### Lecture 2: Institutional design of pensions

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#### • "Retirement", its original meaning

- Withdrawing into seclusion
- Withdrawing from worldly affairs
- Preparation to afterlife

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#### • What is retirement today for economists?

- a Labour market decision
  - exit from labour market at older age
- **b** Financial decision
  - claiming a pension, annuitization of pension wealth

#### • "Pensions"

- From French, borrowed from latin *pensio* : payment, weight, compensation
- An annuity paid regularly in consideration of past services e.g., an allowance to support a royal favourite

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#### Pension systems

- Institutions that have for main purpose to provide pensions, i.e., life annuities
- Many different institutional systems have emerged

# Outline of the lecture

### I. History of retirement

- Family support
- 2 Charity and assistance
- Occupational pensions
- 4 Individual savings and mutual aid
- State pensions

### II. Rationales for government intervention

- Market failures
- Ø Myopia
- 3 Redistribution
- ④ Efficiency

### III. Pension design around the world

- 1 Typologies of pension systems
- 2 Examples of pension systems

## I. History of retirement

### • Pensions have a recent history (Thane, 2006)

- Work until death for most people
- Rise of pensions from the 19th c.
- But development mostly post WWII

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### • Longevity risk is however ancient history

- Positive life expectancy at older ages (cf. lecture 1)
- Risk of becoming unable to work because of old-age
- Longevity risk was, for long, a risk of poverty
- Poverty was historically linked with invalidity or old-age

# I. History of retirement

- 1 Family support
- 2 Charity and assistance
- **3** Occupational pensions
- Individual savings and mutual aid
- **5** State pensions

# Family support

#### Related-kin support

- Children have long been the only way to support into old-age
- If not children, the next of kin (originally the clan)

### • Evidence of remittances (Lambrecht, EREH 2013)

- Children became often farm's servants : employers would pay cash and in kind benefits to parents
  - e.g., in 1784 in Cérans (France), contract to notary to pay "96 livres" of pension to Louis Porteboeuf, with children paying 10 livres and nieces and nephews 4-5 livres
    e.g., in 1786-1800 in Flanders, farm records payment to labourers and their parents
    e.g., in 1812-1830, in Labourse (France), 26 to 53% of wages remitted to parents
    e.g., in England, no evidence of remittances; complaints about "English individualism"

# From family support to pensions

- During the French Revolution Wars, a family allowance for soldiers's parents was put in place
  - 800 000 men were mobilized (1794)
  - estimates of 2 family members supported by each man

Table 1 – Annual compensation for family members of French soldiers, 1792–1794 (livres/year)

	1792	1793	1794
Father (60 $+$ )	40	100	100
Father (70 $+$ )	60	100	100
Mother (60+)	40	100	100
Mother (70+)	60	100	100
Orphaned brother/sister (-12)	_	50	100

SOURCE : Lambrecht (2013), Tab. 2, p. 197.

# From family support to pensions

### Multi-generational households

- Common pattern to find generations cohabiting in the same household before 19th c.
- Including in regions where nuclear family is prevalent

#### • Cohabiting was often dreaded

- Advises not to become dependent of children
- Evidence of suicides of older individuals (Porret, 1994)
- Pensions : displacing the family?
  - Decohabiting process since the late 19th c.
  - Concomitant with the rise in income and pensions

Figure 1 – Percentage of U.S. men aged 65 or older who were household heads, by retirement status



SOURCE : Costa (1998), Fig. 2.10, p. 26.

Figure 2 - Percentage of U.S. men aged 65 or older not living in extended family



SOURCE : Costa (1998), Fig. 6.2, p. 108.

### • Church support

- Old and sick always seen as "deserving poor"
- Creation of almshouses in medieval Europe (10-12th c.) : hospitals for the sick and the old
- e.g., Hospices de Beaune (15th c.)



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- Debate on the size of poor relief
  - Estimates available suggest little in aggregate (Lindert, 2004)
  - Some argue that spending on the elderly was high before 1800 (Thompson, 1984)

### English Poor laws

- 1601 Poor Law Act : "impotent poor" accommodated in almshouse
- · Led to significant poor relief in England, compared to other countries
- Elderly people made a large part of the targeted poor
- Poor Law Amendment act 1834 : reversal in trend

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### • French revolution

- Public assistance is the obligation of the nation, i.e. the State
- Secularisation of church interventions
- French poor relief remained low in level (Lindert, 2004)

Figure 3 – Poor Relief before 1880 (as a share of GDP)



SOURCE : Lindert (1998), Tab. 2, p. 113-114.

#### • Emergence of occupational pensions

- Desire of employers to control when an employee should retire
- Incentives : rewards for past services
- Management : easing the dismissal of older workers

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### Employers

- Armed forces
- State bureaucracies
- Large private firms

#### • Military reward

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### • Roman legion veterans

- Distribution of land to veterani by Octavius (41 BC)
- Distribution of lump-sum of money (30 BC)
- 12'000 sesterces (compared to 1000 s. of annual earnings)
- Creation of *aerarium militare*, pension scheme for Roman legions funded with tax on inheritances
- Minimum age 45, 20 years of service
- Repeated problems of funding (de Valeriola, 2015)

- Louis XIV and French veterans
  - Creation of *Hôtel des invalides* for French veterans (1670)



• Creation of the *Caisse des invalides de la marine royale* (1673), i.e., scheme dedicated to French royal navy veterans funded through royal funds and soldiers's contributions

## Occupational pensions : Union Army pensions

- U.S. veterans after the Civil War
  - Civil war pension instituted by U.S. Congress in 1862 for Union Army veterans (not Confederates)
  - Condition of war-related disability, or inability to work
    - with war-related disability : \$35 p.m. (close to 100% of a laborer's earnings)
    - without war-related disability : \$6-12 p.m.

### • Extensions of veterans' pensions

- 1890 Act led to more universal disability and old-age pension for veterans
- In 1904, pensions was granted on basis of age (62 as early age for 50% of benefit)
- Rates were increased from 30% to 76% of laborer's earnings
- By 1900, veterans' pensions represented 30% of the US federal budget

# Costa (QJE, 1995)

### • Descriptive statistics about US veterans

- Exploite Union Army pension records matched with US Census
- Large share of retirees are veterans

Figure 4 – Comparison of percent retired among veterans and a random sample of white men

Age	Veteran sample	Random sample	Restricted random sample	
50-59	8.4	4.1	5.1	
60-69	15.2	7.7	8.9	
70-81	42.0	26.7	29.7	
50-64	10.0	4.9	5.4	
65 - 81	29.7	23.1	24.3	

Note. The veteran sample contains 696 noninstitutionalized men.

Note. The random sample was drawn from the public use sample of the 1900 Census (Preston and Higgs 1983) and consists of 4554 white, noninstitutionalized men. The restricted random sample was limited to men either who were born in a Union state or who, if foreign-born, immigrated prior to the Civil War. Both samples contain veterans and nonveterans and were reweighted to have the same age distribution as the veteran sample.

# Costa (QJE, 1995)

### • Estimation of the impact of Union Army pensions

- Dora Costa estimates the income effect on probability to retire using probit
- Elasticity of non labour force participation with respect to pension income is 0.73 (large)

Figure 5 – Probit of determinants of probability of retirement, dependent var. = retirement status

526 observations, pseudo $R^2 = 0.22$						
				$\partial P$		
Variable	Mean	$\mathbf{Est}$	Std err	$\partial x$		
Dummy = 1 if retired	0.17					
Intercept		-12.14	2.24			
Monthly pension	12.94	0.05‡	0.01	0.0090		
Age	61.28	0.05‡	0.01	0.0106		
Dummy = 1 if does not own home	0.34	$0.35^{+}$	0.17	0.0695		
Dummy = 1 if discharged disability	0.25	-1.63	0.19	-0.1229		
Dummy = 1 if health good	0.22					
Dummy = 1 if health fair	0.35	0.39*	0.23	0.0765		
Dummy = 1 if health poor	0.25	0.37*	0.25	0.0717		
Dummy = 1 if health status unknown	0.18	0.46*	0.26	0.0905		
Dummy = 1 if farmer	0.46					

SOURCE : Costa (1995), Tab. 5, p. 308.

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- French civil service pensions (1853)
  - Before : private pensions for each administration
  - New system : unfunded, financed by direct budget spending (Thiveaud, 1995)
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#### Pension as a reward

- Pension not linked to employee/employer contribution
- Only available to those with long years of service
- Could be withdrawn if lack of loyalty towards the State

#### • Private sector development

- Use of "retirement posts" (cleaning, security) for unskilled older workers; still used in Japan
- · Pensions for skilled workers in railways, banking industry, mining
- Introduction of fixed retirement ages

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#### Modern occupational pensions

- Late 19th c. employers introduced mandatory retirement ages to remove older workers (Sass, 2006)
- Pensions with full cost supported by the employer
- Development in the U.K., U.S., Canada and Australia

## Individual savings : in search of life annuity

### • Corrody market (16th c.)

- Corrody : lifetime allowance of food, clothing, shelter and care, granted by an abbey or monastery
- In the Netherlands, development of corrody market (Zuijderduijn, 2014)
- Inexpensive contracts around 1500, later increase in price

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- Tontine : investment shared by survivors; contract contingent on the survival of the investors

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### • Life insurance (18th c.)

- Development of actuarial calculus
- Moral condemnation in catholic countries, hence more development in protestant countries
# Individual savings

#### • Corporate insurance

- Corporations (guilds, associations, etc.) provided some insurance for their members
- Little evidence of old-age insurance : burial costs, or temporary reliefs.

#### • Rise of friendly societies or mutualisme

- Development of *sociétés de secours mutuels*, i.e. non for profit insurance (Toucas-Truyen, 1998)
- Often organised along professional lines
- British friendly societies movement
- Competition with for profit insurance and state insurance

## The birth of the German Wohlfahrtsstaat

### Intellectual context

• Economists in favour of state interventions, "pulpit socialists" (*Kathedersozialismus*)

e.g., Adolph Wagner, Gustav von Schmoller

• Congress in 1872 in Eisenach leading to the *Vereins für Socialpolitik* : support for a social insurance scheme

### Political context

- Rise of socio-democrats in opposition. Repression by the German empire (party banned, leaders imprisoned)
- View that workers's complaints were in part justified :

"The real grievance of the worker is the insecurity of his existence; he is not sure that he will always have work, he is not sure that if he will always be healthy, and he foresees that he will one day be old and unfit to work." (Otto von Bismarck, 20 March 1884)

## Bismarck's Social Reforms

### **1** Work-related accident insurance (6 July 1884)

- 1881 first project presented in Reichstag
- 1884 Law Unfallversicherungsgesetz
- Paid by employer's contributions, offering compensation pension to 66% of previous wage in case of full invalidity

### **2** Health care insurance (15 June 1883)

- Gesetz betreffend die Krankenversicherung der Arbeiter
- Only for industry workers with less than 2000 euros annual wage
- The health service was established on a local basis
- Employers contributed one-third, the workers two-third
- "Sickness funds", managed by workers' representatives
- Recent research credit the reform with a causal decline in mortality (Bauernschuster et al., JEEA 2020)

## Bismarck's Social Reforms

### **6** Old-age and disability insurance (1889)

- Gesetz betreffend die Invaliditäts und Altersversicherung
- Participation was mandatory (except for civil servants, covered by previous scheme)
- All workers concerned (not only industry workers)
- Contributory system funded by employee, employers and the State
- Pension age was set at 70

## Bismarck's Social Reforms

### • A conservative or progressive policy?

- Social insurance with the aim to reduce social risk
- Mandatory contributions, with no redistribution
- Stated objective to reduce attraction of socialism

#### Large legacy

- German example led to many debates in Europe : many policy makers did make the trip to Germany (e.g., William Beveridge in 1890, and 1907)
- Application in other countries (e.g., Austria in 1888, Hungary in 1907)
- Large influences for US Social Security in the 1930s, or France's Social Security in 1945

## UK state pensions

### • U.K. Old-Age Pension Act (1908)

- Liberal governments in the U.K. (1906–1914)
- Non-contributory pension system for all resident of the U.K. (see Gilbert, 1966)
- Pension age was set at 70
- · People who hadn't worked their whole life were also not eligible

### • UK contributory pension attempt (1925)

- Widows, Orphans and Old Age Contributory Pensions Act 1925
- No large coverage
- Only mandatory for low-wage workers

# The Beveridge report

- Sir William Beveridge (1879–1963)
  - British economist, civil servant, director of the LSE
  - First director of the first unemployment insurance scheme



 Close to Churchill Beatrice Webb (Fabian Society), Clement Attlee, Hugh Dalton, John M. Keynes (new economics), Seebohm Rowntree (studies on poverty)

#### • The institutional context

- Poor laws
- Liberal government, chancellor Lloyd George : National Insurance Act 1911
- A web of complex benefits with strong means-test

## The Beveridge report

- The report : Cmd. 6404 Social Insurance and Allied Services (1942)
  - a boring admin report with an introduction with lyrical style
  - Comprehensive welfare state : "from the cradle to the grave"
  - Objective to lift all British out of poverty, but not to provide high replacement rates



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# The Beveridge report : the principles

### • An overall scheme

 "a revolutionary moment in the world's history is a time for revolutions, not patching."

#### • Taming the five giants

 "it is an attack upon Want. But Want is one only of five giants on the road of reconstruction, and in some ways the easiest to attack. The others are Disease, Ignorance, Squalor and Idleness."



## The Beveridge report : the principles

#### Social insurance and not means test

- a minimum should be given "as of right and without means test, so that individuals may build freely upon it"

#### • Three assumptions to make it work

- "A national health service for prevention and comprehensive treatment"
- "Universal children allowances"
- "Full use of the powers of the state to maintain employment"

### • Security to look forward

 "Freedom from Want cannot be forced on a democracy or given to a democracy. It must be won by them."

## The Beveridge report

#### • Legacy of the report

- Huge success : 600K copies sold
- Broadcasted by the BBC in 22 languages
- Sent to soldiers, to occupied countries (two copies found in Hitler's bunker)

#### • "Thank you Sir William"

- Beveridge became a national hero
- It became a name synonym of the welfare state

## UK pensions after Beveridge

#### • British National Insurance (1948)

- William Beveridge, author of Social Insurance and Allied Services (1942)
- Objective to lift all British out of poverty, but not to provide high replacement rates
- National Insurance Act 1946 set-up National insurance contributions (NICs) to fund the system

### • Basic state pension (BSP)

- Contributory scheme : years of NI contribution as requirement
- But flat-rate contributions, and flat-rate benefits
- Pension age set at 65 for men, 60 for women

## UK pensions after Beveridge

#### • British attempts at social insurance (1961)

- Graduated retirement benefit
- Workers would buy "units of pension"
- But UK government didn't indexed benefit, hence disappearance of the scheme

#### • Second attempt at contributory scheme (1978)

- State Earnings-Related Pension Scheme (SERPS)
- Replaced by state second pension (S2P) in 2002

## State pensions in France

#### • France's retraites ouvrières et paysannes (1910)

- *loi du 5 avril 1910* old-age pension system for private sector employees
- Funded system, mandatory, eligibility at age 60
- Little contribution, little pension

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### • A second failed attempt in France (1928-1930)

- lois des 5 avril 1928 et 30 avril 1930
- Funded system, mandatory, eligibility at age 65
- Higher contributions, and pensions
- But war inflation destroyed their value

#### Figure 6 – Trade union opposition to the 1910 French pension system



SOURCE : CGT poster opposing the 1910 pension system.

NOTE : The title mentions : "Their pensions, and the ones they offer us". And below : "what a deceit these pensions for the dead !

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### The birth of the French Social Security

- The Conseil national de la Résistance (CNR)
  - CNR Programme "Les jours heureux", 15 March 1944
  - "Un plan complet de sécurité sociale, visant à assurer à tous les citoyens des moyens d'existence dans tous les cas où ils sont incapables de se le procurer par le travail, avec gestion appartenant aux représentants des intéressés et de l'État;"

#### Social policies before 1945

- Social assistance laws from the late 19th c.
- Social insurance laws
  - Workers' compensation, law 9 April 1898
  - Pensions, law 5 April 1910
  - Social insurance, law 1 July 1930

## The birth of the French Social Security

#### • Pierre Laroque (1879–1963)



French civil servant, often dubbed "the father of French Social Security", or "the French Beveridge" He went to London during the war, and was impressed by the Beveridge report

### • The creation of Social Security (1945)

- Pierre Laroque is named director of the *Assurances sociales* in 1944 by the Minister of Labor Alexandre Parodi, continued under Minister Ambroise Croizat
- Set up the main texts and administrative institutions which replace previous social insurances and assistance laws

## The birth of the French Social Security

- 4-19 October 1945 Decrees "ordonnances de 1945"
  - Child benefits (*prestations familiales*)
  - Old-age insurance (assurance vieillesse)
  - Health care insurance (assurance maladie)
  - Workers' compensation (assurance accidents du travail)
- Beveridge's spirit ?
  - Universal coverage, unique system, rejection of assistance
    "C'est une révolution que nous voulons faire, et c'est une révolution que nous faisons" (Laroque, 1946)

### • Or Bismarck's legacy?

- Choice of social insurance, coverage of workers (not citizen)
- Contributive benefits based on past earnings
- Funding only by contributions on earnings

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- The life-cycle model
  - Savings for pension in absence of pension system

### • The life-cycle model

• Savings for pension in absence of pension system

### • Motivations for public interventions

- Market failures
- 2 Individual failures
- 8 Redistribution
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### • Positive economics of pensions

• Political economy of pensions

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### • Positive economics of pensions

Political economy of pensions

### References

- Diamond (JPubE, 1977)
- Feldstein and Liebman (HPE, 2002, section 2)

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## The life-cycle model



#### Franco Modigliani (1918–2003)

Italian and American economist, Nobel Prize in 1985 Life-cycle theory of consumption and saving Modigliani and Brumberg (1954); Ando and Modigliani (AER 1963); Modigliani (1966)

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- Life-cycle model
  - Individuals save while young, and dissave while old

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- Life-cycle model
  - Individuals save while young, and dissave while old
- Optimal saving problem is complex
  - Uncertainty in life-span
  - Uncertainty in future earnings
  - Uncertainty in future ability to work
  - Uncertainty in returns to savings

Figure 7 – A graphical representation of the life cycle model



SOURCE : Slides 'Social Security' from Emmanuel Saez (2022).

### Market failures : capital markets

- Risk in capital markets
  - Large volatility in capital market returns
  - Rare disasters in capital market (Barro, QJE 2006)

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### • Lack of inflation-indexed bonds

· Historic absence of market for real annuities

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  - Historic absence of market for real annuities

### • Development of inflation-indexed bonds

- UK : Inflation-linked Gilts since 1981
- US : Treasury Inflation-Protected Securities (TIPS) issued by the U.S. Treasury since 1997
- France : *Obligations assimilables du Trésor indexées* (OATi) issued by Agence France Trésor since 1998

Event	Real stock return (% per year)	Real bill return (% per year)
World War I		
France, 1914-1918	-5.7	-9.3
Germany, 1914-1918	-26.4	-15.6
Sweden, 1914-1918	-15.9	-13.1
Great Depression		
France, 1929-1931	-20.5	1.4
Germany, 1928-1931	-14.8	9.3
United States, 1929-1932	-16.5	9.3
World War II		
Denmark, 1939-1945	-3.7	-2.2
France, 1943-1945	-29.3	-22.1
ltaly, 1943-1945	-33.9	-52.6
Japan, 1939-1945	-2.3	-8.7
Post-WWII Depressions		
Argentina, 1998-2001	-3.6	9.0
Chile, 1981-1982	-37.0	14.0
Indonesia, 1997-1998	-44.5	9.6
Philippines, 1982-1984	-24.3	-5.0
Thailand, 1996-1997	-48.9	6.0

#### Table 2 – Stock and bill returns during economic crises

SOURCE : Barro (2006), excerpt from Table 2, p. 833.

## Market failures : insurance markets

#### • Annuity market

- Asymmetric information problem in insurance markets (Rothshild and Stiglitz, 1970)
- Adverse selection leads to high cost of annuity (Brown, Mitchell and Poterba, 2001)

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### • Mandated annuitization

- UK : mandated annuitization until 2015
- US : no mandated annuitization
- France : mandated for PERP, voluntary for PERCO

## Myopia

#### • Myopic behaviour

- If individuals are myopic, i.e., shortsighted
- Then they under-save for retirement
- End-up in poverty

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#### Evidence

- Large share of population has no asset apart from public pension wealth
- Could be due to crowding-out
- Hyperbolic discounting (Laibson,QJE 1997)

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### • Rationale for government intervention

- Paternalism
- Self-constraints
### Samaritan's dilemma

#### • Gaming the system

- If there is expectation that there will be assistance to the elderly poor (i.e., elderly cannot be left dying)
- Then some will under-save for retirement, expecting receiving welfare when poor
- "Samaritan's dilemma" (Buchanan, 1975)
- Feldstein (JPE, 1987), Lindbeck and Weibull (JPE, 1988)

## Samaritan's dilemma

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- Then some will under-save for retirement, expecting receiving welfare when poor
- "Samaritan's dilemma" (Buchanan, 1975)
- Feldstein (JPE, 1987), Lindbeck and Weibull (JPE, 1988)

#### • Rationale for government intervention

- Mandate to save reduces the risk of gaming the system
- Pareto-improvement

### Redistribution

#### • Preventing poverty

- General objective to prevent poverty, especially of elderly individuals
- Does not lead to public pension system (i.e., mandate to save for retirement) if poverty does not come from myopia
  - $\Rightarrow$  Redistribution towards the lifetime poor

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#### Preventing poverty

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- Redistribution within cohorts
  - Redistribution with income tax is annual taxation
  - · Redistribution based on lifetime earnings, towards lifetime poor
- Redistribution across cohorts
  - Some cohorts affected by different shocks
  - Pension system allows to redistribute across cohorts

### Efficiency and administrative costs

#### • Efficiency issue

- Diamond (JPubE, 1977)
- Cost of providing insurance product
- Selling cost (convincing would-be purchasers)

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- Large scale gains for administrative costs

### Efficiency and administrative costs

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- Cost of providing insurance product
- Selling cost (convincing would-be purchasers)

### Advantages of compulsion

- No selling costs
- Large scale gains for administrative costs

#### • Costs of compulsion

- Lack in competition
- Uniform scheme might not accommodate heterogeneity in preferences (if too big)
- Choice over the size of the public scheme might not be optimal

## Rationales for public intervention : Recap

### Market failures

- Capital market long-term risk
- 2 Historic lack of real annuities market
- 3 Adverse selection in insurance market for annuities

### Individual failures

- 6 Myopia : paternalism
- 6 Myopia : self-constraints
- Gaming of the system : Samaritan's dilemma

### Redistribution

- 8 Fight against poverty
- 9 Redistribution within cohort over lifetime earnings
- Redistribution across cohorts

### Efficiency

# II. Rationales for public intervention Political economy

#### Political coalitions

- Coalition of poor and elderly for redistributive pensions (Tabellini, 1990)
- Middle class voting block (Pelztman, 1980)
- Voter of median age has net benefit of US Social Security (Bohn, 1999)

# II. Rationales for public intervention Political economy

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#### Generational contract

- Parents provide for children, children pay back with pensions (Becker and Murphy, 1988)
- Public pension system enforce this contract

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#### Generational contract

- Parents provide for children, children pay back with pensions (Becker and Murphy, 1988)
- Public pension system enforce this contract

#### • Negative externalities of older workers

• Positive externalities in incentivising older workers out of the labour force (Sala-i-Martin, 1996; Mulligan and Sala-i-Martin, 1999)

## III. Pension design around the world

#### **1** Typologies of pension systems

- Bismarck vs Beveridge
- Three worlds of welfare states
- Other typologies
- 2 Examples of pension systems
  - France
  - United Kingdom
  - Denmark
  - United States
  - Singapore

## A classic classification : Bismarck vs Beveridge

#### Bismarckian system



- Contributory benefit
- Funded by Social Security contributions
- Covering only workers and their family
- Managed by employee and employers' unions
- Beveridgian system



- Flat-rate benefits
- Universal coverage
- Funded by general taxation
- Managed by the State

### Bismarck vs Beveridge

- Historically more complex
  - Beveridge plan was in the form of a social insurance
    - Funded by National insurance contributions (NICs)
    - Contributory benefits proportional to years of contribution
  - Big difference : benefits expressed as absolute amount (not as share of earnings)
  - Evolution lead to marked difference with earnings-related schemes

#### • Not a pertinent distinction today

- Most countries have hybrid systems
  - e.g., Bismarckian systems introduced means-tested benefits
  - e.g., Beveridgian systems introduced contributory pensions
- Typology of welfare states is more complex

• Gøsta Esping-Andersen



Gøsta Esping-Andersen, Danish sociologist. *The Three Worlds of Welfare Capitalism* (1990)



• Gøsta Esping-Andersen



- Three worlds of welfare states
  - Liberal
  - 2 Social-democrat
  - 3 Corporatist/Conservative

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#### 1 Liberal regime

- Modest, means-tested assistance, targeted at low-income
- Strict entitlement rules often associated with stigma
- This type of welfare state encourages market solutions to social problems
- e.g., English-speaking countries (US, UK, Canada, Australia)

#### Orporatist/Conservative regimes

- Shaped by traditional family values, and tend to encourage family-based assistance
- Social insurance excludes non-working wives, and family benefits encourage motherhood
- State assistance will only step in when the family's capacity to aid its members is exhausted
- e.g., Continental Europe (Germany, France, Italy, Austria, Belgium)

#### **3** Social-democrat regimes

- Universal systems that promote an equality of high standards, rather than an equality of minimal needs
- Decommodification of welfare services, i.e., socializing the costs of caring for children, the aged, and the helpless
- Commitment to a heavy social service burden, which introduces an imperative to full employment policies
- e.g., Nordic countries (Sweden, Norway, Finland, Denmark, the Netherlands)
- Debates about country classification
  - A southern model of welfare state (Spain, Italy, Greece)?
  - Is the UK really liberal with public NHS?
  - What about Asian countries like Singapore, China, etc.

## Typologies : three pillars

#### • World Bank report (1994)

- Description of the ideal pension system
- Recommendation to follow this model

### • Three pillars

- 1 First pillar : minimum pension, non-contributory, state funded
- 2 Second pillar : contributory, employer provided pension
- 3 Third pillar : voluntary savings, in tax-favoured schemes, pension funds

#### • Swiss pension system as model

- The origin of the three pillars
- In the Swiss model the first pillar is contributory

## Other typologies

#### • Use and misuse of pension typologies

- Useful for understanding philosophical differences
- But pension design is a lot more complex

### • Feldstein and Liebman (2002)

- 4-way classification
- Defined-contribution vs. defined-benefit
- Funded vs. unfunded

### • Lindbeck and Persson (2003)

- 4-way classification
- Actuarial vs. non-actuarial
- Funded vs. unfunded

Figure 8 – A Taxonomy of Social Security Systems



### Main characteristics of pension systems

#### • Public vs mandatory private vs voluntary private

- Mandatory systems can be public or private
- Mandate can be found with scheme monopoly or competition
- Public schemes can be run by the State or Social security administrations

#### • Funded vs unfunded vs mixed funding

- Funded : contributions invested in capital markets
- Unfunded or PAYGO : contributions directly used to finance current pensions
- Mixed funding : PAYGO with some reserves

#### Figure 9 – Old-age and survivor benefits in 1980 (% GDP)



SOURCE : OECD Social Expenditure Database, OECD.Stat. NOTE : Mandatory private spending data is missing for many countries.

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#### Figure 10 – Old-age and survivor benefits in 2013 (% GDP)



SOURCE : OECD Social Expenditure Database, OECD.Stat. NOTE : Mandatory private spending data is missing for many countries.

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A D > A B > A B > A B >

#### Figure 11 – Old-age and survivor benefits in Europe in 2022 (% GDP)



## Main characteristics of pension systems Nature of contributions

- Contributory vs Universal non-contributory vs Means-tested
  - Contributory : earnings related schemes funded by social security contributions (SSCs)
  - Universal non-contributory : same pension benefit for all
  - Means-tested : pension benefit if income below a threshold

#### • Defined benefit or defined contributions

- Defined benefit (DB) : benefit expressed as function of previous earnings
- Defined contribution (DC) : benefit expressed as function of previous contribution
- Default adjustment is different; risk-sharing different for funded systems

#### Figure 12 – Typology of pension systems

			Funding			
			Funded		Pay-as-you-go	
			Public	Private	Public	Private
Regulation	Mandatory	Defined contribution	Netherlands, Switzerland, Singapore	Mandatory saving (Switzerland, NL, Denmark)	Notional accounts (Sweden, Italy, Poland)	French point-based schemes
		Defined benefit	Fonds de réserve des retraites (France)		Main French scheme (Cnav), US <i>Social</i> <i>Security</i> , <i>State</i> <i>pension</i> (UK)	
	Voluntary	Defined contribution	Préfon retraite (France)	Pension funds (US, UK, etc.)		
		Defined benefit		Employer funds (US, UK)		

## III. Pension design around the world

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- France
- United Kingdom
- Denmark
- Germany
- United States
- Singapore

#### • Social insurance design : Bismarck

- Contributory system funded by SSCs
- Mostly unfunded system

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#### • Non-contributory elements : Beveridge

- Minimum pension and family benefits
- Funded by general taxation, though Fonds de Solidarité Vieillesse

#### • 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 : 14.2% GDP in 2022 (376 billion euros)
- Pension SSCs :  $\simeq 28\%$  gross earnings

#### Figure 13 – Pension spending in France (% of GDP, 1959–2022)



SOURCE : Drees, La protection sociale en France et en Europe en 2022 (2023), Fig. 3, p. 10.

- Complex institutional architecture
  - 35 mandatory pension schemes

#### • 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

#### Figure 14 – Composition of pension spending in France, by type of schemes (2022)



SOURCE : Drees, La protection sociale en France et en Europe en 2022 (2023), Fig. 1, p. 65.
Figure 15 – Pension schemes for private sector (France)

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

SOURCE : GIP info retraite.

#### Figure 16 – Pension schemes for public sector (France)

	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-ele CRPCF (comédie française) CRPCEN (clercs et employés de notaires) ENIM (mar OPERA DE PARIS, PORT AUTONOME DE STRASBOURG, CRPRATP CPRPSNCF				

SOURCE : GIP info retraite.

#### Figure 17 – Pension schemes for self-employed (France)

NON SALARIES			
Evoloitants agicolos	MSA		
Exploitants agreeies	Mutualité Sociale Agricole Retraite de base + Complémentaire		
Artisans, commerçants et industriels	RSI		
	Régime Social des Indépendants (fusion AVA et Organic) Retraite de base + Complémentaire		
	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)		
Professions libérales	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	IRCEC	
	Régime général de la Sécurité Sociale	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	ARRCO	
	Caisse d'Assurance Vieillesse Invalidité et Maladie des cultes	Anneo	

SOURCE : GIP info retraite.

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- Basic scheme, "régime général" (CNAV)
  - Contributory scheme, funded by employer and employee contributions
  - Pay-as-you-go system
  - Earnings related system under threshold
  - Social Security Threshold (SST) relatively low in France (mean earnings, or P70)
- Reforms increasing generosity of pensions
  - 1945 : low generosity to start with (40% of past earnings at age 65)
  - 1971 : increase in benefits (Boulin reform)
  - 1983 : lowering of "retirement age" to 60 under contribution length requirement

#### • Reforms towards financial sustainability

- 1987 : price indexation
- 1993 : increase in duration length, change in reference wage (private sector)
- 2003 : increase in duration length, penalty for early retirement in public sector
- 2010 : increase in ERA (62) and FRA (67)
- 2013 : increase in duration length
- 2023 : increase in ERA (64)

#### • Other aspects of the system

- Specific long career path since 2003 with earlier ERA
- Specific case for disability pensions

• Pension formula in the main scheme (after 2023 reform)

$$P = \tau \times CP \times W_{ref} \tag{1}$$

$$\tau = 0.50 \times \left[1 - 0.05 \times \max\left\{0, \min\left[(67 - AGE), (43 - D_1)\right]\right\}\right]$$
(2)

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 (2)

- Early retirement age = 64
- Age with full pension = 67
- Required length of contribution = 43 years
- Reference wage  $W_{ref}$  = best 25 years of earnings
- Earnings weighted by inflation
- But other specific ERA for long careers : having worked before 16 (18/20), allows ERA at 58 (60/62)

#### • Complementary schemes

- Complementary pension scheme for executive (Agirc, 1947) and non-executive (Arrco, 1961)
- Mandatory from 1972 onwards
- Coverage between SST and 8SST (P99.5)

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#### Point-based pension design

- Points (PTS) :  $PTS = \frac{\tau \times w}{PP}$
- Pension :  $P = (\sum_{i} PTS_{i}) \times VP$
- *PP* : purchasing price of the point
- VP : value of the point

$$P_t = \left(\sum_i \frac{\tau_i \times w_i}{PP_i}\right) \times VP_t$$

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#### • Limited funding

- No reserve in regime général
- Limited funds in complementary schemes

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- Public fund dedicated to pension (1999)
- Little endowment

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#### Funded systems

- Banque de France
- Additional scheme for civil servants (RAFP) created in 2003 as "funded pay-as-you-go scheme" (*répartition provisionnée*)
- Some voluntary, tax-exempt pension savings schemes : PERP, PERCO

- Family-related benefits
  - Three children or more : 10% additional pension
  - Women : 2 years of contribution per kid
  - Mothers who have stopped work can be credited some contributions

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- Minimum income above 65 (1956)
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- Means-tested benefit to complement owns resources

#### • Other non-contributory benefits

- Incapacity pensions
- Unemployment spells taken into account

#### • Largely non-contributory : Beveridge

- Little links between contributions and pension level
- Close to flat-rate level : very redistributive

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- Development of employer-sponsored private pensions (Hannah, 1986)
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- Today mostly DC schemes

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- Close to flat-rate level : very redistributive

#### Private pensions

- Development of employer-sponsored private pensions (Hannah, 1986)
- Originally many DB schemes (in industry)
- Today mostly DC schemes
- Limited public pension spending
  - Public pension spending : 6.2% of GDP
  - But large private pensions : 4.6% of GDP

- Basic state pension (BSP)
  - Full-rate pension : £169.50 per week in 2025 (875 euros monthly)
  - Requirement of full years of contributions (44 years)
  - But system of credits for years in education, caring, unemployed, etc.
  - State pension age (SPA) : 66, with planed increase to 68

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#### Second-tier pension

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- Possibility to contract out : replace second-tier pension by private pension contributions

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#### • Means-tested pension credit

• provide pensioners with a guaranteed minimum level of income through means-tested benefits

Figure 18 – U.K. Basic State Pension (1948–2009)



SOURCE : Bozio, Crawford and Tetlow (2010), Fig. 3.1, p. 13.

#### Figure 19 – U.K. state pension expenditure (% GDP, 1948–2026)



SOURCE : Cribb, Emmerson, Johnson and Karjalainen (2023), Fig. 2.2, p. 22, data from UK Department for Work and Pensions.

Figure 20 – Income replacement rates from state pensions and means-tested benefits at SPA for a median earner : before the Pensions Act 2007



SOURCE : Bozio, Crawford and Tetlow (2010), Fig. 7.1, p. 60.

Figure 21 – Income replacement rates from state pensions and means-tested benefits at SPA for a median earner : after the Pensions Act 2007



SOURCE : Bozio, Crawford and Tetlow (2010), Fig. 7.2, p. 62.

## Denmark

#### • Folkepension, Universal basic pension

- Funded by general government taxation
- For Danish nationals, resident in Denmark
- Paid from the age of 67 (increasing to 69)
- Universal benefit DKK 7,198 monthly (965 EUR monthly)

### • Arbejdsmarkedets Tillægspension (ATP) Livslang Pension

- Funded scheme, introduced in 1964
- Contributions by employee and employers
- Maximum pension DKK 24,500 annually (273 EUR monthly)

## Denmark

#### • Occupational pensions

- Schemes mandated by collective bargaining agreements
- Fully-funded schemes
- Defined contributions, with contributions from employee and employers
- Contribution rates range from around 10% to 18%.
- Different occupational schemes

#### Private pensions

- Voluntary tax-favoured savings schemes
- kapitalpension, to fund lump-sum payment
- *ratepension*, to fund annuity

## Germany, Gesetzliche Rentenversicherung (GRV)

#### • Bismarckian inspiration

- Strong contributory link (point system)
- Employee and employer contributions (18.6% up to a ceiling of 7,050 EUR monthly)
- Largely non-funded

# Germany, Gesetzliche Rentenversicherung (GRV)

#### • Bismarckian inspiration

- Strong contributory link (point system)
- Employee and employer contributions (18.6% up to a ceiling of 7,050 EUR monthly)
- Largely non-funded

### Point-based system

- Entgeltpunkte = pension points related to the proportion of average earnings
- At average earnings (3,250 EUR monthly), 1 point per year
- 1 point child (up to a maximum of 3)

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- At average earnings (3,250 EUR monthly), 1 point per year
- 1 point child (up to a maximum of 3)

### • Computing monthly pension

- Current pension value (*aktueller Rentenwert*) = 36.02 EUR
- 43 years at average earnings =  $36.02 \times 43 = 1,548$  EUR monthly

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# Germany

#### • Pathways to retirement

- Women
- Long-term insured
- Unemployed
- Disability

Pathways	Required contribution	Other requirements	Statutory Early	retirement ages Full	Actuarial deductions
Regular old-age	5 years	-	$65 \rightsquigarrow 67$	65 ~~ 67	none
Long-term insured	35 years	-	63	65	yes
Especially long-term insured	45 years	-	$63 \rightsquigarrow 65$	65	none
Women	15 years	female	60	66	yes
Unemployed	15 years	unemployed	$60 \rightsquigarrow 63$	65	yes
Invalidity	35 years	disability status	$60 \rightsquigarrow 62$	65	yes

#### Table 3 – Pathways into retirement in Germany

SOURCE : Börsch-Supan, Rausch and Goll (2020), Tab. 5.1, p. 184.

Figure 22 - Early Retirement Age in Germany, according to pathways



Figure 23 - Full Retirement Age in Germany, according to pathways



SOURCE : Seibold (2021), Appendix Fig. A.2.B.

## **United States**

#### • 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

## **United States**

#### • US Social security today

- US payroll tax 12.4%
- Average Indexed Monthly salary (AIME) earnings : last 35 years of earnings
- Progressive benefit formula (higher replacement rate for low average earnings)
- Full pension at 67, early retirement age at 62
- 8% bonus per year of delayed retirement until age 70s

#### • Tax advantaged savings vehicle

- 401(k)
- IRA

AIME Salary	Single Benefits	Married Benefits	Single Benefits	Married Benefits
permontin	Denents	Denents	@ age 62	@ age 62
\$ 791	90%	135%	68%	101%
\$ 1,000	78%	117%	58%	88%
\$ 2,000	55%	82%	41%	62%
\$ 3,000	47%	71%	35%	53%
\$ 4,000	43%	65%	33%	49%
\$ 5,000	40%	60%	30%	45%
\$ 6,000	36%	54%	27%	41%
\$ 7,000	33%	50%	25%	32%
\$ 8,000	31%	46%	23%	35%
\$ 9,000	29%	44%	22%	33%
\$ 10,000	28%	42%	21%	31%
\$ 11,000	23%	34%	17%	26%
\$ 12,000	21%	32%	16%	24%
\$ 13,000	19%	29%	15%	22%

Table 4 – Social Security Benefits as function of AIME

SOURCE : OASDI Benefit calculations.
## Singapore

### • Singapore's scheme (1955)

- Prime Minister Lee Kuan Yew (1959-1990)
- Compulsory savings scheme
- Fully funded scheme

### • Central Provident Fund (CPF)

- Mandatory savings into state fund
- Minimum interest rate guaranteed
- Limited redistribution : rely on family support

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### • Singapore's scheme (1955)

- Prime Minister Lee Kuan Yew (1959-1990)
- Compulsory savings scheme
- Fully funded scheme

### • Central Provident Fund (CPF)

- Mandatory savings into state fund
- Minimum interest rate guaranteed
- Limited redistribution : rely on family support

#### • High level of contributions

- Pension contributions were set high
- Led to low retirement age

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