Undergraduate Public Finance: Social Security and Retirement

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Retirement Problem

Life-Cycle: Individuals' ability to work declines with aging (usually to the point where people are unwilling/unable to work).

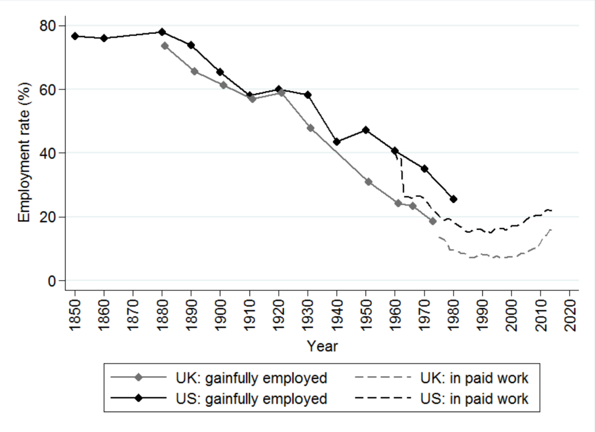
Standard Life-Cycle Model Prediction: Absent public pensions, rational individuals would save while working to consume savings while retired.

In practice, the optimal saving problem is highly complex...

e.g., uncertainty in returns to saving, in life-span, in future ability and opportunities to work, in future tastes and health status, etc.

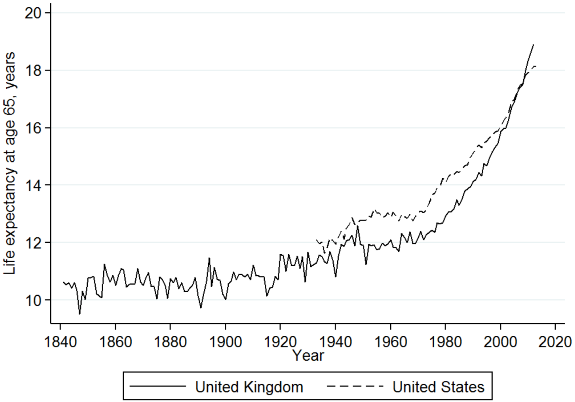
Instead of purely private pension systems, governments tax workers to provide for retirees through social security retirement systems.

Figure 2.6: Employment rate of men aged 65+ in the UK and the US

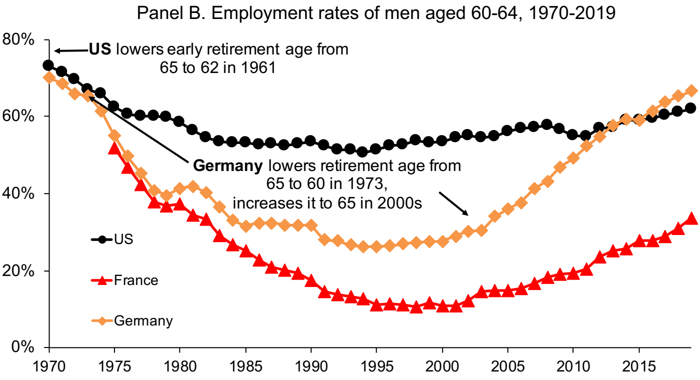


Source: Data for the UK from Matthews et al. (1982) and the Labour Force Survey. Data for the US from Moen (1987) and OECD.

Figure 2.7: Life expectancy of men at age 65 in the UK and the US



Source: UK data from the Office for National Statistics. US data from the Human Mortality Database.



Source: Saez '21 using OECD database

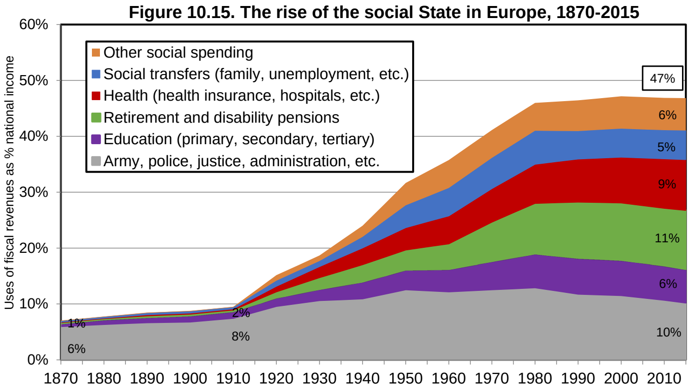
Government Intervention in Retirement Policy

OECD countries implement substantial government-funded retirement programs (started in the first part of 20th century and have been growing).

Individuals pay social security contributions while working (i.e., payroll taxes).

In exchange, they receive retirement benefits when they stop working till the end of their life (i.e., annuity payments).

In the United States, the public retirement program is called **Social Security**.



Interpretation. In 2015, fiscal revenues represented 47% of national income on average in Western Europe et were used as follows: 10% of national income for regalian expenditure (army, police, justice, general administration, basic infrastructure: roads, etc.); 6% for education; 11% for pensions; 9% for health; 5% for social transfers (other than pensions); 6% for other social spending (housing, etc.). Before 1914, regalian expenditure absorbed almost all fiscal revenues. **Note.** The evolution depicted here is the average of Germany, France, Britain and Sweden (see figure 10.14). Sources and séries: see piketty.pse.ens.fr/ideology.

Social Security: Program Details

How Is Social Security Financed?

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

Who Is Eligible to Receive Social Security?

In Italy, a person must have worked and paid payroll tax for a minimum number of 20 years and must reach the retirement age of 67.

In the US, a person must have worked and paid payroll tax for a minimum of 10 years and must reach the retirement age of 62.

Social Security: Program Details

How Are Social Security Benefits Calculated?

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

The amount of this annuity payment is a progressive function of the recipient's average earnings over the person's 35 highest earning years.

In the US, this is the Average Indexed Monthly Earnings (AIME).

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

Higher earners live longer. The progressivity of benefits formula roughly offsets this (but the life expectancy gap between rich and poor is increasing).

Source: Gelber et al. AEJ:EP 2017

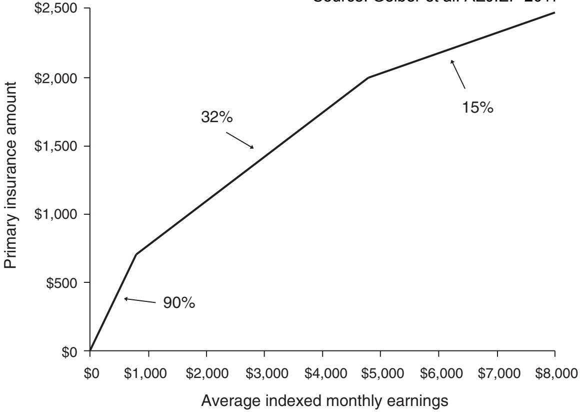
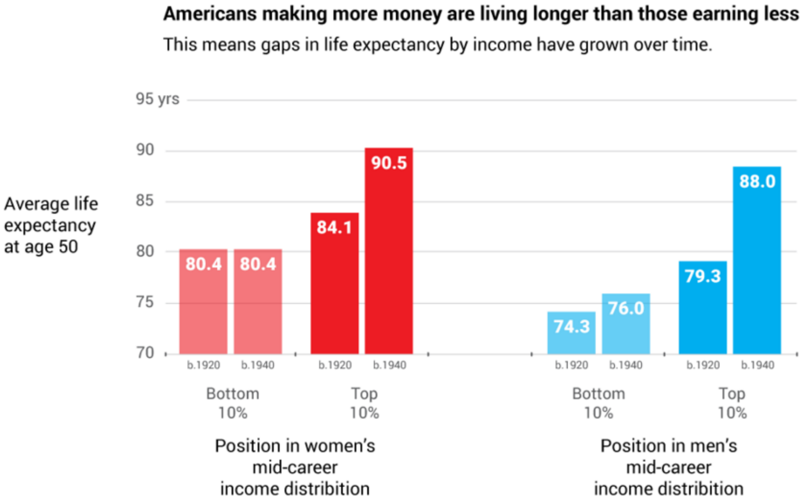


Figure 1. Primary Insurance Amount as a Function of Average Indexed Monthly Earnings

Notes: The figure shows the primary insurance amount (PIA) as a function of average indexed monthly earnings (AIME) in 2013. The percentages are marginal replacement rates.

Source: SSA (2013)



Source: Bosworth et al. 2016

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).

In the US, it is currently 67 if born 1960+ (used to be 65).

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

In the US, it is 62.

If you claim benefits y year(s) before FBA, you get 8y% less in annual benefits (permanently).

Social Security: Program Details

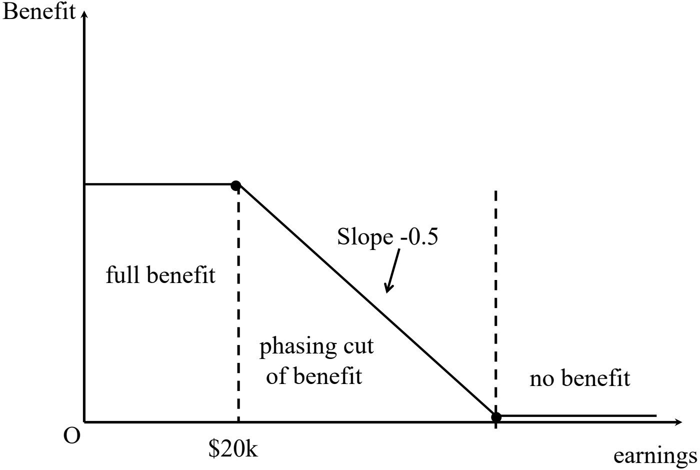
Can You Work and Receive Social Security?

- The *earnings test* reduces benefits of the 62 to 66-year old by \$0.50 for each dollar of earnings they have above about \$20K.
- These benefits are returned later when the worker's earnings fall below this threshold.

Are There Benefits for Family Members?

- Spouses of claimants (get own benefits or 50% of primary earner benefits, whichever is biggest)
- Spouses who survive a Social Security recipient
- Children of deceased workers

Earning test for Social Security Benefit



How are pension systems funded?

Two forms of retirement programs:

(1) Unfunded (pay-as-you-go): Benefits of current retirees are paid out of contributions from current workers.

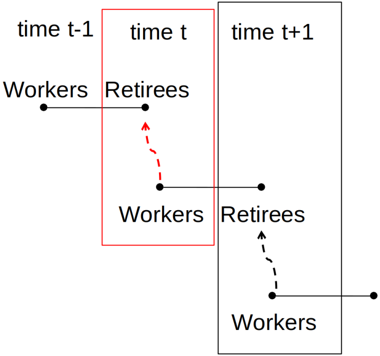
current benefits = current contributions

(2) Funded: Workers' contributions are invested in financial assets and will pay for benefits when they retire.

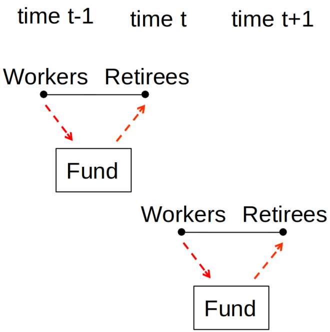
current benefits = past contributions + market returns on past contributions

Social security (like most public retirement systems) is unfunded. Most private pension plans (such as 401(k)s) are funded.

Unfunded System



Funded System



Funded vs. Unfunded Systems

(1) Funded system: Each generation gets a market return r on contributions.

Benefits = Taxes $\cdot(1 + r)$

(2) Unfunded system: The first generation of retirees gets free benefits when the system starts. For later generations: you pay taxes for the older generation and you get benefits from the younger generation.

Generation t is size N_t, earns w_t, pays taxes $T_t = \tau N_t w_t$ in period t and receives benefits $B_t = \tau N_{t+1} w_{t+1}$ from generation $t + 1$.

$$B_t / T_t = (N_{t+1}/N_t) \cdot (w_{t+1}/w_t) = (1 + n) \cdot (1 + g)$$

$\Rightarrow$ Implicit return on taxes is the sum of population growth n and real wage growth per worker g.

Funded vs. Unfunded Systems

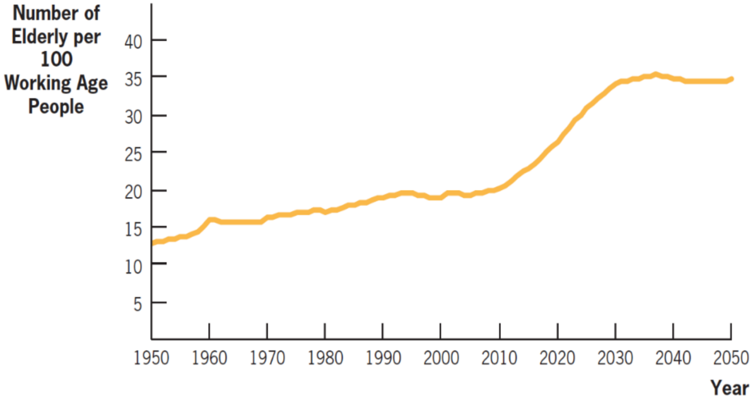
Unfunded system is always desirable when $n + g > r$ (Diamond 1965): an economy with $n + g > r$ is called **dynamically inefficient** and introducing an unfunded system makes a Pareto improvement.

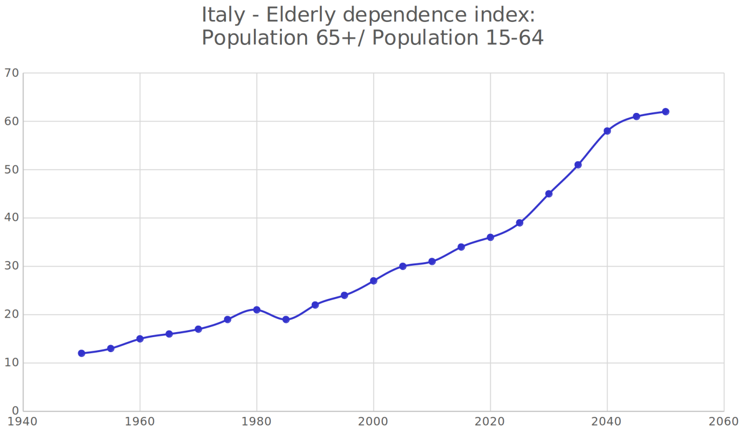
US economy: $n = 1\%$, $g = 1\%$, $r \simeq 5\%$, so $r > n + g$.

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

The funded system delivers higher returns because it does not deliver a free lunch to the first generation.

US Elderly Dependence Index




Italy - Elderly dependence index:
Population 65+/ Population 15-64
70
60
50
40
30
20
10
0
1940
1960
1980
2000
2020
2040
2060

Rationales for Social Security

Retirement is a predictable event that depends mainly on individual choice.

Why should the government be involved?

(1) One justification for Social Security is a **market failure** in the annuities market.

The longer a person lives, the less money the insurer makes from an annuity contract. This could lead to such a high price for annuities that most people would not want to buy them.

(2) True reason: **paternalism**!

Policymakers worry that people won't save enough. In practice, most workers have very little savings besides Social Security (and private pensions).

Crowd-Out Effect of Social Security on Savings

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

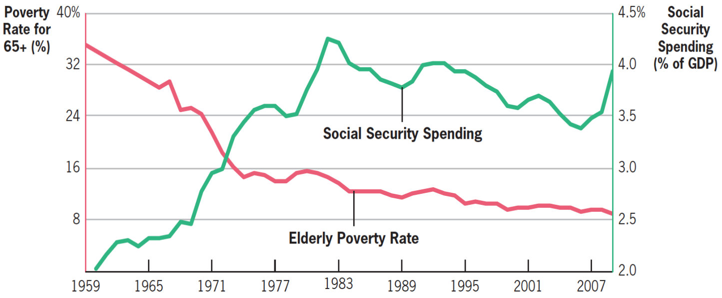
To measure this effect, we need to compare people with different levels of Social Security benefits who are otherwise identical.

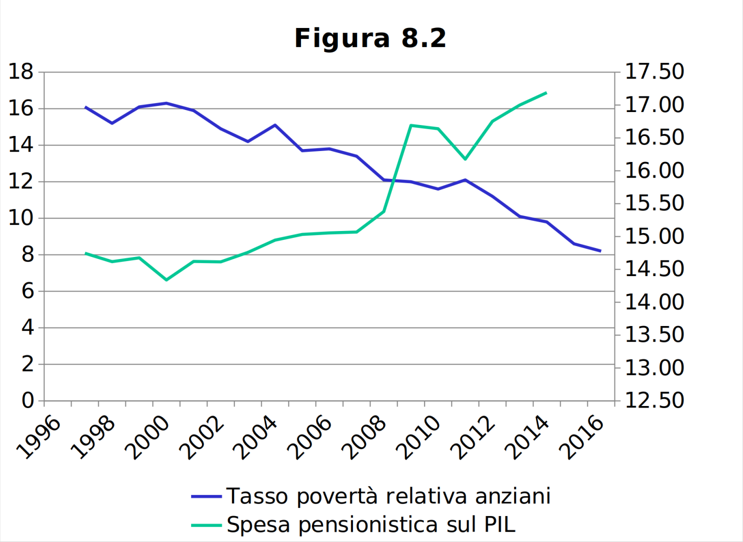
Recent studies have provided evidence of the impact of Social Security-like programs on private savings in Italy.

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

$\Rightarrow$ Studies estimate that only about 1/3 of the reduction in SSW was offset by higher private savings.

13.2 Living Standards of the Elderly, 1959–2009

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Tasso povertà relativa anziani
Spesa pensionistica sul PIL

Social Security and Retirement

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

(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** if those three effects cancel out in PDV (US system has been reformed to be close to fair on average).

Social Security and Retirement

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

(1) Availability of benefits at **Early Retirement Age** (EEA).

(2) Non-actuarially fair benefits adjustments for those retiring after the EEA. If benefits are not adjusted equitably, they can create a substantial implicit tax on work.

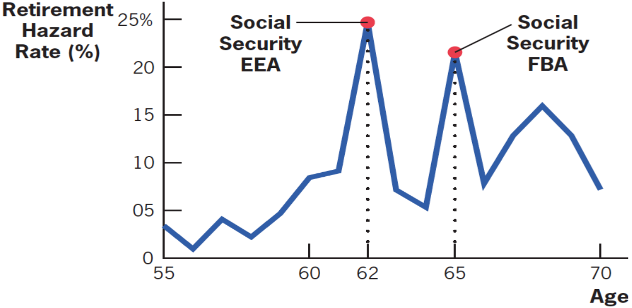
(3) Social norm created by retirement benefits: The government calling some age the "Normal Retirement Age" (NRA) can affect decisions despite no underlying economic incentives.

e.g., Seibold '21 for such effects in Germany

13.3

Spike in Retirement Hazard at EEA

- **Retirement hazard rate:** The percentage of workers retiring at a certain age.



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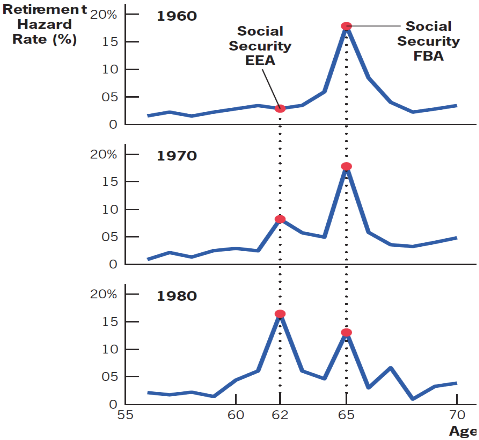
Spike in Retirement Hazard at EEA



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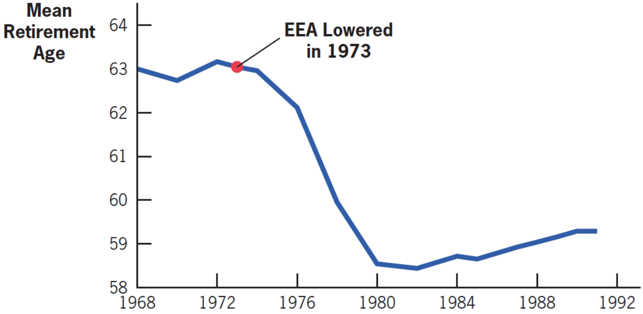
Evidence: Retirement Age in Germany, 1968−1992



- Retirement age lowed from 65 to 60 in 1973.

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.

Social Security faces a long-run financing problem requiring to increase taxes or cut benefits in the long run.

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.

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