

Acknowledgements

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The Problem Facing Workers In Physically Demanding Occupations

Workers in physically demanding occupations may be forced for health reasons to stop working before meeting the age requirement for Social Security old age benefits or for unreduced benefits, although their health has not deteriorated sufficiently to qualify them for Social Security disability benefits. One study found that 18 percent of retirees aged 55 to 61 and 14 percent of retirees aged 62 to 64 could not have continued working for health reasons but did not have a condition severe enough to qualify them for disability benefits (Uccello 1998). This conclusion is based on data from the 1990 panel of the Survey of Income and Program Participation (SIPP). The survey does not include information on the physical demands of each participant's job, so the analysis was made based on occupational category. Uccello found that workers in occupations deemed more physically demanding constitute a disproportionately high number of retirees at earlier ages, and that the proportion of workers in more physically demanding occupations decreases with age, particularly after age 65.

An earlier analysis by the Social Security Administration based on the 1982 New Beneficiary Survey found that 7.2 percent of new retired workers aged 62 to 67 receiving old age benefits were unable to work and had worked in jobs with medium or heavy physical demands immediately before retirement; and 6.7 percent had partial work limitations and had worked in jobs with medium or heavy physical demands immediately before retirement (Social Security Administration 1986). They represented 18.4 percent and 17.1 percent, respectively, of all retirements among workers in jobs with medium or heavy work demands. The analysis projects that the percentage of new retired workers aged 62 to 67 who retire from jobs with heavy work demands will decrease from 11.4 percent in 1980 to a range of 8 to 10 percent in 2000 and to 7 to 9 percent in 2020. No similar projection was made for workers in jobs with medium work demands, but a proportional decrease would be from 27.8 percent in 1980 to a range of 19 to 24 percent in 2000 and to 17 to 22 percent in 2020. Putting these figures together, even by 2020 about ten percent of new retired workers aged 62 to 67 will be unable to work or have partial work limitations and will have retired from jobs with medium or heavy work demands.

Both of the studies cited above were carried out when the full retirement age (FRA), the earliest age at which unreduced old age benefits are payable, was age 65. Since then, due to the 1983 amendments to the Social Security Act, the FRA has risen to age 66, and it is scheduled to rise further to age 67 for workers born in 1960 of later, i.e., those who will reach age 62, the earliest retirement age, in 2022 or later (Myers 1993). The rise in the normal retirement age has the effect of reducing benefits for workers who retire before the FRA. For example, for a worker retiring at age 62, the earliest retirement age for non-disabled workers both before and after the 1983 amendments, the rise in the FRA from 65 to 67 decreases the benefit by 12.5 percent, from 80 percent to 70 percent of the unreduced benefit; and for a worker retiring at age 65 by 13.3 percent, from 100 percent to 86.7 percent of the unreduced benefit. While these benefit reductions affect all workers not eligible for disability benefits, they can have a greater impact on workers unable to continue working for health reasons because these workers: (a) may have less opportunity to plan for an earlier than expected retirement; (b) may have less ability to save for retirement while working due to lower than average income; and (c) may have to bear additional costs owing to their health condition. Uccello concludes "many blue collar workers and others in more strenuous occupations may be adversely affected by a higher retirement age."

The Case For Raising the Retirement Age

According to the 2008 report of the Social Security trustees, projected income to the system will fall short of projected expenses over the statutory 75-year valuation period, using the trustees' intermediate, or best estimate, assumptions (Board of Trustees of the Social Security Trust Funds 2008). Remedying this actuarial imbalance would require an increase in the payroll tax equivalent to an immediate increase of 1.7 percent of payroll, or a benefit decrease equivalent to an immediate across-the-board reduction in current and future benefits by 11.5 percent, or some equivalent combination of tax increases and benefit reductions. Under the intermediate assumptions, benefits and administrative expenses are projected to exceed payroll tax income beginning in 2017, and the trust funds are projected to be drawn down to zero in 2041.

Some people claim the soaring costs of social insurance programs such as Social Security and Medicare make future benefit cuts inevitable (Klieber 2008). This is not the case, however.

Gradually increasing the payroll tax at a rate less than 20 percent of the Trustees' assumed rate of increase in real wages would solve most of Social Security's and Medicare's long-term financial problems as projected in the 2008 Trustees Reports for the two systems. Nevertheless, Social Security is a major government program that must compete in the political arena with many other government programs for funding. The country may decide, through the political process, not to finance currently promised benefits, in which case benefit cuts would become necessary. This paper takes no position on whether or not to cut benefits.

If benefit cuts become necessary, many actuaries and economists have advocated that further increases in the FRA be part of any package of reforms intended to put Social Security on a sound financial footing. Advocates for raising the FRA generally begin their arguments by pointing out the increase in life expectancy among the covered population since the program started paying benefits in 1940. The following table summarizes the increase in cohort life expectancy at age 65 from 1940 to the present and projected future increases using data from the 2008 Trustees Report (Board of Trustees of the Social Security Trust Funds 2008).

Table 1: Cohort Life Expectancies at Age 65, 1940 - 2085

Year Age 65	Male	Female
1940	12.7	14.7
1950	13.1	16.2
1960	13.2	17.4
1970	13.8	18.5
1980	14.7	18.7
1990	15.8	19.0
2000	16.9	19.5
2007	17.5	19.8
2010	17.7	20.0
2035	19.2	21.4
2060	20.6	22.7
2085	21.7	23.8

Source: 2008 Social Security Trustees Report

Cohort life expectancy represents the expected remaining lifetime of an individual at a given age in a given year. Calculating the cohort life expectancy requires following the entire population at the given age, the "cohort," through time from the calculation year through the death of the last cohort member. Therefore, cohort life expectancies for future and recent past calculation years

take into account expected future death rates, which can only be derived from assumptions regarding the future rate of mortality improvement. The cohort life expectancies in the table include actual death rates through 2007 and estimated death rates after 2007. The estimated death rates are based on the Trustees' intermediate assumptions. In their annual reports, the Trustees do not show life expectancies for subgroups of the covered population except for men and women; for example, there is no breakdown by race or income level.

From 1940 to 2000, age 65 cohort life expectancy for both men and women increased by about a third, although the pattern of change differs between the sexes. Nearly 80 percent of the increase in life expectancy for women occurred in the first half of this period, while nearly three quarters of the increase in life expectancy for men occurred during the second half. The trustees project the increase in life expectancy over the 75 years from 2010 to 2085 will be less than over the 60 years from 1940 to 2000, both as a percentage and in absolute years, and that the rate of increase will be more uniform, dropping off slowly over the course of the 75 years. The total projected increase from 1940 to 2085 for both men and women is about 9 years.

As noted above, the FRA remained constant at age 65 from 1940 to 2000, then increased gradually to age 66, and is scheduled to increase further to age 67 for workers who reach age 62, the earliest retirement age, in 2022. Comparing the increase in life expectancy, both past and projected, from the table with the scheduled changes shows that the two year increase in the FRA represents less than half of the increase in life expectancy from 1940 to date, and less than a quarter of the projected increase from 1940 to 2085. According to the American Academy of Actuaries, Social Security faces a permanent actuarial imbalance that is partly attributable to increasing longevity (American Academy of Actuaries 2008). The Academy goes on to declare, "A financially sound Social Security system must accommodate future increases in longevity. The most direct way to do that would be to extend the currently scheduled increases in Social Security's retirement age."

Three recent Social Security reform proposals have included provisions for raising the FRA, although in all three cases this provision is only a minor part of the overall proposal.

The first is a Nonpartisan Social Security Reform Plan submitted December 14, 2005 by Jeffrey Liebman, professor of public policy at Harvard University; Maya MacGuineas, director of the fiscal policy program at the New America Foundation; and Andrew Samwick, professor of economics and director of the Nelson A. Rockefeller Center for Public Policy at Dartmouth College (Liebman *et al* 2005). Among its many components is beginning the scheduled rise in the FRA from age 66 to 67 immediately rather than in 2017 as under current law, followed by a continuation of the two month per year rate of increase until the FRA reaches age 68 for those attaining age 62 in 2017. The proposal also includes gradually increasing the earliest age for receiving Social Security old age benefits from the current age 62 to age 65. The authors justify raising both the FRA and the earliest retirement age by the rising longevity and improved health of older Americans.

A Social Security reform bill introduced March 16, 2006 by Senator Bob Bennett (R-Utah) includes among its provisions a modest acceleration of the rise in the FRA from age 66 to 67 so that it occurs from 2012 to 2017 (Bennett 2006). After 2017, there is no further increase in the FRA, but the initial monthly benefits of future retirees are adjusted based on increases in longevity in the covered population.

More recently, on May 21, 2008, Rep. Paul Ryan (R-Wis) introduced a wide ranging economic reform package including Social Security provisions (Ryan 2008). Under Rep. Ryan's proposal, the scheduled rise in the FRA from age 66 to 67 would occur one year earlier, ending in 2021, after which the FRA would rise as necessary so that the ratio of the period from age 20 to the FRA to the life expectancy at FRA remains the same as in 2021. Under the Trustees' intermediate assumptions, the FRA would need to rise about one month every two years to keep this ratio constant.

The Office of the Actuary (OACT) of the Social Security Administration publishes summary measures of the effect on the long-range actuarial balance from adopting on a stand-alone basis various provisions that have been or may become part of reform proposals (Social Security

Administration 2008). These include seven provisions for raising the FRA above the level specified in current law:

- A. Increase the FRA by two months per year for those attaining age 62 in 2012 through 2017, five years earlier than in current law. This corresponds to the FRA component of the bill introduced by Senator Bennett, as described above.
- B. Begin the increase in the FRA from age 66 to age 67 immediately, *i.e.*, in 2009. This corresponds to the first part of the Liebman-MacGuineas-Samwick proposal, *i.e.*, without the further increase to age 68.
- C. Increase the FRA by one month every two years after the FRA reaches age 67 under current law in 2022. An increase of one month every two years corresponds roughly to indexing the FRA to expected improvements in longevity.
- D. Increase the FRA by two months per year for those attaining age 62 in 2016 through 2021, one year earlier than in current law; then increase the FRA as necessary to maintain a constant ratio of expected retirement years to potential work years. This corresponds to the FRA component of the Ryan proposal.
- E. Begin the increase in the FRA from age 66 to age 67 immediately, followed by a continued increase by one month every two years until the FRA reaches age 68. As noted above, this is roughly equivalent to indexing the FRA by life expectancy.
- F. Begin the increase in the FRA from age 66 to age 67 immediately, followed by a continued increase by two months every year until the FRA reaches age 68. This corresponds to the full Liebman-MacGuineas-Samwick proposal as regards the FRA.
- G. Begin the increase in the FRA from age 66 to age 67 immediately, followed by a continued increase by one month every two years until the FRA reaches age 70. As noted above, this is roughly equivalent to indexing the FRA by life expectancy. Under

this provision, the age 70 FRA would not be reached for 78 years, beyond the end of the 75-year valuation period.

The following table summarizes the results of the OACT studies, which are based on the actuarial valuation described in the 2008 Trustees Report.

Table 2: Results of Actuarial Studies of Various Provisions Raising the Retirement Age

Provision	Current Law		Change from Current Law		Result After Change	
Described	Long-Range	75 th Year	Long-Range	75 th Year	Long-Range	75 th Year
Above	Balance	Balance	Balance	Balance	Balance	Balance
A	-1.70%	-4.20%	0.05%	0.00%	-1.65%	-4.20%
В	-1.70%	-4.20%	0.10%	0.00%	-1.60%	-4.20%
C	-1.70%	-4.20%	0.37%	1.32%	-1.32%	-3.12%
D	-1.70%	-4.20%	0.38%	1.11%	-1.32%	-3.09%
Е	-1.70%	-4.20%	0.46%	0.73%	-1.24%	-3.47%
F	-1.70%	-4.20%	0.58%	0.73%	-1.12%	-3.47%
G	-1.70%	-4.20%	0.62%	1.43%	-1.08%	-2.78%

Source: Office of the Chief Actuary Web Site: www.socialsecurity.gov/OACT/solvency/provisions

The table shows that even the largest increase in the FRA among the seven provisions eliminates only a little over a third of the long-range actuarial deficit. However, larger increases are not out the question. Increasing the FRA to a higher age and/or more rapidly would further reduce the long-range actuarial deficit.

In a report in May 2005, the Congressional Budget Office (CBO) calculates, among 30 proposed changes, the effect on the actuarial balance from beginning the increase in the FRA from age 66 to age 67 immediately, followed by a continued increase by two months every year until the FRA reaches age 70 (Congressional Budget Office 2005). CBO calculates this provision would raise the actuarial balance by 1.09 percent of taxable payroll. Since CBO's baseline actuarial balance in 2005 was –1.05 percent of taxable payroll, under the CBO projection this provision would entirely eliminate the 75-year deficit. However, this would almost certainly not be the case using the Trustees' intermediate assumptions.

Putting Social Security on a firm financial footing is not the only reason for raising the retirement age. As Eugene Steuerle points out in testimony before the Social Security

Subcommittee of the House Committee on Ways and Means, Social Security is turning into a middle-age retirement system (Steuerle 2005). By this he means an increasing portion of benefits is paid to people whose capacity for work is undiminished and who still have many years of healthy life ahead of them, while a declining portion is paid to the most vulnerable, the truly elderly. By subsidizing middle-age retirement, Social Security as currently constituted hurts the economy in three ways: (1) by exacerbating the projected decline in the growth of the labor force; (2) by reducing national income; and (3) by reducing national savings. Increasing the retirement age reduces the subsidy for middle-age retirement while redirecting system resources to those who are truly old.

Aside from its impact on the national economy, working longer can benefit both individual workers and their employers (Munnell 2007). Increasing longevity requires that workers save more for retirement at a time when Social Security benefits are declining as a percentage of preretirement income, due to the scheduled increases in the FRA, and employers are cutting back on retirement benefits. Delaying retirement both increases the time available for accumulating retirement savings and reduces the amount of savings required. At the same time, employers face the prospect of a labor shortage due to declining fertility rates following the baby boom generation. Older workers today are better educated and healthier than in the past and have a lifetime of work experience behind them. Further, fewer jobs are physically demanding. Tapping older workers will be an important strategy for employers to overcome the impending labor shortage. Further increases in the FRA, by encouraging workers to remain longer in the labor force, can benefit both workers and their employers.

The Case Against Raising the Retirement Age

The case against raising the FRA is perhaps best summarized by economist Christian Weller in a briefing paper for the Economic Policy Institute, "Raising the Retirement Age: The Wrong Direction for Social Security" (Weller 2000). Weller's arguments are based on three hypothetical schedules for raising the FRA derived from proposals made by then Republican presidential candidate George W. Bush. In addition to his advocacy for diverting a portion of the Social Security payroll tax to individual investment accounts, Bush suggested that the system's

financial deficit might be closed by benefit cuts for younger workers, including raising the FRA, although Bush did not make any specific proposal for raising the FRA.

Weller constructs three options based on the Bush proposal. Option I would close the entire funding deficit through an across-the-board 41 percent benefit cut, achieved through raising the FRA for those currently age 35 to age 72.8. Option II would close the entire funding deficit through an equivalent phased-in benefit cut, resulting in an FRA for current 35 year olds of 73.6 years. Option III would close half the funding deficit through half the phased-in benefit cut under Option II, resulting in an FRA for current 35 year olds of 70.2. Thus, 35 year olds would need to work 5.8, 6.6, or 3.2 years longer, respectively, under options I, II and III than under current law to retire on full old age benefits, while enjoying substantially reduced periods of retirement on average.

The impact on length of retirement would fall most heavily on low-income workers, due to their shorter life expectancy. For example, Weller calculates that the 41 percent across-the-board benefit cut under Option I would mean a 52 percent cut for poor men, due primarily to a proportionately greater reduction in life expectancy at the Option I FRA compared to current law. Weller also raises the issue of workers who may need to continue working until the FRA in order to qualify for a benefit high enough to avoid retiring in poverty, but are prevented from doing so by poor health. Again, the burden falls most heavily on low-income and blue collar workers. Weller concludes, "Ultimately, raising the retirement age would be most burdensome for those who depend on Social Security the most."

Other research supports Weller's conclusions. A 2007 study by the Office of Research, Evaluation and Statistics in the Office of Policy of the Social Security Administration examines differentials in mortality rates and life expectancies by average relative earnings among male workers covered by Social Security (Waldron 2007). The study includes a sample of covered male workers born in the period 1912 through 1941, and categorizes these workers by income, measured by average Social Security covered earnings from ages 45 through 55 (excluding years with zero reported earnings) relative to prevailing earnings levels. The study finds that projected cohort life expectancies at age 65 among workers in the top half of the earnings distribution

increased from 15.5 years for workers born in 1912 to 21.5 years for workers born in 1941, and among workers in the bottom half of the distribution from 14.8 years to 16.1 years over the same period. Thus, not only did the high income workers have a higher life expectancy than the low income workers, but their life expectancy increased more rapidly over the period covered by the study. The study concludes that the segment of the male Social-Security-covered worker population experiencing slower mortality improvement is not limited to a small group of economically disadvantaged workers at the lowest end of the income scale, but includes the entire bottom half of the population. Indeed, the study notes that the differential in life expectancy between the top and bottom half of the population may be understated, because some of the most economically disadvantaged workers are excluded from the study because they had no reported income from ages 45 to 55.

A study published by the International Monetary Fund (IMF) reports similar findings (Duggan *et al* 2007). This study also uses data from Social Security records. It categorizes workers by income according to total lifetime earnings relative to prevailing earnings levels, and further categorizes workers according to earnings trend - declining, flat or rising relative to cohort averages. The following table showing median ages at death for retired workers born in 1920 summarizes some of the findings of this study.

Table 3: Median Age at Death for Retired Workers Under Social Security Born in 1920

	Flat Earnings Trend		Rising Earnings Trend			
Group	$10^{\rm th}$	Median	90 th	10 th	Median	90 th
	percentile	Median	percentile	percentile	Median	percentile
White males	78.8	80.3	81.6	79.8	81.3	82.6
Black males	76.8	77.8	80.3	77.3	78.3	80.8
White females	82.1	83.1	84.3	83.5	84.5	85.8
Black females	81.1	82.5	84.8	82.3	83.8	86.1

Source: Duggan et al 2007

The table shows higher median ages at death for females compared to males, whites compared to blacks, higher income workers compared to lower income workers, and workers with a rising earnings trend compared to those with a flat earnings trend. The study concludes that "incomerelated differences in life expectancy are substantial enough to require consideration when

evaluating the distributional consequences of proposals to modify various features of the Social Security program or when evaluating the existing program."

The case against raising the FRA is stated most poignantly by Valarie Long, president of the Service Employees International Union, in testimony before the Social Security Subcomittee of the House Committee on Ways and Means: "Changing the Social Security retirement age would do a great injustice to millions of Americans who have worked the hardest to earn a decent rest at the end of their working lives." (Long 2005)

Individual Equity and Social Adequacy

From its inception, Social Security has included elements of individual equity and social adequacy (Myers 1993, American Academy of Actuaries 2004). In this context, individual equity means basing a covered worker's benefit on the worker's earnings history, and hence on the contributions made by the worker and on his behalf. Social adequacy means basing a covered worker's benefit on the worker's financial need.

Social Security follows the principle of individual equity in the following ways:

- The system pays benefits when a covered worker meets the eligibility requirements in the law, without regard to financial need.
- Benefits are determined by a formula that provides higher amounts for workers who have contributed more to the system.

These two features are sometimes characterized by the terms "universality" and "earned right." Universality means that the system covers nearly all workers, across the entire earnings spectrum. The fact that the very wealthy receive Social Security helps prevent benefits to the less well off from being stigmatized as welfare payments. Earned right means that a worker's entitlement to a Social Security benefit derives from the worker's employment and from the payroll taxes paid on wages rather than from financial need. Together, the concepts of

universality and an earned right to a benefit underpin the widespread and enduring public support for Social Security.

Social Security serves the requirement for social adequacy in the following ways:

- When the system started paying benefits, full benefits were paid to workers who had made contributions for only a few years.
- The benefit formula is weighted so the amounts for low income workers are higher relative to
 pre-retirement earnings than for high income workers, although low and high income
 workers pay taxes at the same rate.
- If a worker is married when he retires, the spouse receives 50 percent of the worker's benefit while the worker is alive and 100 percent after the worker dies (provided the spouse is not eligible for a higher benefit based on the spouse's own earnings history) without any requirement that the worker contribute more than an unmarried worker.
- If a worker cannot work due to disability, Social Security pays a disability benefit to the worker and other eligible family members.
- If a worker dies before retirement, Social Security pays benefits to the worker's surviving spouse and other eligible family members.

These features have the effect of focusing benefits where need is greatest, thus furthering the essential goal of the system of providing a floor of protection for covered workers and their dependents against the contingencies of old age and premature death and disability.

Policy makers have sometimes given too little heed to the role of individual equity in maintaining broad public support for social insurance programs, as illustrated by the fate of the Medicare Catastrophic Coverage Act of 1988 (MCCA). The MCCA included many enhancements to Medicare benefits in additional to the catastrophic coverage from which it derives its name (Myers 1993). These were funded by a supplemental premium on covered beneficiaries which, under a complex formula, fell most heavily on those with high incomes. Thus, high income beneficiaries paid a supplemental premium far greater than the value of the additional coverage they received. In fact, those who already had good post-retirement health

coverage, for example, from their employers, received no value for the additional premium. High income beneficiaries and organizations representing them raised such a brouhaha that the legislation was ultimately repealed by lopsided margins in both houses of Congress. Those supporting the MCCA argued that even the highest supplemental premium was less than the subsidy all Medicare beneficiaries received at the time from the Treasury, and that the supplemental premium actually represented only a reduction in this subsidy. This is not how the matter was perceived by opponents.

The phase-in of the new benefit formula adopted as part of the 1977 Social Security legislation provides another example of a change to the system that gave too little attention to individual equity (Myers 1993). The new formula became effective in 1979 for those attaining age 62 in that year and later, i.e., those born in 1917 and after. Congress did not provide for a smooth transition from the old to the new formula for those choosing to delay retirement beyond age 62. These workers received significantly lower benefits than similarly situated workers born before 1917. Automatic adjustments to the benefit formula brought the dollar amount of benefits back to approximately the 1978 level in a few years. This benefit pattern become known as the "notch," and affected workers called themselves "notch babies," because their less favorable treatment under the 1977 legislation resulted from their year of birth. The notch babies made a major public fuss about their treatment under the 1977 legislation, but they never succeeded in obtaining legislative redress. Although the transition to the new benefit formula could have been designed more equitably, still the notch babies received benefits comparable to succeeding cohorts and were in fact better off than succeeding cohorts in that they paid less taxes over their working lifetimes. Nevertheless, the perceived unfairness of their situation caused a great deal of bitterness.

The lesson from these two examples is that, with Social Security as with all political issues, perception is reality. Changes to the system that shift the balance between individual equity and social adequacy in one direction with no compensating change in the other direction, even if based on sound economic reasoning, run the risk of alienating the public support so essential to the continued viability of the system.

Individual equity and social adequacy are both essential to the success of Social Security, the first by ensuring public support for the system, the second by ensuring that the system achieves its purpose. All the features of the system described above and others less important embody a balance between the competing principles of individual equity and social adequacy. The balance has changed as the system has evolved. For example, spouse, survivor and disability benefits, as well as benefits for non-spouse family members, were added and expanded at various times over Social Security's history. No amendment to the Social Security Act that has a significant effect on benefits has been adopted since 1983.

The current balance between individual equity and social adequacy in the U.S. Social Security system is the end result of more than 70 years of political give and take. That the balance has remained stable over the past 25 years can be taken as an indication that a political consensus has developed around it. The strength of this consensus was a major contributing factor to the failure of President Bush's proposal to convert part of Social Security to an individual account system.

There is no theoretically correct balance between individual equity and social adequacy. After World War II, individual equity considerations were virtually eliminated from most Western European social insurance programs (de Jong 1997). This had the effect of severing all links between the utilization of social insurance benefits and the cost of providing those benefits, with the result that both utilization and cost soared out of control, making the programs unsustainable in the long run. This was particularly the case for disability benefits, which both employers and employees came to regard as a combination of unemployment insurance and early retirement subsidy. Reforms, including tightening eligibility requirements, reducing benefits, particularly for younger workers, and requiring employers to finance benefits directly during the initial period of disability, have restored some degree of individual equity. Nevertheless, an entrenched culture of entitlement has made cutting back benefits politically hazardous, so that even after reform European social insurance programs remain more generous than their U.S. counterparts. While the high cost of social insurance programs and the resulting high rates of taxation remain of concern in many European countries, they have not prevented Europeans from enjoying what they consider a satisfying standard of living.

An Occupational Disability Benefit for Social Security

Raising the FRA with no compensating change to the system would shift the balance between individual equity and social adequacy by reducing the adequacy of benefits for a significant segment of the covered population, as demonstrated above. Nevertheless, actuaries and economists knowledgeable about Social Security have made a good case for making raising the FRA a part of any package of reforms intended to put the system on a sound financial footing. A compensating change to the system which restores some of the benefit adequacy lost through raising the FRA can bridge the gap between those for and against raising the FRA.

One possible change is adding a new second tier disability benefit that provides a benefit between the current Social Security disability and old age benefits based on a less strict definition of disability than that which applies to the current disability benefit. To qualify for a disability benefit under current law, a worker must be "totally disabled," i.e., unable to "engage in any substantial gainful activity by reason of any medically determinable physical or mental impairment." (Myers 1993, Zayatz 2005) In evaluating disability claims against this standard, the Social Security Administration takes into account the age, education and experience of the applicant. Nevertheless, as is apparent from the above, many older workers, particularly those in physically demanding jobs, cannot continue working for health reasons but cannot qualify for Social Security disability benefits. This situation could be ameliorated by an "occupational" disability benefit that provides benefits the same as old age benefits under the law in effect before the 1983 amendments, i.e., an unreduced benefit at age 65 and a reduced benefits as early as age 62, if a worker is unable to perform the essential duties of his or her current occupation. Implementing this occupational disability benefit with no change to the FRA would reverse the benefit reductions described above due to the increase in the FRA from age 65 to age 67 for workers who qualify only under this less strict definition of disability. Implementing this benefit in the context of a further increase in the FRA would insulate these workers from the otherwise adverse effects of such an increase.

Setting the benefit level for the occupational disability benefit is a matter of judgement. One could argue for freezing the age 66 FRA that applies to workers reaching age 62 currently, so

that qualifying workers would be protected against further increases in the FRA, whether scheduled under current law or adopted in future legislation. Alternatively, the occupational disability benefit could incorporate the full schedule of increases in the FRA under current law, so that this benefit would take effect only if and when further increases are adopted in future legislation. Going in the other direction, the occupational disability benefit could provide unreduced benefits before age 65, for example, at age 62, the earliest age for old age benefits. Adopting the retirement age structure for old age benefits under the law in effect before the 1983 amendments seems a reasonable compromise. It is clear from the preceding that many workers in physically demanding occupations have been adversely affected by the increase in the FRA to age 66 that has already taken effect, and will be affected further by the scheduled increase to age 67. Yet the age 65 FRA served similarly situated workers before 1983, a time when older workers were generally in poorer health than today and when a higher proportion of workers were in physically demanding occupations.

While an occupational disability benefit would protect one particularly vulnerable group of workers from the effects of an increase in the FRA, it would not answer directly all the objections to raising the FRA. In a public program where benefit eligibility and amount are determined by objective criteria, it is not possible to exactly meet the needs of all participants. As discussed below in some detail, adding an occupational disability benefit in the context of an increase in the FRA preserves the balance between individual equity and social adequacy better than other proposed alternatives for increasing revenues or cutting benefits. Further, since workers qualifying for occupational disability benefits will come mostly from the lower half of the income spectrum and are by definition in poor health, they account in some measure for lower longevity among workers in the lower half of the income spectrum. For this reason, those who do not benefit from the occupational disability benefit will have longevity more nearly equal to workers in the upper half of the income spectrum. However, the magnitude of this effect could only be measured from actual experience under such a benefit.

It is expected that an occupational Social Security disability benefit would be adopted in the context of an increase in the FRA. As discussed above, such an increase would reduce the benefits of workers applying for old age benefits at age 62 and over (assuming the age 62 is

retained as the earliest retirement age). Adding the proposed occupational disability benefit for workers age 62 and over would increase benefits for a small minority of these participants. Thus, the cost of adding this benefit would not be an additional cost to the system, but a reduction in the cost savings derived from increasing the FRA. If one goal of a package of proposed Social Security amendments is to achieve actuarial balance, a package that includes an occupational disability benefit such as described above would require higher tax increases and/or greater benefit reductions in other areas than a package not including such a benefit.

Estimating the degree to which an occupational disability benefit would offset the cost savings from raising the FRA requires estimating claims experience under such a benefit. As discussed below, experience from commercial long-term disability insurance may not apply, making initial cost estimates subject to a high degree of uncertainty. Autor and Duggan have shown that both applications and benefit awards under the current Disability Insurance program have increased markedly since 1984, when Congress liberalized the disability screening process by shifting the emphasis from purely medical criteria to greater emphasis on more subjective criteria such as the applicant's reported pain and discomfort, and by requiring that evidence submitted by the applicant's own health care provider have controlling weight unless contradicted by other medical evidence (Autor and Duggan 2006). One result is that the current Disability Insurance program already functions to some extent as an occupational disability program. This does not contradict the conclusion established above that many workers in physically demanding occupations cannot continue working but do not qualify for Social Security disability benefits. It does mean this group may be smaller otherwise expected, since some of the most vulnerable workers may already qualify for Social Security disability benefits. A formal occupational disability benefit might even reduce overall system costs if some workers who would currently qualify for full disability benefits were instead awarded lower occupational disability benefits. However, that is outside the scope of this paper.

An occupational disability benefit could not be strictly limited to workers in physically demanding occupations. Some workers outside the targeted group will qualify for an occupational disability benefit. That non-targeted workers with legitimate needs may benefit from the proposed occupational disability benefit hardly invalidates the proposal, but it does

increase costs. Nevertheless, the scope of the proposed occupational disability benefit has been carefully circumscribed so that the cost can be no more than a partial offset to the cost savings pursuant to an increase in the FRA. The 1983 Social Security amendments reduced old age benefits for workers retiring between ages 62 and 67, while disability benefits remained unreduced. Duggan *et al* estimate that resulting induced disability retirements in this age range under the current disability benefit offset less than 4 percent of the cost savings from increasing the FRA (Duggan *et al* 2005). The less generous proposed occupational disability benefit should have an even smaller effect with respect to any further increases in the FRA.

Alternate Proposals For Achieving Actuarial Balance

Proposals to reduce or eliminate Social Security's long-term actuarial deficit fall into two categories, revenue increases and benefit cuts (Ghilarducci 2008).

Weller and Ghilarducci both suggest increasing revenue by removing the cap on Social Security taxable wages (there is already no cap for Medicare), which would eliminate more than three quarters of the projected actuarial deficit (Weller 2000, Guilarducci 2008). The problem with this proposal is that, with no compensating change to the system, it would shift the balance between individual equity and social adequacy away from the individual equity side, just as raising the retirement age with no compensating change would shift the balance away from social adequacy. Although removing the cap on taxable wages also increases benefits for high wage earners, because the newly covered wages are taken into account in the benefit formula, the newly covered wages fall under the 15 percent term in the formula that applies to average indexed monthly wages above the second formula bend point, so the additional benefits are far from commensurate with the additional taxes paid. This proposal could run into opposition for the same reason as the Medicare Catastrophic Coverage Act discussed above.

A more modest proposal for increasing revenue is raising the cap on Social Security taxable wages so that 90 percent of the wages of covered workers are subject to the payroll tax (Ghilarducci 2008). This would require raising the cap for 2008 from the actual \$102,000 to about \$140,000, and would eliminate about 40 percent of the actuarial deficit. The effect would

be to return the proportion of wages subject to the payroll tax to the level in 1983, when the last major changes to the system were adopted. Thus, this change can be viewed as restoring the balance between individual equity and social adequacy as it existed in 1983. While it may be feasible to enact this change using this rationale, any further revenue increases, if any, should come from raising the payroll tax rate.

Prominent among proposals that cut benefits is "progressive price indexing," a concept developed by Robert C. Pozen, chairman of mutual fund company MFS Investment Management (Pozen 2005, Munnell and Soto 2005). Currently, Social Security benefits are indexed to changes in the national average wage until age 60 (or earlier disablement or death of the worker) and thereafter to changes in consumer prices as measured by the consumer price index (CPI) (Myers 1993). During the twentieth century, wages have grown on average 1.1 percent per year faster than prices. The rough result of the current indexing scheme is that benefits keep pace with changes in the workers' standard of living until initial receipt, but thereafter only preserve the standard of living at initial receipt. Price indexing, i.e., indexing benefits to changes in consumer prices at all times, would preserve only the standard of living at the time this change was adopted, so that over time initial benefits would decrease relative to the workers' standard of living. Progressive price indexing applies price indexing at all times to workers at the maximum career average earnings, but retains the current indexing scheme for workers whose career earnings are in the bottom 30 percent, roughly those whose earnings are less than \$20,000 in 2005. These two regimes would be blended for workers above the bottom 30 percent but below the maximum career average earnings. Hence benefits for maximum wage earners would preserve only the standard of living when progressive price indexing was first adopted, benefits for the bottom 30 percent of wage earners would continue to reflect changes in the standard of living until initial benefit receipt, and benefits for other workers would fall between these poles. This change would eliminate about three quarters of Social Security's long-term deficit. However, over time it would have the effect of decreasing the differential between the benefits of high and low wage earners, thus shifting the balance between individual equity and social adequacy away from the individual equity side. If left in place long enough, progressive price indexing would eventually result in all workers receiving the same initial benefit. Although its advocates do not contemplate reaching this point, leaving progressive price indexing in place

long enough to have a significant impact on the actuarial deficit would greatly reduce the individual equity component of the system.

An interesting alternative is "progressive longevity indexing." (MacGuineas 2005) Longevity indexing means periodically changing the benefit formula so that the expected value of benefits remains constant as longevity increases. Longevity indexing is equivalent to raising the FRA to take into account longevity increases, because a worker can obtain a benefit equivalent to the old unreduced benefit by delaying retirement until the delayed retirement adjustment exactly offsets the longevity adjustment. The age at which the delayed retirement adjustment exactly offsets the longevity adjustment effectively becomes the new FRA. Seven European countries plus Brazil use longevity indexing in their social insurance systems (Turner 2007). Longevity indexing is also part of Senator Bob Bennett's reform proposal (Bennett 2006). Longevity indexing can be implemented in several ways; for example, by adjusting the factors in the current formula, or by adding a longevity index factor to the formula. Progressive longevity indexing, in an analogy to progressive price indexing, applies longevity indexing to workers at the maximum career average earnings, but retains the current benefit formula for workers at the bottom of the income spectrum, with a blending of these regimes for workers who fall in between. Progressive longevity indexing has some similarities to raising the FRA and providing an occupational disability benefit, as suggested above in this paper. There are two main differences.

Progressive longevity indexing, like progressive price indexing, if left in place long enough, reduces the differential between the benefits of high and low wage earners, thereby eroding the individual equity aspect of the system. The occupational disability benefit leaves the current benefit formula unchanged, giving at least the perception that the current degree of individual equity in the system is preserved.

In progressive longevity indexing, the protected class of workers, those whose benefits are preserved or strengthened, is defined by income, while the occupational disability benefit protects workers who are physically unable to continue working. Giving preference to workers unable to continue working builds on the current Social Security disability benefit and other benefits provided to the disabled in both the public and

private sectors, and may therefore be perceived as more equitable than protecting the benefits of all low income workers.

Lessons From Commercial Long-Term Disability Insurance

Because Social Security's covered population is defined by law, there is no underwriting of the risks. Nevertheless, the underwriting experience of commercial long-term disability insurers can be instructive of the pattern of claims that may be expected. Although commercial disability insurance has been offered in the US since the late nineteenth century, it did not become widely available until after World War I (Soule 2002). At that time, companies used occupational classifications for underwriting purposes based primarily on the hazard of the occupation, so that, for example, clerical workers were often placed in the same class as professionals, and supervisors in the same class as the workers they supervised. As experience emerged, insurers began giving commensurate weight to the stability, i.e., turnover rate, and income level of the occupation. Lower turnover and higher income occupations have a lower level of claims than other occupations with similar hazards. In addition, insurers began evaluating pre-existing conditions in light of the applicant's occupation. This usually means that pre-existing conditions are given more weight for applicants in physically demanding occupations, since such conditions are more likely to develop into disabilities which will ultimately prevent the applicant from working. Underwriting in commercial disability insurance commonly results in rejection rates in the range from 6 to 10 percent, and policy modifications, such as higher than standard premiums and exclusion of risks associated with pre-existing conditions, in the range from 15 to 20 percent.

A consistent pattern in the claims experience of commercial insurers is that claims increase with the percent of gross income insured. The claims rate for insureds whose benefit exceeds 60 percent of gross income is about a third higher than the rate for those whose benefit does not exceed 50 percent of gross income. This pattern has particular significance for Social Security, since the Social Security benefit formula is weighted to provide higher replacement ratios for low income workers. In fact, a higher proportion of low-income than high income workers receive Social Security disability benefits (Autor and Duggan 2006). Low income workers are more likely to work in physically demanding occupations.

The rate of disability claims for both public and commercial disability programs increases during periods when the national economy is performing poorly. There are several reasons for this. Individuals with significant physical impairments, who may continue working when the economy is performing well, are more likely to make a claim if they become unemployed during a recession. This is particularly the case for those close to retirement, who may be motivated to make a disability claim to help finance early retirement. Also, the financial and psychological pressures of unemployment may be sufficient to induce disability in vulnerable individuals. The length of claims also increases during recessions, because those receiving benefits are less motivated to return to the work force if jobs are unavailable.

During the recession in the mid 1970s, which saw the unemployment rate soar in 1976 to 210 percent of the level in 1968, Social Security disability claims rose in 1977 to about 140 percent of the 1968 level. This was due in part to overly generous disability benefits under the law at the time, which could provide a replacement ratio exceeding 100 percent for low and middle income workers. Subsequent law changes have cut these replacement ratios nearly in half. Loss ratios under commercial disability insurance exhibited a similar, but less dramatic, increase. This scenario illustrates the sensitivity of disability claims experience to the economic environment. The effect is magnified for older workers, many of whom desire early retirement and will be motivated by poor health and unemployment or the threat thereof to apply for Social Security disability benefits. Therefore, it can be expected that claims for occupational disability benefits, which apply only to older workers, would increase to a greater degree than for the current disability program during poor economic times.

Thus, taken together, there are three factors likely to drive high claims experience under the proposed occupational Social Security disability benefit: (1) Workers in physically demanding occupations are more likely to have health conditions that prevent them from working but do not qualify them for Social Security disability benefits under current law. (2) Such workers are more likely to desire to retire early and to take advantage of any opportunity that makes it financially feasible to do so. (3) Such workers generally receive higher than average benefits relative to preretirement income. While the cost associated with high claims experience may be seen as a

deterrent to the adoption of the proposed occupational disability benefit, it can also be seen as a measure of the need for such a benefit.

The same three factors cited above expected to drive high expected claims experience under the proposed occupational disability benefit will also make claims administration more difficult (Soule 2002). Determining whether a particular individual's condition meets the definition of disability, under either a public program like Social Security or a commercial disability policy, is an inherently subjective process, regardless of how carefully the definition of disability is crafted. Does the claimant's condition truly prevent him from working? Is a worker approaching retirement age submitting a claim primarily out of a desire to retire early? Is a worker who is unemployed or underemployed attempting to use disability insurance as a source of unemployment benefits? These questions and others equally open to interpretation are likely to arise in the course of adjudicating claims under an occupational disability benefit.

The problem of providing consistent claims administration is magnified in Social Security by the size of the system (Soule 2002). The number of claims for benefits under the current disability insurance program exceeded one million in every year from 1993 to 2004, and approached 1.5 million in the last year of that period. (Zayatz 2005). This volume of claims is orders of magnitude higher than that faced by even the largest commercial disability insurance underwriter. In the study of experience under commercial group long-term disability insurance discussed below, the 14 insurance companies that contributed to the study approved just over 14,000 claims over a five-year period (Committee on Group Life and Health Insurance 1985). If the approval rate of claims is similar to Social Security's, the total claims during this period would be under 50,000, or 10,000 per year spread over 14 companies.

The initial review and determination of Social Security disability claims is currently handled by state agencies (Autor and Duggan 2006), and it can be expected that this would be the case under an occupational disability benefit as well. Dispersal of administration among multiple agencies further exacerbates the problem of providing consistent claims administration.

These factors in combination will likely result in inconsistent administration when an occupational Social Security disability benefit is first introduced, with frequent appeals and recourse to litigation. Several years may pass before consistent administration is established. This will also increase the uncertainty of early cost estimates.

Commercial disability policies typically include two definitions of disability (Jones and Long 1999, Soule 2002, Bluhm 2003). During an initial period, commonly two years although periods up to ten years are available, a claimant is considered disabled if unable to work at his usual occupation. Thereafter, the claimant is not considered disabled unless unable in work in any occupation for which he is suited by education, training and experience. The purpose of tightening the definition of disability after a set period is to encourage the claimant to return to employment if at all possible. The latter definition corresponds more closely to the current definition of Social Security disability, while the former corresponds to the definition applicable to the proposed occupational disability benefit.

Most commercial disability insurance contracts expire on the insured's reaching age 65, although some policies may continue beyond that age if the insured remains employed. As a result claims experience beyond age 65 is sparse, and that experience is largely limited to a healthy and motivated population likely to exhibit a lower level of claims than the population at large. Social Security's own claims experience for ages 65 and 66 is based on the current-law definition of disability. These factors will make it difficult to predict claims experience under an occupational disability benefit for ages 65 and over.

The credibility and interpretation of claims experience data for commercial disability insurance is further complicated both by the number of underwriting factors and by the variety of available policy provisions that may affect claims experience (Soule 2002). Underwriting factors include age, sex, marital status, occupation, job stability (the number of years the applicant has been in his current job), income, net worth, and existence of other disability coverage. Policy provisions include benefit level, both in absolute dollars and relative to income, benefit payment period, definition of disability, elimination period (the time between the onset of disability and the commencement of benefits), exclusions for pre-existing conditions, and many more. Although

Social Security covers a broad spectrum of the population, the proposed occupational disability benefit is targeted at a segment of that population, older, predominantly male, in physically demanding occupations, with lower than average income. The benefit offered is high relative to income, is payable for life (assuming the worker does not recover from his disability), uses a liberal definition of disability and has no exclusions for pre-existing conditions. Deriving useful claims data for a Social Security occupational disability benefit, from experience under either the current-law Social Security disability benefit or commercial disability insurance, would be difficult at best.

Bearing the above in mind, the following table compares rates of disablement per 1,000 lives exposed under commercial group long-term disability insurance and under the current-law Social Security disability benefit. The most recent inter-company data under long-term disability insurance includes the experience of 14 major underwriters of group long-term disability coverage during the five calendar years 1976 through 1980 (Committee on Group Life and Health Insurance 1985). The study is limited to policies with a six-month elimination period, similar to Social Security's five-month waiting period for benefits. The policies are also similar to Social Security because group policies involve little or no individual underwriting beyond the requirement that covered individuals be actively at work. Experience from this study is compared to Social Security disability experience for 1980 (Zayatz 2005).

Table 4: Long-Term Disability Claims Experience: Commercial Insurance vs. Social Security

Age	Disability Awards per 1,000 Covered Lives			
	Commercial	Social Security		
15-19		0.26		
20-24	1.16	0.62		
25-29	(Under 40)	0.92		
30-34	(Olidel 40)	1.44		
35-39		2.36		
40-44	2.29	3.64		
45-49	3.79	5.66		
50-54	6.59	9.03		
55-59	11.81	15.04		
60-64	15.27	18.15		
65 and over	No data 12.65			
All ages	3.62 4.36			

Sources: Committee on Group Life and Health Insurance 1985, Zayatz 2005.

Overall, the disability rate for Social Security is about 25 percent higher than for commercial group long-term disability, and this ratio holds for the 60-64 age interval most relevant to the proposed occupational disability benefit. Thus, Social Security under current law already approves claims at a higher rate per exposed life than the typical commercial carrier. This is not surprising, since the underwriting function, as well as targeted marketing toward people expected to have lower disability risk, such as professionals and other high income workers, can be expected to reduce the claims experience of commercial carriers. As noted above, Social Security disability rates have increased markedly since the 1980s (Autor and Duggan 2006).

Although claims experience under commercial long-term disability insurance cannot provide quantitative guidance to expected claims levels under a Social Security occupational disability benefit, there are lessons to be gleaned from the commercial market, as the above discussion demonstrates:

An occupational disability benefit will effectively target workers in physically demanding occupations, while providing protection for workers in other occupations as well.

As with the current Social Security disability benefit, an occupational disability benefit will disproportionately benefit lower income workers.

Claims will inevitably rise during economic recessions, as workers seek to use the benefit as a form of unemployment insurance or early retirement subsidy.

Claims adjudication will be an expensive and uncertain process.

Summary

Social Security's expected expenses over the next 75 years exceed expected income by 1.7 percent of taxable payroll. This financial imbalance can be addressed by increasing the system's income from taxation, whether from the current payroll tax or some other revenue source, or by

cutting benefits. There is no economic necessity for cutting benefits to finance Social Security over the long term. Nevertheless, Social Security is a major government program which must compete in the political arena with many other government programs for funding. The country may decide, through the political process, not to finance currently promised benefits, in which case benefit cuts would become necessary.

If it should become necessary to cut benefits, actuaries and economists knowledgeable about Social Security have made an excellent case that raising the full retirement age (FRA), the age at which unreduced benefits are paid to non-disabled workers, should be part of any package of benefit cuts. The 1983 amendments to the Social Security law previously raised the FRA from age 65 to age 67 in incremental steps scheduled to end in 2022. Raising the FRA further responds directly to past and expected future increases in the longevity of American workers. Greater longevity without later retirement means the typical worker's period of retirement increases relative to the period of employment. This effect is responsible for a portion of the projected actuarial deficit. Raising the FRA can therefore be interpreted as restoring the prior balance between the typical worker's retirement and employment periods. Raising the FRA serves purposes other than improving system finances. By encouraging workers to remain longer in the work force, raising the FRA would increase both national income and national savings, helping to raise the standard of living for all. In addition, employers would retain access to a pool of educated and experienced workers at a time of expected slow growth in the labor force, and workers would have more time to accumulate personal savings for retirement.

Nevertheless, good arguments have also been brought to bear against raising the FRA. Increases in longevity have not been uniform across the population, but have been much greater among workers in the upper half of the income spectrum compared to those in the lower half. Thus, raising the FRA cuts benefits proportionately more for workers in the lower half of the income spectrum. In addition, many workers in the lower half of the income spectrum are in physically demanding occupations and have health conditions which prevent them from continuing to work even though they do not qualify for Social Security disability benefits. These workers are particularly vulnerable to increases in the FRA, since they may be forced to retire early with

greatly reduced benefits or endure periods during which they are neither able to work nor eligible for Social Security benefits.

To qualify for benefits under the current Social Security disability program, a worker must be unable to "engage in any substantial gainful activity by reason of any medically determinable physical or mental impairment." The benefit is unreduced regardless of the worker's age when benefits begin. One way to protect workers in physically demanding occupations if the FRA is increased is to provide an alternate occupational disability benefit, which a worker can qualify for if unable to perform the essential duties of his or her current occupation. Because this standard of disability is lower than for the current law disability benefit, the occupational disability benefit would need to be less generous. An occupational disability benefit that provides an unreduced benefit at age 65 and a reduced benefit as early as age 62 would not only insulate workers in the target group, *i.e.*, those in physically demanding occupations who cannot continue working due to disability, from future increases in the FRA, but roll back the increase in the FRA in the 1983 Social Security amendments.

From its inception, Social Security has included elements of individual equity and social adequacy. In this context, individual equity means basing a covered worker's benefit on the worker's earnings history, and hence on the contributions made by the worker and on his behalf. Social adequacy means basing a covered worker's benefit on the worker's financial need. Numerous changes have been made to Social Security since it started in the 1930s. However, no major changes have been made since the 1983 amendments. This indicates a national consensus has developed around the balance between individual equity and social adequacy built into the current benefit structure. Adding an occupational disability benefit in the context of an increase in the FRA, while not answering all the objections to raising the FRA, preserves this balance between individual equity and social adequacy better than other proposed alternatives for cutting benefits.

References

American Academy of Actuaries. 2008. *Actuaries Advocate Raising Social Security's Retirement Age*. Policy Statement. Washington, DC: American Academy of Actuaries.

American Academy of Actuaries. 2004. *Social Adequacy and Individual Equity in Social Security*. Issue Brief. Washington, DC: American Academy of Actuaries.

Autor, David and Mark Duggan. 2006. "The Growth in the Social Security Disability Rolls: A Fiscal Crisis Unfolding." NBER working paper no. 12436. Cambridge, MA: National Bureau of Economic Research.

Bennett, Bob. 2006. *Bennett Introduces Social Security Reform Bill*. Press Release. Washington, DC: Office of United States Senator Bob Bennett.

Bluhm, William F., principal editor. 2003. *Group Insurance*, 4th ed. Winsted, CT: ACTEX Publications.

Board of Trustees of the Social Security Trust Funds. 2008. 2008 OASDI Trustees Report. Baltimore, MD: Social Security Administration.

Chen, Yung-Ping and John Turner. 2007. "Raising the Retirement Age in OECD Countries," In *Work Options for Older Americans*, Teresa Ghilarducci and John Turner, eds. Notre Dame, IN: University of Notre Dame Press.

Committee on Group Life and Health Insurance. 1985. "Report of the Committee on Group Life and Health Insurance," in 1982 Reports of Mortality and Morbidity Experience. Itasca, IL: Society of Actuaries.

Congressional Budget Office. 2008. *Updated Long-Term Projections for Social Security*. Washington, DC: Congressional Budget Office.

Congressional Budget Office. 2005. *Projected Effects of Various Provisions on Social Security's Financial and Distributional Outcomes*. Washington, DC: Congressional Budget Office.

de Jong, Philip R. 1997. "U.S. Disability from a European Perspective," In *Disability: Challenges for Social Insurance, Health Care Financing, and Labor Market policy*, Virginia Reno, Jerry L. Mashaw and Bill Gradison, eds. Washington, DC: National Academy of Social Insurance.

Duggan, James E., Robert Gillingham and John S. Greenlees. 2007. *Mortality and Lifetime Income: Evidence from U.S. Social Security Records*. IMF Working Paper. Washington, DC: International Monetary Fund.

Duggan, Mark, Perry Singleton and Jae Song. 2005. "Aching to Retire? The Rise in the Full Retirement Age and Its Impact on the Disability Rolls." NBER working paper no. 11811. Cambridge, MA: National Bureau of Economic Research.

Ghilarducci, Teresa. 2008. When I'm Sixty Four: The Plot Against Pensions and the Plan to Save Them. Princeton, NJ: Princeton University Press.

Jones, Harriett E and Dani L. Long. 1999. *Principles of Insurance: Life, Health and Annuities*. Atlanta, GA: Life Office Management Association, Inc.

Klieber, Eric. 2008. "Can We Afford Social Security and Medicare In the Long Term?" In *Journal of Pension Benefits* Spring 2008: 72-78.

Liebman, Jeffrey, Maya MacGuineas and Andrew Samwick. 2005. *Nonpartisan Social Security Reform Plan*, Washington, DC: New America Foundation.

Long, Valarie. 2005. Testimony before the Subcommittee on Social Security of the House Committee on Ways and Means, June 14, 2005. Washington, DC: U.S. House of Representatives.

MacGuineas, Maya C. 2005. Testimony before the Subcommittee on Social Security of the House Committee on Ways and Means, June 14, 2005. Washington, DC: U.S. House of Representatives.

Munnell, Alicia and Mauricia Soto. 2005. What Is Progressive Price Indexing? Boston, MA: Center for Retirement Research at Boston College.

Munnell, Alicia. 2007. "Working Longer: A Potential Win-Win Proposition," In *Work Options for Older Americans*, Teresa Ghilarducci and John Turner, eds. Notre Dame, IN: University of Notre Dame Press.

Myers, Robert J. 1993. *Social Security* 4th ed. Philadelphia, PA: Pension Research Council and University of Pennsylvania Press.

Pozen, Robert C. 2005. *Testimony before the Senate Finance Committee, April 26, 2005.* Washington, DC: U.S. Senate.

Ryan, Paul. 2008. *A Roadmap for America's Future*. http://www.house.gov/ryan/roadmap/roadmap (accessed August 29, 2008).

Social Security Administration. 1986. "Increasing the Social Security Retirement Age: Older Workers in Physically Demanding Occupations or Ill Health", from *Social Security Bulletin*, vol. 49, no. 10.

Social Security Administration. 2008. *Long Range Solvency Provisions*. http://www.ssa.gov/OACT/solvency/provisions (accessed August 8, 2008).

Soule, Charles E. 2002. *Disability Income Insurance: The Unique Risk* 5th ed. Bryn Mawr, PA. The American College.

Steuerle, C. Eugene. 2005. Testimony before the Subcommittee on Social Security of the House Committee on Ways and Means, June 14, 2005. Washington, DC: U.S. House of Representatives.

Turner, John A. 2007. *Autopilot: Self-Adjusting Mechanisms for Sustainable Retirement Systems*, Schaumburg, IL: Society of Actuaries.

Uccello, Cori E. 1998. Factors Influencing Retirement: Their Implications for Raising Retirement Age, Washington, DC: American Association of Retired Persons.

Waldron, Hilary. 2007. Trends in Mortality Differentials and Life Expectancy for Male Social Security-Covered Workers, by Average Relative Earnings ORES Working Paper No. 108. Washington, DC: Social Security Administration, Office of Policy, Office of Research, Evaluation and Statistics.

Weller, Christian E. 2000. *Raising the Retirement Age: The Wrong Direction for Social Security*. Issue Briefing. Washington, DC: Economic Policy Institute.

Zayatz, Tim. 2005. *Social Security Disability Insurance Worker Experience*. Actuarial Study No. 118. Baltimore, MD. Social Security Administration, Office of the Actuary.