

Innovative Policies to Strengthen Social Security  
For Vulnerable Populations

**Longevity Insurance:  
Strengthening Social Security at Advanced Ages**

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## **Longevity Insurance: Strengthening Social Security at Advanced Ages**

While Social Security provides a guaranteed lifetime benefit, its benefit is insufficient for most people to maintain their pre-retirement standard of living. While low-income retirees at age 62 tend to rely largely on Social Security, other retirees generally have other sources of retirement income. However, as people grow older, especially for those living past their life expectancy, they risk having exhausted their other sources of income.

People in their 80s and older with low Social Security benefits who have exhausted their other sources of income are a vulnerable group. Few are able to work. As a matter of national policy, it is desirable that people in this age group, often called the old-old, are able to live with sufficient resources to enjoy the last years of their lives with dignity.

The target population for this Social Security reform proposal is people age 82 or older. The proposal focuses further on people with low Social Security benefits and long work histories. Age 82 is chosen as approximately the average life expectancy at age 65 (Centers for Disease Control 2007). Women outnumber men by roughly two to one in this age group (U.S. Census Bureau 2003). In part because of improvements in life expectancy, this age group is growing rapidly. The aging baby boom generation will further swell the numbers of people in their eighties.

### **An Increasing Risk of Poverty with Advancing Age**

The risk of poverty increases with advancing age. This section examines the statistics and discusses reasons why that occurs.

*Poverty Statistics.* The percent of the elderly in poverty increases with age. Elderly poverty is high among people age 80 and older-- a third higher than for people age 65-69 (Whitman and Purcell 2006). Older women are particularly at risk (U.S. Census Bureau 2003). Women age 80 and older had a poverty rate of 14 percent in 2004, and 25 percent had income below 125 percent of the poverty line. By comparison, women ages 55 to 60 had rates of 10 percent and 13 percent (Social Security Administration 2006). These figures suggest that substantial numbers of women fall into poverty in old age.

A reason for the increase in poverty is that people at older ages tend to rely on Social Security for an increasing proportion of their retirement income. That increase occurs because

of a decline in the importance of other sources of retirement income. Because of these problems, a higher percentage of people at older ages depend on Social Security for most or all of their income than do people in their sixties and seventies. For aged units age 75 and older, 40 percent depend on Social Security for 90 percent or more of their income, compared to 27 percent of people age 65 to 74 (Social Security Administration 2006).

While these figures clearly indicate that the poverty rate increases among older age groups, they imperfectly measure how poverty rates increase as people age. Due to the greater mortality risk of low-income persons, it would be expected that if everyone maintained their standard of living, poverty rates would actually decline at older ages due to a survivorship bias. Thus, those figures understate the percentage of older women who have fallen into poverty. To some extent, however, that effect may be offset by a cohort effect, with people in earlier birth cohorts having higher poverty rates than people in later birth cohorts.

Though each successive generation presumably has greater resources, some data suggest that the problem of elderly poverty, or at least elderly financial distress, may be growing over time. While the bankruptcy rate for persons under age 55 fell over the period 1991 to 2007, it more than quadrupled for people ages 75 to 84 (Sedensky 2008). Studies indicate that people in older age groups are at risk of having fallen into poverty even though they had not been in poverty earlier in life, and they have greater difficulty leaving poverty than people at younger ages (Lee and Shaw 2008).

*Reasons Why Elderly Persons May Fall into Poverty.* Except for Social Security, people's retirement income is not provided as a price indexed annuity. Partially for that reason, people who were not already in poverty can fall into poverty at older ages. Some of the reasons why people fall into poverty at older ages fit into the classic views about rational, well-informed people managing their finances. Even with good planning, adverse events can lead to financial problems. In addition, however, behavioral economics indicates that many people do a poor job in planning their finances over long time periods. The traditional reasons for financial distress at older ages are given first, followed by reasons that fall within the field of behavioral economics.

Traditional rational economics explains why some people who had sufficient resources face financial difficulties in advanced old age, primarily due to bad luck:

1. They retired earlier than they had planned because of ill health, the need to care for a spouse, or they were laid off. They thus entered retirement with less financial resources than they had planned.
2. They did a good job of managing their investments, but the stock market declined sharply. The timing of such a decline matters, with it having more serious consequences early in retirement because the dollar value of losses are larger.
3. Interest rates declined, reducing the income they receive from their fixed income investments. A decline in interest rates also reduces the annual annuity benefit provided a given account balance when converting to an annuity.
4. They have a defined benefit pension plan, but few of these plans provide cost-of-living adjustments, so the value of the benefit erodes over time. When the inflation rate is as low as 3 percent per year, the real value of a fixed annuity is nearly cut in half after twenty years.
5. They have a 401(k) plan, but the majority of these plans do not offer annuities, and the retiree has the problem of managing withdrawals over an uncertain life time. In 2000, 33 percent of defined contribution plans offered annuities (Blostin 2003).
6. They have had unexpectedly high expenses for medical care, pharmaceuticals, long-term care, or housing and assistance needs due to an illness or disability. Out-of-pocket medical costs rise rapidly with age (DeNardi et al. 2006).
7. They no longer are able to work to offset an unexpected expense or unexpected loss of income, with only 5 percent of people age 80 and older receiving income from work (Whitman and Purcell 2006).
8. Prices for people age 65+ have risen more rapidly than the Consumer Price Index (CPI) (Stewart 2008), while Social Security benefits are indexed to the CPI.
9. They divorced.
10. Their spouse died, which is particularly a risk for women. About 71 percent of people aged 65 are married. The probability that one person in a couple where both are age 65 will die by age 76 is 50 percent (Hurd and Rohwedder 2008).
11. The Social Security widow's benefit implies that the widow needs 67 percent of the couple's benefit to maintain the same standard of living, while the poverty line adjustment for family size assumes that the widow needs 79 percent of the couple's benefit (Hurd and

Rohwedder 2008). Thus, widows suffer a loss in standard of living provided by their Social Security benefits following the death of their husband. This would be particularly important for low-income widows who depend on their Social Security benefits.

12. They had retiree health insurance from their employer, but their employer unexpectedly ended the insurance.
13. They unexpectedly have had to take responsibility for rearing their grandchildren.
14. While most of the reasons people fall into poverty or financial distress at older ages are due to bad luck or bad decisions, one of the reasons is due to good fortune. They had a reasonable expectation of their life expectancy, but they lived longer than they expected and have exhausted their resources other than their Social Security benefits.
15. People may rationally plan for lower consumption in advanced old age because they view it to be a low probability that they will live that long.

Behavioral economics provides reasons for financial problems in advanced old age that result from poor decision-making and faulty information. Those reasons include:

16. They saved too little and had too little resources in retirement to continue consuming at their pre-retirement levels. This could be due to having a high discount rate for future consumption or due to hyperbolic discounting.
17. They did a poor job planning the spend down of their resources, and they have reduced their resources to a low level. They consumed too much early in retirement due to a lack of self-control. They have difficulty planning over an uncertain lifetime.
18. They did a poor job of managing and diversifying their investments and their investments have lost a lot of money. They invested entirely in high tech stocks or their employer's stock. This could be due to poor financial literacy.
19. They did a poor job of managing their credit cards, fell behind on payments, and were overwhelmed by the charges and fees associated with predatory credit card practices. They invested in variable rate mortgages beyond their means, housing prices fell, and interest rates rose. They fell victim to other predatory lenders.
20. They had unreasonably low estimates of life expectancy, and they lived longer than they expected. Perhaps they did not realize that life expectancy has been increasing, and based their expectations on outdated historical information. People may underestimate their

likelihood of living to an advanced age. A 65-year-old man has a 41 percent chance of living to age 85 and a 20 percent chance of living to age 90. A 65-year-old woman has a 53 percent chance of living to age 85 and a 32 percent chance of living to age 90. If the man and woman are married, there is a 72 percent chance that one will live to age 85 and a 45 percent chance that one will live to age 90 (Vanguard 2008).

21. They had reasonable expectations as to their life expectancy, but neglected to plan for the 50 percent probability that they would live longer than their life expectancy.
22. They have not adequately annuitized their resources. Studies have consistently shown that retirees under-annuitize (Brown et al. 2008). Many people do not understand what annuities are. The MetLife Retirement Income IQ Study (MetLife 2008) indicates that only 33 percent of pre-retirees know that annuities provide guaranteed income that cannot be outlived. People may not buy annuities because they find them to be complex and confusing. Because of a lack of financial literacy, people may not understand the benefits of the longevity insurance that annuities provide.
23. Husband's did not provide survivors benefits for their wives through their pensions. Workers generally can take their 401(k) plan benefits as a lump sum without the consent of their spouse.
24. They fell victim to a financial scam. These scams sometimes target the older population as vulnerable.

The MetLife Retirement Income IQ Study (MetLife 2008) provides evidence on a number of these issues. It finds that nearly 70 percent of pre-retirees overestimate how much they can withdraw from their savings and assure that their savings will last. More than 40 percent indicated that they think they could withdraw 10 percent of their savings each year while preserving their principal, while 14 percent believe they could draw down 15 percent per year while maintaining their principal. Financial experts put the figure at more like 4 to 5 percent. Almost half estimate that they will need 50 percent or less of their pre-retirement income to maintain their consumption in retirement. Financial experts put the figure at more like 70 to 75 percent. Six in ten underestimate their chances of living beyond average life expectancy.

Thus, a lot of factors may account for why someone who was not in poverty at age 62 may fall into poverty later in life. For many people, these scenarios may be a source of worry, but others are oblivious to their financial risks in their future.

People in poverty at advanced ages can be classified into four groups:

- 1) people who were poor when they retired,
- 2) people who were well-informed, rational planners and were not poor at age 62 but experienced bad luck during retirement,
- 3) people who were not poor and were rational planners but lived longer than expected, and
- 4) people who were not poor at age 62 but due to poor decision-making and misconceptions have become poor in old age.

### **Longevity Insurance**

The categorization of reasons why older people may fall into poverty or financial distress helps clarify the reasons why people would benefit from longevity insurance. This section explains what longevity insurance is and why Social Security would be strengthened if it included this type of insurance.

Longevity insurance is a special type of deferred annuity. Annuities are financial instruments that pay a stream of benefits over time. A life annuity pays fixed nominal benefits periodically until death. Annuities can be purchased privately or through pension plans. The purchase can occur at retirement as immediate annuities, or they can be purchased while working for later receipt as deferred annuities. The large majority of annuities purchased in the United States for payment in retirement are purchased as immediate annuities. While the immediate annuities market dominates the deferred annuities market in most countries with substantial annuities markets, such as the United Kingdom and the United States, Denmark and Germany are countries where the deferred annuities market is large (Rusconi 2008).

*Efficient Insurance.* While all annuities provide retirees a degree of longevity insurance, in recent years the term longevity insurance has been used to refer to a particular type of deferred annuity. Longevity insurance is a deferred annuity that starts at an advanced age, such as 82. Adding longevity insurance to Social Security would address the problem of people falling into poverty at older ages. It would provide cost effective social insurance.

This insurance is similar to buying car or home insurance with a large deductible, which optimally deals with catastrophic risk. By analogy, longevity insurance provides insurance against outliving ones assets, but only when that risk becomes substantial at advanced ages (Milevsky 2005).

The life cycle theory of consumption and savings suggests that rational planners may not save for a level of consumption at advanced ages that is equivalent to the level of consumption at earlier ages because of the low probability of being alive at those ages. A longevity insurance annuity solves that problem by allowing a person at low cost to obtain an annuity that only pays benefits at advanced ages (Webb, Gong and Sun 2007). An advantage of this type of annuity is that a person may be able to consume more of their nonannuitized resources in their sixties and seventies, knowing that they have longevity insurance that protects them if they live longer than their life expectancy.

Annuity benefits can conceptually be divided into two components: old-age benefits and longevity insurance benefits. Longevity insurance benefits are a hedge against life expectancy risk. If, hypothetically, a person were certain that he would live to age 80 but faced an uncertain life expectancy after that, then benefits paid up to age 80 would be old-age benefits, and benefits provided at advanced ages would have an element of longevity insurance benefits. More technically, the value of longevity insurance can be calculated by determining annuity equivalent wealth. That is the amount of wealth that would provide the same level of utility as would an annuity of a fixed value. The difference between the annuity equivalent wealth and the value of the present value of the annuity is the value of longevity insurance (Webb, Gong and Sun 2007).

Social Security benefits paid at age 62 are primarily old-age benefits, and provide little longevity insurance at that age. Benefits paid starting at age 82 have a high component of longevity insurance for most people. A delayed annuity can be designed to largely serve as longevity insurance rather than as retirement savings (Scott et al. 2007).

Horneff et al. (2007) use a simulation model to show that the percentage of resources that a person would optimally annuitize increases over time during retirement. For people who have some financial resources invested in equity, they can benefit from the equity premium early in retirement, gradually reducing their investment in equity, and increasing the amount that is annuitized. A longevity insurance benefit does not follow a gradual pattern of increasing the share of assets that is annuitized, which they analyze, but it does capture some of the benefit of that strategy. They find that most retirees optimally would avoid full annuitization until an advanced age, but by age 80, would fully annuitize their financial wealth, other than wealth



used for bequests. Thus, this research provides an additional argument in favor of longevity insurance.

*Life Cycle Planning.* In addition to serving as insurance against outliving ones resources in advanced old age, longevity insurance can simplify the problem of planning asset decumulation. Many retirees with moderate income have difficulty managing the spend-down of their assets over a retirement period of uncertain length. The prevalence of this problem will increase in the future as an increasing percentage of retirees have 401(k) plans that do not provide annuities, rather than defined benefits plans, as their employer-provided pension plan.

A longevity insurance benefit simplifies that problem. Instead of planning for an uncertain period, they can plan for the fixed period from the date of their retirement to the date at which they start receiving the longevity insurance benefit. Technically, it changes their planning problem from one with a stochastic end point (date of death) to one with a deterministic end point (the date at which longevity insurance begins providing benefits).

As well as assisting in planning, longevity insurance may help people who at advanced ages have difficulty managing their finances. At older ages, people are increasingly likely to need assistance in managing their finances because of declining mental ability and declining health. With longevity insurance, there is nothing to manage concerning the receipt of the benefits because the benefits are handled automatically by Social Security, generally with automatic deposit to their checking account. They have no checks to cash or investments to manage.

*OASLI.* The longevity insurance benefit proposed here is a delayed annuity paid to Social Security beneficiaries as a minimum Social Security benefit starting at age 82. Qualifying persons receiving a Social Security benefit below a minimum level would have their benefit raised to the minimum level at that age.

Recognizing this enhanced insurance protection, Social Security OASI would be renamed Old-Age, Survivors and Longevity Insurance (OASLI). The renaming will help inform people about the benefit. It will positively frame the benefit, rather than the benefit being thought of as an anti-poverty benefit. Longevity insurance protects retirees against the risk of outliving their resources, which is a risk primarily at advanced older ages.

### **How would the proposed change address the problem?**

The proposed change would address the problem of poverty among persons at advanced ages by providing guaranteed minimum benefits to persons age 82 and older. Much of the utility value to retirees of annuitization comes from insuring against the possibility of running resources down to a very low level if one lives to be older than expected (Brown 2001).

Longevity insurance greatly reduces the economic consequences of longevity risk at older ages, while also facilitating retirees' ability to manage the spend-down of assets. With longevity insurance, the person has better protection against outliving his or her resources and ending life in poverty. If the longevity insurance provides a sufficient benefit from the retiree's perspective, the retiree only needs to manage the spend-down of assets over a fixed period, from retirement to age 82. The spend-down problem over a period of fixed length is much easier for retirees to manage than determining a spend-down rate over the unknown period of their lifespan and the lifespan of their spouses.

To help retirees use the longevity insurance benefit in planning their spend down of resources, starting five years before receipt of the benefit, the annual benefit statement would provide information about the longevity insurance benefit to people with low benefits who would be eligible.

Longevity insurance provides retirees the insurance aspects of annuitization at the lowest possible cost. It involves a trade-off between cost and level of benefits early in life. The longevity insurance provided by benefits received at younger ages is of little value. A large percentage of the longevity insurance can be provided by an annuity that begins payment when the retiree is age 80 or older. Thus, retirees can reduce the cost of an annuity while maintaining most of the longevity insurance by choosing an annuity that begins payment when they are in their 80s.

Webb et al. (2007) estimate that with longevity insurance provided at an advanced age, a substantial share of the longevity insurance provided by an immediate annuity can be obtained. A deferred annuity starting at age 85 provides over half the longevity insurance of an annuity starting at age 65 (between 56 and 62 percent, depending on the degree of risk aversion, in their examples), and at a fraction of the cost—roughly 15 percent. They calculate that a household planning to smooth consumption through its retirement would need to allocate only 15 percent of

its age 60 wealth to a deferred annuity with payments starting at age 85. The remainder of its wealth it would hold in non-annuitized form to finance consumption from age 60 to 85.

The longevity insurance would be a price indexed annuity, just as current Social Security benefits. Thus, the deferred aspect of the annuity would not disadvantage recipients due to a loss of buying power from the annuity.

Longevity insurance can be an important component of a policy to restore Social Security solvency. Public policy changes likely will reduce the generosity of Social Security old-age benefits as part of a package to restore solvency. If general benefit reductions, such as through longevity indexing benefits (discussed later), are combined with a new longevity insurance benefit, it may be possible to retain much of the longevity insurance provided by Social Security to low-income persons.

Most reform packages that cut benefit across the board would raise elderly poverty (see, for example, Sarney 2008). Thus, there will be a need to increase the generosity of some benefits to provide better targeting to vulnerable populations. That goal could be achieved by providing longevity insurance benefits. For low-income persons, the effects of benefits cuts later in life when they are least able to work would be moderated.

### **Can the Private Sector Provide this Benefit?**

Pension plan tax qualification rules make it difficult for 401(k) participants to purchase longevity insurance. The problem arises with the requirement that minimum distributions from a 401(k) plan start by April 1 of the year following the year the person turns age 70½. This requirement prevents a person with a small account balance from using the entire balance to purchase an annuity starting at age 80 or 85. Changes in these minimum required distribution rules might be considered to encourage the purchase of longevity insurance.

Even with enabling changes in tax law, however, it is likely that few people would purchase longevity insurance. People are reluctant to purchase annuities that begin payment immediately. They presumably would be even more reluctant to purchase an annuity that began payment at age 82. With longevity insurance, people have better protection against outliving their resources and ending life in poverty, but the tradeoff is that they have less money to spend earlier in life.

## **Benefit Payment Structures**

Longevity insurance benefit payments can be structured different ways, at different costs, and with different sets of goals being served. Benefits can be universal or they can be targeted. Universal benefits provide longevity insurance without regard for need. Targeted benefits take into account need. Because they are targeted, they can be provided at lower total cost. Within those two categories for benefit eligibility, benefits can be based on Social Security benefit levels, years of contributions to Social Security, or age, or they can be flat benefits, being the same amount for everyone who qualifies. For example, if the benefit is universal, everyone age 82 and older could receive the same flat amount. Alternatively, everyone age 82 could receive the same amount, but the amount would increase slightly more than the rate of inflation for subsequent years. If the benefit is targeted, it could be based on having worked a minimum number of years, with the amount increasing based on the number of years worked.

While many options would provide longevity insurance in different ways, the next section chooses a targeted option, favoring that option because of cost considerations, and calculates a rough estimate of its costs.

### **Who would it help? Illustrate how and how much.**

The level of benefits provided by longevity insurance under this approach would be based on quarters of contributions to Social Security. A minimum of 20 years (80 quarters) of contributions would be required. At that level, a benefit of 70 percent of the poverty level for a single or married person, depending on the Social Security benefit received, would be provided. For each additional four quarters, the benefit would increase by 1.5 percent, so that someone who had worked 40 years (160 quarters) would receive a benefit equal to 100 percent of the poverty level. There would be no maximum number of quarters, so that someone who had worked 45 years would receive a benefit at 107.5 percent of the poverty level (table 1).

This benefit formula supports the principle that Social Security rewards work. It also establishes the principle that a poor person who has worked at least 40 years is guaranteed at least a poverty level benefit in advanced old age. Thus, a poor person who has worked for many years and has contributed to Social Security is guaranteed a minimum level of income, and the dignity associated with that, in advanced old age. However, people with low lifetime earnings, and thus low Social Security benefits, tend to have more years of zero earnings than

people with higher lifetime earnings, and thus some people with low benefits would not qualify. People in the lowest quintile of family lifetime earnings have on average 9.1 years of zero earnings, compared to 2.4 years in the second lowest quintile (Sarney 2008).

Table 1. Relationship between number of years of covered work and benefit level for the longevity insurance benefit	
Number of years (quarters) of covered work	Benefit as a percent of the poverty level
20 years (80 quarters)	70%
30 years (120 quarters)	85%
40 years (160 quarters)	100%
45 years (180 quarters)	107.5%
Source: Author's calculations	

The benefit eligibility conditions are designed to exclude people with low benefits for reasons other than a full career with low earnings. Recipients receiving benefits from pension plans in non-covered employment in the federal, state, or local governments would be excluded. Thus, people would be excluded who were affected by the Government Pension Offset, which reduces the spouse's benefit for spouses who have a government pension and were not covered by Social Security, and the Windfall Elimination Provision, which reduces the Social Security benefit for person's who have a government pension and were not covered by Social Security.

The longevity insurance benefit would help moderate- and low-income persons manage the spend-down of their assets in retirement. It would help people with low Social Security benefits who through misfortune or poor planning have run out of assets in old age. The amount of the benefit would vary depending on the minimum benefit level established and the benefits already received by persons receiving low Social Security benefits.

The longevity insurance benefit would improve the progressivity of Social Security. It would do so by shifting resources toward a subset of low-income persons. It also provides insurance against negative shocks that cause some people to have low Social Security benefits.

Divorced spouses are treated currently by Social Security as though they had the advantages of economies of scale inherent in living with another person. They receive the same benefit as do spouses, even though they live in a one-person household while spouses live in a two-person household. Because the current treatment results in relatively low benefits for divorced spouses, the longevity insurance benefit would help divorced women whose former husband was still living.

Longevity insurance provided automatically to a broad group of people at a distant point in the future avoids the problem of adverse selection. When it is purchased privately, presumably only people with long life expectancy would purchase it, which would drive up its price due to adverse selection.

While a universal longevity insurance benefit would provide benefits to everyone reaching the target age, the longevity insurance benefit proposed here also insures against low benefits in old age because it is a benefits-tested benefit. However, it does not consider all the resources available to older persons but only their Social Security benefits. The advantage of this approach is that payment would be automatic, without requiring the recipient to apply for it. Thus, there would not be a problem with a low take-up rate among the targeted population. An estimated 40 percent of the elderly who are eligible for Supplemental Security Income (SSI) benefits do not apply for them (Hoskins 2008). Declining cognitive ability may contribute to a low take up rate at advanced older ages.

Longevity insurance would help make up for the shortcomings of SSI, and could replace it for the target age group. Further, it would not be stigmatized, given that the benefit would be described as insurance, rather than as an anti-poverty benefit. It would not be as targeted a benefit as if all resources were considered as a qualifying condition, but that type of administrative process is both expensive and intrusive. While targeting is never perfect, it appears that the benefit would be targeted reasonably well.

### **What cohorts could or would feel the full impact of the policy change?**

The change could be implemented to take effect immediately. The current cohort age 82 and older, and all future cohorts that age, would feel the full impact.

**What would be involved in implementing the proposal?**

The proposal requires a change in Social Security law for it to be implemented. On their 82<sup>nd</sup> birthday, Social Security recipients would start receiving a higher benefit if previously their monthly benefit was below the minimum and they met other qualifying conditions. Thus, the Social Security Administration would need to do a new benefit calculation for people with low benefits when they reached their 82<sup>nd</sup> birthday.

**Who else would be affected? Consider unintended consequences.**

The children of this age group would be affected because they would have less financial responsibility for low-income parents. Provision of longevity insurance may affect family relationships. It may empower the poor elderly and raise their social standing within the household and within their families.

Because this benefit provides insurance, it affects potential beneficiaries as well as actual beneficiaries. Thus, it provides insurance to a person with low Social Security benefits even if that person or their spouse does not survive to receive the benefit. While the probability that a single person would survive to receive the benefit is roughly 50 percent, the probability is higher that at least one person in a couple would survive to receive it.

In a broader philosophical sense, all Americans would benefit from the insurance. While an upper-income person age 50 may not feel like they would directly benefit from the insurance, in a broader sense that person could have been born into a family with less advantaged circumstances, they could have had less ability to earn a living, or they could have suffered from serious health problems, and their situation at age 50 could have been much different.

A possible unintended consequence is that guaranteed minimum benefits reduce the incentive to save for people who anticipate that they may qualify for those benefits. Since the qualifying condition is the level of Social Security benefits at age 82, the unintended consequence of people taking steps to qualify would be expected to be minimal. For example, a person could retire at age 62 rather than age 65, possibly qualifying themselves for the higher benefit at age 82, but at the cost of lower benefits for 20 years. It is thus unlikely that there will be a negative unintended consequence of reducing labor supply at older ages.

Raising the level of Social Security benefits could have the consequence that some people no longer would be eligible for Food Stamps, Medicaid, housing allowances and other programs for low-income persons.

A possible unintended consequence is that picking an advanced age, such as 82, would be unfair to African Americans because of their shorter life expectancy. However, at older ages the difference in life expectancy is less than at younger ages, and at age 65 the difference for white and African American women is less than two years. At age 65, the difference in life expectancy between males and females is greater than the difference between African Americans and whites (Centers for Disease Control 2007).

A possible unintended consequence is that government-provided longevity insurance would displace privately-provided longevity insurance offered by insurance companies. This outcome appears unlikely given the low-purchase of annuities generally, and in particular the low purchase of annuities by the target population. Because this benefit would be provided universally to the target population, which is a low- and moderate-income population, it would not be affected by adverse selection, which affects the provision of annuities in voluntary markets.

Provision of longevity insurance by the government for Social Security beneficiaries with low benefits could encourage the demand among higher-income retirees for private longevity insurance. The example set by the government could serve as an endorsement that would encourage higher-income persons to consider obtaining such insurance through their 401(k) plans or purchased privately.

Because political support tends to be greater for social insurance than for public assistance, there may be greater political support for adequate benefits through longevity insurance than through Supplemental Security Income.

### **Cost Estimate**

In 2004, 7.3 million persons age 80 and older were receiving Social Security benefits (Social Security Administration 2006). The poverty threshold for a single person age 65 and older in 2004 was \$9,060 (U.S. Census Bureau 2006). Roughly 24 percent of Social Security beneficiaries age 80 or older had annual benefits less than the poverty threshold, while roughly



11 percent had annual benefits at less than 70 percent of the poverty threshold (based on interpolation, table 2). Thus, roughly 1.75 million were below the poverty line.

Somewhat dated data (for 1993) indicate that of the retired Social Security beneficiaries living in poverty, 42 percent had worked between 21 and 40 years and 10 percent had worked for 41 or more years (Olsen and Hoffmeyer 2002, Diamond and Orszag 2004). More recent data for benefit recipients in 2004 indicate that less than 20 percent of recipients have less than 20 years of covered earnings (Pfau 2008). Thus, if 80 percent of the target population age 82 and older had at least 20 years of service, that population in 2004 would be less than 1.4 million. For the cost calculations, we assume there would be approximately 1.4 million eligible persons.

The level of the longevity insurance benefit received depends on the level of the person's Social Security OASI benefit and the number of years the person or the person's spouse (if survivor benefits) had worked. The data in Table 2 suggest that the average benefits would be less than \$3,000 a year. If these people received a supplemental benefit that averaged \$3,000 a year, the cost would be approximately \$4.2 billion a year. It should be stressed that this figure is rough, but it indicates approximate cost. For perspective, the annual cost of this benefit would be less than half of the monthly cost of the Iraq war, or about 4 percent of the annual cost of the war.

Table 2. Social Security benefit recipients with low annual benefits, 2004			
Annual Social Security benefit level (dollars)	Percent of recipients	Cumulative percent of recipients	Cumulative percent of recipients below the poverty line
1-999	0.6%	0.6%	2.5%
1,000-1,999	0.6	1.2	5.0
2,000-2,999	0.8	2.0	8.3
3,000-3,999	1.2	3.2	13.3
4,000-4,999	2.3	5.5	22.9
5,000-5,999	3.5	9.0	37.5
6,000-6,999	4.5	13.5	56.25
7,000-7,999	5.6	19.1	80.0
8,000-8,999	4.8	23.9	100.0
9,000-9,999	7.4	31.3	-
Source: Social Security Administration (2006)			

The choice of a level of benefits involves tradeoffs between budgetary considerations with more generous benefits and social welfare considerations with less generous benefits. Setting a benefit at less than the poverty line for retirees with less than a full career of work represents the thinking that Social Security is not intended to be the sole source of income for older persons, even though statistics indicate that it is for many older persons. Basing the level of benefits on the current poverty line recognizes the reality that, flawed though it may be, that is the poverty measure used in the United States. If in future years the United States adopts a new poverty standard, then at that time policymakers might consider using that standard for setting the level of the longevity insurance benefit. Representative Jim McDermott introduced legislation in 2008 in the U.S. House of Representatives that would mandate the government to develop a new poverty measure.

An alternative benefit formula for the longevity insurance benefit would provide benefits that were a percentage increase of the person's benefit at age 82, with the increase rising with years of covered work. There would be a maximum combined longevity insurance benefit and regular OASI benefit. For example, the percentage increase could be 20 percent for retirees with 20 years of coverage, increasing by 1.5 percentage points for every additional year of service. This approach would tie the longevity insurance benefit more closely to the OASI benefit. For people with low benefits, it would result in a smaller benefit increase, and in that sense would be less well targeted.

As life expectancy at age 65 continues to improve over time, the qualifying age of 82 would be life expectancy indexed, increasing with increases in life expectancy. For example, if life expectancy at age 66 increases by one year, the qualifying age would increase to 83. For each birth cohort, its qualifying age for life expectancy insurance benefits will be set at age 62, so that retirees will know at the point at which they receive their Social Security benefits what the qualifying age is.

### **How would you pay for it?**

This section discusses two policies other countries have used that the United States could use to pay for longevity insurance benefits. Either approach could be used, or they could be used in combination, providing more than sufficient funding.

*Longevity Indexing Benefits.* Starting in the late 1990s, a number of countries have reformed their social security systems to incorporate longevity indexing of benefits. Longevity indexing benefits shifts at least part of the financial costs and risks of longer life onto workers. This shift of costs and risks recognizes that workers are the beneficiaries of longer life expectancy (Whitehouse 2007).

Longevity insurance can be financed by longevity indexing benefits. Longevity indexing benefits is done in all defined contribution systems that annuitize benefits using current life expectancy information. In social security systems, it is done, or is enacted into law but not yet effective, in Sweden, Finland, Portugal, Brazil, Poland, Latvia, Italy, Turkmenistan, and Azerbaijan (table 3) (Turner 2008b). That change would reduce the growth rate of initial benefits at retirement. With longevity indexing of benefits, Social Security benefits at retirement would be adjusted downward slightly for each birth cohort to take into account the long-term trend of increased life expectancy.

Longevity indexing of benefits has been done two ways. One way adjusts benefits for the percentage increase in life expectancy. For example, if life expectancy increases by one percent, benefits would be reduced by one percent. The second way adjusts benefits for the percentage increase in the present value of benefits caused by the increase in life expectancy. For example, if an increase in life expectancy raises the expected present value of benefits at retirement by one percent, benefits would be reduced by one percent. Because of the interest discounting of future benefits, an increase in life expectancy by one percent raises the expected present value of benefits by less than one percent. For that reason, the second way results in a smaller adjustment of benefits for a given increase in life expectancy.

In Sweden, longevity indexing of benefits is done by an adjustment that reflects improvements in life expectancy at age 65. No further adjustments to retirees' benefits are made for improvements in mortality after age 65. Mortality experience is averaged over the previous five years to avoid year-to-year fluctuations that do not reflect longer-term trends. The Swedish system uses period mortality tables, which are mortality tables based on the experience of the cross section of older persons. For each cohort, the annuity divisor adjustment is established at age 65, with a provisional adjustment made for retirements starting at age 61, which is the earliest age at which social security benefits are available.

The Congressional Budget Office has estimated the effect of a U.S. reform that only involved longevity indexing of initial Social Security benefits. This one change, put into effect in 2012, would eliminate 43 percent of the 75-year deficit, and would extend the date of insolvency by seven years, resulting in a date of insolvency more than 50 years into the future (Congressional Budget Office 2005). An alternative estimate, using a different indexing method, has indicated a smaller effect, with 27 percent of the deficit eliminated (Shelton 2008).

Table 3. Selected countries with life expectancy indexing of Social Security benefits	
Country	Year effective
Traditional pay-as-you-go systems	
Brazil	2004
Finland	2010
Japan	2004
Portugal	2008
Notional defined contribution systems	
Italy	2010
Norway	2010
Sweden	2001
Source: Author's compilation	

Longevity indexing of benefits for successive cohorts gradually lowers the replacement rate as traditionally measured at a fixed age. The replacement rate is a measure of benefit adequacy. It can be calculated as the ratio of earnings in the period before retirement to benefits received at retirement. When replacement rates are measured at a fixed age, life expectancy indexing results in reduced benefits relative to earnings. However, if replacement rates alternatively were measured at a fixed number of years from expected age at death, rather than age at birth, life expectancy indexing would not affect replacement rates.

Because this change results in a declining replacement rate over time when measured at a fixed age, it may be necessary, due to increased life expectancy, to also raise the early retirement age to help maintain the replacement rate.

One criticism is that longevity indexing of benefits would be unfair to African Americans and other groups with shorter life expectancy. However, as already noted, the life expectancy differences at age 65 are somewhat smaller than the differences observed at earlier ages, and are less than gender differences.

Longevity indexing of benefits is conceptually similar to longevity indexing of the Normal Retirement Age in that both cut benefits. For example, the Social Security Office of the Actuaries presents the actuarial results of life expectancy indexing of benefits, which is accomplished in their example by raising the Normal Retirement Age by one month every other year starting in 2022 (Social Security 2008). However, increases in the Normal Retirement Age may provide a signal to some workers that encourages them to work to the Normal Retirement Age. This feature could be incorporated with longevity indexing of benefits by setting the Normal Retirement Age as the age at which the person could receive the same level of benefits as before the longevity indexing of benefits.

*Expand the Compensation Base.* There are, of course, other ways that the longevity insurance benefit could be financed. The longevity insurance benefit could be financed without raising the payroll tax rate or cutting benefits but by expanding the base of taxable compensation. Tax deductible employee contributions are allowed for 401(k) plans in the private sector and for similar plans in the public sector. Tax deductible employee contributions are also allowed for defined benefit plans for state and local government employees (table 3). In addition, tax deductible employee contributions for defined benefit plans are allowed in Canada, the United Kingdom, Ireland, Jamaica, and in nearly all other countries where defined benefit plans are widespread or are provided. The exception is that they are not allowed for private sector defined benefit plans in the United States.

This proposal would allow employee tax deductible contributions to private sector employer-provided defined benefit plans. Just as for 401(k) plans, the employee contributions would not be exempt from the FICA tax, replacing employer contributions that are exempt from the FICA tax.

This proposal would have the advantage that it would place Social Security reform in the broader context of retirement income system reform. It would strengthen employer-provided defined benefit plans by giving them greater flexibility in financing, level the playing field between 401(k) plans and defined benefit plans by providing both the same tax benefits, and

broaden the tax base of compensation for the FICA tax by including employee contributions to defined benefit plans.

Table 4. Tax deductibility of employee pension contributions		
Sector	Defined benefit plans	401(k)-type plans
Private	Not Deductible	Deductible
Public (State and local governments)	Deductible	Deductible
Source: Author's compilation		

In 2005, \$87.5 billion was contributed to private sector defined benefit plans (USDOL 2008). Those contributions are made almost entirely by employers, and were not subject to FICA taxes as part of the Social Security compensation base. If half of that amount were contributed by employees, the resulting increase in FICA taxes would be insufficient by itself to pay for the longevity insurance benefit. For 401(k) plans, \$138.5 billion was contributed by employees, which was subject to FICA taxes, and \$70.2 billion was contributed by employers that was not subject to FICA taxes. Thus, \$157.7 billion dollars was contributed to employee pension plans that was part of employee compensation but was not subject to the FICA tax.

While at current levels of contributions to defined benefit plans, allowing tax deductible employee contributions would be insufficient to finance the longevity insurance benefit, but it might be sufficient if it encouraged the provision of defined benefit plans.

A possible criticism of permitting tax deductible employee contributions to defined benefit plans is that this could cause a cut in employee compensation. Transition rules could be put in place to address this issue: the increase in employee contributions could be no more than one percent of pay in a calendar year and it must be accompanied by a pay increase of at least three percent. However, employers already can reduce real pay, for example by ending a defined benefit plan and switching to a 401(k) plan. This proposal is designed in part to discourage employers from doing that by providing employee financing of defined benefit plans. While it may be argued that in the long run employee and employer financing of defined benefit plans

ultimately have the same effect on employee compensation, there may be a shift in risk bearing when employee compensation is involved.

**Has longevity insurance been tried before in the U.S. or internationally; in the private sector?**

Longevity insurance annuities are available in the U.S. private sector (Iwry and Turner 2008, Turner 2008a). Longevity insurance is a new product that has been available since about 2005. It is offered by MetLife, Hartford, and New York Life Insurance Company. If a 65 year-old man invested \$100,000 with MetLife's Longevity Income Guarantee annuity (the maximum benefit without death benefit) he would receive \$83,000 a year starting at age 85. Inflation protection and a return of premium guarantee can increase the premium by as much as 50 percent (Greene 2008).

In addition, there is some foreign experience with providing a special social security benefit at advanced ages. The United Kingdom provides a small old age allowance to persons age 80 and older. Ireland pays a benefit of about \$800 a year at age 80, called the Age 80 Allowance. That benefit is automatically received by persons receiving Irish social security pensions once they turn age 80. Italy has a special supplement for low-income persons age 75 and older (Europa 2001). The Riester pensions in Germany are voluntary defined contribution plans that were enabled by a 2001 reform, taking effect in 2002. They require that at retirement the participant purchase a longevity insurance annuity that begins payment at age 85 (Börsch-Supan and Wilke 2005). Singapore is considering adding such a requirement to its mandatory defined contribution system. Antolin (2008) has advocated that longevity insurance annuities play a major role in individual account private pension systems.

U.S. Social Security OASI has provided a minimum benefit in the past, but not a longevity insurance benefit. The benefit was available to workers taking Social Security benefits at the early retirement age or any later age. Because it was not well targeted to low-income workers with long careers of covered employment, it was eliminated for beneficiaries becoming entitled in 1982 and later. A more targeted minimum benefit was created in 1972 and still exists, but is being phased out (Diamond and Orszag (2004). Diamond and Orszag (2004) have proposed a new minimum benefit that would require at least 20 years of covered

work and would increase in value for each additional year of covered work, reaching 100 percent of the poverty threshold for workers with 35 years of covered work.

There also is international experience with the two financing options discussed. Sweden's Notional Defined Contribution plan, which provides the main part of its social security benefit, uses life expectancy indexing of benefits, as does Poland. Brazil, Portugal and Finland have also adopted life expectancy indexing of benefits in traditional social security programs. This represents a new trend, with nearly all the adoptions since 2000 (Turner 2008b). As previously noted, most countries with defined benefit plans provide for tax deductible employee contributions to those plans.

**What variations in policy parameters would increase (or lower) its impact and cost?**

Providing a higher guaranteed minimum benefit or providing it to more people would increase the cost. Lowering the age limit would raise the cost. Requiring more than 80 quarters of covered work, which would limit the benefit to people with longer work histories (and their survivors), would lower the cost. Having an earnings test or asset test, rather than the qualification test only being Social Security benefits, would lower the cost in benefits paid but raise the administrative cost. Indexing the age limit for increases in life expectancy would lower the cost in future years. Setting a maximum amount by which the longevity insurance benefit could increase the OASI benefit would reduce the cost. For example, the maximum longevity insurance benefit could be set at \$5,000 a year.

Integration with Supplemental Security Income (SSI) is one of the design issues. Having SSI be the first payer, the longevity insurance benefit would be based on the total of the person's Social Security benefit and SSI benefit, which would lower the cost to Social Security and shift part of the cost onto general revenue funds. A similar issue arises for Veteran's pensions, which are pensions for low-income veterans.

**Are there other Social Security options to help this group? Why is your policy approach better than others?**

A similar approach could be taken through Supplemental Security Income, raising the level of benefits it provides for persons age 82 and older. Longevity insurance would be



simpler to administer and would not be stigmatized. The benefit would be viewed as insurance rather than as a government dole.

Survivors benefits could be raised, but that would be less targeted and thus more expensive. Longevity insurance would be better targeted to people with long service who had low benefits and were at an advanced age.

Minimum benefits could be raised with the same qualifying conditions except for age, with the benefits being available at an earlier age, such as age 62. Longevity insurance, however, would be better targeted by age. As life expectancy continues to increase, age 62 has become a relatively younger age, compared to expected age at death. Further, providing minimum benefits at an earlier age would more likely have adverse incentive effects for labor supply at older ages. While people in their sixties and even in their seventies may be able to continue working, that expectation does not extend to people in their eighties.

A political concern that might be raised is that this policy would lead to an eventual expansion of the minimum benefit to younger age groups. With this proposal, however, the age limit would be raised over time in line with increases in life expectancy at age 62 to preserve its role as longevity insurance. Lowering the age limit would move the benefit toward being an old-age benefit rather than longevity insurance. Lowering the age limit, for example by providing a minimum benefit at age 65, would have adverse incentive effects on the labor supply and savings of older low-income workers.

## **Conclusions**

People in their 80s with low Social Security benefits are a particularly vulnerable group. At that age, few are able to work. As a matter of national policy, it is desirable that people in this age group are able to live with sufficient resources so that they are able to enjoy the last years of their lives with dignity.

The target population for this proposal is people age 82 or older with low Social Security benefits and long work histories. Age 82 is chosen as approximately the average life expectancy at age 65. Elderly poverty is particularly high among this age group-- a third higher than for people age 65-69. People in this age group are particularly at risk of having fallen into poverty even though they had not been in poverty earlier in life. They have greater difficulty leaving poverty than people at younger ages.

Longevity insurance can be an important component of a policy package to restore Social Security solvency. Public policy changes likely will reduce the generosity of Social Security old-age benefits to restore solvency. If general benefit reductions, such as through longevity indexing of benefits as of retirement age, are combined with a new longevity insurance benefit, it may be possible to retain much of the longevity insurance Social Security provides for low-income persons. For low-income persons, the effects of benefits cuts later in life when they are least able to work will be moderated.

## References

Antolin, Pablo. "Policy Options for the Payout Phase." OECD Working Paper on Insurance and Private Pensions no. 25, September 2008. <http://www.oecd.org/dataoecd/39/2/41407986.pdf>

Blostin, Allan. 2003. "Distribution of Retirement Income Benefits." *Monthly Labor Review*, April.

Börsch-Supan, Axel H. and Christina R. Wilke. 2005. "Reforming the German Public Pension System." [http://www.rand.org/labor/aging/rsi/rsi\\_papers/2006\\_axel1.pdf](http://www.rand.org/labor/aging/rsi/rsi_papers/2006_axel1.pdf) (accessed August 9, 2008).

Brown, Jeffrey R., Jeffrey R. King, Sendhil Mulainathan, and Marian V. Wrobel. 2008. "Why Don't the People Insure Late Life Consumption? A Framing Explanation of the Under-Annuitization Puzzle." TIAA-CREF Research Dialogue, April.

Brown, Jeffrey R. 2001. "Redistribution and Insurance: Mandatory Annuitization with Mortality Heterogeneity." Center for Retirement Research at Boston College, CRR WP 2001-02, April.

Butrica, Barbara and Sheila Zedlewski. 2008. "More Older Americans Are Poor than the Official Measure Suggests." The Retirement Policy Program, no. 15, The Urban Institute, May. [http://www.urban.org/UploadedPDF/411670\\_older\\_americans.pdf](http://www.urban.org/UploadedPDF/411670_older_americans.pdf) (accessed July 12, 2008).

Centers for Disease Control and Prevention. 2007. "QuickStats: Life Expectancy at Age 65 by Sex and Race--United States, 1999-2004." February 23. <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5607a5.htm> (accessed July 12, 2008).

Congressional Budget Office. 2005. "Projected Effects of Various Provisions on Social Security's Financial and Distributional Outcomes." May 25. [http://www.cbo.gov/ftpdocs/63xx/doc6377/Social\\_Security\\_Menu-CBO\\_baseline.pdf](http://www.cbo.gov/ftpdocs/63xx/doc6377/Social_Security_Menu-CBO_baseline.pdf) (accessed July 12, 2008).

De Nardi, M., E. French, and J.B. Jones, J. B. 2006. "Differential Mortality, Uncertain Medical Expenses, and the Savings of Elderly Singles." NBER Working Paper 12554, October.

Diamond, Peter A. and Orszag, Peter R. *Saving Social Security: A Balanced Approach*. Washington, DC: The Brookings Institution, 2004.

Europa. 2001. "Social Protection in the EU Member States and the European Economic Union Area: Special Supplements."

[http://ec.europa.eu/employment\\_social/missoc2001/missoc\\_132\\_en.htm](http://ec.europa.eu/employment_social/missoc2001/missoc_132_en.htm) (accessed July 12, 2008).

Greene, Kelly. "How to Bullet Proof Your Nest Egg." *Wall Street Journal*, June 14, 2008, p.

E1. [http://online.wsj.com/article\\_email/SB121259350492445223-1MyQjAxMDI4MTEyNjUxOTYzWj.html](http://online.wsj.com/article_email/SB121259350492445223-1MyQjAxMDI4MTEyNjUxOTYzWj.html) (accessed August 6, 2008).

Horneff, Wolfram J., Raimond Maurer and Michael Z. Stamos. 2006. "Life-Cycle Asset Allocation with Annuity Markets: Is Longevity Insurance a Good Deal?" Michigan Center for Retirement Research working paper no. 2006-146.

<http://www.mrrc.isr.umich.edu/publications/Papers/pdf/wp146.pdf> (accessed July 12, 2008).

Horneff, Wolfram; Raimond Maurer, Olivia S. Mitchell, and Michael Z. Stamos. 2007.

"Money in Motion: Dynamic Portfolio Choice in Retirement." Pension Research Council Working Paper 2007-7, February.

Hoskins, Dalmer D. 2008. "Tackling Old-Age Poverty in a Contributory Pension Program." Presentation at the World Bank-Hitotsubashi Workshop, Tokyo, February 21.

Hurd, Michael D. and Susann Rohwedder. 2008. "Adequacy of Economic Resources in Retirement and Returns-to-Scale in Retirement." Michigan Retirement Research Center Working Paper 2008-174, May.

Iwry, Mark J. and John A. Turner. 2008. "Expanding the Use of Annuities by 401(k) Participants: Innovations in Policies, Products, Marketing and Advice." Retirement Security Project, draft paper.

Lee, Sunhwa and Lois Shaw. 2008. "From Work to Retirement: Tracking Changes in Women's Retirement Status." AARP Public Policy Institute Research Report, 2008-03, February.  
[http://assets.aarp.org/rgcenter/econ/2008\\_03\\_poverty.pdf](http://assets.aarp.org/rgcenter/econ/2008_03_poverty.pdf) (accessed July 12, 2008).

MetLife. 2008. "MetLife Retirement Income IQ Study: A Survey of Pre-Retiree Knowledge of Financial Retirement Issues." June.  
<http://www.metlife.com/FileAssets/MMI/MMIStudiesRetirementIQ.pdf> (accessed August 11, 2008).

Milevsky, Moshe. 2005. "Real Longevity Insurance with a Deductible: An Introduction to Advanced-Life Delayed Annuities (ALDA)." *North American Actuarial Journal* 9(4): 109-122. [http://www.ifid.ca/pdf\\_workingpapers/WP2004FEB\\_.pdf](http://www.ifid.ca/pdf_workingpapers/WP2004FEB_.pdf) (accessed August 6, 2008).

Olsen, Kelly and Don Hoffmeyer. 2002. "Social Security's Special Minimum Benefit." *Social Security Bulletin* 64 no. 2 (September).

Pfau, Wade D. 2008. "Assessing the Applicability of Hypothetical Workers for Defined-Contribution Pensions." National Graduate Institute for Policy Studies, Tokyo, Japan, GRIPS Policy Information Center Discussion Paper no. 07-11.

Rusconi, Rob. "National Annuity Markets: Features and Implications." OECD Working Paper on Insurance and Private Pensions no. 24, September 2008.  
<http://oberon.sourceoecd.org/vl=1964179/cl=12/nw=1/rpsv/cgi-bin/wppdf?file=5kzfsrxn0fr3.pdf>

Sarney, Mark. 2008. "Distributional Effects of Increasing the Benefit Computation Period." Social Security Policy Brief No. 2008-02, August.

<http://www.socialsecurity.gov/policy/docs/policybriefs/pb2008-02.pdf> (accessed August 14, 2008).

Scott, Jason S.; John G. Watson, and Wei-Yin Hu. 2007. "Efficient Annuitization: Optimal Strategies for Hedging Mortality Risk." Pension Research Council Working Paper no. PRC 2007-09.

Sedensky, Matt. 2008. "Study: Bankruptcies Soar for Senior Citizens." *Washington Post*, August 27. <http://www.washingtonpost.com/wp-dyn/content/article/2008/08/27/AR2008082702215.html> (accessed August 28, 2008).

Shelton, Alison. 2008. "Reform Options for Social Security." AARP Public Policy Institute Research Report, April. [http://assets.aarp.org/rgcenter/econ/i3\\_reform.pdf](http://assets.aarp.org/rgcenter/econ/i3_reform.pdf) (accessed July 12, 2008).

Social Security Administration. 2008. "Actuarial Publications: Provisions that Could Change the Social Security Program." August. <http://www.ssa.gov/OACT/solvency/provisions/index.html> (accessed August 10, 2008).

Social Security Administration. 2006. "Income of the Population 55 or Older, 2004." May. [http://www.ssa.gov/policy/docs/statcomps/income\\_pop55/](http://www.ssa.gov/policy/docs/statcomps/income_pop55/) (accessed July 17, 2008).

Stewart, Kenneth J. 2008. "The Experimental Consumer Price Index for Elderly Americans (CPI-E): 1982-2007." *Monthly Labor Review* April, pp. 19-24. <http://www.bls.gov/opub/mlr/2008/04/art2full.pdf> (accessed July 12, 2008).

Turner, John A. 2008a. "The Annuity Market and Personal Pensions." In Gerard Hughes and Jim Stewart (eds.), *Personal Choice in the Provision of Retirement Income: Meeting the Needs of Older People?* Cheltenham, UK: Edward Elgar.

Turner, John A. 2008b. "Sustainable Social Security: Automatic Adjustments for Restoring Solvency." Prepared for the AARP Public Policy Institute.

U.S. Census Bureau. 2003. "The Older Population in the United States: March 2002." P20 546, April. <http://www.census.gov/prod/2003pubs/p20-546.pdf> (accessed July 12, 2008).

U.S. Census Bureau. 2006. "Poverty Thresholds 2004."  
<http://www.census.gov/hhes/www/poverty/threshld/thresh04.html> (accessed July 17, 2008).

U.S. Department of Labor, Employee Benefits Security Administration. 2008. "Private Pension Plan Bulletin: Abstract of 2005 Form 5000 Annual Reports." February.  
<http://www.dol.gov/ebsa/PDF/2005pensionplanbulletin.PDF> (accessed July 24, 2008).

Vanguard. 2008. "Plan for a Long Retirement."  
<https://personal.vanguard.com/us/planningeducation/retirement/PEdRetPicLongRetireContent.jsp> (accessed August 6, 2008).

Webb, Anthony; Guan Gong, and Wei Sun. 2007. "An Annuity People Might Actually Buy." Center for Retirement Research at Boston College, Issue in Brief no. 7-10, July.  
[http://crr.bc.edu/images/stories/Briefs/ib\\_7-10.pdf](http://crr.bc.edu/images/stories/Briefs/ib_7-10.pdf) (accessed July 12, 2008).

Whitehouse, Edward. 2007. "Life-Expectancy Risk and Pensions: Who Bears the Burden?" OECD Social, Employment and Migration Working Papers No. 60, October.

Whitman, Debra and Patrick Purcell. 2006. "Topics in Aging: Income and Poverty Among Older Americans in 2005." Congressional Research Service.  
<http://digitalcommons.ilr.cornell.edu/cgi/viewcontent.cgi?article=1022&context=crs> (accessed July 12, 2008).