Social Security

131 Undergraduate Public Economics
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Chapter 13

**Social Security**: A federal program that taxes workers to provide income support to the elderly.

13.1 What Is Social Security and How Does It Work?

13.2 Consumption-Smoothing Benefits of Social Security

13.3 Social Security and Retirement

13.4 Social Security Reform

13.5 Conclusion
RETIREMENT PROBLEM

**Life-Cycle:** Individuals ability to work declines with aging but individuals continue to live after they are unwilling/unable to work

**Standard Life-Cycle Model Prediction:** Absent any government program, rational individual would save while working to consume savings while retired

Optimal saving problem is extremely complex: uncertainty in returns to saving, in life-span, in future ability/opportunities to work, in future tastes/health

**In practice:** When govt was small before 20th century ⇒ Many people worked till unable to (often till close to death) and then were taken care of by family members [US elderly poverty rate very high before Social Security]
Actual Retirement Programs: All OECD countries implement substantial government funded retirement programs (substantial share of GDP around 6-8%, US smaller around 3.5%), started in first part of 20th century and have been growing. Common structure:

Individual pay social security contributions (payroll taxes) while working and receive retirement benefits when they stop working till the end of their life (annuity)

Extension of the earlier family model: it’s no longer your working kids that take care of you in old age but all workers in the country

In the United States, the public retirement program is called Social Security
SOCIAL SECURITY: PROGRAM DETAILS

How Is Social Security Financed?

Almost all workers in the United States pay the Federal Insurance Contributions Act (FICA) tax on their earnings.

Tax is 12.4% of earnings (6.2% paid by employer, 6.2% paid by employees) up to a cap of $110,100 (in 2012)

Who Is Eligible to Receive Social Security?

A person must have worked and paid this payroll tax for 40 quarters (10 years) over their lifetime, and must be of age 62 or older.
SOCIAL SECURITY: PROGRAM DETAILS

How Are Social Security Benefits Calculated?

**Annuity payment**: A payment that lasts until the recipient’s death.

The amount of this annuity payment is a function of the recipient’s average (taxable) earnings over the person’s 35 highest earning years where each month’s earnings are expressed in today’s dollars (AIME = average indexed monthly earnings).

Once benefits start for a given person, they are indexed to price inflation once every year ("real" annuity).
Why Choose 35 Years?

First, individuals should not be penalized for years of part-time work or particularly low earnings.

Second, if the averaging period is too short, it can have perverse incentives for behavior by older workers.

- A 61-year-old subway driver for the Boston MBTA fell asleep at the wheel, causing a crash in which 18 people were injured.
- An investigation revealed that this driver had been working 25 hours straight in an effort to maximize his overtime pay.
- The pension that the driver would be able to claim was a function of his earnings during his last 5 years of work.
- In the wake of this accident, the MBTA changed its pension plan to no longer reward such excessive work at the end of one’s career.
What Is Social Security and How Does It Work?

Program Details

How Are Social Security Benefits Calculated?

replacement rate The ratio of benefits received to earnings prior to the entitling event (40% on average in the US social security program)
How Are Social Security Benefits Paid Out?

**Full Benefits Age (FBA):** The age at which a Social Security recipient receives full retirement benefits (Primary Insurance Amount): currently 66 (used to be 65 and is increasing to 67)

**Early Entitlement Age (EEA):** The earliest age at which a Social Security recipient can receive reduced benefits: currently 62

If you claim benefits 1 year before FBA, you get 8% less in annual benefits (permanently), if you claim 2 years before FBA, you get 16% less in annual benefits, etc.

You get 8% more in benefits if you claim 1 year after FBA. Benefits automatic at 70.
SOCIAL SECURITY: PROGRAM DETAILS

Can You Work and Receive Social Security?
The *earnings test* reduces the benefits of 62 to 64-year olds by $0.50 for each dollar of earnings they have above about $15K

Not really a tax because later benefits are increased (as if you had retired later) but most people don’t understand the system

Are There Benefits for Family Members?
- Spouses of claimants (get own benefits or 50% of primary earner benefits, whichever is biggest)
- Children of deceased workers.
- Spouses who survive a Social Security recipient
SOURCES OF RETIREMENT INCOME

1) Govt provided retirement benefits (US Social Security): US: For 2/3 of retirees, SS is more than 50% of income. 1/3 of elderly households depend almost entirely (90%+) on SS.

2) Home ownership: 75% of US elderly are homeowners

3) Employer pensions (tax favored): 40-45% of elderly US households have employer pension benefits. Two types:

   a) Traditional: defined benefit and mandatory: employer carries full risk [in sharp decline, many in default]

   b) New: defined contribution and elective: 401(k)s, employee carries full risk

4) Extra savings through non-tax favored instruments: significant only for wealthy minority [=10% of retirees]
FUNDED VS. UNFUNDED PROGRAMS

Two forms of retirement programs:

1) **Unfunded (pay-as-you-go):** benefits of current retirees are paid out of contributions from current workers [generational link]

   \[\text{benefits} = \text{contributions}\]

2) **Funded:** workers contributions are invested in financial assets and will pay for benefits when they retire [no generational link]

   \[\text{benefits} = \text{contributions} + \text{market returns on contributions}\]

   Social security (as most public retirement systems) is unfunded

   Most private pension plans (such as 401(k)s) are funded
FUNDED VS UNFUNDED SYSTEMS

1) **Funded system:** each generation gets a market return \( r \) on contributions: \( \text{benefits} = \text{tax you paid} \cdot (1 + r) \)

2) **Unfunded system:** 1st generation of retirees gets free benefits when the system starts

For later generations: pay tax (for older generation) and you get benefits from younger generation

Implicit return on taxes is the sum of population growth and real wage growth (per worker)

\[
\text{benefits} = \text{tax paid} \cdot (1 + n)(1 + g) \approx \text{tax paid} \cdot (1 + n + g)
\]
What Is Social Security and How Does It Work?

How Does Social Security Work Over Time?

How Social Security Redistributes Income

### Table 13-1

Social Security in a Two-Period World

<table>
<thead>
<tr>
<th>Period</th>
<th>Number of Young Workers</th>
<th>Earnings Per Young Worker</th>
<th>Taxes Paid Per Young Worker</th>
<th>Total Taxes Paid</th>
<th>Number of Old Retirees</th>
<th>Benefits to Old Retirees</th>
<th>Taxes Paid by Old Retirees</th>
<th>Rate of Return</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100</td>
<td>$20,000</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>2</td>
<td>105</td>
<td>$21,000</td>
<td>$2,100</td>
<td>$220,500</td>
<td>100</td>
<td>$2,205</td>
<td>0</td>
<td>Infinite</td>
</tr>
<tr>
<td>3</td>
<td>110</td>
<td>$22,050</td>
<td>$2,205</td>
<td>$242,550</td>
<td>105</td>
<td>$2,310</td>
<td>$2,100</td>
<td>10%</td>
</tr>
<tr>
<td>4</td>
<td>115</td>
<td>$23,153</td>
<td>$2,315</td>
<td>$266,225</td>
<td>110</td>
<td>$2,420</td>
<td>$2,205</td>
<td>10%</td>
</tr>
<tr>
<td>5</td>
<td>121</td>
<td>$24,310</td>
<td>0</td>
<td>0</td>
<td>115</td>
<td>0</td>
<td>$2,315</td>
<td>Negatively infinite</td>
</tr>
</tbody>
</table>

© 2007 Worth Publishers  Public Finance and Public Policy, 2/e, Jonathan Gruber
FUNDED VS UNFUNDED SYSTEMS

Unfunded system is always desirable when $n + g > r$ (Diamond 1965): an economy with $n + g > r$ is called dynamically inefficient and introducing an unfunded system makes a Pareto improvement.

US economy: Annual $n = 1\%$ and $g = 1\%$ [$n + g$ was higher in 1940-1970]. $r \simeq 4 - 5\%$. In general $r > n + g$ in practice.

Note that $r$ is much more risky than $n + g$: risk adjusted market rate of return should be lower than average market rate $r$ but still higher than $n + g$.

Funded system delivers higher returns because it does not deliver a free lunch to 1st generation.

Choice between funded vs. unfunded system is an inter-generational redistribution trade-off.

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How Does Social Security Redistribute in Practice?

Social Security Wealth (SSW): The expected present discounted value of a person’s future Social Security payments minus the expected present discounted value of a person’s payroll tax payments.

SSW is computed as follows:
- Calculate the entire future stream of benefits that a person expects to receive before he or she dies.
- Use a discount rate to calculate the present discounted value (PDV) of that stream of benefits.
- Calculate the entire future stream of taxes that a person expects to pay before he or she dies.
- Compute the PDV of that stream of taxes.
- Take the difference between these two to get the SSW.
What Is Social Security and How Does It Work?

How Does Social Security Redistribute in Practice?

<table>
<thead>
<tr>
<th>TABLE 13-2</th>
</tr>
</thead>
</table>

Redistribution Under Social Security for a Single Male

<table>
<thead>
<tr>
<th>Earnings Level</th>
<th>Retirees Turn 65 in 1960</th>
<th>Retirees Turn 65 in 1995</th>
<th>Retirees Turn 65 in 2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low earner</td>
<td>$26,100</td>
<td>$12,500</td>
<td>−$4,100</td>
</tr>
<tr>
<td>Average earner</td>
<td>$36,500</td>
<td>−$5,100</td>
<td>−$56,200</td>
</tr>
<tr>
<td>High earner</td>
<td>$36,800</td>
<td>−$37,100</td>
<td>−$248,500</td>
</tr>
</tbody>
</table>

Some examples of how SSW varies within groups that are the same ages include the following:

- Females have more SSW than males because they live longer.
- Married couples have more SSW than single people.
- Single-earner couples have more SSW than two-earner couples.
- The gains to the poor relative to the rich from Social Security are overstated because the length of life rises with income.
RATIONALES FOR SOCIAL SECURITY

A. Individual Failure

Without a public program, people won’t save enough for their own retirement because of myopia, self-control problems, information (how much to save, how to invest savings)

Popularity of Social Security suggests that people understand their own failures and the need for government intervention

B. Adverse selection in the annuities market

The longer a person lives, the less money the insurer makes from an annuity contract

⇒ People with short life expectation less likely to buy

This could lead to such a high price for annuities that most potential buyers would not want to buy them
MODEL: MYOPIC SAVERS

1) Some individuals are rational: [draw graph]

\[
\max u(c_1) + \delta u(c_2) \text{ st } c_1 + s = w \text{ and } c_2 = s \cdot (1 + r)
\]

\[\Rightarrow c_1 + c_2/(1 + r) = w\]

FOC: \[u'(c_2)/u'(c_1) = 1/[(1 + r)\delta], \text{ let } s^* \text{ be optimal saving}\]

Example: If \(\delta = 1\) and \(r = 0\) then \(s^* = w/2\) and \(c_1 = c_2 = w/2\)

2) Some individuals are myopic:

\[
\max u(c_1) \text{ st } c_1 + s = w \text{ and } c_2 = s \cdot (1 + r) \Rightarrow c_1 = w \text{ and } s = c_2 = 0
\]
MODEL: MYOPIC SAVERS

Social welfare is always $u(c_1) + \delta u(c_2)$

Govt imposes forced saving tax $\tau$ such that $\tau = s^*$ and benefits $b = \tau(1 + r)$. Cannot borrow against $b$ [as in current Social Security]

1) Rational individual unaffected: adjusts $s$ one-to-one so that outcome unchanged [rational unaffected as long as $\tau \leq s^*$]: 100% crowding out of private savings by forced savings

$c_1 = w - (s^* + s')$ and and $c_2 = (s^* + s') \cdot (1 + r) \Rightarrow$ choosing $s'$ is equivalent to choosing $s = s^* + s'$, rational person chooses $s' = 0$

2) Myopic individual affected (0% crowding out): new outcome maximizes Social Welfare

Forced savings is a good solution: does not affect those responsible, affects the myopic individuals in the socially desired way
Universal forced savings vs. means-tested program

An alternative to forced savings is to just have a means-tested program for poor elderly (who did not save) and financed by tax on everybody

With forced savings:

a) No transfer from myopic to non-myopic individuals

b) No incentives to under-save to get means-tested pension

⇒ Forced savings program does not penalize responsible people and is likely to be more stable politically
Does Social Security Smooth Consumption?

All that Social Security may be doing is crowding out the savings that individuals would otherwise set aside for their retirement.

Social Security might crowd out private savings by allowing people to count on a government transfer to support their income in old age. The larger this crowd-out is, the less consumption smoothing Social Security provides for retired individuals.
Crowd-Out Effect of Social Security on Savings

The effect of Social Security on private savings has been the subject of a large number of studies over the past 30 years.

To measure the impact of Social Security on savings, there must be a way to compare people with different levels of Social Security benefits who are otherwise identical.

In the United States, Social Security is a national program that applies to almost all workers; very similar people usually have very similar benefits. Recent studies have provided evidence on the impact of Social Security-like programs on private savings in Italy.

Italian Reforms in 1992 substantially reduced the benefits, and thus future SSW, for younger workers in the public sector, while reducing much less the benefits of older workers and those in the private sector.

According to the authors estimate, 30–40% of the reduction in SSW was offset by higher private savings.
Evidence for Myopia and adequate savings

1) Diamond JpubE 1977: old age poverty has fallen as SS expanded. Poverty for other groups has not fallen nearly as much.

2) Fall in consumption during retirement: Hamermesh (1984) shows that consumption falls by 5% per year for the elderly [consumption is not smooth but not necessarily suboptimal].

3) Fall in consumption at retirement: Bernheim, Skinner, Weinberg (2001) show that drop in consumption is significant and sharply correlated with wealth [consistent with myopia].
Consumption-Smoothing Benefits of Social Security

Living Standards of the Elderly

**FIGURE 13-2**

- **Social Security Spending (% of GDP)**
- **Elderly Poverty Rate**

**Elderly Poverty and Social Security, 1959–2004** - There is a striking negative correspondence over time between the poverty rates of the elderly (which have fallen) and the size of the Social Security program (which has risen).

Figure 4. Change in Consumption at Retirement, by Wealth Quartile

Source: Bernheim et al. (2001), p. 847
Consumption drop at retirement: Aguiar-Hurst JPE05

Starting point: Empirically, consumption falls with retirement...but studies use expenditures as measure of consumption

Aguiar-Hurst JPE05 shows that it is important to differentiate between consumption and expenditures. Further, the paper provides new information on the complementarity of consumption and leisure after retirement.

1) Confirm that expenditure on food falls by 17% at retirement but

2) time spent on home production rises by 60%

3) all measures of caloric intake, vitamin intake, meat quality, etc. do not drop at retirement (find that caloric intake falls when getting unemployed, hard to believe but suggestive)
Fig 1.—Percentage change in food expenditure, predicted food consumption index, and time spent on food production for male household heads by three-year age ranges. Data are taken from the pooled 1989–91 and 1994–96 cross sections of the CSFII, excluding the oversample of low-income households. The sample is restricted to male household heads (1,510 households). All series were normalized by the average levels for household heads aged 57–59. All subsequent years are the percentage deviations from the age 57–59 levels. See Sec. IV for details of data and derivation of food consumption index.

Source: Aguiar and Hurst (2005), p. 925
SOCIAL SECURITY AND RETIREMENT: THEORY

If a 62-year-old worker works until 63, instead of retiring at 62 and claiming her Social Security benefits, three things happen through the Social Security system:

1) She pays an extra year of payroll taxes on her earnings.

2) She receives one year less of Social Security benefits.

3) She gets a higher Social Security benefit level through the actuarial adjustment (8% extra permanently per year of delay)

Adjustment is called **actuarially fair** is those 3 effects cancel out in PDV (US system has been reformed to be close to fair on average)
SOCIAL SECURITY AND RETIREMENT: THEORY

Two key elements of a social security system may affect retirement behavior:

1) Availability of benefits at Early Retirement Age (EEA): (62 in US)

Those effects arise because of (a) liquidity constraints, (b) self-control problems, (c) mis-information

2) Non-actuarially fair adjustments of benefits for those retiring after the EEA:

If benefits are not adjusted in a fair way, they can create a huge implicit tax on work (US used to have very little adjustment)
Social Security and Retirement

Evidence

**FIGURE 13-3**

![Graph showing Social Security Spending and Labor Force Participation](image)

Elderly Work and Social Security, 1959–2004 • There is a striking negative correspondence over time between the labor force participation (LFP) rates of the elderly (which have fallen) and the size of the Social Security program (which has risen).

**Social Security and Retirement**

### Evidence

**FIGURE 13-4**

**Hazard Rate of Retirement for Males in the United States**

The male hazard rate, or exit rate at each age given that a man has worked to that age, has a distinct spike at age 62 (the Early Entitlement Age, EEA) and 65 (the Full Benefit Age, FBA), key ages for the Social Security system.

Source: Diamond and Gruber (1999), Figure 11.12.

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**retirement hazard rate**

The percentage of workers retiring at a certain age.
Social Security and Retirement

Evidence

**Figure 13-5**

The Evolution of the U.S. Male Retirement Hazard

- In 1960, before the EEA of 62 was introduced for men, the hazard rate for men was highest at age 65 (the FBA), with no spike at age 62. By 1970, the spike at 62 had begun to emerge, and by 1980 it was larger than the spike at age 65.

Source: Gruber and Wise (1999), Figure 12.
Evidence

**Figure 13-6**

Hazard Rate of Retirement in France

In France, there is an enormous exit rate from the labor force at age 60, which is both the EEA and FBA.

Source: Gruber and Wise (1999), Figure 11.
Social Security and Retirement

Evidence

**FIGURE 13-7**

**Change in Average Retirement Age in Germany from 1968 to 1992**
- Germany lowered its age of social insurance entitlement by five years (from 65 to 60) in 1973; within seven years, the average age at which individuals retire had fallen from 63 to 58.

Source: Gruber and Wise (1999), Figure 5.
Implicit Social Security Taxes and Retirement Behavior

**APPLICATION**

**FIGURE 13-8**

*Implicit Taxes on Work and Nonwork*  There is large variation across nations in the social security disincentives to work at older ages. The disincentive to work is measured here as the natural logarithm of the sum of implicit taxes on work at older ages. Those nations with greater disincentives to work tend to have much higher nonwork among older workers.

Source: Gruber and Wise (1999), Figure 17.
SOCIAL SECURITY AND RETIREMENT: IMPLICATIONS

Evidence suggests that it is potentially very costly to design Social Security systems that allow very early retirement and/or penalize additional work beyond the retirement age.

Adjusting systems to more fairly reward work at old ages can mitigate much of the moral hazard effect of Social Security.

It seems better to have an early retirement age that is not too low and support only the disabled who retire earlier (with disability insurance benefits).
SOCIAL SECURITY REFORM: PROBLEMS WITH CURRENT SYSTEM

Rate of return \( n + g \) has declined from over 3% to about 2% due to:

1) \( n \): Retirement of baby boom large cohorts born 1945-1965: 1995: 3.3 workers/beneficiary, 2030: 2 workers/beneficiaries

2) Increase in life expectancy at retirement age: top half of individuals (in terms of lifetime earnings) has seen large life expectancy gains while bottom half life expectancy has stagnated in recent decades

3) \( g \): Slower productivity growth since 1975 (from 2% to 1%)

System requires adjusting taxes or benefits to remain in balance.
**Social Security Reform**

**FIGURE 13–9**

**Ratio of Elderly to Working-Age Population, 1950–2050**

The number of persons over age 65 per working-age person age 15 to 64 almost triples over the century, from 13 per 100 in 1950 to 35 per 100 in 2050.

Demographic changes are predictable, so 1st reform was implemented in 1983 (designed to solve budget problems over next 75 years)

1) Increased payroll taxes to build a trust-fund

2) Increased retirement age in the future (from age 65 to 67)

Trust fund invested in Treasury Bills (Fed gov debt): $TF_{t+1} = TF_t \cdot (1 + i) + SSTax_t - SSBen_t$

Trust fund is now peaking around ($2.5 \text{ Tr}$), will be exhausted by 2040, taxes will then cover about 75% of promised benefits

Requires additional adjustment: can fix it for next 75 years by increasing payroll tax rate now by 1.7 percentage points or wait till 2040 and then increase tax by 3.5 pp (not huge)
The Social Security Trust Fund and National Savings

In theory, one benefit of the partial funding of Social Security through the build-up of the trust fund is an increase in national savings.

However, this trust fund is, by law, “off budget,” meaning that the government is supposed to consider its other revenue and spending obligations distinct from the trust fund.

When the government reports its budget deficit or surplus for each year, it typically reports the “unified budget,” which incorporates off-budget categories.

In 2005, the true deficit is over 50% more than that popularly reported.

When the baby boomers start to retire, the trust fund will get drawn down, and suddenly the unified budget will plunge sharply into deficit.

Thus, if policymakers only pay attention to the unified budget, then the trust fund is not new savings—it just displaces other government savings.
SOCIAL SECURITY REFORM OPTIONS

1) Increased contributions: increase tax rate or earnings cap

2) Reduce benefits: straight cut not politically feasible: a) Index FBA to life expectancy, b) Index benefits to chained-CPI instead of CPI after retirement, c) Make benefits fully taxable

3) Means-tested benefits: bad for savings incentives and could make program politically unstable [a program for the poor is a poor program]. Explains conservatives support.

4) Invest Trust Fund in higher yield assets (such as stock-market, as proposed by Clinton in 1990s). Advantage: higher return on average and govt can be a long-term investor. Issue: Socialism (or lobbying and corruption in investment choices), need to leave investment choices to independent board

5) Major reform: privatization
SOCIAL SECURITY PRIVATIZATION

Two components:

1) Funding the system

2) Create individual accounts (like private employer 401k pensions)

benefits = contributions + market return

Controversial academic and policy debate

Main proponent: Feldstein, main critic: Diamond

Pros: get higher return on contributions $r > n + g$, increase capital stock and future wages.
SOCIAL SECURITY PRIVATIZATION ACCOUNTING

Exactly the reverse of pay-as-you-go calculations:

1) First generation loses as they need to fund current retirees and own contributions. All future generations gain [generational redistribution]

2) If govt increases debt to pay for current retirees: future generations get higher return on contributions but need to re-pay higher govt debt ⇒ Complete wash for all generations

tax to pay debt interest = returns on funded contributions - returns on paygo contributions

⇒ Only way funding generates real changes is by hurting some transitional generations which have to double pay
ADDITIONAL PRIVATIZATION ISSUES

1) Risk: individuals bear investment risk (stock market fluctuates too much relative to economy) and cannot count on defined level of benefits [Privatization needs to include minimum pension provision]

2) Annuitization: hard to impose in privatized system because of political constraints [sick person forced to annuitize her wealth] ⇒ Some people will exhaust benefits before death and be poor in very old age [looming problem with 401K system]

3) Lack of financial literacy: Individuals do not know how to invest. Complicated choice, govt can do it for people more efficiently

4) Administrative costs: privatized systems (Chile, UK) admin costs very high (1% of assets) due to wasteful advertisement by mutual funds bc of lack of financial literacy [SS has very low admin costs]
Evidence on Lack of Financial Literacy

401(k) private pensions in the US offer strong evidence of lack of financial literacy

1) Default effects: opt-in vs. opt-out have enormous effects on 401(k) enrollment [Madrian and Shea QJE’01]

2) $1/N$ investment choices of 401(k) contributions: many people invest contributions by dividing them equally into investment options (regardless of the options)

3) People often invest 401(k) in company stock which is extremely risky (Enron). Strong evidence of default effects in investment choices as well

4) Evidence that financial education and advice has impacts on savings decisions (Thaler and Benartzi JPE ’04: Saving More Tomorrow experiment).

⇒ Much better to force people to save via mandatory social security system than rely on individual rationality
Automatic enrollment effect

Automatic enrollment dramatically increases participation.

401(k) participation by tenure at firm: Company B

Source: Madrian and Shea (2001)
Automatic enrollment effect

Employees enrolled under automatic enrollment cluster at the default contribution rate.

**Distribution of contribution rates: Company B**

<table>
<thead>
<tr>
<th>Contribution rate</th>
<th>Hired before automatic enrollment</th>
<th>Hired during automatic enrollment (2% default)</th>
<th>Hired after automatic enrollment ended</th>
</tr>
</thead>
<tbody>
<tr>
<td>1%</td>
<td>3</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>2%</td>
<td>20</td>
<td>9</td>
<td>67</td>
</tr>
<tr>
<td>3-5%</td>
<td>17</td>
<td>7</td>
<td>26</td>
</tr>
<tr>
<td>6%</td>
<td>37</td>
<td>14</td>
<td>31</td>
</tr>
<tr>
<td>7-10%</td>
<td>14</td>
<td>6</td>
<td>18</td>
</tr>
<tr>
<td>11-16%</td>
<td>9</td>
<td>4</td>
<td>10</td>
</tr>
</tbody>
</table>

Source: Madrian and Shea (2001)
The Flypaper Effect in Individual Investor Asset Allocation (Choi, Laibson, Madrian 2007)

Studied a firm that used several different match systems in their 401(k) plan.
I’ll discuss two of those regimes today:

**Match** allocated to employer stock and workers can reallocate
- Call this “default” case (default is employer stock)

**Match** allocated to an asset actively chosen by workers;
  - workers *required* to make an active designation.
- Call this “no default” case (workers must choose)

Economically, these two systems are identical. They both allow workers to do whatever the worker wants.

Source: courtesy of David Laibson
## Consequences of the two regimes

<table>
<thead>
<tr>
<th></th>
<th>Default</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ES</td>
<td>Default</td>
</tr>
<tr>
<td>Own Balance in Employer Stock</td>
<td>24%</td>
<td>20%</td>
</tr>
<tr>
<td>Matching Balance in Employer Stock</td>
<td>94%</td>
<td>27%</td>
</tr>
<tr>
<td>Total Balance in Employer Stock</td>
<td>56%</td>
<td>22%</td>
</tr>
</tbody>
</table>

Source: courtesy of David Laibson
Company Stock in 401(k) Plans

One option in many company 401(k) plans is to invest money in company stock.

There are two major sources of financial uncertainty in a worker’s life:

- Their job security.
- The performance of their savings.

Investing in company stock binds these sources of uncertainty together. If the company does badly, the worker is both out of a job and out of savings.

- When Enron went bankrupt, over 4,000 workers lost their jobs in a single day, and more had their retirement savings wiped out.
- Sixty-two percent of Enron’s 401(k) assets had been invested in its own stock, which lost over 99% of its value over the course of the year surrounding its bankruptcy.
CONCLUSION

Social Security is the largest social insurance program in the United States, and the largest single expenditure item of the federal government.

Key reason for existence of social security programs is the inability of individuals to save adequately for retirement on their own (individual failure).

Social Security faces a long-run financing problem to which there are no easy solutions.

The question of how to resolve this problem will be one of the most contentious sources of political debate for at least the first part of the twenty-first century.