Lecture 7: Old-age insurance and pensions

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Introduction

- **Old-age pension**
  - Longevity risk : old-age insurance
  - But today a large part is consumption smoothing (i.e., a large share of pension benefit receipt is certain)
- **Design of pension provisions vary considerably**
  - Depend on the rationales for which you want to have public interventions
  - Large path dependency of pension systems

Outline of the lecture

I. **Rationales for government intervention**
   1. Market failures
   2. Myopia
   3. Redistribution
   4. Efficiency

II. **Pension design around the world**
   1. Typologies of pension systems
   2. Examples of pension systems

I. Rationales for public intervention

- **Life-cycle model**
  - Modigliani and Brumberg (1954) ; Modigliani (1966)
  - 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

I. Rationales for public intervention

- **Motivations for public interventions**
  1. Market failures
  2. Myopia
  3. Redistribution
  4. Efficiency

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

Market failures : capital markets

- **Risk in capital markets**
  - Large volatility in capital market returns
  - Rare disasters in capital market (Barro, QJE 2006)
- **Lack of inflation-indexed bonds**
  - 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

Table 1 – Stock and bill returns during economic crises

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
Italy, 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

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

Recap

- **Market failures**
  1. Capital market long-term risk
  2. Historic lack of real annuities market
  3. Adverse selection in insurance market for annuities

- **Individual failures**
  5. Myopia : paternalism
  6. Myopia : self-constraints
  7. Gaming of the system : Samaritan's dilemma

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

- **Efficiency**

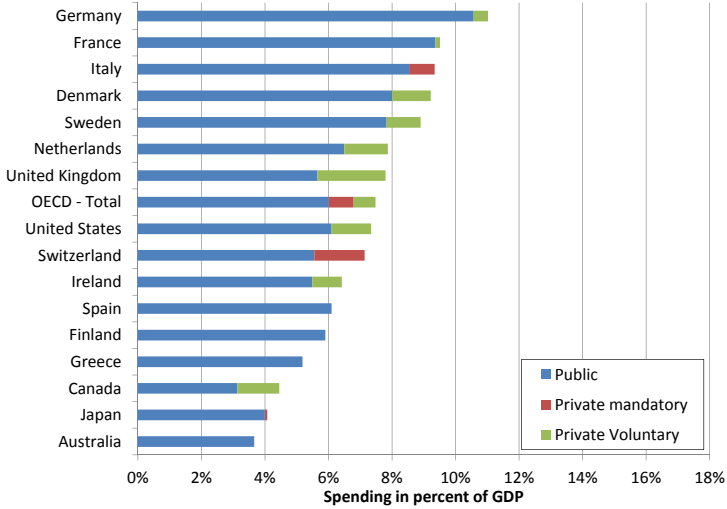
III. Pension design around the world

1. Main characteristics of pension systems
2. Examples of pension systems
   - France
   - United Kingdom
   - Denmark
   - United States
   - Singapore
   - Sweden

Main characteristics of pension systems

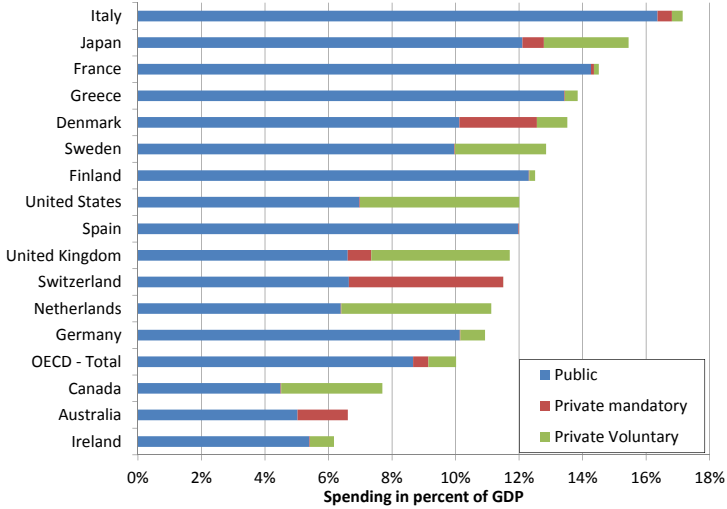
- **Public vs mandatory private vs voluntary private**
  - Mandatory systems can be public or private
  - Mandate can be found with scheme monopoly or competition
  - Public schemes can be run by the State or Social security administrations
- **Funded vs unfunded vs mixed funding**
  - Funded : contributions invested in capital markets
  - Unfunded or PAYGO : contributions directly used to finance current pensions
  - Mixed funding : PAYGO with some reserves

Figure 1 – 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.

Figure 2 – 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.

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 3 – 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 *Social Security*, *State pension* (UK)	
	Voluntary	Defined contribution	Préfon retraite (France)	Pension funds (US, UK, etc.)		
		Defined benefit		Employer funds (US, UK)		

III. Pension design around the world

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

The French pension system

- **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 : $\simeq$ 28% gross earnings

The French pension system

- **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

The French pension system

Figure 4 – Pension schemes for private sector (France)

<table>
<tr><th colspan="4">SECTEUR PRIVE</th></tr>
<tr><td>Salariés de l'agriculture</td><td>MSA
Mutualité Sociale Agricole</td><td rowspan="2">ARRCO
Retraite complémentaire des salariés</td><td rowspan="2">AGIRC
Retraite complémentaire des cadres</td></tr>
<tr><td>Salariés de l'industrie, du commerce et des services</td><td rowspan="2">CNAV
Régime général de la Sécurité Sociale</td></tr>
<tr><td>Personnel navigant de l'aviation civile</td><td colspan="2">CRPN
Caisse de retraite du personnel navigant</td></tr>
</table>

Source : GIP info retraite.

The French pension system

Figure 5 – 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-electricité) CRPCF (comédie française) CRPCEN (clercs et employés de notaires) ENIM (marin) OPERA DE PARIS, PORT AUTONOME DE STRASBOURG, CRPRATP CPRPSNCF	

Source : GIP info retraite.

The French pension system

Figure 6 – Pension schemes for self-employed (France)

NON SALARIES		
Exploitants agicoles	**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**

Source : GIP info retraite.

The French pension system : private sector

- **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)

- **Increase in generosity**
  - 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

The French pension system : private sector

- **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 to 62 (and FRA to 67)
  - 2013 : increase in duration length
  - 2023 : increase in early retirement age
- **Other aspects of the system**
  - Specific long career path since 2003 with earlier ERA
  - Specific case for disability pensions

The French pension system : private sector

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

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

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

  - 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)

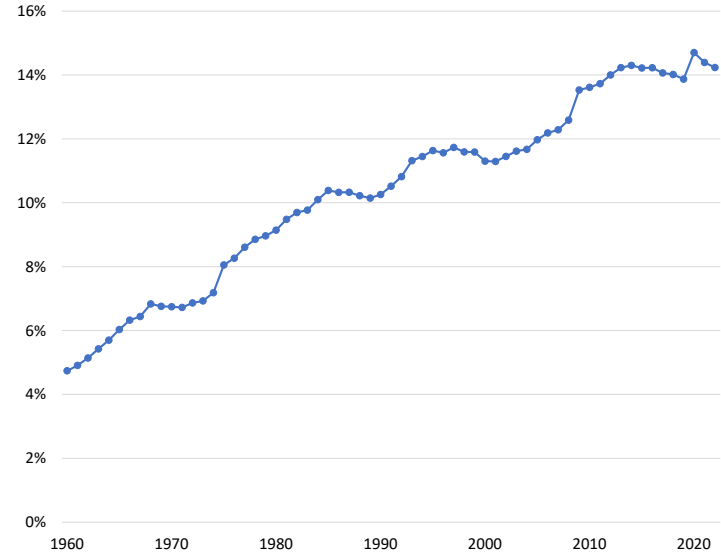
The French pension system : private sector

- **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)

- **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

$$P_t = (\sum_i \frac{\tau_i \times w_i}{PP}_i) \times VP_t$$

Figure 7 – Pension spending in France (% of GDP, 1959–2022)



The French pension system

- **Limited funding**
  - No reserve in *regime général*
  - Limited funds in complementary schemes
- **The Fonds de réserve des retraites (FRR)**
  - Public fund dedicated to pension (1999)
  - Little endowment
- **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

The French pension system

- **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
- **Minimum pension**
  - Minimum income above 65 (1956)
  - Means-tested benefit to complement owns resources
- **Other non-contributory benefits**
  - Incapacity pensions
  - Unemployment spells taken into account

United Kingdom

- **Largely non-contributory : Beveridge**
  - Little links between contributions and pension level
  - 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

United Kingdom

- **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

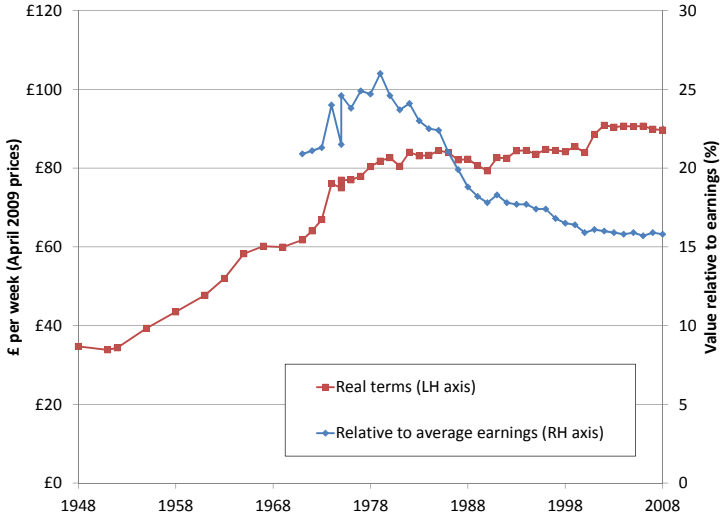
United Kingdom

- **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

United Kingdom

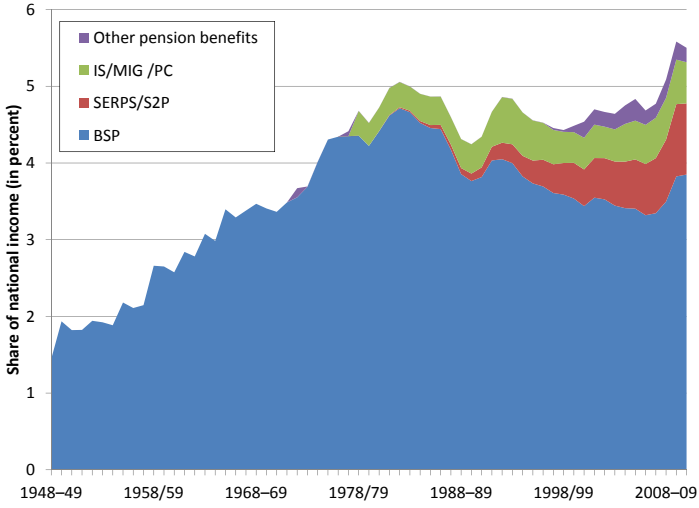
- **Basic state pension (BSP)**
  - Full-rate pension : £115.95 per week (647 euros monthly)
  - Requirement of full years of contributions (44 years)
  - But system of credits for years in education, caring, unemployed, etc.
  - State pension age (SPA) : 60 for women, increasing to 65, then planed increase to 68
- **Second-tier pension**
  - Earnings related pension, but with weak link
  - Possibility to contract out : replace second-tier pension by private pension contributions
- **Means-tested pension credit**
  - provide pensioners with a guaranteed minimum level of income through means-tested benefits

Figure 8 – U.K. Basic State Pension (1948–2009)



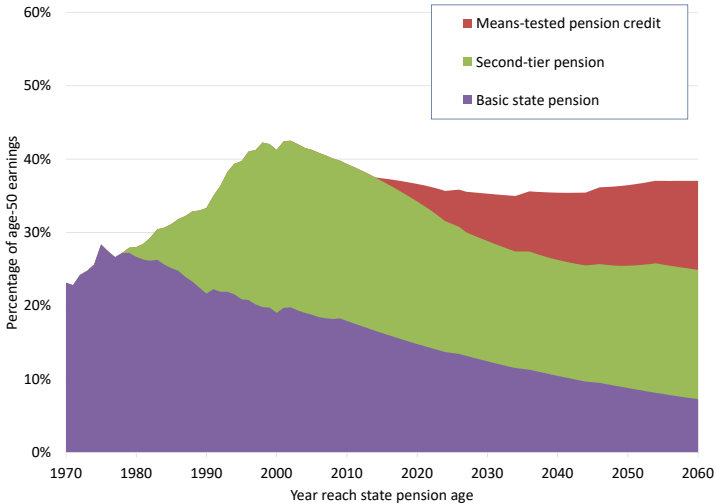
Source : Bozio, Crawford and Tetlow (2010), Fig. 3.1, p. 13.

Figure 9 – U.K. state pension expenditure



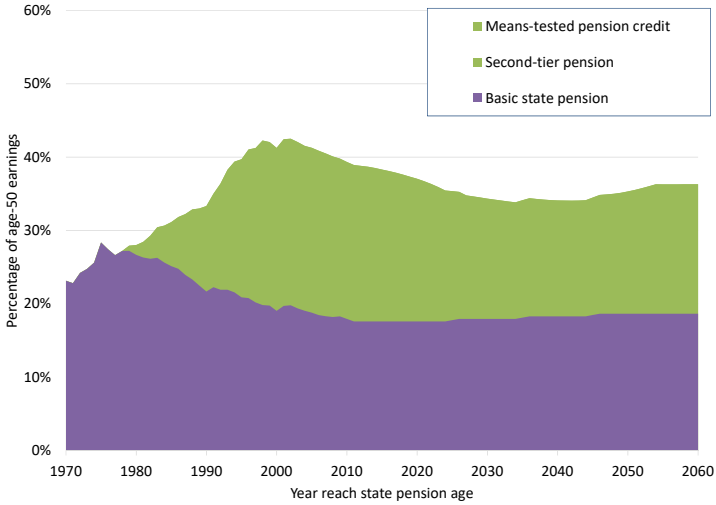
Source : Bozio, Crawford and Tetlow (2010), Fig. 8.1, p. 64.

Figure 10 – 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 11 – 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)
  - Means-tested benefit, DKK 75,924 annually (800 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
- **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)
- **Computing monthly pension**
  - Current pension value (*aktueller Rentenwert*) = 36.02 EUR
  - 43 years at average earnings = 36.02 x 43 = 1,548 EUR monthly

Germany

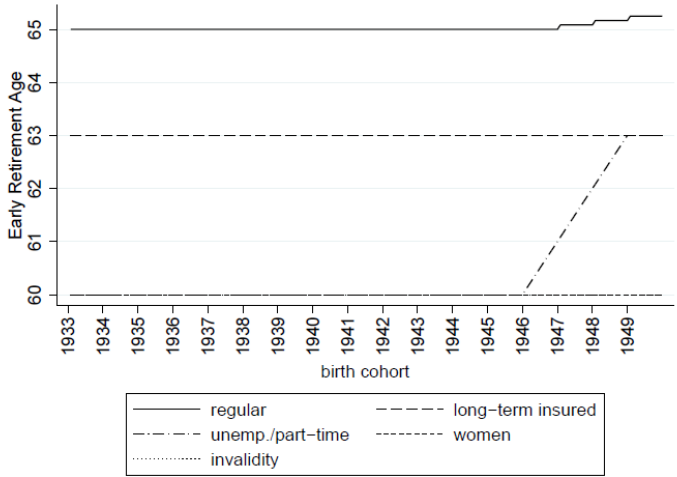
- **Pathways to retirement**
  - Women
  - Long-term insured
  - Unemployed
  - Disability

Table 2 – Pathways into retirement in Germany

Pathways	Required contribution	Other requirements	Statutory retirement ages Early	Full	Actuarial deductions
Regular old-age	5 years	-	65 $\rightsquigarrow$ 67	65 $\rightsquigarrow$ 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

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

Figure 12 – Early Retirement Age in Germany, according to pathways



Source : Seibold (2021), Appendix Fig. A.2.A.

Figure 13 – 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

Table 3 – Social Security Benefits as function of AIME

AIME Salary per month	Single Benefits	Married Benefits	Single Benefits @ age 62	Married Benefits @ 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%

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
- **High level of contributions**
  - Pension contributions were set high
  - Led to low retirement age

Swedish pension system pre-reforms

- **Three-parts pension system**
  1. *Folkspension* (FP) : flat-rate universal benefit
  2. *Allmänna tilläggspension* (ATP) : earnings related benefit
  3. Occupational pensions : outcome of collective agreements
- **ATP**
  - Reference wage : best 15 years of earnings
  - Requirement of 30 years of contribution for full pension
  - 60% replacement rate up to a ceiling
- **Contribution rates**
  - 17.6% for earnings related component
  - 2.2% for non-earnings related

Swedish pension system pre-reforms

- **Funding**
  - Significant buffer stock pre-reform (5 years of benefit for ATP)
- **Need for reform**
  - Increasing life-expectancy
  - Weak contribution-benefit linkage
  - Perverse redistribution of the best 15-years of earnings rule
  - Pension Commission report in 1990 suggesting increasing normal retirement age and number of years for full pension

Reform process

- **Working Group on Pensions**
  - A parliamentary group representing all seven parties was appointed in 1991
  - Agreement on
    - Keeping PAYG system
    - Contribution link : “Every krona counts”
    - Lifetime income principle : benefit depends on life expectancy
  - Disagreement on
    - Use of financial individual account
- **1994 reform in Parliament**
  - Large majority (85% of MPs)
  - 5 main parties in favour

Reform process

- **Long preparation**
  - Implementation work 1994-1998
  - New IT system
  - Training of staff and simulation
  - Information campaign
- **1998 start of new system**
  - Opening of *Premiumpensionsmyndighet* in mid-1998

Swedish choices

- **Two reforms in one**
  1. Unfunded pensions NDC
  2. Mandatory funded defined contribution FDC
- **NDC component**
  - Rate of contribution set at 16%
  - Rate of return set as per capita wage growth
  - Anticipated IRR of 1.6% into the annuity rate
  - Pensions indexed on inflation + wage growth - 1.6%
  - Early retirement age set as 61

Swedish choices

- **FDC component**
  - Rate of contribution set at 2% (later 2.5%)
  - Individuals asked to choose investment fund (up to 700 different funds)
  - Default option invested in global equities
  - Annuitization is mandatory
- **Guaranteed pension**
  - Means-tested pension benefit
  - Financed by general tax revenues
  - From age 65, benefit roughly 30% of average wage

Swedish choices

- **Transition process**
  - 16 years of transition 1999-2015
  - Idea to smooth transition
- **Progressive switch to new system**
  - First cohort affected born in 1938, 1/5 of new system pension, 4/5 of old system
  - Then additional 1/20 of new system for every cohort
  - Those born in 1954 and after fully incorporated in the new system

Swedish choices

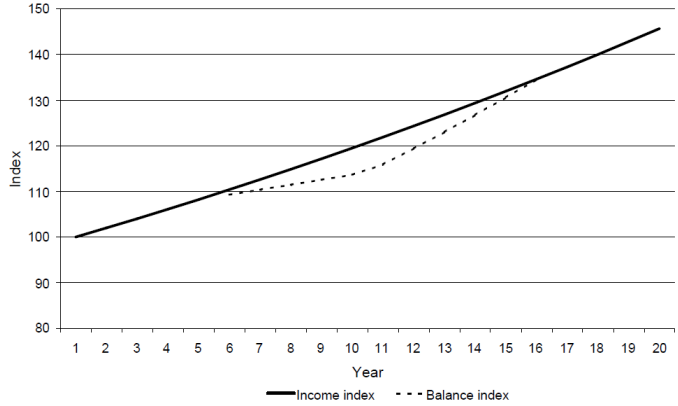
- **Automatic balancing mechanism**
  - Legislated in 2001, after the creation of the new system
  - Principle, a "brake" in pension indexation when liabilities above assets

$$Balance\ ratio = \frac{Contribution\ assets\ +\ Buffer\ fund}{Pension\ liabilities}$$

  - If ratio < 1, then reduction in pension indexation

Swedish choices

Figure 14 – Automatic balancing in Swedish system



* Average income grows with 2 % per year through out the period. Year 6 the balance mechanism is activated. Balancing reduces the indexing years 6-11, is neutral year 11 and increases the indexing years 12-17. Year 18 the balance mechanism is discontinued.

SOURCE : Settergren (2001)

Swedish choices

- **Orange envelops**

- **Information needs**
  - Each individual receives annually annual account statement in “orange envelops”
  - Personal information on expected benefits
  - Brochure explaining the system

Recent reforms in Sweden

- **Debate about the incentives impact on retirement**
  - Fear that too many Swedes are retiring too early, at the ERA of 61, with low pension
  - Not completely clear that this fear is warranted
- **Reforms increasing early retirement age**
  - 2020 : increase of ERA from 61 to 62
  - 2023 : increase of ERA from 62 to 63
- **Creation of a "target age"**
  - From 2026 onwards, introduction of "target age" of 67
  - "Target age" is reference norm (no change in benefits)
  - Minimum pension will be available at "target age"
  - Planed increase of "target age" with life-expectancy

The Chilean reform

- **System before the reform**
  - Unfunded public pension system
  - Very complex, fragmented into 35 schemes
  - Very different benefits
  - High contribution rates (16 to 25%)
  - Unfunded liability of 80% of GDP
- **1981 reform**
  - Military regime under Gen. Pinochet
  - Reforms in 1980, implemented in 1981, towards a privatized funded pension system

The Chilean reform

- **New system in 1981**
  - Mandatory savings rate of 10% of earnings
  - Funds managed by private firms, *Administradoras de Fondo de Pensiones* (AFPs)
  - Additional charge to cover for administrative costs
  - Workers are free to select any AFP
  - No mandatory annuitization, but constraints on withdrawal rate
- **Poverty relief**
  - Minimum pension guarantee for low earners with 20 years of contribution
  - Means-tested welfare pension for the elderly poor
  - Funded by general revenue

The Chilean reform

- **Transition issues**
  - Old unfunded system was closed
  - Workers joining the new system received *recognition bonds* for past contributions
  - Pensions were paid for by general revenue
- **Cost of pre-funding**
  - Budget surplus of 4-5% per year from 1980 to late 1990s
  - Means extra national savings during that period

Figure 15 – Transition cost of Chilean reform (% GDP)

Year	Operational deficit[a]	Recognition bond	Social assistance pensions	Minimum pensions	Civilian deficit (1+2+3+4)	Military deficit	Total deficit (5 + 6)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1981	3.6	0.0	0.2	0.0	3.8	n.a.	3.8
1982	6.0	0.1	0.3	0.0	6.4	n.a.	6.4
1983	6.5	0.2	0.4	0.0	7.1	n.a.	7.1
1984	6.9	0.2	0.5	0.0	7.6	n.a.	7.6
1985	6.0	0.2	0.5	0.0	6.7	n.a.	6.7
1986	5.9	0.3	0.5	0.0	6.7	n.a.	6.7
1987	5.2	0.4	0.5	0.0	6.1	n.a.	6.1
1988	4.6	0.4	0.4	0.0	5.4	n.a.	5.4
1989	4.7	0.4	0.3	0.0	5.4	n.a.	5.4
1990	3.3	0.5	0.3	0.0	4.1	1.2	5.4
1991	3.3	0.5	0.3	0.0	4.1	1.2	5.3
1992	3.2	0.5	0.3	0.0	4.0	1.1	5.1
1993	3.2	0.6	0.3	0.0	4.1	1.2	5.3
1994	3.1	0.7	0.3	0.0	4.1	1.1	5.2
1995	2.8	0.7	0.3	0.0	3.8	1.1	4.9
1996	3.1	0.7	0.3	0.0	4.1	1.1	5.2
1997	3.0	0.8	0.3	0.0	4.1	1.1	5.2
1998	3.2	0.9	0.3	0.0	4.4	1.1	5.5
1999	3.2	1.1	0.4	0.0	4.7	1.2	5.9
2000	3.1	1.1	0.4	0.0	4.7	1.3	6.0
2001	3.1	1.1	0.4	0.1	4.7	1.3	6.0
2002	3.0	1.1	0.4	0.1	4.6	1.3	5.9
2003	2.9	1.2	0.4	0.1	4.5	1.3	5.8
2004	2.5	1.3	0.3	0.1	4.2	1.3	5.5

SOURCE : Arenas de Mesa and Mesa-Lago (2006).

The Chilean reform

- **Assessment : pros**
  - Isolation of pension system from political risk
  - High regulation of AFP
  - Development of capital markets
  - Higher national savings, contributing to higher growth
- **Assessment : cons**
  - High administrative costs (18% of total), higher than well run public systems
  - Lack of competition between AFPs
  - Limited coverage of population
  - Limited poverty relief

The Chilean reform

- **Towards a new overhaul**
  - Gov. Michelle Bachelet (2006-2010)
  - Pension Advisory Commission Report (2006)
- **2008 pension reform**
  - Creation of new solidarity pillar, *Sistema de Pensiones Solidarias* (SPS)
  - Basic pensions for those above 65, without any other pension
  - Gradual extension of coverage to self-employed
  - Bond worth 18 months of contributions for women having had children
  - In case of divorce, possibility to split the individual retirement account
  - Regulations to lower administrative fees

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