Public Economics for Public Policy
Part VII: Social Insurance

Bluebery Planterose

Sciences Po   *MPA 2023-2024*

Social Insurance: Adverse Selection and Moral Hazard

Insurance is payment of premium to get payment in case of adverse event (e.g., auto insurance)
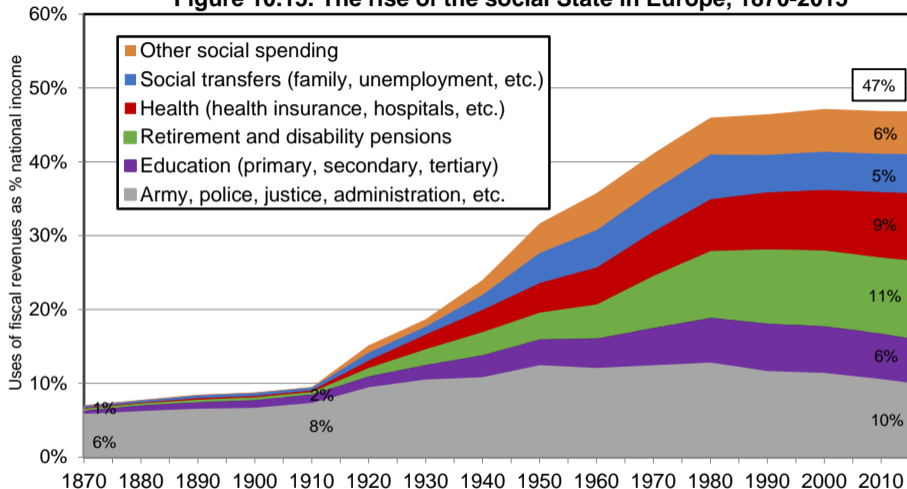
Social insurance programs: Government provided insurance against adverse events funded by taxation:
1. health insurance (Medicaid, Medicare, Obamacare)
2. retirement and disability insurance (Social Security),
3. unemployment insurance

Growth in government over the 20th century is mostly due to the growth of social insurance (health and retirement benefits)

Figure 10.15. The rise of the social State in Europe, 1870-2015

Legend:
- Other social spending
- Social transfers (family, unemployment, etc.)
- Health (health insurance, hospitals, etc.)
- Retirement and disability pensions
- Education (primary, secondary, tertiary)
- Army, police, justice, administration, etc.

Y-axis: Uses of fiscal revenues as % national income

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.

Two main questions:

1. Why have social (as opposed to private, or any) insurance?
2. What type of SI system maximizes social welfare?

Tradeoff between two forces:

- **Benefits**: reducing risk ⇒ consumption smoothing
- **Costs**: changes in incentives for workers and firms ⇒ inefficient behavior and deadweight loss

Public intervention can generate new distorsions ⇒ **second-best** solutions

Identify optimal policy by combining theoretical models of social insurance with empirical evidence on program effects

Why have social insurance?

Motivation for insurance: reduce cost of adverse events for risk-averse individuals

- Ex: risk of involuntary unemployment, risk of injuries, risk of living too long, etc.

But why is **public intervention** needed to provide this insurance?

Possible sources of **market failures**:
1. Asymmetric information (adverse selection)
2. Externalities
3. Individual optimization failures (myopia/improper planning)

Expected Utility Model

Utility function $U(c)$ increasing in consumption c and concave in consumption c: $U'(c) > 0$ and $U''(c) < 0$

Expected utility model: Individuals want to maximize expected utility defined as the weighted sum of utilities across states of the world, where the weights are the probabilities of each state occurring.

If q is probability of adverse event, expected utility (EU) is:

$EU = (1 - q) \cdot U$ (consumption with no adverse evert) $+ q \cdot U$ (consumption with adverse evert)

Actuarially fair premium: Insurance premium that is set equal to the insurer's expected payout.

In this setup, person has income *W* and can be sick with probability *q*

If sick, it uncurs a medical cost *d*

Insurance contract: pay premium *p* always, and receive payout *b* only if sick

Therefore the expected utility is:

$$EU = (1 - q) \cdot U(W - p) + q \cdot U(W - p - d + b)$$

Expected profits of insurers: $EP = p - q \cdot b$

Competition among insurers $EP = 0 \Rightarrow b = p/q$. (The **actuarially fair** insurance)

Individual maximizes *EU* by choosing $p \Rightarrow p = d \cdot q$

$\Rightarrow$ consumption is the same in both states: $W - d \cdot q$

Because utility is concave: always desirable to reduce consumption in high-income states to increase consumption in low-income states

Now, 2 types of individuals: sickly ($q = q_S$) and healthy ($q = q_H$), with $q_S > q_H$

- **1st case, Symmetric Information**: Insurers can observe q_H and q_H types (e.g., age)

    The insurer will charge 2 policies, each actuarially fair:

    $b_S = p_S/q_S$ for the sickly; $b_H = p_H/q_H$ for the healthy

    Each type, will choose to buy perfect insurance:

    $b_S = b_H = d$, and $p_S = q_S \cdot d$, $p_H = q_H \cdot d$

    Private insurance equalizes income within types ($\neq$ across) [$W - q_S \cdot d$ vs $W - q_H \cdot d$]

    Note: if $W - q_S \cdot d < 0$: Sickly cannot afford unsurance and dies if sick

2nd case, Asymmetric Information: Insurers do not observe (or cannot price) types

    If 2 policies, everyone will buy the healthy (cheaper) insurance $\Rightarrow$ **Adverse Selection**

    2 equilibrium possibilities: **Pooling equilibrium** (good for sickly, mediocre for healthy) or **Separating equilibrium** (partial insurance for healthy)

Adverse Selection

Adverse selection is when individuals know more about their risk level than the insurer and hence individuals with higher risk are more likely to purchase insurance.

Example: people with high risk of getting sick more likely to buy health insurance on Obamacare exchanges than people with low risk of getting sick (as insurers cannot discriminate based on pre-existing conditions)

With adverse selection, market for insurance can unravel in a **death spiral**:

Insurance is offered at average fair price, bad deal for low risk people and hence only high risk people buy it $\Rightarrow$ insurers make losses $\Rightarrow$ insurers raise the price further $\Rightarrow$ only very high risk people buy it $\Rightarrow$ insurers make losses again $\Rightarrow$ no insurance contract is offered at all even though everybody wants full actuarially fair insurance

This inefficiency (market failure) arises because of **asymmetric information**

The government can address adverse selection and improve market efficiency but this involves redistribution

Natural solution is to impose a **mandate**: everybody is required to purchase insurance
$\Rightarrow$ If price is the same for everybody, low risk people subsidize high risk people

From a social perspective, being high risk (e.g., having a sickly constitution) is rarely consequence of individual choices $\Rightarrow$ Society might want to compensate individuals for this

$\Rightarrow$ Explains why all OECD countries (except US) have adopted universal health insurance paid for by government

Obamacare three-legged-stool (a) forbids insurers from charging based on pre-existing conditions, (b) mandates that everybody needs to get insurance, (c) subsidizes health insurance for low income families

In 2019+, mandate (b) weakened by eliminating fine for not having insurance, will see whether this leads to death spiral on Obamacare exchanges

Health care as a right: Access to quality of healt care (regardless of resources) perceived as a right

Redistribution: Insurers cannot insurance against pre-existing conditions, so high-risks pay more. Might want to compensate them (often not their fault)

Externalities: Lack of insurance can be a cause of illness for me

Individual Failures: Indiv. might not appropriately insure themselves (myopia, lack of information,...)

Administrative costs: If large economies of scale in administrative costs, mandating pooled insurance can lead to efficiency gains

- Ex: in the U.S., administrative costs represent 12% of insurance premiums in the private health insurance market vs. 3.2% for Medicare/Medicaid

Moral hazard: Adverse actions taken by insured individuals in response to insurance against adverse outcomes.

Example: If you receive unemployment benefits replacing lost wages, you may not search as much for a new job $\Rightarrow$ Insurance reduces incentives to remedy adverse events

Moral Hazard exists with both private and social insurance as long as insurer cannot perfectly monitor the person insured $\Rightarrow$ Insurers do not offer perfect insurance

The existence of moral hazard problems creates the **central trade-off of social insurance**: insurance is desirable for consumption smoothing but insurance can create moral hazard

[similar to the problem of optimal income taxation equity-efficiency trade-off]

What Determines Moral Hazard?

    How hard it is to observe whether the adverse event has happened

    How easy it is to change behavior in get into or stay in the adverse event

Moral Hazard Is Multidimensional: In examining the effects of insurance, three types of moral hazard play a particularly important role:

1. Reduced precaution against entering the adverse state (example: auto insurance)
2. Increased odds of staying in the adverse state (example: unemployment insurance)
3. Increased expenditures when in the adverse state (example: health insurance)

$\Rightarrow$ Moral hazard increases the cost of providing insurance

Optimal social insurance trades-off two considerations:

1. The benefit of social insurance is the amount of consumption smoothing provided by social insurance programs

2. The cost of social insurance is the moral hazard caused by insuring against adverse events

$\Rightarrow$ Optimal social insurance systems should partially, but not completely, insure individuals against adverse events.

Asymmetric information in insurance markets has two important implications:

1. It can cause adverse selection in private insurance provision (as insurers cannot perfectly observe risk types) hence the need for social insurance
2. It can cause moral hazard (as insurer cannot perfectly monitor behavior), hence the need to **limit generosity** of insurance

The ironic feature of asymmetric information is, therefore, that it simultaneously motivates and undercuts the rationale for government intervention through social insurance.

An illustration: Health Insurance

Health expenditure as a share of GDP, 2016 (or nearest year)
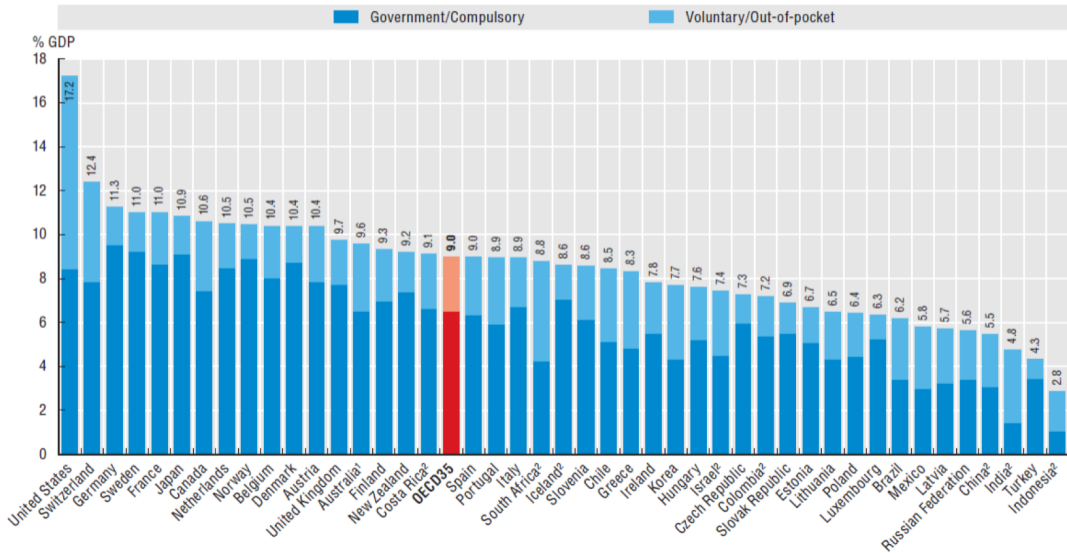
Adverse selection: when individuals have heterogeneous risks of falling sick and the insurers do not know individuals' types, the private market will not be able to efficiently provide insurance.

Moral Hazard: when individuals use more medical services because they are insured and do not pay the full cost of the treatment.

Address this with **universal public health insurance**, to redistribute from the healthy to the sick

All OECD countries (except the US) provide universal health care insurance funded by taxation:

Individuals who get sick can have health care paid for by the government

Government either directly controls doctors/hospitals (like National Health Service in the UK) or government reimburses private health care providers (like in France or Germany)

Government controls costs and limits health-care over-consumption through:

1. Regulation (govt picks allowed treatments based on cost effectiveness, bargains for prices, rations care in some cases)
2. Patient co-payments (patients share part of the cost)

Is Universal Health Care Desirable?

Health care is expensive (even in countries which control costs) $\Rightarrow$ Poor cannot afford health care on their own and need help

People face difference health risks (pre-existing conditions) $\Rightarrow$ Those facing high health risks face very high insurance costs in private market

Should the government insure people for health risks? Yes if health risks outside people's control (age, genetics). Not necessarily if health risks due to choices (diet, exercise)

Virtually all OECD countries answer yes and provide universal health care

Not providing universal health care creates another big issue: adverse selection if private insurers cannot observe risks or cannot charge based on risks $\Rightarrow$ Even those with low risks cannot get actuarially fair insurance

In all cases (private and public), health insurance needs to deal with moral hazard (over-provision, over-consumption)

The government can regulate and subsidize private insurance markets

Subsidies towards the private purchase of full insurance: this also involves redistribution (eg: tax subsidy to employer-provided insurance)

Regulation to limit the type of contracts that can be proposed by the private insurance market: force some degree of pooling. This does not necessarily ensure that all individuals will get insurance

Mandates: obligation to buy insurance. Combined with regulations, it forces a pooling equilibrium

Effect of Health Care on Utilization and Health: Oregon Medicaid Health Insurance Experiment

In 2008, Oregon had a limited Medicaid budget $\Rightarrow$ used lottery to select individuals on waitlist to be given a chance to apply for Medicaid insurance coverage

30,000 "lottery winners" (treatment group) out of 90,000 participants (lottery losers are control group)

  Not all winners received coverage. Some non-winners later received insurance on their own.

  But it is still the case that winning the lottery increases probability of having health insurance by 29 percentage points

Finkelstein et al. (2012) use lottery as instrument to estimate causal effect of insurance coverage itself Two way to report the results:

  ITT (intention to treat): just compare winners and losers

  LATE (local average treatment effect): Inflate estimates by 1/[difference in fraction insured between winners and losers]=1/.29=3.5

Data sources: admin data from hospitals, credit reporting data, and survey responses regarding utilization, health, and financial outcomes

Key results: winning the Medicaid lottery leads to:

1. higher health care utilization (including primary and preventive care as well as hospitalizations)
2. lower out-of-pocket medical expenditures and medical debt (including fewer bills sent to collection agencies for unpaid debt)
3. better self-reported physical and mental health

Social Security and Retirement

Retirement Problem

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

Standard Life-Cycle Model Prediction: Absent any govern- ment program, rational individual would save while working to consume savings while retired [Modigliani life cycle graph]

Optimal saving problem is extremely complex: uncertainty in returns to saving, in life-span, in future ability/opportunities to work, in future tastes/health
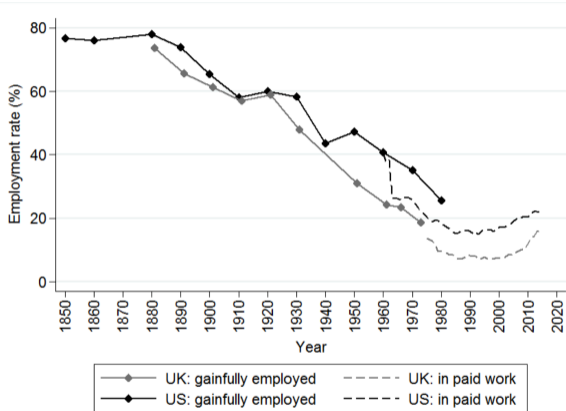
In practice: When govt was small ⇒ Many people worked till unable to (often till death) and then were taken care of by family members

Today: Govt is taxing workers to provide for retirees through social security retirement systems

Life Cycle Model

Earnings

Wealth

Consumption

savings

dissaving

0: work starts

R: retirement

T: death

time
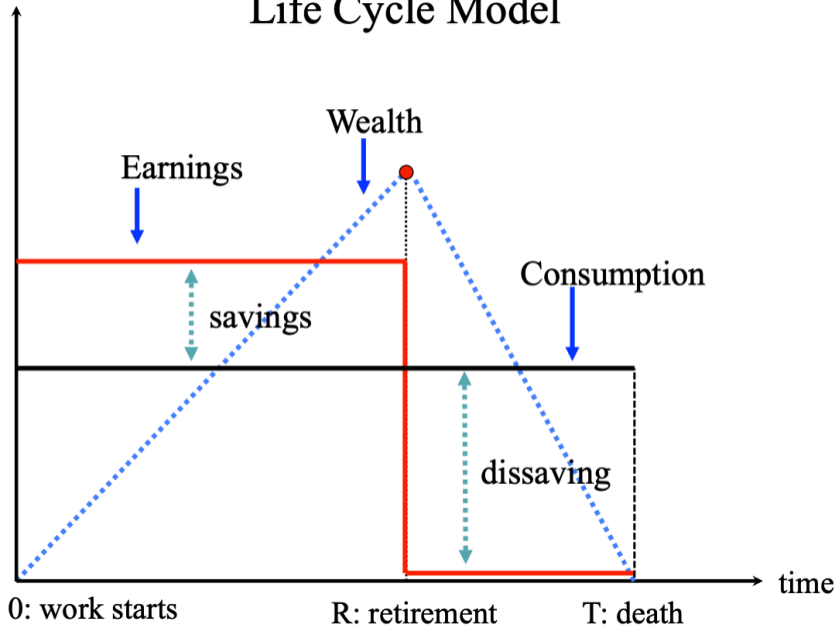
Employment rate of men aged 65+ in the UK and the US

Employment rate (%)

UK: gainfully employed
US: gainfully employed
UK: in paid work
US: in paid work

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

Life expectancy at age 65, years

United Kingdom
United States
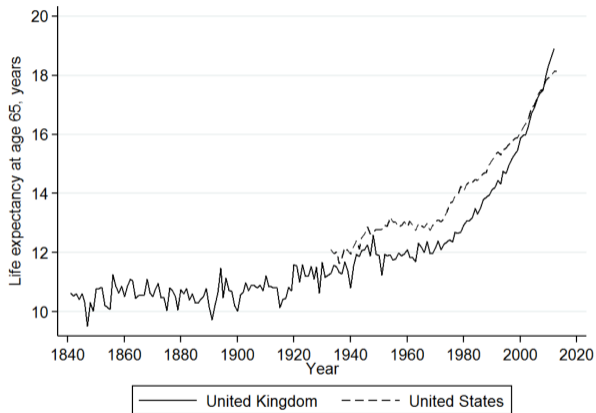
Employment rates of men aged 60-64, 1970-2019

US lowers early retirement age from 65 to 62 in 1961

Germany lowers retirement age from 65 to 60 in 1973, increases it to 65 in 2000s

- US
- France
- Germany
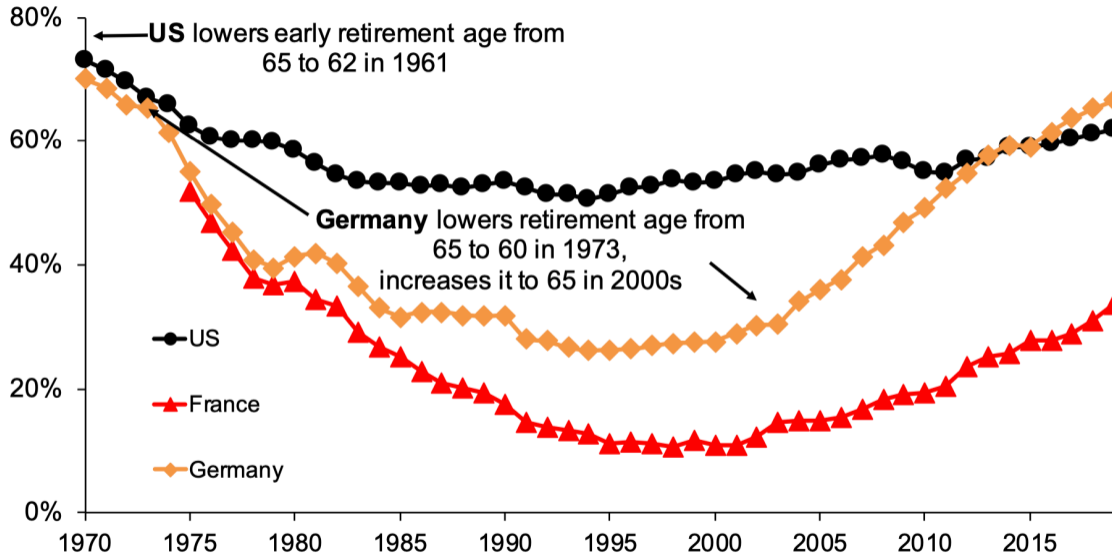
Actual Retirement Programs: All OECD countries imple- ment substantial government funded retirement programs (sub- stantial share of GDP around 6-10%, US smaller around 5%), started in first part of 20th century and have been growing.
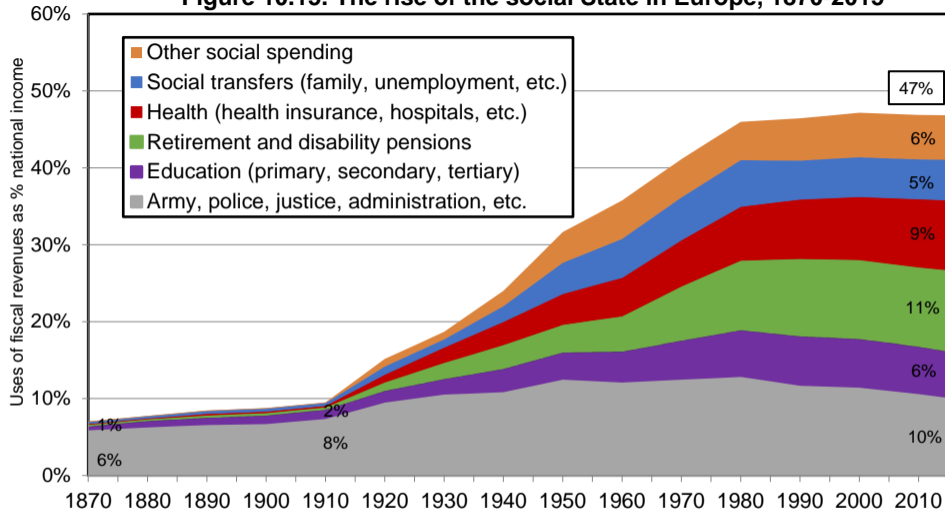
Common structure:

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

Extension of the earlier family model: it's no longer your own working kids who 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**

Figure 10.15. The rise of the social State in Europe, 1870-2015

Legend (top to bottom):
- Other social spending
- Social transfers (family, unemployment, etc.)
- Health (health insurance, hospitals, etc.)
- Retirement and disability pensions
- Education (primary, secondary, tertiary)
- Army, police, justice, administration, etc.

Y-axis: Uses of fiscal revenues as % national income

Data labels at 2015: 47%, 6%, 5%, 9%, 11%, 6%, 10%

Data labels at 1870: 1%, 6%

Data labels at 1910: 2%, 8%

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.

A classical categorization

1. Bismarckian pensions: contributory, funded by social security contributions, covering only workers and their spouses, managed by joint employee and employers' unions
2. Beveridgian pensions (Beveridge Report, 1942): flat-rate, universal, paid by taxes, managed by the State

Classification of countries

Bismarck: Germany, France, U.S.

Beverige: U.K., New-Zealand, Denmark, Sweden, Norway

⇒ **Not a pertinent distinction today** (mixed and more complex systems)

Social insurance design: Bismarck

- Contributory system funded by SSCs

- Mostly unfunded system

Non-contributory elements: Beveridge

- Minimum pension and family benefits

- Funded by general taxation, though *Fonds de Solidarité Vieillesse*

High level of spending and contributions

- Spending: 14.7% GDP

- Pension SSCs: $\sim$ 28% gross earnings

Complex institutional architecture

- 35 mandatory pension schemes

French Social Security (1945)

- Programme of the *conseil national de la résistance*

- Social Security: health care, family, maternity, old-age

- Self-employed and public sector refused to join

Sector differences

- Private sector: SS scheme + complementary schemes

- Public sector: civil servants, armed forces, utilities outside main SS scheme

- Self-employed: many small schemes, lower contributions, lower pensions

Pension schemes for private sector (France)

SECTEUR PRIVE			
Salariés de l'agriculture	**MSA** Mutualité Sociale Agricole	**ARRCO** Retraite complémentaire des salariés	**AGIRC** Retraite complémentaire des cadres
Salariés de l'industrie, du commerce et des services	**CNAV**		
Personnel navigant de l'aviation civile	Régime général de la Sécurité Sociale	**CRPN** Caisse de retraite du personnel navigant	

	RETRAITE DE BASE	RETRAITE COMPLEMENTAIRE
SECTEUR PUBLIC		
Fonctionnaires de l'Etat	**SERVICE DES RETRAITES DE L'ETAT**	**RAFP**
Fonction publique territoriale	**CNRACL**	
Fonction publique hospitalière	Caisse Nationale de Retraites des Agents des Collectivités Locales	Retraite additionnelle
Ouvriers de l'Etat	**FSPOEIE** Fond Spécial des Pensions des Ouvriers des Etablissements Industriels de l'Etat	
Agents non titulaires de l'Etat et des Collectivités publiques	**CNAV** Régime général de la Sécurité Sociale	**IRCANTEC**
Salariés relevant d'entreprises publiques à statut particulier	**BANQUE DE FRANCE, RETRAITE DES MINES, CNIEG** (gaz-electricité) **CRPCF** (comédie française) **CRPCEN** (clercs et employés de notaires) **ENIM** (marin) **OPERA DE PARIS, PORT AUTONOME DE STRASBOURG, CRPRATP CPRPSNCF**	

NON SALARIES		
Exploitants agricoles	**MSA** Mutualité Sociale Agricole Retraite de base + Complémentaire	
Artisans, commerçants et industriels	**RSI** Régime Social des Indépendants (fusion AVA et Organic) Retraite de base + Complémentaire	
Professions libérales	**CNAVPL** Caisse Nationale d'Assurance Vieillesse des Professions Libérales Retraite de base + Complémentaire + Supplémentaire (selon les sections professionnelles) **CRN** (notaires) **CAVOM** (officiers ministériels) **CARMF** (médecins) **CARCDSF** (dentistes et sages-femmes) **CAVP** (pharmaciens) **CARPIMKO** (infirmiers, kinésithérapeutes) **CARPV** (vétérinaires) **CAVAMAC** (agents d'assurance) **CAVEC** (experts-comptables) **CIPAV** (architectes et professions libérales diverses)	
	CNBF Caisse Nationale des Barreaux Français	
Artistes, auteurs d'œuvres originales	**CNAV** Régime général de la Sécurité Sociale	**IRCEC** Institution de Retraite Complémentaire de l'Enseignement et de la Création
Patrons pêcheurs embarqués	**ENIM** Établissement national des invalides de la marine	
Membres des cultes	**CAVIMAC** Caisse d'Assurance Vieillesse Invalidité et Maladie des cultes	**ARRCO**

U.S. Social security (1935)

- Social Security Act in 1935 (President Franklin D. Roosevelt)

- Contributory system, funded by employee and employer payroll taxes

- Initially low contribution (2%) and low benefits

- Eligibility at age 65

- Benefit in proportion to past earnings

Expansion of old-age insurance in the U.S.

- 1956: early retirement age for women at 62

- 1961: same for men

- 1972 amendment: 20% increase in benefits

How Is Social Security Financed?

Almost all workers in the United States pay the Federal Insur- ance 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 $160,000 in 2023

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.

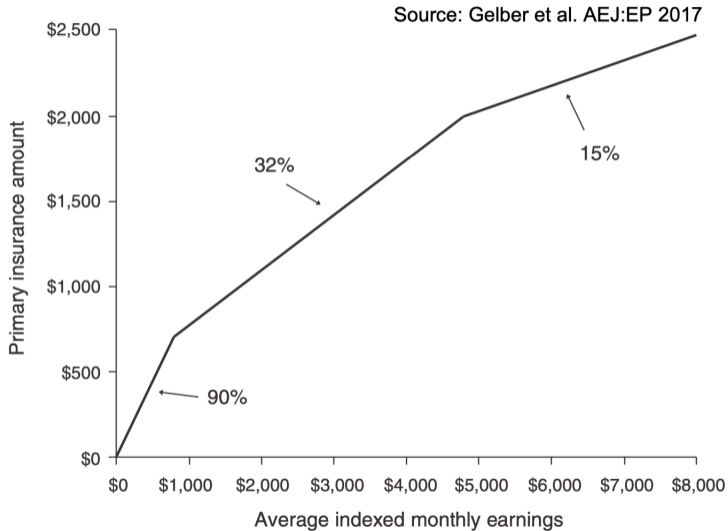**Annuity**: A payment that lasts until the recipient's death.

The amount of this annuity payment is a progressive function of the recipient's average (taxable) earnings over the person's 35 highest earning years where each month's earnings are ex- pressed in today's dollars using average wage growth AIME = average indexed monthly earnings
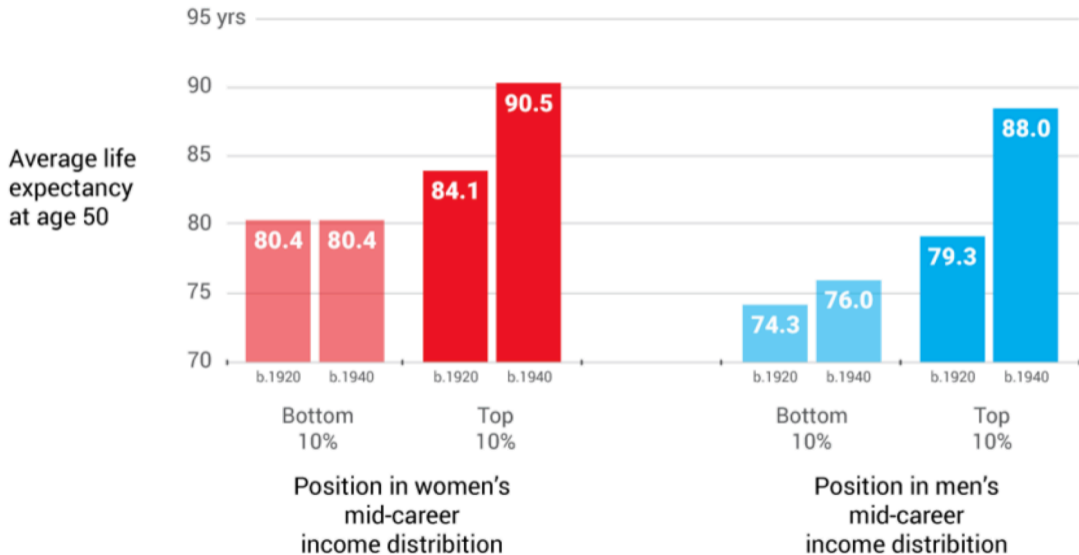
Once benefits start for a given person, they are indexed to price inflation once every year ("real" annuity)

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

Primary Insurance Amount as a Function of AIME

Source: Gelber et al. AEJ:EP 2017

Primary insurance amount (y-axis): $0, $500, $1,000, $1,500, $2,000, $2,500

Average indexed monthly earnings (x-axis): $0, $1,000, $2,000, $3,000, $4,000, $5,000, $6,000, $7,000, $8,000

90%

32%

15%

Gaps in Life Expectancy Have Grown Over Time

Average life expectancy at age 50

Position in women's mid-career income distribution

Bottom 10%: b.1920 = 80.4, b.1940 = 80.4
Top 10%: b.1920 = 84.1, b.1940 = 90.5

Position in men's mid-career income distribution

Bottom 10%: b.1920 = 74.3, b.1940 = 76.0
Top 10%: b.1920 = 79.3, b.1940 = 88.0

Full Benefits Age (FBA): The age at which a Social Security recipient receives full retirement benefits (Primary Insurance Amount): 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: 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 (permanently), etc.

You get 8% more in benefits if you claim 1 year after FBA. Benefits automatically paid at 70.

Sources of Retirement Income in the US

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

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

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

   a) Traditional: Defined Benefit (DB) and mandatory: **employer** carries full risk [in sharp decline, many in default]
   b) New: Defined Contribution (DC) and elective: 401(k)s, **employee** carries full risk

4) Extra additional savings: significant only for wealthy minority [=10% of retirees]

Key lesson: Bottom 90% wealth is (a) housing (net of mort- gage debt), (b) pensions, (c) minus other debts (consumer credit, student loans)

All 3 components are heavily affected by government policy (education finance), institutions (such as employers), financial regulations (mortgage refinance, credit card and loans)

Note: student loans make you start negative (instead of zero) in life-cycle model

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 [genera- tional link]

current benefits = current contributions

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

current benefits = past contributions + market returns on past contributions

Social security (as most public retirement systems) is unfunded

Most private pension plans (such as 401(k)s) are funded

1) Funded system: each generation gets a market return r on contributions:

benefits=tax you paid $\times (1 + r)$

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

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 gen. $t + 1$

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

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

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], $r \sim 5\%$
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 **intergenerational redistribution trade-off**

Most important reason for social security: many people are unable to save rationally for retirement (due to myopia, self-control problems, lack of information, etc.)

Life-cycle model: work and save in period 1, retire in period 2

1) Rational individuals: [draw graph]

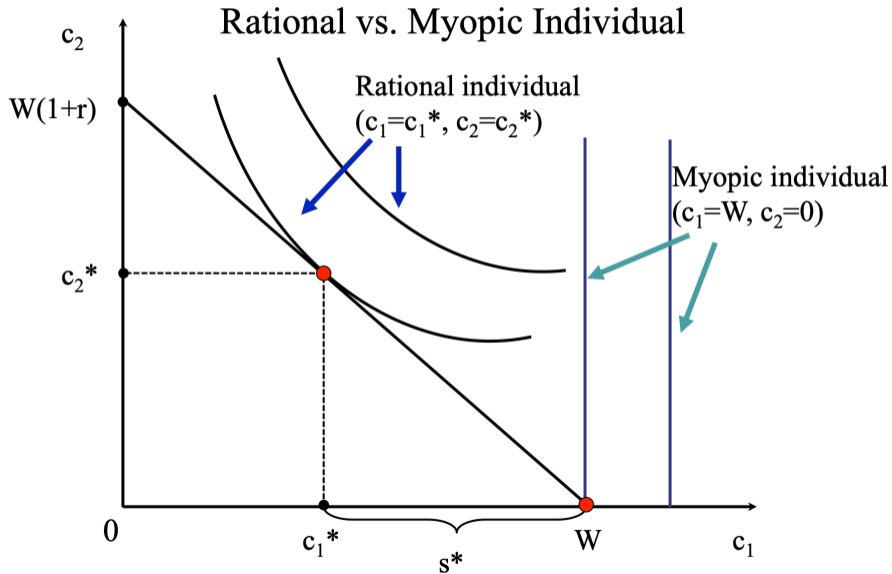$max_{c_1,c_2} u(c_1) + \delta u(c_2)$ st $c_1 + s = w$ and $c_2 = s \cdot (1+r) \Rightarrow c_1 + c_2/(1+r) = w$

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

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

2) Myopic individuals:

$max_{c_1,c_2} u(c_1)$ st $c_1 + s = w$ and $c_2 = s \cdot (1+r) \Rightarrow c_1 = w$ and $s = c_2 = 0$

Rational vs. Myopic Individual

Model: Rational vs. Myopic Savers

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

Govt imposes forced saving tax τ such that $\tau = s^*$ and benefits $b = \tau \cdot (1 + r)$. 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 out- come maximizes Social Welfare

Forced savings is a good solution: does not affect those responsible, affects the myopic individuals in socially desired way

Adding forced savings $\tau = s^*$

Rational individual
stays at ($c_1 = c_1^*$, $c_2 = c_2^*$)

Myopic individual
moves to ($c_1 = c_1^*$, $c_2 = c_2^*$)
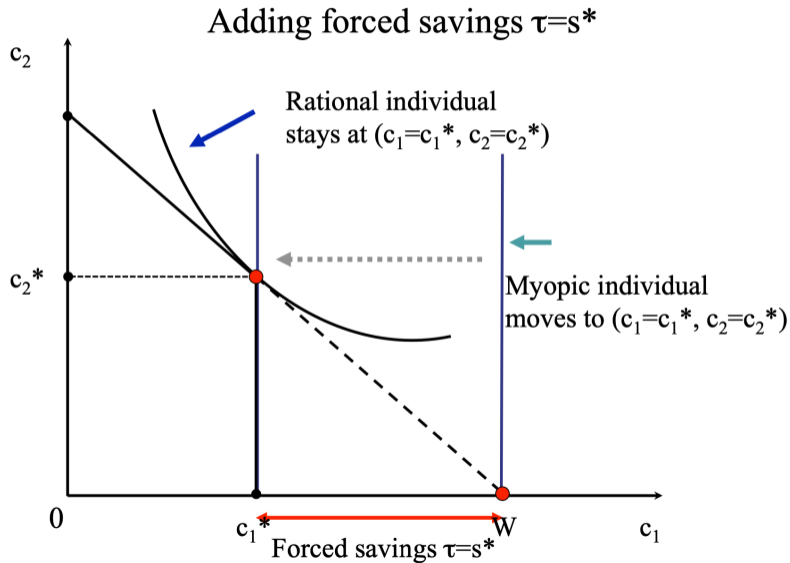
Forced savings $\tau = s^*$

1) Universal vs. Means-Tested Program: Universal forced savings is better than means-tested program financed by tax on everybody. With means-test program, two drawbacks:

    a) Responsible individuals subsidize myopic individuals

    b) Incentives to under-save to get means-tested pension

2) Heterogeneity in w: Forced saving should be proportional to w (as long as govt does not care about redistribution)

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

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

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

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 experi- ment).

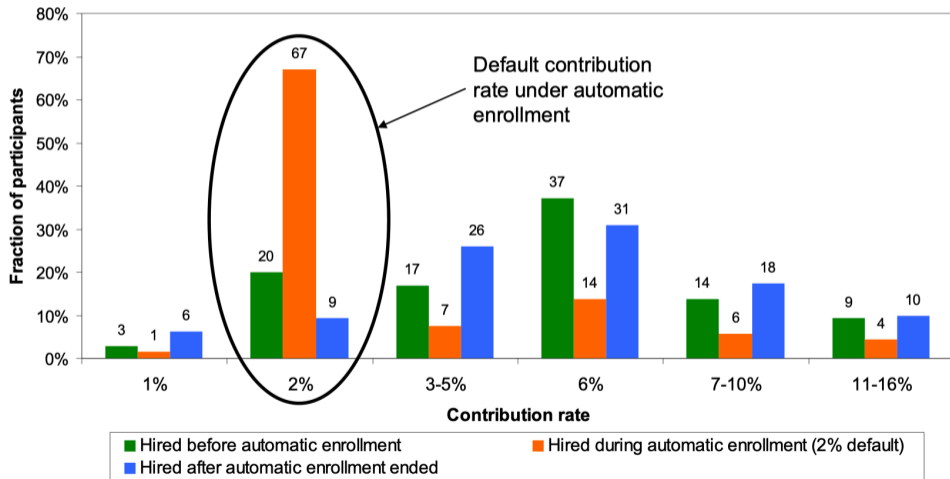$\Rightarrow$ Much better to force people to save via mandatory social security system than rely on individual rationality

401(k) participation by tenure at firm: Company B
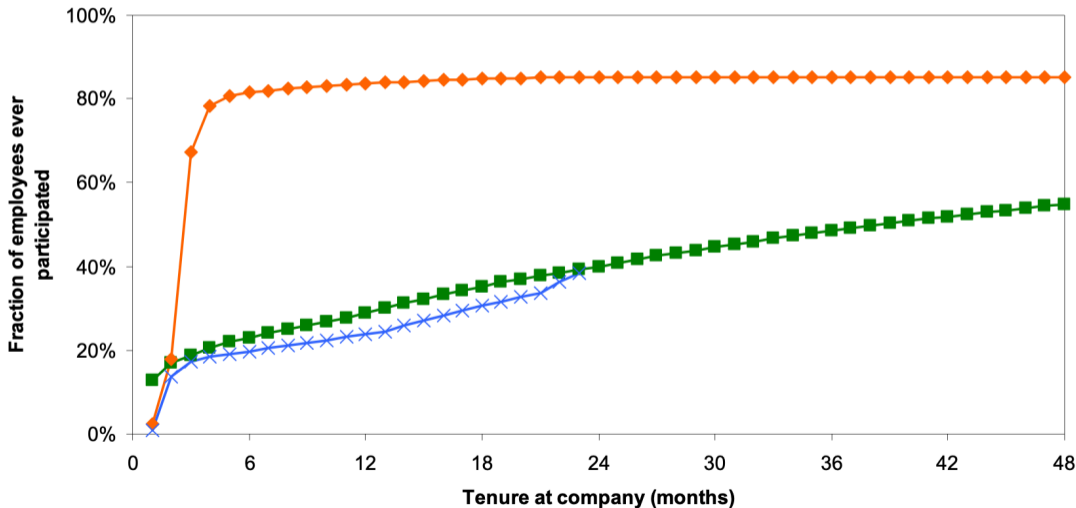
Distribution of contribution rates: Company B

Default contribution rate under automatic enrollment

Legend:
- Hired before automatic enrollment
- Hired during automatic enrollment (2% default)
- Hired after automatic enrollment ended

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

THANK YOU!

These slides are available on my website: https://bluebery-planterose.com/teaching

These slides are partly based on courses by: Ghazala Azmat, Antoine Bozio, Raj Chetty, Emmanuel Saez, Stefanie Stantcheva, and Gabriel Zucman.