

Designing pensions: Lessons, pitfalls and some solutions

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Designing pensions: Lessons, pitfalls and some solutions

- 1 The backdrop
- 2 Lessons from economic theory
- 3 What does the theory imply for pension design?
- 4 Conclusions

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1 The backdrop

- Objectives of pension systems
- Principles of analysis

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1.1 Objectives of pension systems

- For the individual
 - Consumption smoothing
 - Insurance
- Additional objectives of public policy
 - Poverty relief
 - Redistribution

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1.2 Principles of analysis

- Analysis requires a holistic approach
- Any pension reform has distributional effects
- Analysis should be framed in a second-best context

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Analysis requires a holistic approach

- Multiple objectives
- Multiple risks
- Multiple economic effects
- Mistake to avoid: tunnel vision

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Any pension reform has distributional effects

- Introducing a new PAYG system makes a transfer to the first cohort of retirees; if, instead, policy makers introduce a funded scheme, the first cohort receives no pension
- Similarly, a move towards funding that increases saving redistributes from today's workers and pensioners to later generations
- Thus choices about pension systems are inescapably also choices about intergenerational redistribution
- Mistake to avoid: ignoring distributional effects

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Analysis should be framed in a second-best context

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Assumptions of first-best analysis

- The classic assumptions
 - Perfect competition
 - No externalities, public goods, increasing returns to scale
- Perfect information
- Rational behaviour
- Complete markets
- No distortionary taxation
- First-best analysis (i.e. rational economic man/woman) is useful as an analytical benchmark but a bad guide to policy

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Failure of the first-best assumptions

- The classic assumptions
 - Imperfect competition (monopoly, oligopoly, etc.)
 - Externalities, public goods, increasing returns to scale
- Imperfect information (the economics of information)
- Non-rational behaviour (behavioural economics)
- Incomplete markets, incomplete contracts
- Distortionary taxation (which is necessary to finance redistribution)

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Mistake to avoid: improper use of first-best analysis

- Uncritical advocacy of competition (more below)
- Uncritical reliance on rational responses to incentives, e.g. the argument that DC pensions lead to higher compliance
- Ignoring administrative costs

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2 Lessons from economic theory

These analytical principles given rise to a series of lessons for policy design

- Imperfect information and non-rational behaviour are pervasive
- Output is central
- Different pension systems share risks differently
- Transition costs matter
- Administrative costs matter
- Implementation matters
- Sound principles of pension design but no single best pension system for all countries

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2.1 Imperfect information and non-rational behaviour are pervasive

- Do consumers choose well?
 - Lessons from the economics of information
 - Lessons from behavioural economics

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Lessons from information economics

- In many areas of social policy the model of the well-informed consumer does not hold
- In the context of pensions
 - A survey, 50% of Americans did not know the difference between a stock and a bond
 - Most people do not understand the need to shift from equities to bonds as they age if they hold an individual account
 - Virtually nobody realises the significance of administrative charges for pensions

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Non-rational behaviour

- What conventional theory predicts
 - Voluntary saving to maximise lifetime utility (consumption smoothing)
 - Voluntary purchase of annuities (insurance)
- What actually happens
 - Bounded rationality
 - Procrastination: people delay saving
 - Inertia: people stay where they are; in theory it should make no difference whether the system is opt in or opt out – in practice, automatic enrolment leads to higher participation
 - Immobilisation: impossible to process information about 700 different funds (90% go into Swedish default fund)
 - Bounded will-power
 - People do not save, or do not save enough

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Why? Recent lessons from behavioural economics

- Experimental evidence shows high discount rate in short run, much lower in long run
 - Next week's snack: 2/3 chose fruit salad, 1/3 chocolate
 - This week's snack: 1/3 fruit salad, 2/3 chocolate
- Thus people are rational for the future, but not the present; but when the future arrives it is the present, so the short-term wins

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Clinical measurement of brain activity

- Two parts of the brain
 - Mesolimbic: old part of brain: impatient – 'eat now, won't last'
 - Prefrontal cortex: newer part of brain: patient and rational – this is rational economic man and woman
- Clinical measurement (experiments while person is in scanner) shows that short-term decisions are made by the mesolimbic system, longer-term decisions by the prefrontal cortex
- Life is a constant fight between the two parts
- Examples: start dieting tomorrow; give up smoking tomorrow; but when tomorrow comes ...
- Results call into question the simple model of long-term rationality

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Implications for policy design

- There are limits to what can be done cost-effectively with financial education
- Constrained choice is part of good policy design (more later)

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Mistake to avoid: choice and competition is the wrong model

- Pensions are complex
- Systems in which workers have to choose from competing private pension providers face information and behavioural problems and have high administrative costs
- Not a condescending attitude; we do not allow people free choice of pharmaceutical drugs; pensions are similar
- Thus the model of choice and competition is the wrong one – it uses a first-best model in second-best circumstances
- The criticism is not of pension funds but of the model. Even the most knowledgeable, best-intentioned person could not run a pension fund cheaply using this model

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2.2 Output is central

- Two and only two ways of organising pensions
 - Store current production
 - Build a claim to future production
- Pensioners are not interested in money, but in consumption (food, clothing, medical services). Thus the key variable is future output.
- PAYG and funding are merely different financial mechanisms for organising claims on future output
- Thus the difference between the two approaches should not be exaggerated
- Key message: what matters is output

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Solutions to problems of pension finance

- If there are problems in paying for pensions there are **four and only four** solutions
 - Lower average monthly pensions
 - Later retirement at the same monthly pension (another way of reducing pensions)
 - Higher contributions
 - Policies to increase national output
- Any proposal to improve pension finance that does not involve one or more of these approaches is illusory

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Mistake to avoid: Arguing that funding is a solution to demographic change

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Static output: effects of demographic change on funded pensions

- Money accumulation: desired pensioner consumption exceeds desired saving by workers. Excess demand in the goods market causes price inflation, reducing the purchasing power of annuities
- Financial asset accumulation: desired asset sales by pensioners exceeds desired purchases of assets by workers. Excess supply in the assets market reduces asset prices, reducing pension accumulations and hence the value of the resulting annuity
- Under either outcome, pensioners do not get the real pension they expect

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Growing output: effects of demographic change on funded pensions

- Money accumulation: a decline in the savings rate increases aggregate demand. But if supply has increased in parallel, there is no effect on prices. Thus period 2 pensioners get the real pension they expect
- Asset accumulation: wages generally keep pace with output. If workers' pension target is (say) 50% of their earnings, rising wages imply rising demand for assets, hence no effect on asset prices. Again, period 2 pensioners get the real pension they expect

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Conclusion: funding and demographics

- In the face of demographic problems the key variable is output
- Policy should consider the entire menu of policies which promote output growth directly
- From a macroeconomic perspective the choice between PAYG and funding is secondary

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Mistake to avoid: Arguing that funding necessarily increases growth

Funding can increase output if

- It increases saving in a country with a shortage of savings and/or
- Improves the operation of capital markets, thus improving the allocation of saving to productive investment

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Effects on saving

- Is higher saving the right objective?
 - Yes in a country where saving is too low
 - But not always the right objective; in China saving is, if anything, too high
- Does funding increase saving? An increase can be reduced by
 - Savings offset by private savers
 - The necessity to finance the transition to funding may reduce government saving, e.g. higher government borrowing

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Effects on capital markets

- Does funding make capital markets more efficient, improving the allocation of saving to productive investment?
 - Not in advanced economies
 - Not in countries below a threshold of development
 - For countries in between there may be gains
 - However, policy makers should consider whether the gains could come through voluntary pensions?

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Conclusion: funding and growth

- The impact of funding on growth is controversial
- The evidence suggests that funding can have a beneficial effect, but that effect should not be taken for granted nor its magnitude over-stated
- Funding is only one of the sources of growth
- Even if funding does increase growth rates, a move to funding is not necessarily welfare-improving, since such a move may have adverse intergenerational redistributive effects

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2.3 Different pension systems share risks differently

In ascending order of risk sharing:

- In a pure DC scheme, risk of varying returns to a pension accumulation falls entirely in the individual worker
- In a pure DB scheme, the risk of varying returns falls on the plan sponsor, e.g. in a firm or industry scheme on workers, shareholders and/or customers
- In a pure public PAYG DB scheme, the risk of rising pension costs falls on current workers
- In a scheme which includes at least some tax finance, risk falls on taxpayers and hence, via government borrowing, can be shared with past and future taxpayers

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2.4 Transition costs matter

- If young workers' contributions go into individual accounts the cost of honouring promises to older workers and pensioners has to fall somewhere else
- Thus a move to funding typically has a fiscal cost
- Though called the transition cost, it can be large and long-term, e.g. even though Chile reformed in 1981, public pension spending in 2008 was 5.2% of GDP
- Implication: a move to funding requires a sound fisc

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Mistake to avoid: understating or ignoring transition costs

- Example: moving towards funding during a time of fiscal constraint
- Thus some of the pension reforms in Central and Eastern Europe are being abandoned or put on hold

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Mistake to avoid: overstating the cost of PAYG pensions

- The problem: treating implicit and explicit pension debt as equivalent
- The simple argument about implicit pension debt
 - Focuses only on liabilities, ignoring assets, e.g. ability to tax
 - Erroneously implies that paying off implicit debt in full is optimal; implicit debt (like government debt) should be optimised, not minimised
 - Ignores the intergenerational distributional effects of a change in balance between implicit and explicit debt
- Implicit debt is a useful concept, but has to be interpreted properly

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2.5 Administrative costs matter

- Administrative costs in private schemes are important and often overlooked
- With individual accounts, administrative costs are, to a significant extent, a fixed cost per account
- These costs are significant even in large, developed countries with long-established systems
- Considerably higher for small accounts, typically of low earners, in small countries starting a new system
- A charge of 1% of assets each year over a 40-year career reduces the worker's accumulation (and hence his/her pension) by nearly 20%

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2.6 Implementation matters

- Good policy design is important; but the best design will not achieve its objectives if financial, political and administrative capacity are lacking
- Policy design that exceeds a country's capacity to implement it is bad policy design
- The importance of implementation is often underestimated. It requires skills that are just as demanding as policy design, and those skills need to be involved when the policy is designed, not as an afterthought

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Mistake to avoid: paying too little account to implementation

- Failing to recognise the depth and breadth of skills that are needed
- Assuming that since collection is first and payout later the design of the mechanism of paying out can wait till later
- Example: Poland's reforms in 1998, despite trying to avoid these problems, came very close to crashing for administrative reasons

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2.7 Sound principles of design but no single best pension system for all countries

- Objectives: consumption smoothing, insurance, poverty relief, redistribution
- Constraints include
 - Fiscal capacity
 - Institutional capacity
 - Empirical value of behavioural parameters
 - Shape of the income distribution
- No single best system because
 - Policy makers attach different relative weights to the different objectives
 - The pattern of fiscal and institutional constraints differs across countries
- Thus
 - What is optimal will differ across countries and over time
 - Pension systems look different across countries; this is as it should be

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Mistake to avoid: arguing for a single, dominant policy

- Example: over-promotion of pension reform in Chile
- Example: claiming that NDC pensions are inherently superior

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3 What does the theory imply for pension design?

- A pension system that addresses the major objectives and recognises population ageing could involve four policy trends
 - 1) Non-contributory pensions: mainly address poverty relief
 - 2) Redefining retirement; this element addresses fiscal sustainability and has other benefits
- The other elements address consumption smoothing and insurance
 - 3) Simple, cheaply-administered savings and annuities
 - 4) A partially funded notional defined-contribution (NDC) pension; this is a public scheme but may include private fund management

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3.1 Relieving poverty: A non-contributory basic pension

- Also called a social pension or a citizen's pension
- Definition: a public pension paid at a flat rate, on the basis of age and residence rather than contributions
- Why?
 - The contributory principle assumed workers with long, stable employment, thus coverage would grow
 - History has not sustained this argument

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The world then

- Social policy in Europe and North America in 1950 was based on a series of assumptions
 - Independent nation states
 - Employment generally full time and long term
 - Limited international mobility
 - Stable nuclear family with male breadwinner and female caregiver
 - Skills once acquired were lifelong
- Though not true even then, true enough to be a realistic basis for policy

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What has changed?

None of these assumptions holds today. In particular:

- More diverse patterns of work: thus there are problems for coverage of contributory benefits tied to employment
- Changing nature of the family
 - More fluid family structures
 - Rising labour-market activity by women
 - Thus there are problems basing women's benefits on husbands' contributions

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Arguments for non-contributory basic pensions

- Strengthen poverty relief in terms of coverage, adequacy and gender balance
- May improve incentives relative to income-tested poverty relief
- Provide good targeting (age is a useful indicator of poverty)
- Are robust in the face of shocks because share risk widely, thus responding to the economic crisis
 - Share risk across current taxpayers
 - Through government borrowing, can also share risk with future taxpayers

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Containing costs

Adjusting to match budgetary constraints (i.e. sustainability): three instruments

- The size of the pension
- The age at which the pension is first paid
- Perhaps also an affluence test

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Country examples

- UK: illustrates problems of coverage, hence recently reduced contribution requirements
- OECD countries with non-contributory basic pensions include
 - The Netherlands
 - New Zealand
 - Australia (with an affluence test)
 - Canada (with an affluence test)
 - Chile

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3.2 Redefining retirement: Later and more flexible retirement

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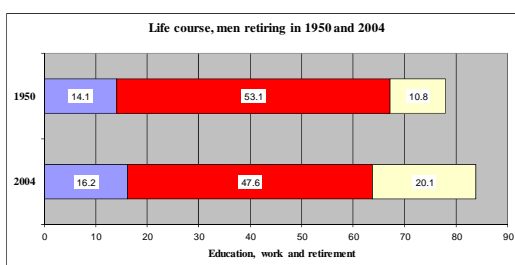
Later retirement: Why?

- Longer healthy life + constant or declining retirement age creates problems of pension finance
- The problem is *not* that people are living too long, but that they are retiring too soon
- The solution: pensionable age should rise in a rational way as life expectancy increases
- Most work is less physical than in the past
- The 'lump of labour' fallacy
- Response to the crisis: another way of sharing risk; if they have to bear some of the cost, many pensioners would prefer a shorter duration of retirement to lower living standards in retirement

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The UK as an illustration



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Later retirement: How

- Changes should be announced a long time in advance
- Rules should relate to date of birth, not date of retirement
- Changes should be made annually (or monthly) to avoid large changes across nearby cohorts
- The rules should be explicit

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Also more flexible retirement

- Mandatory full retirement made sense historically, but no longer
- Increased choice about when to retire, and whether fully or partially is desirable
 - To promote output growth
 - As a response to individual preferences (and thus desirable for its own sake, irrespective of problems of pension finance)

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Country examples

- USA: age for full pension of 65 (men and women) rising over time to 67
- UK: state pensionable age of 65 will rise to 66 in 2020 and thereafter by one year each decade (men and women)
- Norway: retirement age is already 67 (men and women)
- Retirement age is now a proper topic for polite society, at least in the UK

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3.3 Consumption smoothing 1: Simple savings and annuities

- The model of choice and competition is the wrong model because
 - Choice has high administrative costs
 - Consumers do not do a good job of choosing because of
 - Imperfect information
 - Bounded-rationality
 - Bounded-will power

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Implications for pension design

1. Make pensions mandatory or use automatic enrolment
2. Keep choices simple: highly constrained choice is a deliberate and welfare-enhancing design feature
3. Include a good default option which includes life-cycle profiling
4. Keep administrative costs low by decoupling account administration from fund management
 - Centralised administration
 - Fund management
 - Wholesale, competitive; or
 - Sovereign wealth fund, e.g. Norway

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The US Thrift Savings Plan

The system (www.tsp.gov)

- Initially voluntary for federal civil servants, now auto-enrolment
- Workers choose from five funds
- Centralised account administration
- Wholesale fund management
- No mandatory annuitisation

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The UK National Employment Savings Trust

The system (www.nestpensions.org.uk)

- Automatic enrolment into NEST or other occupational scheme
- When fully phased in, minimum contribution be 8% – 4% from worker, 3% from the employer and 1% in tax relief
- Choice from small number of funds
- Centralised account administration
- Wholesale fund management
- A participant's savings are fully portable. And more than one employer can contribute to a member's savings pot
- Mandatory annuitisation of most of a worker's accumulation

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Other approaches

- Collective DC plans, e.g. the Netherlands
 - Workers may be required to belong to a DC scheme organised by their employer or industry
 - If well-designed and administered addresses important problems, including excessive consumer choice and high administrative costs
- Collective career average DB, e.g. Finland
 - Final salary schemes are problematical
 - Impediments to labour mobility
 - Tend to be regressive
 - A well-designed career average scheme avoids these problems

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Assessment

- All these approaches respect the lessons from the economics of information and behavioural economics
 - Simplify choice for workers
 - Auto-enrolment or mandatory
- Keep administrative costs low
- But DC plans have a major downside: being fully funded, they can share risk only between current participants
- Career-average DB has the option of partial funding, hence may be able to share risks more widely.
- A public NDC scheme has wider options for risk sharing

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3.4 Consumption smoothing 2: NDC pensions

How NDC pensions work

- Mimic individual funded accounts, but on a Pay-As-You-Go basis, i.e. actuarial Pay-As-You-Go
- Workers' contributions this year pay this year's pensions
- The government keeps a record of individual contributions, each year attributing a notional interest rate to each worker's accumulation
- When the worker retires, his/her notional accumulation is converted into an annuity
- In a pure NDC system benefits are actuarial; the system can also incorporate redistribution, e.g. minimum benefits or pension credits for caring activities

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Advantages of NDC

- Simple from point of view of the worker
- Administrative advantages
 - Centrally administered, hence low administrative costs
 - Does not require the institutional capacity to manage funded schemes
- People may not want to save in individual accounts (or saving may be the wrong policy, e.g. China)
- Are a possible response for countries that want to step back from individual funded accounts in good order, e.g. some countries in Central and Eastern Europe
- Advantages in terms of risk sharing
 - Shares risk more widely than individual accounts, making the system more robust in the face of the economic turbulence
 - A large buffer fund offers further options for risk sharing
- Flexibility
 - NDC can be combined with a non-contributory pension
 - Can approach NDC in an evolutionary way, e.g. Germany

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Examples

- Sweden
- Poland
- Latvia
- Italy

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A partially funded NDC system

- In contrast with a fully-funded DC system, an NDC system with a large buffer fund
 - Has greater capacity for smoothing
 - Can share risks more widely than current participants
- Ideally, a partially-funded NDC should be able to smooth over cyclical turbulence, adjusting only to long-term trends
- Fund management
 - Sovereign wealth fund (e.g. Norway)
 - Private sector: wholesale, competitive
- Comparison of DC and partially funded NDC
 - Fully-funded DC provides stronger defence against government failure but less risk sharing
 - Partially-funded NDC provides wider risk sharing but less defence against government failure
 - The right answer depends, inter alia, on (a) the weight policy makers give to wider risk sharing and (b) an empirical view of the quality of government

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4 Conclusions

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A wide range of options

- 1st tier: choice of
 - Contributory pension aimed at poverty relief
 - A non-contributory tax-financed pension, with or without an affluence test
- 2nd tier: choice of
 - A publicly-organized defined-benefit pension, which may be integrated as a single system with the first tier
 - NDC
 - An administratively cheap savings plan with access to annuities
 - Mandatory occupational funded defined-benefit pensions
 - Funded defined contribution pensions
- 3rd tier: Voluntary defined contribution pensions at the level of the firm or the individual; any tax favouring should seek to avoid excessive regressivity

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Lessons for pension design

- As economic and institutional capacity increases, the range of feasible options widens
- But more complex is not necessarily better; New Zealand has a simple system out of choice, not constraint

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Mistakes to avoid

A country:

- Should not reform piecemeal and in haste, but strategically and with a long time horizon
- Should not set up a system beyond its capacity to implement
- Should not introduce a mandatory, earnings-related pension system until it has a robust capacity to keep records accurately over forty+ years
- Should not introduce mandatory individual funded accounts until it can regulate investment, accumulation and annuitisation
- Should not underestimate how administrative costs cumulate over a long life
- Should not underestimate transition costs, hence should not move towards funding if that risks breaching fiscal constraints

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Conclusion

- No single best system for all countries
- Four and only four policies to fix problems of pension finance
- Key issues
 - Risk sharing
 - Employment rates, especially 50+
- What really matters
 - Good government
 - Output growth

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References

For a summary of the issues

Barr, Nicholas (2012), *The Economics of the Welfare State*, OUP, Ch. 7

Barr, Nicholas and Diamond, Peter (2009), 'Reforming pensions: Principles, analytical errors and policy directions', *International Social Security Review*, Vol. 62, No. 2, 2009, pp. 5-29 (also in French, German and Spanish)

For broader discussion

Barr, Nicholas and Diamond, Peter (2008), *Reforming pensions: Principles and policy choices*, New York and Oxford: OUP.

Barr, Nicholas and Diamond, Peter (2010), *Pension reform: A Short Guide*, New York and Oxford: OUP.

www.nestpensions.org.uk

www.tsp.gov



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