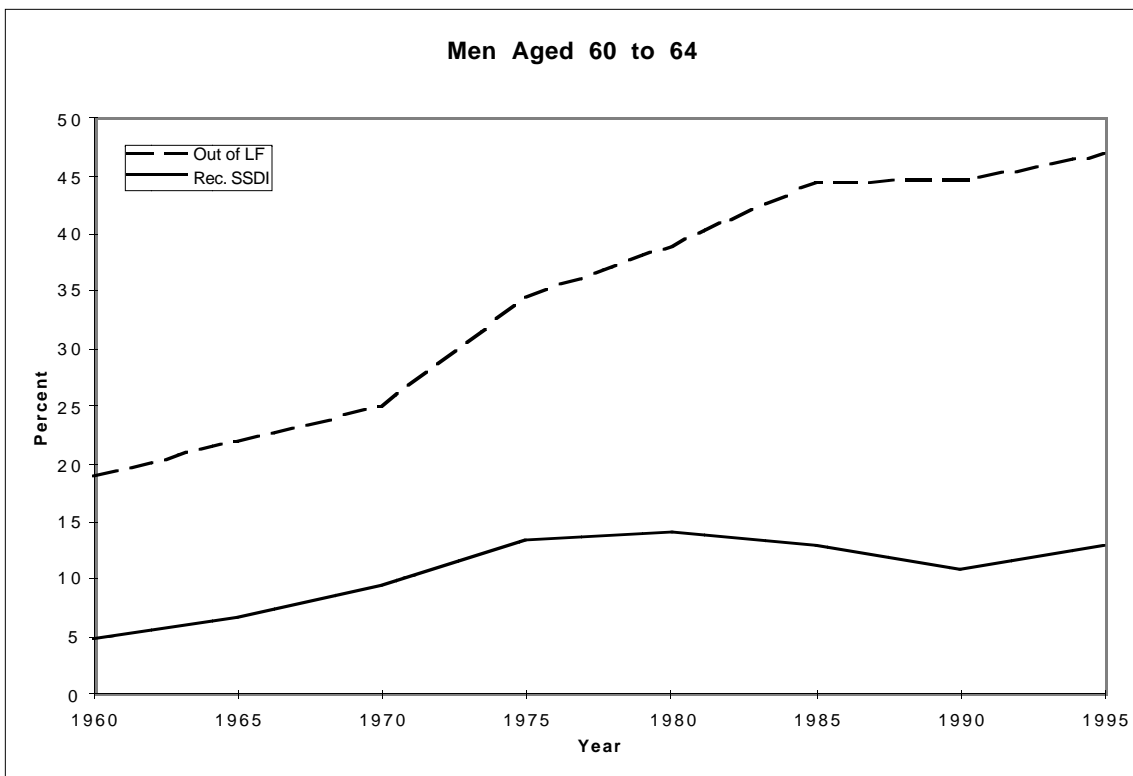
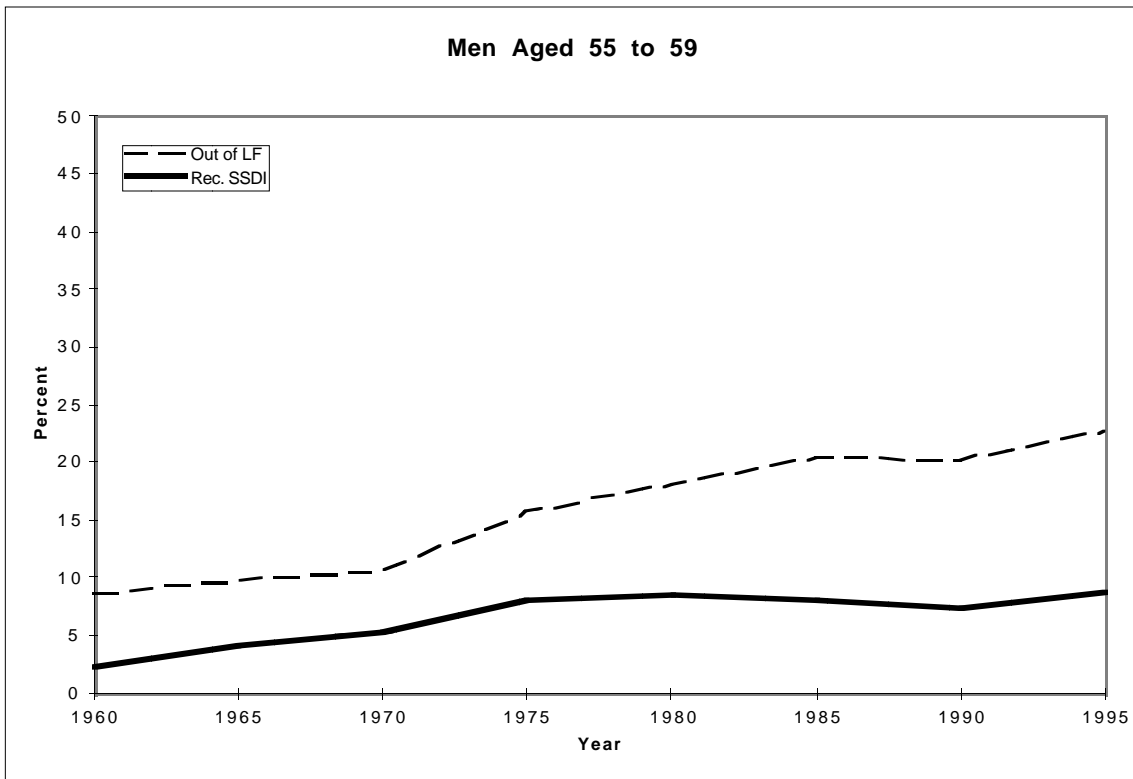
Figure 6

Male Retirement Rates, by Age
1950 to 1990



Source: Leonasio (1993: Chart 1)

Figure 7
 Percent of Men Out of the Labor Force and
 Percent of Men Receiving Social Security Disability Benefits,
 Aged 55 to 59 and 60 to 64, 1960 - 1995



Source: Bound and Burkhauser (1998: table 15)