Most policymakers are painfully aware that entitlement programs are becoming less solvent. The main factors contributing to this looming insolvency are rising health care costs, slower population growth, and longer life expectancies. Rising health care costs increase the cost of financing retirement. Slower population growth reduces the number of workers per retiree. And longer life expectancy—without a corresponding increase in the average number of years spent working—increases the length of retirement, pushing down the ratio of workers to retirees and increasing the cost of financing retirement per individual.

This paper focuses on the last of these three factors, the length of retirement. In 1940, soon after Social Security was introduced, men aged 65 could expect to live for an additional 12.7 years, and women aged 65 could expect to live for an additional 14.7 years. Today, remaining life expectancy at age 65 has risen to 18.9 years for men and 20.9 years for women. In the meantime, Americans have been retiring earlier. According to Munnell and Sass, in 1940, more than 40 percent of men aged 65 and older were employed. By 1980, that fraction had fallen to less than 20 percent. The average length of retirement has therefore greatly increased since the early days of Social Security. Although employment among older Americans at any given age has increased in recent decades, the increase has not been enough to decrease the length of retirement in the face of rising life expectancy. Cushing-Daniels and Steuerle show that labor force participation at any given remaining life expectancy, rather than age, has remained relatively constant.

Policymakers concerned with the sustainability of entitlement programs frequently express interest in lengthening working lives. To achieve economic efficiency, government policy should be neutral with respect to retirement age—that is, retirement decisions should be based on productivity and preferences for leisure, rather than on taxes and government benefits. A large body of research, which we will discuss, shows that government programs, particularly Social Security and Medicare, inefficiently discourage work at older ages and lengthen retirement. Reforms that undo such distortions could reduce pressure on the federal budget by increasing tax revenue and reducing the need to pay retirement benefits.
We first examine trends in employment for workers at older ages, documenting the rise in employment that has occurred among older workers in recent decades. Despite these positive trends, entitlement programs still pose substantial disincentives to work. We then summarize the recent research about which factors influence work decisions for older workers, relating them to the observed trends in employment. Finally, we discuss policy options that could increase employment for older workers.

**Trends in Work at Older Ages**

In this section, we document that over the past two decades, there has been a widespread increase in employment among older workers, with increases in both labor force participation and average hours worked. The increase is observed for both men and women. To measure aggregate employment outcomes for older workers, we construct a full-time employment index using annual Current Population Survey data from 1979 to 2011.4

For each age group, the employment index is defined as the employment-to-population ratio multiplied by average weekly hours worked divided by 40. If all workers in the group are employed and work 40 hours per week, then the index is equal to one. If we think of this as full employment, then the index measures the percentage of full employment attained by each group. The index falls when unemployment increases, when workers leave the labor force, or when workers reduce their hours.

Figure 1 plots the aggregate employment index over the period 1979–2011 for workers aged 55–61 (who are not yet eligible for Social Security benefits or Medicare), workers aged 62–64 (who are eligible for Social Security benefits but not Medicare), and workers aged 65 and older (who are eligible for Social Security and Medicare).5 For comparison, we also plot the measure for prime-age workers aged 25–54.

Not surprisingly, prime-age workers display higher levels of employment than older workers. Although all four groups show some increase in employment over the period, the timing of the changes differs significantly. For prime-age workers, employment increases until about 1990, when the upward trend starts to level off. A substantial decline has occurred in recent years because of the persistence of high unemployment following the Great Recession. In contrast, older workers’ employment is flat or declining for the first decade of the sample before increasing over the latter two decades. Moreover, the employment of older workers seems to be less correlated with the business cycle than that of prime-age workers. In particular, for workers eligible for Social Security, there is no visible decline in employment during the Great Recession.

To determine whether these trends are accounted for by changes in employment-to-population ratios or by changes in the number of hours worked, we plot each variable separately in figure 2. Panel (a) shows that the path of the employment-to-population ratio for the four age groups from 1979 to 2011 is strikingly similar to the path of the employment index in figure 1. This similarity implies that understanding older workers’ decisions to participate in the labor market is significant for understanding trends in employment. Panel (b) shows that changes in the number of hours worked are also important, especially among Social Security–eligible workers. For prime-age
workers and workers aged 55–61, the hours index is close to one over the entire period. Workers aged 62–64 worked 10 percent fewer hours than prime-age workers until the early 1990s, when hours began to increase steadily to their current level, around 5 percent below prime-age workers. The pattern is more striking for workers aged 65 and older, who worked about 30 percent fewer hours than prime-age workers until the early 1990s but only 20 percent fewer hours by 2011. A full account of the increase in employment for older workers since the 1990s must therefore explain increases in both participation and hours worked.

Next, to gain more understanding, we examine how the aggregate levels and trends observed in figure 1 vary by sex. Figure 3 plots male employment in panel (a) and female employment in panel (b) for the period 1979–2011. In general, the level of male employment is higher and has fewer distinct time trends. This is most striking among prime-age workers, where males have an employment index above 0.9 for most of the period, dipping below that level only recently as a result of the Great Recession. The employment index for prime-age females increases steadily—from 0.53 to 0.7—during the first half of the period before declining again during the Great Recession. Among the 62–64 age group and the 65 and older age group, although the employment index is lower for females, employment increased for both men and women starting in the early 1990s. Among 55–61 year olds, however, most of the recent increase in employment is concentrated among women, suggesting that the trend for this group may be driven by women’s labor force participation rather than factors influencing all older workers.

Although the trend in employment among older workers is positive, sizable level differences in employment still exist for workers of different ages. Entitlement programs generate many disincentives for

![Figure 2: Decomposition of Aggregate Employment Index](image)

Note: Recessions shaded in gray. 
Source: Authors’ calculations from the Current Population Survey.
work at older ages. Reducing these disincentives can be an important tool for encouraging employment at older ages. Thus, in the next section, we examine how policy affects the labor supply incentives of older workers.

**Factors Affecting Labor Supply at Older Ages**

The decision to retire represents one dimension of the choice between labor supply and leisure. This choice may be influenced by several factors, but the two most important ones are take-home pay (which reflects a worker’s productivity) and wealth. When wealth increases, an older worker can retire earlier—an effect known as the income or wealth effect. When take-home pay increases, making work more rewarding relative to leisure, a worker is less likely to retire. This effect is known as the substitution effect. An increase in take-home pay may also discourage work through the income effect by allowing the worker to reduce hours or retire earlier and still maintain the same standard of living. In general, economists believe that the substitution effect of a change in take-home pay outweighs the income effect.

Other factors besides income and substitution effects may influence retirement decisions. For example, liquidity considerations may be important for some individuals. Because workers generally cannot borrow against future Social Security or pension benefits, some workers may be unable to finance their retirement until they have access to those benefits. Behavioral economics provides additional insights into the way individuals plan for their retirement. For example, individuals do not appear to save optimally for retirement in the way that standard economic models predict, their choice of retirement age appears to be influenced by the behavior of their peers, and their decision regarding when to claim Social Security appears to be affected by the way the choice is framed.6

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**FIGURE 3**

**AGGREGATE EMPLOYMENT INDEX BY SEX**

(a) Male Aggregate Employment Index

(b) Female Aggregate Employment Index

Note: Recessions shaded in gray.

Source: Authors’ calculations from the Current Population Survey.
Several studies document that retirement is a process rather than a one-time decision. Many older workers move to part-time work or self-employment before stopping work entirely. However, fixed costs associated with working—such as the costs of getting ready for work or commuting—can reduce flexibility in making such choices. One study by French and another study by French and Jones show that fixed costs may help to explain why hours worked do not respond as much as labor force participation to changes in take-home pay. The remainder of this section documents factors that affect work decisions at older ages.

**Social Security.** An individual’s Social Security retirement benefit is based on his or her average monthly earnings, calculated on the basis of the highest 35 years of earnings after adjusting for economy-wide wage growth. This quantity is known as Average Indexed Monthly Earnings (AIME). A progressive benefit formula is applied to AIME to arrive at the monthly retirement benefit. For example, workers born in 1951 receive a benefit that is equal to 90 percent of the first $791 of AIME, 32 percent of AIME between $791 and $4,768, and 15 percent of any additional AIME.

Workers receive this benefit amount if they claim benefits at their normal retirement age (66 for those born between 1943 and 1954). But benefits may be claimed at any age between 62 and 70. Monthly benefits are reduced for those claiming before age 66 and increased for those who delay. These actuarial adjustments are intended to compensate for the fact that those who claim later are likely to receive benefits for a shorter period. Social Security retirement benefits are normally financed by a 10.6 percent payroll tax on earnings under a maximum taxable amount ($113,700 in 2013). Workers earning additional income subjects a worker to the 10.6 percent payroll tax, which creates a work disincentive; however, because Social Security benefits are based on earnings, that disincentive may be partially or fully offset by the additional future Social Security benefits earned. The net Social Security tax rate that an individual faces is often less than 10.6 percent. Consider an individual who is deciding whether to work an additional year or to retire. If this person has had a short career, his or her AIME is low, and increments to AIME translate into large gains in monthly benefits. As the worker’s career becomes longer and the AIME continues to grow, each additional year of work results in smaller benefit increases, offsetting less of the payroll tax and strengthening the incentive to retire. After a 35-year career, additional years of work are likely to have a very small—and possibly zero—impact on AIME. For example, working a 36th year raises the worker’s AIME only if earnings in that year are greater than earnings (adjusted for wage growth) in one of the first 35 years. If the 36th year has no impact on AIME, then the worker faces the full 10.6 percent payroll tax on the additional year’s earnings with no offset from additional benefits.

In addition, Social Security’s spousal and survivor benefits can result in high implicit tax rates on secondary earners. Whereas single workers collect benefits on the basis of their own records, a married person can collect the higher of his or her own worker benefit and a spousal benefit equal to half of the spouse’s basic monthly benefit. A surviving spouse can also collect the higher of his or her own worker benefit and a survivor benefit that is generally equal to the deceased spouse’s actual benefit. Spousal and survivor benefits are available regardless of gender, but they typically affect married women. A married woman who expects to claim benefits on the basis of her husband’s record faces the full 10.6 percent payroll tax on her own earnings regardless of her age.

Several recent studies show that benefit accrual can be quite low for individuals late in their careers, leading to net Social Security tax rates that are close to the full 10.6 percent. Other studies show that older workers’ retirement decisions are sensitive to these incentives. Spousal and survivor benefit provisions also diminish the labor supply of married women. The expansion of Social Security from the 1940s through the 1970s may therefore have reduced the labor supply of older workers. Social Security has become somewhat less generous recently as a result of such reforms as the partial taxation of benefits and the phased increase in the normal retirement age. These changes could explain some of the recent increase in labor supply among eligible workers. On the other hand, the fact that Social Security benefits become partially taxable for high-income individuals may further discourage work among Social Security recipients.

In addition, the rewards from delaying Social Security benefits beyond normal retirement age have increased over the past several decades as a result of changes in the program’s rules, improvements in life expectancy, and changes in the real interest rate. Today, delaying benefits appears to be actuarially advantageous for most people. Although Social Security claiming and retirement do not need to occur simultaneously, most individuals claim Social Security either when they are first eligible or when they
stop working, whichever is later. Perhaps in response to the increased benefits from delay, younger cohorts appear to be claiming Social Security later. Pingle and Coile and Gruber suggest that this change also increased labor supply at older ages, although MacInnis finds mixed evidence.

Finally, the Social Security earnings test may discourage work at older ages. The earnings test reduces Social Security benefits for every dollar of income earned above a particular threshold. It is not truly a tax, however. Since 1972, any benefits forgone due to the earnings test have resulted in higher future benefits. In effect, individuals are forced to delay benefits, receiving an adjustment that, as discussed above, is actuarially advantageous for many people. But the earnings test is poorly understood, and evidence indicates that people respond to it as though it were a tax, increasing their labor supply when it is liberalized. The earnings test has been greatly liberalized since the 1970s. Gruber and Orszag demonstrate that the earnings test threshold trended upward in real terms between 1973 and 1998, particularly for workers 65 and older. In 2000, the earnings test was eliminated for workers at normal retirement age or older and was further liberalized for workers under normal retirement age.

Medicare. An additional disincentive for work at older ages comes from Medicare. The Medicare as Secondary Payer (MSP) provision, which went into effect in 1983, requires Medicare to be the secondary payer for employees aged 65 and older who have employer-provided health coverage and work for firms with 20 or more employees. For affected employees, Medicare covers only expenses that are not covered by the employer-sponsored plan. In addition, firms that offer health coverage to workers under age 65 must extend the same coverage to those over 65 and may not offer financial incentives to older workers to forgo health coverage. Because employer-sponsored health plans are typically more generous than Medicare, the individuals who are subject to the MSP provision frequently receive no Medicare benefits. The MSP provision results in either lower wages for employees or higher costs for employers, driving a wedge between after-tax wages and take-home pay. Therefore, the MSP provision may reduce work in the 65 and older age group.

Goda, Shoven, and Slavov estimate that the implicit tax rates from the MSP provision can be quite high for workers aged 65–80, ranging from 15 to 45 percent for men and 20 to 70 percent for women. Still, the empirical evidence of the impact of MSP is limited. Glied and Stable find that MSP did not significantly reduce the employment of older workers, although it may have shifted the workers toward jobs that were not subject to MSP (for example, jobs at firms with fewer than 20 employees). They also demonstrate that MSP was poorly enforced during their study period (ending in 1987), which may explain the lack of effect on employment. Enforcement was improved in 1995, but with more recent data, it is difficult empirically to untangle the impact of the increased enforcement and the concurrent liberalization of the Social Security earnings test.

The introduction and heightened enforcement of the MSP provision operate in the opposite direction of some of the recent changes to Social Security. Thus, employment at older ages appears to have increased since the 1990s despite this added disincentive for work.

For workers eligible for Social Security, there is no visible decline in employment during the Great Recession.

Private Employer Policies. Private pensions and other employer-provided benefits can also create strong retirement incentives. These retirement incentives are not necessarily inefficient, because private employers take into account workers’ productivity in designing employment contracts. Nevertheless, we discuss them to provide context for the trends in the labor supply of older workers.

Traditional defined benefit (DB) pension plans are often designed in a way that encourages early retirement. Under a DB plan, workers accrue benefits while working and receive an annuity—calculated by a formula based on some measure of earnings or years of service—on retirement. Accrued benefits can be considered part of a worker’s compensation package. Benefit accrual typically rises as a worker approaches the plan’s retirement age, then drops after that point, effectively reducing compensation and encouraging retirement. Various studies have shown that retirement behavior strongly responds to DB plan incentives.

Still, DB plans are gradually being replaced by defined contribution (DC) plans, such as 401(k)s, in which a worker contributes to an account and can draw on the account balance in retirement. In 1980, 38 percent of workers participated in DB plans, and 8 percent...
participated in DC plans. By 2008, only 20 percent participated in DB plans, and 31 percent participated in DC plans. DC plans do not create incentives for early retirement by lowering compensation at older ages. In addition, DC plans may discourage early retirement via the wealth effect. Evidence suggests that many individuals do not save optimally in DC plans, which would make them less prepared to retire at early ages. Furthermore, Butrica and colleagues show that a mid-career switch from a DB to a DC plan reduces retirement income, as individuals forgo the high late-career accruals that typically result under a DB plan. The increased prevalence of DC plans has influenced aggregate retirement behavior. Heiland and Li find that the relative increase in DC plans from 1977 to 2010 is responsible for a 4.9 percentage point increase in labor force participation for workers aged 60–64 and a 1.7 percentage point increase in labor force participation for workers aged 65–69.

In addition to pensions, some firms offer group health benefits to their retirees. The number of firms that offer retiree health coverage has declined in recent decades, however. There is overwhelming empirical evidence that retiree health coverage encourages early retirement, because it allows workers to maintain group health coverage after retirement even if they are not yet eligible for Medicare. The recent decline in retiree health coverage may therefore be an additional factor encouraging work at older ages. Soon, however, early retirees will be able to purchase health insurance on the exchanges created under the Patient Protection and Affordable Care Act, which may increase early retirement in the future.

The Great Recession. The recent recession may have influenced retirement behavior through a number of channels. Older workers may have become unemployed as a result of poor labor market conditions. But pushing in the opposite direction, a decline in retirement wealth as a result of falling stock and house prices may have caused older workers to postpone retirement. This is particularly true given the decline of DB relative to DC pension plans, because DC plans expose workers to more market risk. Obviously, the recent recession cannot be thought of as a policy that distorts retirement decisions, but we provide a discussion here in order to contextualize the recent trends in the labor supply of older workers.

Several studies have estimated that the recession has had a substantial impact on the asset holdings of older Americans. On the other hand, in two studies Gustman, Steinmeier, and Tabatabai argue that the average American nearing retirement is unlikely to have much exposure to stocks and that the impact of the recession on the labor market is likely to outweigh any impact from wealth shocks. Several studies have empirically examined the impact of the recent recession on retirement expectations and behavior. The general finding appears to be that a correlation exists between recent stock market fluctuations and retirement choices for older workers, although the weak labor market at least partially offsets this effect. There is little evidence of a relationship between house prices and retirement choices.

### Entitlement programs generate many disincentives for work at older ages.

Although it may be too early to have conclusive evidence, the figures in the “Trends in Work at Older Ages” section suggest that employment rose among older workers relative to younger ones during the recession. Workers aged 65 and older show no decline in employment, and workers aged 62–64 show only a minor decline in comparison to younger groups. Nevertheless, employment among older workers may have been even higher in the absence of the recession.

Overall, several recent policy changes—including the liberalization of the Social Security earnings test and the increase in the rewards for delaying Social Security—may have contributed to the upward trend in the labor supply of older workers. The shift in the private sector from DB to DC plans and the decline in retiree health insurance may have reinforced this effect. Pushing in the opposite direction, the Medicare as Secondary Payer provision and the recent weakness in the labor market may have worked against the observed trend in labor supply.

### Policy Options

The increasing labor supply among older workers can help remove budgetary strains caused by entitlement programs such as Social Security and Medicare. Fortunately, the labor supply among older workers has increased steadily since the early 1990s. However, the length of retirement does not appear to have fallen, because of increases in life expectancy. Additional reforms that could potentially reduce work disincentives at older ages include the following:
• Exempt late-career workers from the payroll tax (and associated benefit accrual). For workers considering retirement, the average tax rate on labor income is the critical factor in determining their willingness to bear fixed costs associated with working in order to participate in the labor market. Eliminating payroll taxes for workers who have worked for a minimum number of years would greatly reduce the work disincentives at older ages. Laitner and Silverman’s simulation suggests that such a reform could increase the average retirement age by a year and raise $2,500 in additional income tax revenue per household.

• Increase the number of years included in the Social Security benefit calculation. Such an increase could provide further incentives to work. Goda, Shoven, and Slavov show that a combination of reforms—raising the number of years in the benefit computation from 35 to 40, exempting workers with 40 years of covered earnings from the payroll tax, and altering the benefit formula to distinguish between short careers and low average earnings—can substantially reduce net Social Security tax rates at older ages.

• Eliminate the Social Security earnings test. As we noted earlier, although the earnings test is not truly a tax because the forgone benefits are paid later, substantial evidence indicates that it distorts behavior as though it were a tax. Eliminating it could encourage work among older people without a significant effect on government revenue.

• Raise the Social Security early and normal retirement ages and index them to life expectancy. Such reforms are often considered as part of a Social Security overhaul. Empirical evidence suggests that recent increases in the normal retirement age have indeed led to increases in labor supply. A change in the normal retirement age can affect retirement timing because some individuals may view this age as a recommendation, a social norm, or a reference point from which they prefer not to deviate. In addition, raising the normal retirement age reduces overall expected benefits, reducing individual wealth. An increase in the early retirement age also shifts back the date at which individuals have access to the liquidity that benefits provide. And for workers who choose to retire early anyway, this reform would reduce the fraction of retirement that is publicly funded.

• Pay the delayed retirement credit as a lump sum. This policy has been suggested by Orszag and Blahous. Currently, an individual who delays Social Security forgoes current benefits in exchange for higher benefit payments for the rest of his or her life. That is, delaying claiming is equivalent to purchasing an annuity. A great deal of research suggests that individuals undervalue annuities. Paying delayed retirement credits as a lump sum may make delaying more attractive. Because retirement and claiming occur simultaneously for many workers, such a change could encourage longer careers.

• Make Medicare the primary payer for all Medicare-eligible individuals. Clearly, this reform would increase Medicare costs, although the cost increase would be partially offset by an increase in income tax revenue from additional work.

• Replace Social Security spousal and survivor benefit provisions with earnings sharing, giving each member of a couple credit for half the couple’s total earnings. This change would reward work by secondary earners who would receive a spousal benefit under the current system. Gustman and Steinmeier show that switching to earnings sharing can reduce the fraction of retired 55-year-old wives by almost two percentage points. The reform also reduces retirement rates among older husbands because of the progressivity of the benefit formula. That is, splitting earnings between a high and a low earner tends to lower the rate at which the higher earner’s average earnings rise over his lifetime. This improves work incentives at older ages when average earnings are relatively high.

All of these reforms should be considered if the policy goal is to be neutral with regard to retirement decisions and increase employment among older workers. Making specific recommendations would require a much more detailed analysis of the range of possible options, as well as their behavioral and revenue effects. Nonetheless, the policies enumerated above are suggestive of the kinds of reforms that might undo some of the work disincentives at older ages.
Conclusions

Reducing disincentives for work at older ages improves economic efficiency. In addition, increasing employment among older workers is an attractive way to help alleviate the fiscal strain imposed by the pending insolvency of entitlement programs. Long-term working lives can generate more revenue for the government, and shorter retirement durations reduce the resources needed to finance retirement. But many of the proposals to reduce work disincentives for older workers entail trade-offs, because reducing average tax rates for older workers can reduce government revenue. Despite such concerns, the labor supply of older workers is highly responsive to take-home pay as a result of fixed costs of labor supply around retirement. Thus, there might be large increases in work because of changes in tax incentives. This effect may offset some of the revenue losses from lower tax rates. Participation in the labor market, even at a lower tax rate, creates a strictly positive amount of tax revenue, whereas retirement leads to no government revenue. Well-designed reforms should take all of these effects into account and attempt to reduce work disincentives while maintaining revenue. Policymakers should encourage the trend of increasing employment among older workers by continuing to remove barriers to work at older ages.

About the Authors

Aspen Gorry is a research fellow at AEI and an assistant professor at the University of California, Santa Cruz, and Sita Nataraj Slavov is a resident scholar at AEI.

Notes

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5. For workers born in 1937 and earlier (who turned 65 in 2002), the Social Security normal retirement age is 65. Normal retirement age has gradually risen since then—by one month per year—until it reached 66 for individuals born in 1943 (who turned 65 in 2008). Reduced benefits are available starting at age 62, and delaying beyond normal retirement age (up to age 70) results in higher monthly benefits.


9. In addition, the Social Security disability program is financed by a 1.8 percent payroll tax on wages below the maximum, and Medicare is financed by a 2.9 percent payroll tax on all wages. The combined payroll tax financing retirement and disability benefits has been temporarily reduced by two percentage points for 2011 and 2012.

10. In contrast, the income tax system creates disincentives for work at younger ages by reducing the return to saving. See Alan D. Viard, “Statutory and Effective Tax Rates: Part 2,” Tax Notes, October 15, 2012, 307–11. However, it is unlikely that this outweighs the work disincentives at older ages.


14. Social Security has undergone several rule changes since its inception. We are not aware of any calculations of implicit marginal tax rates under older Social Security rules, although we suspect the pattern would be similar to that found in the more recent studies. Hurd and Boskin find that the expansion of Social Security benefits during the 1970s reduced employment among older workers, although these authors primarily emphasize the wealth effect of the unexpected increase in benefits. See Michael D. Hurd and Michael J. Boskin, “The Effect of Social Security on Retirement in the Early 1970s,” Quarterly Journal of Economics 99, no. 4 (1984): 767–90.


16. It is not clear why this occurs. One possibility is that individuals need liquidity—that is, they may not be able to finance a delay in claiming. Nevertheless, Hurd, Smith, and Zissimopoulos find that financial wealth does not appear to be related to claiming behavior. See Michael D. Hurd, James P. Smith, and Julie M. Zissimopoulos, “The Effects of Subjective Survival on Retirement and Social Security Claiming,” Journal of Applied Econometrics 19, no. 6 (2004): 761–75. Another possibility is that individuals do not understand the complex benefit determination rules, although Liebman and Luttmer find that providing individuals with information about the gains from delay does not appear to change claiming behavior. See Jeffrey B. Liebman and Erzo F. P. Luttmer, “Would People Behave Differently If They Better Understood Social Security? Evidence from a Field Experiment” (NBER Working Paper 17287, National Bureau of Economic Research, Cambridge, MA, 2011). A third possibility is that individuals may fear that their Social Security benefits will be cut if they do not claim as early as possible.


