The pension system in Sweden

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Contents

Executive summary

This report evaluates the design of the pension system in Sweden in parallel with the reports listed in Box 1, the main focus being the public pension system. After introductory discussion (section 1), section 2 summarises the analytical approach. Subsequent sections assess the system: objectives (section 3), adequacy (section 4), the role of choice (section 5), labour markets (section 6), risk sharing (section 7) and sustainability (section 8). Section 9 briefly discusses disability pensions, and section 10 voluntary pensions. Section 11 considers the way pensions policy is formulated and offers some broad conclusions.

The primary objective of a pension system is to provide income security in old age. That objective has at least four elements: consumption smoothing, insurance, poverty relief and redistribution. The reforms of the 1990s contributed to the achievement of those objectives, commanded consensus and survived the stress test of the economic crisis. Thus discussion of improvements can be reflective rather than crisis management. In the light of that broad conclusion, much of this report sets out areas for discussion and possible directions of change rather than specific recommendations.

Strengths and weaknesses

The strengths of the system can be summarised as follows.

- Consensual: the system involves most of the interested parties and is run consensually.
- Unified: the national system is unified; occupational pensions allow variation with industry needs, though with issues of how well they integrate with the national system.
- Adequacy: the system scores well for most people.

- Fiscal sustainability is built into the strategic design of the system.
- Coverage is high because (a) the guaranteed pension is based on residence and (b) employment rates are high for both men and women.
- The system is well-designed in terms of the retirement decision: benefits adjust actuarially for a delayed start to pension; and the system provides flexible choice about whether initially to draw the whole pension or only part of it. Both aspects should be protected.

Though the system is not in crisis, a number of weaknesses will over time compromise its ability to achieve its objectives.

- Diminishing adequacy is a potential problem for two reasons. First, the notional defined contribution (NDC) design places all adjustment on the benefits side; thus fiscal sustainability of the inkomstpension (section 8) has priority over adequacy. Second, adjustment to rising life expectancy is by reducing pension benefits at the age of retirement. If people continue to retire at broadly the same age as at present, benefits will over time become less adequate. If the guaranteed pension is high enough the system will still provide poverty relief, but over time will provide less and less effective consumption smoothing.
- The design of the brake mechanism means that adjustment (a) may be too sharp and (b) has the unintended effect of benefiting workers at the expense of retirees.
- The indexation of benefits in payment faces retirees with more risk than is optimal.
- Insufficient account of family structure: as discussed in section 4.1.2, the individual basis of pension design is a partial cause of the fact that the incidence of poverty among single pensioners is notably higher than among pensioner couples.
- Excessive choice: workers can choose from nearly 800 mutual funds as part of premium pensions. The analysis in section 5 suggests that that amount of choice is inefficiently large.
- Occupational pensions can create impediments to labour mobility and later and more flexible retirement.

Strategic issues

MAINTAIN THE CONSENSUAL APPROACH. A central purpose of pension systems is as a long-run institution to allow people to plan over their life course. Long-run stability is therefore important: policy should avoid shocks to the system, particularly for pensioners and workers close to retirement. Thus the principal recommendation is to preserve the consensual way that pensions policy has been managed. Since the pension system is not in crisis, it is better to reform somewhat more slowly on the basis of wide and continuing consensus than reform sooner if that would risk destabilising long-run political support for the system.

More specifically, the Pensions Group is an institution that works and should be preserved. A number of questions arise:

- The Green Party was too small to be represented in Parliament and was thus not included when the original reforms were being discussed. Should the Green Party be added to the Group?
- Should the Pensions Group be extended beyond the political parties, e.g. to include representatives of workers and employers?
- Should there be a periodic review of membership?

OBJECTIVES OF THE SYSTEM. Discussion of the objectives of the system and the relative weights that should be accorded to each (section 3) are part of the process of building and preserving consensus. Discussion should include the founding principles (section 3.2.1).

- Principle 1: The Life Income Principle: the central idea is that every krona of contribution for every person should count the same.
- Principle 2: Automatic adjustment to economic fluctuations.
- Principle 3: Automatic adjustment to changes in life expectancy.
- Principle 4: A guaranteed pension.
- Principle 5: A part of the system that is fully funded and provides individual choice.

These principles have fundamental implications which emerge throughout the report.

- Principles 1 and 2 together embody a self-imposed constraint that the costs of adjustment fall on current contributors and pensioners. At least three aspects merit discussion.

  Since benefits are strictly related to contributions, the arrangement by implication gives fiscal sustainability priority over adequacy.

  There are other definitions of fairness. The two principles imply that cohorts who live through good times (i.e. with rapid earnings growth, and hence a higher notional interest rate) will have higher pensions relative to their previous earnings than those who live through bad times. Thus each cohort is treated as a separate entity, and each receives the pension to which it is entitled on the basis of the rate of return to its notional capital. This is one definition of fairness, but not the only one.

  Strict adherence to the two principles deliberately leaves no room for government discretion. The claimed benefit is potential protection against government failure, but at a cost of forgoing the potential benefits of wider risk sharing across cohorts discussed in sections 7.4 and 7.5. Another way of thinking about intergenerational adjustment is as combining consumption smoothing with some insurance against adverse economic outcomes. From that perspective an element of intergenerational adjustment can be thought of as an efficiency device.
- Principle 3 raises similar issues: a system that is regarded as fair in a static context (e.g. with a constant age profile), will face shocks. Demographic change affects output; the costs of lower output have to fall somewhere. Thus intergenerational fairness is part of the picture but so is risk sharing. A separate issue (discussed below) is how the principle is implemented: should adjustment be only by reducing monthly benefits via the longevity coefficient, or should it also include an increase in the earliest eligibility age?
- Principle 4, again, could be implemented in different ways: via a pensions test, or as a citizen's pension based only on age and residence, discussed in section 4.1.

- Principle 5 raises the question (discussed below) of how much reliance on rational behaviour makes sense in the context of pensions.

The system was set up against the backdrop of acute economic crisis, hence primarily to ensure sustainability. The resulting choices in 1998[1] may have been right given the political economy of the time, but may or may not be optimal in political-economy terms today.

HOW MUCH RISK-SHARING? As discussed in section 7, principles 1 and 2 have major implications for risk sharing.

- Optimal risk-sharing should take account of age. Many pension systems, including the system in Sweden, offer greater protection to people with smaller pensions; the argument here is that, in addition, the extent of protection against risk should rise with age. Adjustment should avoid sudden large shocks, particularly for pensioners and workers near retirement, since the welfare loss from a given adjustment will be larger for an older person since an older person has less time to adjust. Adjustment to pension systems should take account of age-related differences in the ability to accommodate shocks, with implications, for example, for the way benefits in payment are indexed (discussed below).
- Risk sharing across cohorts: as discussed above, principles 1 and 2 together imply that each cohort is self-financing. Thus a cohort which goes through bad times will receive a smaller pension than an otherwise-identical cohort who lives in better times. That design forgoes options for intergenerational risk sharing, discussed in sections 7.4 and 7.5, and raises the question of whether intergenerational risk sharing via the guaranteed pension is sufficient, or whether there should be at least some risk sharing as regards consumption smoothing.
- The default fund invests heavily in equities for workers under 55. Is age 55 too high for this purpose?
- Should the choice of unit-linked insurance be limited to people with higher pension entitlements?

[1] The principles of the reforms, including some legislation, were agreed by Parliament in 1994; the main legislation was passed in 1998. This report uses the term '1998 reforms' as a convenient shorthand.

- As discussed in section 10, the combined contribution to the premium pension and most occupational pensions is 7 per cent. Does the move towards defined-contributions for younger workers in occupational pensions imply that the system faces individuals with excessive risk?

HOW MUCH RELIANCE ON RATIONALITY? The model of choice and competition underpinning principle 5 – a model that works well in many areas – is the wrong model for pensions.

- The inkomstpension: the arguments in section 5.2.1 lend support to two aspects of limited choice in the inkomstpension: the system is mandatory; thus workers do not have the choice to decide how much to save; and workers have no choice of pension provider. These elements should be protected from naïve arguments that increased choice necessarily increases welfare. On the other hand, the inkomstpension relies on workers to respond rationally by working longer as life expectancy increases. As discussed below, uncritical reliance on rational behaviour can be misplaced.
- Premium pensions: choice is inefficiently large, as shown by the high fraction of people in the default fund. Even for someone with the necessary knowledge, the gain from choosing more effectively in any particular month is small, whereas the transactions costs in terms of time are significant; thus even a knowledgeable person may not review his or her choices sufficiently often. In addition, pension products are complex, creating both information problems and behavioural issues such as procrastination and immobilisation, discussed in section 5.1. Section 5.2 considers ways of designing fully-funded defined-contribution pensions in ways that avoid the problems of excessive choice and the associated high costs of administration.
- Should the extent of choice increase with the size of the person's premium pension accumulation, i.e. should choice outside the default fund be open only to individuals whose accumulation exceeds a given size?

Policy directions

ADJUSTING FOR CHANGES IN LIFE EXPECTANCY (section 7.3). Adjusting pensions to rising life expectancy requires reducing benefits at each age of withdrawal from the labour force. In principle this can be done by focussing on:

- The level of the pension, by reducing monthly benefits at the earliest eligibility age (i.e. the minimum age at which a person can draw pension); or
- The age at which pension is first payable, by gradually increasing the earliest eligibility age, with no compensating increase (or a less-than-actuarial increase) in pension; or
- A combination.

Reducing the level of monthly benefits actuarially to reflect longer life is the current system in Sweden. However, lessons from behavioural economics call into question uncritical adherence to the assumption of rationality. There is good evidence internationally that many people retire as soon as they are allowed to do so, whether or not that is in their own long-run best interests or those of their dependants. In Sweden, though most people retire at 65, an increasing share are drawing benefits at the earliest age of 61.

These arguments suggest that it would be desirable to increase the earliest eligibility age gradually.

- Suppose that policy makers regard it as appropriate that people on average should have a period of retirement that is roughly half of their working life. This could be achieved by raising the earliest eligibility age by two-thirds of any increase in life expectancy. Thus the earliest eligibility age is adjusted to relate the number of expected years receiving benefit to the number of accrual years.
- When considering this approach, it would be desirable to consider simultaneously the earliest eligibility ages for inkomstpension and premium pension (currently 61) and that for the start of guaranteed pension and the end of unemployment benefit and disability pension (currently 65), and also to discuss harmonising retirement ages in occupational pensions with those in the national system.

Thus the system should adjust to rising life expectancy in two ways:

- Applying the longevity coefficient at the age at which a person first takes pension assists sustainability.
- Increasing the earliest eligibility age broadly in line with life expectancy assists adequacy in the face of potential non-rational behaviour.

ADJUSTING FOR A DELAYED START TO PENSION (section 6.2.1). Once the earliest eligibility age has been decided, a separate question is how benefits should adjust where a worker delays taking some or all of his/her pension. As with the option for partial drawdown, Sweden is a praiseworthy outlier internationally, in that adjustment for a delayed start is roughly actuarial and thus creates no strong incentives either for or against continuing work.

LATER RETIREMENT BUT MORE FLEXIBLE RETIREMENT (section 6.2). Pension design should seek to raise the average retirement age to assist sustainability, but to accommodate differences in tastes and constraints across individuals by offering choice over how a person moves from full time work to full retirement.

The need for later retirement is now well understood. However, there is less understanding internationally of the gains from more flexible retirement. Facilitating such choice (section 6.2.3) would be good policy even if there were no concerns about sustainability.

- Sweden is an outlier internationally – and an example for other countries to follow – in allowing partial deferral of pension, i.e. the option to draw 25%, 50% or 75% of a person's pension, while the deferred element continues to grow.
- It would be useful to check that the fixed cost of employing a worker is small, to avoid creating an incentive against part-time employment.
- It would be useful to review employment law with the aim of reducing transactions costs and legal uncertainty where a worker wishes to downshift at his/her existing employer. It would also be useful for employers organisations and trade unions to draw up some sample contracts to illustrate best practice.
- Access to training is central to extending working life.

- Public discussion would be useful (a) on the empirical facts about the productivity of older workers and (b) of the implications for labour law, e.g. whether, and on what basis, less productive workers could be paid less. Again, sample contracts would be useful.
- Policies to change attitudes: gradually increasing the earliest eligibility age is important not only to assist sustainability but because of the signal it gives, which will help to change attitudes.

ADJUSTING THE RELATIVE TREATMENT OF INDIVIDUALS AND FAMILIES.

- About 13 per cent of single pensioners in Sweden were poor in 2009, but only 1.1 per cent of couples. The high incidence of poverty among single pensioners suggests a need to review benefits for that group, including the relative size of the guaranteed pension for single people and couples (section 4.1), and whether it might be desirable to include joint-life annuitisation as an option in the inkomstpension.
- Given the frequency of divorce, there is a good case for giving spouses and registered partners the option of transferring pension balances in the inkomstpension at divorce or retirement (section 4.3).

INDEXING BENEFITS IN PAYMENT.

- The guaranteed benefit is indexed to prices not wages. In the absence of discretionary action, the gap between the guaranteed pension and average earnings will increase. Part of the discussion of objectives should consider whether the guaranteed pension should focus on absolute or relative poverty.
- Inkomstpension in payment is indexed to the notional interest rate minus 1.6 per cent. As discussed in sections 4.2.2 and 7.4.1, this method fails to take account of age in the way risks are shared, and thus exposes pensioners to more risk than is optimal. The method of indexation should be adjusted so that benefits in payment do not face the full risk of year-to-year variation in wages.

THE BRAKE MECHANISM. The design of the brake has two ill-effects.[2] First, it operates sharply: without action by government and parliament, the combination of slow wage growth and a balance ratio below one would have reduced the inkomstpension by 4.6 per cent in 2010. It is a misreading to think of those events as a 'perfect storm' – macroeconomic turbulence will tend to affect both wage growth and the balance ratio, so that the combined effect is no accident. The design of the brake should recognise that the two sets of events are correlated.

A second ill-effect (section 7.4.2) is that the operation of brake and catch-up has unintended distributional effects across cohorts and, within a working cohort, across workers with different age-earnings profiles. Those effects are largely arbitrary. In addition, adjustment tends to benefit younger workers and harm retirees, which is sub-optimal since retirees on average are more risk averse than workers. There is no apparent normative justification for these outcomes.

Section 7.5 discusses possible reform directions, which are summarised in section 7.6. One approach is to continue to impose all adjustment on current participants but to adjust the operation of the brake mechanism to share the costs of adjustment differently. Section 7.5.2 discusses several ways of doing so, perhaps the simplest being to apply the balance ratio only to part of the wage growth rate for the purposes of indexing pensions in payment, thus giving retirees, who are less able to adjust, relatively greater protection than workers.

A more radical approach is to share the costs of adjustment more widely across cohorts by retaining automaticity as the primary form of adjustment, but allowing some relaxation of the strict application of principles 1 and 2. As discussed in section 7.5.3, one way to do so is to slow down the operation of the brake; another is by legislating the timing and construction of an independent periodic review.

Topics for discussion

THE DESIGN OF THE GUARANTEED PENSION (section 6.2.2)

[2] Both problems were recognised in 1998 but, at the time, were unsolved problems.

- Does the 100 per cent/48 per cent taper of the pensions test in the guaranteed pension cause adverse labour-supply incentives? If so, should the design of the taper be adjusted?
- Should the pensions test for the guaranteed pension be expanded to include occupational pensions?

INVESTMENT DECISIONS. One of the arguments for decentralising investment decisions in the premium pension is to avoid giving a single entity too much market power and to diminish the risk of political interference. The approach in the premium pension is one way to do this, but not the only way; the approach in the US Thrift Savings Plan and recent reforms in the UK is discussed in section 5.2.

DISABILITY PENSIONS (section 9). Suitable jobs are scarce, making it difficult to move the partly-abled into paid work. The issue is important, both because of the cost of benefits and because having a suitable job has the potential to increase a person's welfare considerably.

VOLUNTARY PENSIONS should be kept under review to ensure that (a) there is suitable quality assurance and (b) arrangements keep administrative costs low (section 10). Any tax advantages for voluntary pension saving should be limited; and the earliest age at which a worker can draw pension from a tax-advantaged scheme should be kept under review.

1 Introduction[3,4]

1.1 Organisation of the report

PURPOSE AND REMIT. This report evaluates the pension system in Sweden against the goals established at the time of the reforms in the late 1990s, the main focus being the public pension system. Analysis concentrates on design rather than issues of management or governance. The report, conducted in parallel with those listed in Box 1, includes some recommendations, but since the system is not in crisis, many of the conclusions take the form of topics for discussion, in each case framed within the relevant analysis. It can be argued that a review of the reforms about half way through the transition to the new system is timely, to evaluate how the arrangements are coping with the longer-term pressures of rising life expectancy and the stress test provided by the economic crisis.

[3] I am grateful to participants in meetings in Stockholm on 12 September 2012, including Richard Gröttheim, Bo Könberg, Anna Pettersson Westerberg, Ola Pettersson, and Ole Settergren, and on 13 June 2013, including Mikael Åsell, Invar Backle, Eva Erlandsson, Pia Fagerström, Daniel Hallberg, Joakim Palme, Ole Settergren, Ola Pettersson, Anders Viklund and Gunnar Wetterberg. I am grateful also to Peter Diamond for many conversations, for our joint work on which sections 7.4 and 7.5 draw, and for comments on earlier versions of this paper, and to Ole Settergren and Daniel Hallberg for written comments on an earlier version. I owe particular thanks to Annika Sundén, who has been my mentor throughout. The responsibility for the views expressed and remaining errors are entirely mine.

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Box 1 Parallel reports

1. Proposals to change the retirement age
   Åtgärder för ett längre arbetsliv,
   http://www.regeringen.se/sb/d/16827/a/214148
2. On the management and organisation of the buffer funds
   AP-fonderna i pensionssystemet – effektivare förvaltning av pensionsreserven,
   http://www.regeringen.se/sb/d/15680/a/197500
3. Proposed changes to the calculation of the income index and the balancing mechanism
   Fördjupad analys av vissa beräkningsregler i inkomstpensionssystemet,
   http://www.pensionsmyndigheten.se/5908.html
4. Reform of the premium pension
   Vägval för premiepensionen,
   http://www.regeringen.se/sb/d/16820/a/218297

ORGANISATION OF THE REPORT. After introductory discussion (section 1), section 2 sets out the analytical approach. Subsequent sections assess the system, starting with the objectives of pension systems (section 3), including consumption smoothing, insurance (i.e. risk sharing), poverty relief and redistribution. Discussion then considers adequacy (section 4), the role of choice (section 5), labour markets (section 6), risk sharing (section 7) and sustainability (section 8). Section 9 briefly discusses disability pensions, and section 10 occupational and voluntary pensions. Section 11 offers some broad conclusions.

One of the central conclusions is that the reforms of the 1990s have stood the test of time in that the system is robust and continues to command broad consensus. Partly as a result, discussion of improvements can be reflective rather than crisis response. The report endorses the broad strategy and offers suggestions (in bold) for improvements, some as explicit recommendations, some as topics which it would be useful to discuss.

1.2 Description of the pension system in Sweden

Until 1998, the pension system in Sweden included a generous universal pension supplemented by an earnings-related pension, the ATP, which provided a full pension after 30 years of contributions, based on earnings during the worker's 15 best years, with a

replacement rate of 55-70 per cent. By the 1980s, as elsewhere, the system faced financial pressures from demographic and social change. A Parliamentary review between 1984 and 1990 identified the stresses, but the politics of time was not conducive to change. Reform in the 1990s was based on wide political recognition of the necessity for a more efficient pension system. As a result, five of the seven parties, representing 85 per cent of parliamentary votes, formed what is known as the Pensions Group. The resulting political cooperation gave parties relative freedom to pursue reform. (Analogously, it is said that one of the reasons many people stabbed Julius Caesar was so that nobody would know who had killed him). The Pensions Group today includes all the major parties with the exception of the Green Party, which was too small to be represented in Parliament when the original reforms were discussed and are now asking for membership.

There are several key dates in the reform process:

1992 the Pension Group agrees on the basic principles of the reform;
1994 in-principle legislation is passed;
1998 final legislation is passed;
1999 the new system is implemented.

The system legislated in 1998 (henceforth, as a convenient abbreviation, referred to as the 1998 system) can be thought of as comprising three elements:

- The inkomstpension (section 1.2.1) is a state-organised, partially-funded notional defined-contribution (NDC) pension;
- The premium pension (section 1.2.2) is a system of fully-funded individual accounts, in which the worker chooses from a large number of providers.

The primary purpose of those two elements is to provide consumption smoothing.

- The guaranteed pension (section 1.2.3) provides poverty relief for individuals whose income is low.

The system has a number of other elements.

- The legacy defined-benefit ATP (section 1.2.4), replaced by the inkomstpension, continues to be paid to older workers;[5]
- Occupational pensions (section 1.2.5);
- Voluntary pensions (section 1.2.6);
- Housing supplement.

Figure 1.1 summarises the relative size of the different elements. The Swedish Pensions Agency is responsible for the national system. The major responsibility for policy lies with the Pensions Group.

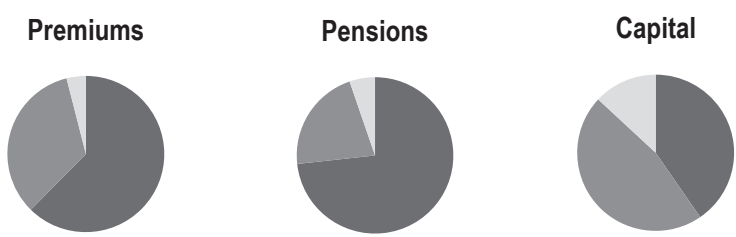
Figure 1.1 The structure of pensions in Sweden, 2010

Sweden´s Pensions in 2010

Billions of SEK

	Paid-in premiums	Capital managed Dec. 31	Disbursement	
National pensions	237	1,309*	222**	Orange Report
Occupational pensions	128	1,509	65***	
Private pension insurance***	15	423	16***	
Total	**380**	**3,240**	**303**	

* Contribution asset not included. In addition, there are payments of guaranteed pensions (SEK 18 billion). Widow´s pensions (SEK 14 billion), housing supplement to pensioners and Income support for the eldery (SEK 8 billion).
** Refers only to persons over 65 years of age.
*** Including individual pension saving (IPS).



[5] ATP pensions have been indexed in the same way as the inkomstpension since 2002 for people born in 1938 and later, and from 2003 for those born in 1937 and earlier.

1.2.1 Consumption smoothing: The inkomstpension

A pure NDC pension is similar to a defined-contribution pension inasmuch as contributions are notionally accumulated to determine a balance which is converted into an annuity at retirement, but different, in that the system is not fully funded. Thus accrual is based on a rule rather than the actual returns on any assets the plan holds.

One of the drivers of the 1998 reform was that the old system, with a full pension based on a worker's best 15 years after 30 years of service disproportionately favoured higher earners. The inkomstpension bases a person's pension on his or her lifetime income, avoiding the regressive redistribution in the old system. Alongside the consumption smoothing provided by the inkomstpension is poverty relief, provided by the guaranteed pension.

Benefits

Benefits are calculated in a way that mimics individual funded accounts. The system has the following elements.

A notional accumulation: each worker's contribution is credited to a notional individual account, i.e. the state 'pretends' that there is an accumulation of financial assets.

A notional interest rate: each year the government attributes to each worker's notional accumulation a notional interest rate (i.e. an accrual rate). The notional interest rate (called the Income Index) is calculated as a 3-year moving average of nominal earnings adjusted for inflation plus one year of price inflation (the detailed formula is set out in Swedish Pensions Agency, 2012, Appendix A). Thus contributions during working life are indexed to long-run average earnings, but with faster adjustment to changes in inflation.

Earliest eligibility age and adjustment for a delayed start to benefits: the earliest eligibility age (i.e. the earliest age at which a person can draw an old age pension) is 61. The initial pension is increased actuarially where a person first takes pension at a later age.

Adjustment for life expectancy: when a person first draws pension, his or her accumulation is multiplied by a life expectancy coefficient, based on the remaining life expectancy at the age of

withdrawal of the person's birth cohort. The intention is that if life expectancy increases, the monthly pension at a given age will be actuarially reduced, i.e. adjustment is via the level of pension, not the earliest eligibility age. The estimate of the cohort's remaining life expectancy is based on historic mortality data, rather than projected mortality rates.

Initial benefits at retirement: when a person first draws pension, his notional accumulation is converted into an annuity in a way that mimics actuarial principles, inasmuch as the present value of the person's benefits, given (a) his age when he first draws pension and (b) the estimated remaining life expectancy of his birth cohort, is equal to the value of his notional accumulation, using a discount rate of 1.6 per cent. The resulting calculation is described in terms of an annuity divisor, D, such that the benefit is equal to the accumulation in the account divided by D. There is a specific divisor for each birth cohort and each age (Swedish Pensions Agency 2012, Appendix A). Thus (a) it is mandatory to annuitise one's entire accumulation, and (b) the annuity is provided by the state.

Adjustment for family structure: benefits under the inkomstpension are structured on an individual basis. Each spouse receives the pension to which he or she is entitled on the basis of his/her contributions record. There is no option to transfer balances between partners, and there are no joint-life annuities, i.e. when (say) the husband dies, his inkomstpension dies with him.

Indexation of benefits in payment: benefits in payment grow at the notional interest rate minus 1.6 per cent. With the notional rate equal to the average rate of earnings growth, if real earnings grow at 1.6 per cent, benefits keep pace with inflation.

Adjustment for economic fluctuations: the balancing and brake mechanisms: the system incorporates a 'brake' mechanism, discussed in section 7.4.2. The mechanism reduces both the accrual rate for workers and the indexation of pensioners' benefits in payment if the actuarial balance of the system falls below a threshold level, a situation which can arise for various reasons, notably if contributions and/or the return on the buffer fund (described below) grow more slowly than average earnings as measured by the income index.

Combining work and pensions:

- Where a person draws his or her inkomstpension but continues to work, there is no clawback of inkomstpension. Earnings are subject to pension contributions and add to the person's pension entitlement. If someone who receives both inkomstpension and guaranteed pension continues to work, he or she will increase his inkomstpension, which is recalculated every year when the new contributions are recorded, and hence reduces the guaranteed pension he receives.
- Drawing a partial pension while working and continuing to pay pension contributions. Suppose that a worker draws 50 per cent of his pension; the remainder grows in accordance with the notional interest rate; and if he or she continues to work, his or her contributions lead to an increased pension.

Pensions for public sector workers: workers in all sectors are covered by the mandatory system. In addition, as with workers in the private sector, there is an occupational scheme for civil servants and another for municipal workers.

Information for workers: a worker can see his or her pension accumulation from all sources on www.minpension.se.

Contributions

The contributions base: workers pay contributions up to a ceiling of 8.07 times the income-related base amount.[6] In 2012, 20 per cent of men and 8 per cent of women had income above the ceiling (Swedish Pensions Agency 2012, p. 31), representing about 11 per cent of the total wage bill. Occupational pensions (discussed in section 1.2.5) can include earnings above the ceiling. Employers pay contributions without limit, but contributions on income above the ceiling do not entitle the worker to any additional pension and are not attributed to the worker's notional account nor included in the income of the pension system, but instead are treated as general government revenue.

[6] The reference amount, which is used to calculate pension benefits and contributions, is defined by law and adjusted annually to reflect the change in average earnings. In 2011 the ceiling was SEK 420,400; see Swedish Pensions Agency (2012, p. 31).

The contribution rate: an employed worker pays a contribution of 7 per cent of his/her earnings and the employer 10.21 per cent, i.e. 17.21 per cent; a self-employed person pays both contributions; and the government makes a contribution of 10.21 per cent for recipients of the main social security benefits. The total of 17.21 per cent is 18.5 per cent of the pensions base, which excludes the worker's 7 per cent contribution.[7]

The tax treatments of contributions and benefits: suppose that a worker earns 100 on which he or she pays a pension contribution of 7. The worker receives a tax credit equal to the 7 per cent contribution for the public pension contributions. Thus if his marginal tax rate is 30 per cent, he pays tax on income of (100 – 7). What appears on his pay slip is a deduction for income tax of 23 and a pension contribution of 7. Thus, the worker's contribution is financed out of general revenues. Prior to the reforms, the entire pension contribution was paid by the employer. The idea behind the current arrangement was (a) to make pension contributions visible, but (b) to keep take-home pay constant without creating upward pressure on wages.

The income and capital gains of pension funds are not subject to tax. Benefits in payment are subject to income tax. There is an earned-income tax deduction which does not apply to pensions. Thus pensions are generally taxed more heavily than labour income.

Workers who continue beyond 65 receive a double earned-income deduction and employers pay reduced payroll taxes. Thus the system includes incentives for older workers on both the supply and demand sides of the labour market.

Finance and funding

The balance ratio: the long-run sustainability of the system is assessed in terms of the Balance Ratio, BR:

$$BR = \frac{\text{Contribution assets + buffer funds}}{\text{Pension liabilities}}$$

The measure is based on

[7] I.e. 17.21/0.93 = 18.5.

- The value of a 'contribution asset', a measure estimating the present value of the flow of contributions, based on recent data;
- The value of the buffer funds (i.e. partial funding) of the system;
- A measure of pension liabilities, also based on recent data.

Employment growth is a key driver of sustainability since it affects contributions; but financial markets also matter because they affect the value of the buffer fund.

Funding rules: in 2012, the value of the three elements (Swedish Pensions Agency 2012, p. 10) were:

- Contribution asset SEK 6,915 billion
- Buffer funds SEK 958 billion
- Liabilities SEK 7,952 billion

Thus the buffer funds are around 11.5 per cent of the liabilities of the system.

The rules specify that the system should aim to preserve a Balance Ratio not below 1, with automatic correction via the brake mechanism if it falls below one. The design and operation of the mechanism is assessed in section 7.4.2.

Costs of administration (Table 1.1): in 2011, capital management costs were 0.14 per cent of funds managed. Additional to these reported costs are costs which are taken from funds and hence reduce the net return, including performance-based fees of 0.03 per cent of funds managed and transaction costs of 0.02 per cent. Total capital management costs of the inkomstpension in 2012 were 0.19 per cent of average managed capital of SEK 884 billion.

Administrative charges are deducted from a person's notional accumulation each year during working life (but not once a person draws pension). The current level of charges cumulatively reduces the inkomstpension by about 0.5 per cent compared with what it would have been without any deduction.

Table 1.1 Administrative costs, per cent of capital managed, 2012

	Inkomstpension	Premium pension
Reported capital management costs	0.15	0.32
Costs taken from funds		
Performance based fees	0.02	--
Transaction costs	0.02	0.15
Total capital management costs & charges	0.19	0.47
Average capital managed (SEK billion)	915	429

Source: Swedish Pensions Agency, 2012, p. 42.

1.2.2 Consumption smoothing: the premium pension

PREMIUM PENSIONS. Alongside the partially-funded NDC inkomstpension is mandatory membership of a fully-funded, defined-contribution individual account – the premium pension. The system has the following elements.

Contributions: the contribution of 18.5 per cent of the pensions base noted earlier is divided between the inkomstpension (16 per cent) and premium pension (2½ per cent)

Range of choice: at the end of 2012 there were 793 funds in the premium pension system, administered by 99 different fund management companies (Swedish Pensions Agency 2012, p. 23). The worker is meant to choose from those funds. A worker who makes no choice in placed in the default fund. Under a recent change it has become possible for a worker actively to choose the default fund.

Benefits at retirement: as with the inkomstpension, the value of a person's pension is determined by the size of his/her accumulation and an annuity divisor. In contrast with the inkomstpension, the divisor is based not on the current life expectancy of the person's birth cohort, but on forecasts of future life expectancy. The premium pension can be drawn in either of two ways.

- Conventional insurance: in this case, the shares in the individual's accumulation are sold and the Swedish Pensions Agency assumes responsibility for the investment as well as the financial risk. Thus the person's annuity is based on the performance of the fund as a whole. The initial annuity

assumes an interest rate of 2.2 per cent and a deduction for costs of 0.1 per cent (Swedish Pensions Agency 2012, p. 25).
- Unit-linked insurance: in this case, a person's accumulation remains with his or her chosen fund and the pension increases with stock market gains, or vice versa. Thus the individual faces more of the risk than with conventional insurance.

Consider the case of a person who works till 65 and then retires fully. At retirement it is mandatory for the person to annuitise his or her entire accumulation, and analogously for someone who initially draws on part of his/her pension. However, a person can choose (a) when to start to draw pension, (b) at that stage whether to draw all or only part of his or her pension, and (c) whether or not to draw inkomstpension and premium pension at the same time. All annuities are provided by the Swedish Pensions Agency.

Indexation of benefits in payment depends on whether the individual has chosen conventional insurance or unit-linked insurance. With conventional insurance, individuals receive a guaranteed amount each month, plus an additional amount which is recalculated each year and depends on the performance of the fund managed by the Swedish Pensions Agency. With unit-linked insurance, benefits in payment are recalculated each year and will rise or fall depending on the return to the funds the person has chosen.

Adjustment for family structure: in contrast with the inkomstpension, it is possible to transfer premium pension balances between spouses and registered partners. Pension capital thus transferred is reduced by 8 per cent, the assumption being that most such transfers will be from men to women, who on average live longer. There is also an option to take out a joint-life annuity to provide a survivor benefit, in which case, the monthly pension will be actuarially reduced since the expected duration of payout will be longer.

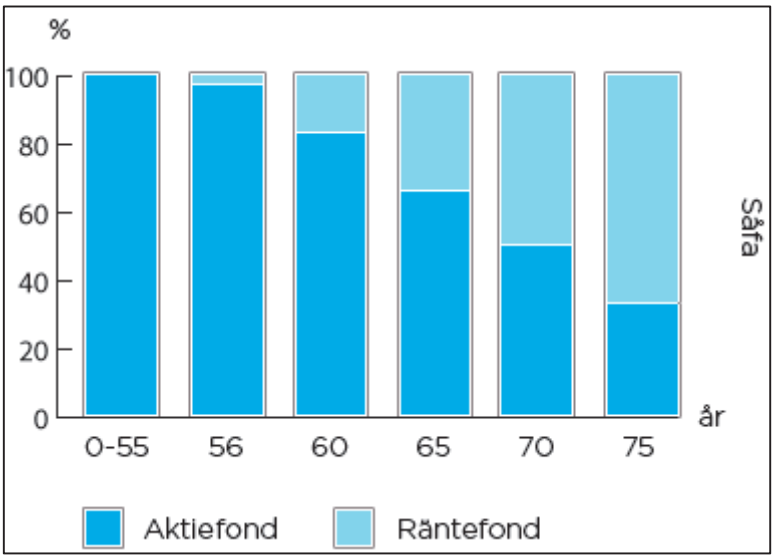
Account administration: to keep administrative costs as low as possible, account administration (i.e. the back-office functions) are organised through a central clearing house. Alongside income tax, the tax authorities collect the 18.5 per cent contribution of each worker which it passes on to the Swedish Pensions Agency, which channels 16 per cent to the NDC system and 2½ per cent to the worker's chosen premium pension fund.

Fund management: as noted, the 797 funds are administered by 99 fund management companies.

Costs of administration: Table 1.1 shows the costs of account administration (0.15 per cent in 2012) and fund management (0.32 per cent), totalling 0.47 per cent, considerably higher than those for the inkomstpension. The difference is a result not only of economies of scale, but also of different patterns of investment. In the inkomstpension system nearly 40 per cent of capital is in bonds or similar assets, which have lower management costs than equities; in the premium pension system only about 7 per cent of funds are invested in such assets.

Administrative charges in the premium pension system have a greater impact on pensions than for the inkomstpension for two separate reasons: the charges are higher (0.42 per cent in 2012, compared with 0.030 for the inkomstpension (Swedish Pensions Agency 2012, p. 43)); and, in contrast with the inkomstpension, charges apply not only during working life but also when pensions are in payment. As the funds in the premium pension system increase over time, creating possibilities for economies of scale, the aim is to reduce administrative charges to 0.3 per cent. Even at that level, however, charges reduce the pension by about 9 per cent (Swedish Pensions Agency 2012, p. 44); the current charge of 0.42 per cent reduces a person's pension by 12 per cent in comparison with what it would be without the charge.

Figure 1.2 Life-cycle profiling in the AP7 Såfa



Note: Aktiefond = equities; Räntefond = fixed income

Source: http://www.ap7.se/en/Our-products/

THE DEFAULT FUND. Previously, workers who made no choice were placed in the default fund (known as AP7). More recently, workers have been given the choice actively to choose the default fund.

AP7 offers six state-managed products.

- AP7 Såfa is life-cycle profiled, adjusting the mix of equities and bonds according to the worker's age as shown in Figure 1.2.
- In addition to the Såfa, AP7 offers three portfolios, AP7 Offensiv (aggressive), AP7 Balanserad (balanced) and AP7 Försiktig (low risk), which offer a worker choice in terms of his/her degree of risk aversion and/or stage in the life cycle.
- AP7 Equity Fund and AP7 Fixed Income Fund are for people who seek higher or lower risk than AP7's other products.

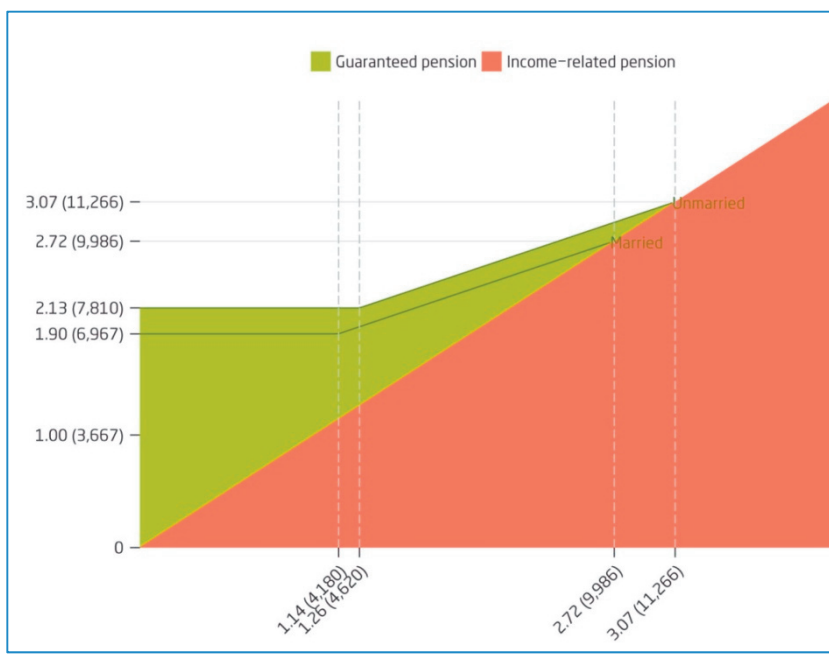
Management fees are 0.09-0.15 per cent of a worker's accumulation, compared with 0.3 per cent for the average premium pension fund.

Thus the options for individuals in the premium pension are (a) to do nothing, in which case the worker will be in the default fund, or (b) choose one of the other funds offered by AP7, choosing from different levels of risk, or (c) choose a portfolio from one of about 800 private funds.

1.2.3 Poverty relief: The Guaranteed Pension

The earnings-related pension of a person with low career earnings will not be enough to keep him or her out of poverty. The system therefore provides a guaranteed pension, financed from general taxation, with the aim that nobody's pension income should fall below a minimum.[8] The guaranteed pension is backed up by housing allowance and income-tested social assistance (AFS).

Figure 1.3 Composition of pension benefits at different levels of income, 2012



Source: Swedish Pensions Agency, 2012, p.26.

[8] The system applies to people born in 1938 or later; for older people other rules apply.

The guaranteed pension is based on three sets of conditions:

- An age test: the earliest eligibility age is 65;
- A residence test: for a full guaranteed pension, an individual must have 40 years of residence in Sweden or another country in the EU or European Economic Area;
- A pensions test: as Figure 1.3 shows, the guaranteed pension faces a taper of 100 per cent of inkomstpension up to a fairly low limit, and of 48 per cent above that. For the purposes of the taper, the inkomstpension is grossed up to what it would have been if based on the entire 18.5 per cent contribution; premium pension is therefore excluded from the taper. There is no taper in respect of any other income. Importantly, there is no taper in respect of occupational pensions, a point taken up later.

Indexation of benefits in payment: the guaranteed pension is indexed to changes in prices.

The benefit is a significant part of the system. In 2011, 42 per cent of all pensioners and 33 per cent of all new retirees received at least some guaranteed pension. 15 per cent of men retiring in 2011 received at least some guaranteed pension, and 51 per cent of women. Benefits from the guaranteed pension in 2011 were 6.1 per cent of total pension income (inkomstpension + premium pension + guaranteed pension).

1.2.4 The ATP

A person born before 1938 is not part of the inkomstpension or premium pension system, but receives the ATP. As noted, the ATP pension is based on an individual's best 15 years of real earnings; a full pension requires at least 30 years of contributions.

Individuals born between 1938 and 1953 receive part of their earnings-related pension as ATP and the rest as inkomstpension and premium pension. The younger the individual, the smaller the proportion of the ATP. Someone born in 1954 or later is entirely within the inkomstpension and premium pension system.

For pension withdrawals before the year when the individual turns 65, the ATP is price-indexed. If balancing is activated in the year when the individual reaches age 65, the ATP is recalculated according to a special rule. The month the person reaches age 65, the ATP is recalculated by multiplication by all the balance ratios

that have been set during that balance period. From the following year, the ATP is indexed in the same manner as the inkomstpension.

1.2.5 Occupational pensions

Alongside the 1998 system and legacy ATP pension are four large occupational pension systems, with some additional agreements covering smaller areas. The four main occupational pensions differ between groups but most have a contribution rate of 4.5 per cent up to the income ceiling and cover the following groups of workers:

- Blue-collar workers in the private sector: the original system (the STP) provided a defined-benefit pension along lines similar to the ATP. From 1996 this was replaced for workers born in 1968 or later by a defined-contribution arrangement (SAF-LO). At retirement, as with the premium pension, the individual chooses between conventional insurance or unit-linked insurance. There are transition arrangements for workers born between 1932 and 1967.
- White-collar workers in the private sector: the original system (the ITP) introduced at the same time as the ATP, provided a defined-benefit pension. A new ITP, a defined-contribution arrangement, was introduced in 2007 for workers born after 1978. People born earlier who were already members of the old system could remain so, though there were options to switch from the old to the new arrangement.
- Central government employees: the original system (PA-91) provided a defined-benefit pension. The system was replaced in 2003 for workers born in 1943 or later by PA 03, which provides a pension which has both a defined-contribution and a defined-benefit component.
- County council and municipal employees: the original system (PA-KL) and its successors (PFA 98 and PFA 01) provided a defined-benefit pension. A new system (KAP-KL), introduced in 2005, combines a defined-benefit element with a defined-contribution element, such that the defined-benefit element is a smaller proportion of the pension for higher earners.

Occupational pensions are significant and, for higher earners, can dominate the inkomstpension. Though not assessed in detail, they are included in discussion where relevant.

1.2.6 Voluntary pensions

Alongside the mandatory system are pensions which are voluntary at the level of the individual, company or industry. Such arrangements are only a small part of the picture.

2 Analytical approach

The analytical approach underpinning this report draws on Barr and Diamond (2008). This section summarises key elements very briefly.

SYSTEMIC ANALYSIS. Analysis should consider the pension system as a whole, avoiding 'tunnel vision'. As noted, pension systems have multiple objectives, discussed in section 3. In addition, pension systems face the multiple risks set out in Box 2. A central element in pension design (section 7) is how risks are shared.

Box 2: Multiple risks and uncertainties

The risks to which pension systems are exposed can loosely be divided into systemic risks, market risks, and risks connected with individual behaviour.

Systemic risks include macroeconomic risk, demographic risk and political risk.

Market risks include:

- Earnings risk: a worker's earnings profile has both deterministic elements (e.g. the decision to invest in human capital) and stochastic elements, relating to labour-market and health risks.
- Investment risk: accumulations held in the stock market are vulnerable to market fluctuations. Accumulations in nominal bonds face the inflation risk.
- Annuities market risk: for a given accumulation, a person's annuity at a given age will be affected by the life expectancy of his or her birth cohort and by the discount rate used by the annuity provider.

Risks connected with individual behaviour:

- Principal risk arises through bad decisions by participants, for example about when to retire. Poor choices can arise from imperfect information, e.g. investing too heavily in equities too close to retirement, or failing to understand the importance of administrative charges. Poor choices can arise also for reasons which behavioural economics explains.
- Agency risk can arise through incompetent or fraudulent fund management.

Many of these issues face policy makers not only with risk (where the probability distribution of outcomes can be estimated with a small variance), but also with uncertainty, where the probability distribution of outcomes is not well known.[9] Actuarial insurance can in principle deal with risk, but faces problems with uncertainty

[9] The distinction between risk and uncertainty was first made by Frank Knight (1921). Not all economists accept the importance of the distinction. For a recent assertion that risk and uncertainty have very different implications, see Bronk (2009, especially pp. 214-16).

Many of these issues face policy makers not only with risk (where the probability distribution of outcomes can be estimated with a small variance), but also with uncertainty, where the probability distribution of outcomes is not well known. Actuarial insurance can in principle deal with risk, but faces problems with uncertainty.

SECOND-BEST ANALYSIS. Simple theory assumes that individuals make optimal choices and that labour markets, savings institutions and insurance markets exist and function ideally. Formulating policy within that first-best framework is a useful analytical benchmark but a bad guide to pension design in a world with market imperfections such as imperfect information, non-rational behaviour, incomplete markets, and progressive taxation.

Analysis should be framed in second-best terms. It is mistaken, for example, to try to design a pension system that creates no labour-market distortions. Any system that provides poverty-relief creates distortions. Thus minimising distortions would imply little or no poverty relief: the cure would be worse than the disease. The objective is to balance the costs of unavoidable distortions with the welfare gains from improved poverty relief.

NO SINGLE BEST SYSTEM. Pension systems have multiple objectives, whose relative weights can change over time and across countries. Similarly, pension design faces multiple constraints, the relative importance of which can change. If objectives differ and constraints differ, what is optimal will generally differ. A central conclusion in Barr and Diamond (2008) is that there is no single best pension system for all countries. Thus it is mistaken to talk about a best pension system, rather than the best pension system for Sweden today.

3 Objectives of the pension system

3.1 Objectives and constraints

The primary objective of a pension system is to provide income security in old age. That objectives has at least four elements. Starting from the position of individuals and families, old-age security requires two sets of instruments: a mechanism for smoothing consumption, and a means of insurance. For the lifetime poor, income security additionally includes transfers in old age.

CONSUMPTION SMOOTHING. A central purpose of retirement pensions is to enable a person to transfer consumption from earnings in her middle years to her retired years, allowing her to choose a better time path of consumption over working and retired life. The extent to which a pension provides such smoothing is reflected in the replacement rate, which measures the size of pension benefits relative to previous earnings.

INSURANCE. In a world of certainty, individuals would save during their working life to finance their retirement. However, people do not live in a world of certainty, not least because they do not know how long they are going to live. Thus a pension based on individual saving means that an individual either risks outliving his or her retirement savings, or consumes very little throughout old age to prevent that from happening. Insurance, i.e. pooling risks, offers individuals protection against the life expectancy risk.

This is the essence of annuities, whereby an individual exchanges some or all of his or her pension accumulation at retirement for regular payments for the rest of his or her life. Annuities increase individual welfare by reducing the need for people to accumulate very large savings to avoid destitution should they live longer than their life expectancy.

Consumption smoothing and insurance are relevant to the family as well as to individuals. People are concerned about their children and their partners. Pension systems commonly include life insurance benefits for workers with young children and the option or the requirement of benefits for a surviving elderly spouse, commonly as an annuity. Pension systems can also insure against disability. A further risk is that of marriage breakup, with potential implications for sharing pension capital.

Public policy generally has objectives additional to improving consumption smoothing and insurance, notably poverty relief and redistribution.

POVERTY RELIEF. In pursuit of this objective, pension systems target resources on people who are poor on a lifetime basis, and thus unable to save enough to support themselves in old age. Programmes which provide poverty relief can target all the elderly or can concentrate on those who have contributed to the pension system. Many countries have both types of arrangement.

REDISTRIBUTION. Pension systems can redistribute incomes on a lifetime basis, complementing the role of progressive taxes on annual income. Lifetime redistribution can be achieved by paying pensions to low earners that are a higher percentage of their previous earnings (i.e. a higher replacement rate), thus subsidizing the consumption smoothing of people who are less well-off, but not necessarily poor. Since life-long earnings are uncertain from the perspective of an individual, such a system can be thought of in two ways: as redistribution, or as insurance against the consequences for retirement of low earnings during a significant part of one's career. There can also be redistribution towards families, for example paying a higher pension to a married couple than to a single person, even though both households have paid the same contributions.

Pension systems can also redistribute across generations. For example, a government may reduce the contribution rate or increase the benefits of the present generation. Such a move requires future generations to pay higher contributions or to have lower pensions, thus redistributing from those later generations to the earlier elderly generation.

OTHER OBJECTIVES. Alongside the primary objectives of consumption smoothing, insurance, poverty relief, and redistribution, policy may have secondary objectives that are not direct purposes of the pension system itself but are related. One is

economic development broadly and economic growth specifically. Though these are important objectives, they are not the primary objectives of a pension system. There is debate about the relative weights accorded to old age security and to these secondary objectives.

CONSTRAINTS. Sustainability, though highly desirable, is most usefully thought of as a constraint on policy design. Sustainability is desirable not for its own sake, but because it is necessary to the achievement of the primary objectives: a system that is not sustainable will fail to provide efficient consumption smoothing, insurance and/or poverty relief.

3.2 Objectives of the pension system in Sweden

3.2.1 Founding principles

The 1998 reforms were based on a set of founding principles. In summary:

- There should be a clear link between contributions and benefits, and fairness across generations;
- The system should be tied to economic growth and demographic change to maintain financial sustainability;
- The system should allow individuals to choose investments for part of their pension.

The Pensions Group was set up to negotiate the legislation, secure its support in Parliament and oversee its implementation. Part of the last task was to adjust the details of the system in the light of the founding principles, i.e. its remit was to protect the system rather than to reform it.

PRINCIPLE 1: THE LIFE INCOME PRINCIPLE. The idea behind this principle is that every krona of contribution for every person should count the same, avoiding the regressive redistribution of the old system. The principle has strategic implications.

- The inkomstpension has an actuarial relationship between an individual's contributions and the benefits he/she receives.
- Since the intention is to keep the contribution rate constant, adjustment falls entirely on the benefits side.

- If the balance ratio shows a shortfall, the costs of adjustment fall on current contributors and pensioners. Thus each generation is self-financing.
- Generations who live in good times (i.e. with rapid earnings growth, and hence a higher notional interest rate) receive a larger pension relative to their previous earnings than generations who live in less-good times.

PRINCIPLE 2: AUTOMATIC ADJUSTMENT TO ECONOMIC FLUCTUATIONS. This is the purpose of the brake mechanism.

Principles 1 and 2 lead to arrangements that mirror a defined-contribution system in some respects but not others.

- The system is like a defined-contribution arrangement in that the two Principles embody a self-imposed constraint that adjustment is (a) automatic and (b) rapid, hence (c) that risk can be shared only among current participants, with fundamental implications discussed in section 7.
- It is unlike a defined-contribution system, in that a person's pension wealth is crystallised year by year, so that adjustment is via the return to a person's accumulation, not the capital value of the accumulation. Thus pensions after the economic crisis showed much less volatility than was the case in fully-funded defined-contribution arrangements for people retiring around 2008. NDC exposes pensioners to less risk than fully-funded individual accounts.

PRINCIPLE 3: AUTOMATIC ADJUSTMENT TO CHANGES IN LIFE EXPECTANCY. For a given notional accumulation, the pension a person receives at a given age depends on the remaining life expectancy of his or her birth cohort. As life expectancy rises, the pension a person receives at the earliest eligibility age falls.

While the principle is clear, its implementation, as discussed in section 7.3.2, requires two elements: a reduction in the monthly pension via the longevity coefficient, in the interests of sustainability, and an increase over time in the earliest eligibility age, in the interests of adequacy.

PRINCIPLE 4: A GUARANTEED PENSION. The primary purpose of the inkomstpension is consumption smoothing by providing a benefit directly linked to a worker's notional accumulation. The

primary purpose of the guaranteed pension is to ensure that the system provides adequate poverty relief.

As discussed more fully in section 7.4.1, this design helps poor older people who receive the full guaranteed pension but provides declining subsidy to the consumption smoothing of the near-poor who face the taper shown in Figure 3, and none to those (not all of them well-off) above the taper.

PRINCIPLE 5: A PART OF THE SYSTEM THAT IS FULLY-FUNDED AND PROVIDES INDIVIDUAL CHOICE. Section 5 discusses whether and to what extent individual choice is beneficial, and section 4.2 whether full funding is necessarily optimal.

3.2.2 Clarifying objectives and constraints

The founding principles include poverty relief (via the guaranteed pension) and consumption smoothing (via the life income principle). It can be argued, however, that they focus more heavily on the constraint of sustainability than the primary objective of adequacy.

Setting out the objectives and constraints more explicitly would be useful to open up discussion of the relative weight each should be accorded.

Some of the issues are illustrated by a series of questions.

- What relative weights should be given to the different objectives? A strict relation between contributions and benefit would imply that redistribution from richer to poorer should be limited to the guaranteed pension, i.e. a zero weight to redistribution to assist consumption smoothing except for the poorest elderly. Currently, about 9.4 per cent of contributions to the inkomstpension come from the central government budget and are targeted mainly at low earners. Thus the system gives a positive but fairly low weight to assisting the consumption smoothing of low earners. There is nothing wrong with this choice – but it is a legitimate topic for discussion.
- Are the objectives well specified? The objective of allowing individuals to choose investments for part of their pension merits discussion. First, it not a primary objective of a pension system. Second, the lessons from the economics of information and – increasingly – from behavioural

economics, raise questions about how much choice is desirable, discussed in section 5.2.
- What are the tradeoffs between objectives? Intergenerational fairness is important. But a system that is regarded as fair in a static context (e.g. with a constant age profile), will face shocks. For example, demographic change affects output; the costs of lower output have to fall somewhere. Thus intergenerational fairness is part of the picture but so is risk sharing, discussed in section 7.
- Is risk-sharing optimal? The life principle leaves no room for government discretion and thus provides some protection against government failure; but in doing so it forgoes the potential benefits of wider risk sharing.[10]

The answer to questions like these has a bearing on policy design, including issues such as:

- How high should the guaranteed pension be?
- What is the appropriate link between contributions and benefits. The inkomstpension includes horizontal redistribution, e.g. for women caring for young children or unemployed people, but not direct vertical redistribution (e.g. a formula which gives more pension per kronor of contribution for a lower earner than a higher). Are these the relative weights which the electorate wants?
- Should the replacement rate provided by the inkomstpension and premium pension be higher (or lower) than currently?
- How should the costs of demographic change be shared between workers, pensioners and taxpayers?

None of these questions has a definitive answer, which will depend on the weights given to different objectives. However, it would be desirable to encourage public discussion of (a) the objectives of the system, including the founding principles and (b) their relative weights. Though the founding principles may have been right given the political economy of 1998 (a backdrop of acute economic crisis, hence the weight given to sustainability), it may be time to consider the relative weights that the design of the system gives to sustainability and adequacy, especially give the swath of new

[10] Two explanations have been offered for this arrangement: distrust of government, or a political exchange whereby the government gave up its powers as a quid pro quo for the trade unions giving up theirs.

budget rules, methods of audit, etc., internationally. We return to the topic in section 7.5.

Explicit discussion of objectives has two sets of benefits: agreement about objectives assists policy design; and it makes it possible to evaluate the system in terms of how well it achieves its stated objectives.

4 Adequacy

One measure of adequacy is the replacement rate, i.e. the ratio of pension benefits to monthly earnings (after taxes and transfers) during work. The replacement rate can be defined in two ways.

- Defined as the average person's pension benefit as a per cent of the average wage, the replacement rate is a measure of the living standards of the elderly relative to those of the working population, i.e. measures the extent to which pensions provide poverty relief. Section 4.1 discusses this aspect.
- Defined as an individual pensioner's benefit relative to his or her previous wage, the replacement rate is a measure of the effectiveness of consumption smoothing. The extent to which a system provides a replacement rate relative to previous earnings which is (a) adequate and (b) broadly in line with what was promised, is important for the legitimacy of a system. Section 4.2 discusses this aspect.

Section 4.3 considers whether the system provides adequate insurance.

4.1 Poverty relief

4.1.1 The contributory principle

The contributory principle assumed that workers would have a long history of stable employment, so that coverage would grow. There are various reasons why history did not bear out this prediction.

- The changing nature of work: people are not necessarily in full time employment for the whole of their career: as well as

full-time employment, they may have periods in education and training, self-employment, part-time work, and periods outside the labour force, for example caring for young children.
- Family structures have become more fluid, with divorce more common than previously.
- Rising women's labour-force participation: over the postwar period in OECD countries, women in increasing numbers have taken on paid work.

The first driver of change means that on average workers will have less complete contributions records. The second and third emphasise the need for pension design which recognises a woman's contribution record and which can accommodate the division of pension assets if a marriage ends in divorce.

The argument for a non-contributory element like the guaranteed pension is that it strengthens poverty relief. There are also advantages in terms of gender balance, since women on average have more fragmented contributions records than men.

As its name implies, the distinguishing feature of a non-contributory pension is that eligibility does not depend on a contributions record, but on other criteria.

- An age test: the age at which a person first become eligible can be lower or higher, and can be static or tied in some way to life expectancy.
- A residence test: residence requirements for eligibility can be more or less stringent (we return to the topic in section 4.1.2).
- A pensions test or income test: the size of a person's non-contributory pension may be reduced in respect of other pension income he or she has (a pensions test) or income from all sources (an income test). In either case, the taper can be more or less steep. A particular form of taper is an affluence test designed to screen out only the people with the highest incomes.[11] In 2010, for example, 95 per cent of Canadian pensioners received the full non-contributory Old

[11] An affluence test contrasts with an income test. In the latter case, the taper starts at a low level of income and thus screens out all except the poor. An income test has significant ill effects, including incentives against work effort and pension saving by lower earners. An affluence test largely avoids these.

Age Security pension, and only the top 2 per cent of income recipients received no Old Age Security pension at all.

As discussed, the guaranteed pension in Sweden is based on an age test, a 40-year residence test and a pensions test.

Several OECD countries have non-contributory pensions, including Australia, Canada, Chile, New Zealand and the Netherlands (the last has interesting characteristics, described in Box 3). Chile introduced a non-contributory pension in 2008 explicitly to address elderly poverty which was widespread, notwithstanding the existence of a guarantee for workers with at least 20 years of contributions to the system of individual funded accounts (for fuller discussion of Chile, see Barr and Diamond, 2008, Chs 12 and 13). And there is evidence that non-contributory benefits have wider gains.[12]

Box 3: The citizen's pension in the Netherlands

The Netherlands has a non-contributory pension, payable at 70 per cent of the net minimum wage. A person with insufficient years of residence receives a partial pension and is potentially eligible also for income-tested social assistance.

The system differs from conventional systems of social security in two ways: the benefit is based on residence, not contributions; and the benefit is financed through an earmarked tax, the AOW premium, which is additional to, but integrated with, the income tax. The tax base for the AOW premium is income, not earnings, and the premium is paid only by people under 65.

It is interesting to reflect on the nature of the arrangement. From one perspective the benefit is non-contributory, thus addressing problems of coverage. However, the benefit is financed from the AOW premium and can therefore be regarded as contributory, although there is no requirement to have had any taxable income. Each of these views is valid, and each has support from a different political perspective. The trick is to require contributions, but not to make benefits conditional on a person's contribution record.

[12] For example, Fishback et al. (2007) show the improved health outcomes which followed surprisingly rapidly after the introduction of a federal safety net in the USA as part of the New Deal.

4.1.2 Areas for discussion

Founding principle 4 was that there should be a guarantee mechanism to provide poverty relief. The defining characteristics of a non-contributory pension of this sort are (a) the level of benefit, including the relative treatment of single people and couples, (b) the age from which the benefit is payable, (c) the design of the residence requirement and (d) the design of the taper in respect of income from pensions or other sources. These are discussed in turn.

THE LEVEL OF BENEFIT. As noted in section 1.2.3, the guaranteed benefit is indexed to prices not wages so that, in the absence of discretionary action, the gap between the guarantee pension and average earnings will increase. At the heart of the design of the guarantees pension, therefore, is the objective of relieving absolute rather than relative poverty.

It was argued at the time of reform that a low replacement rate would have beneficial labour-supply incentives. As with other aspects of the reforms, the approach might have been appropriate at the time, but may be a less good fit today, when the principles underlying the reforms have become embedded. It can be argued, for example, that other aspects of pension design, particularly those discussed in section 6.2 have a much greater influence on the labour supply of older workers.

Table 4.1 shows that in the mid-2000s the replacement rate of an average person over 65 in Sweden was equal to the OECD average of 82 per cent of the average for the population as a whole. For people aged 66-75, the figure was 91.6 per cent, and for people over 75, 69.8 per cent. The table also shows replacement rates for selected other countries, chosen because they have non-contributory pensions.

Table 4.1 Incomes of older people, mid 2000s, selected countries

	Incomes of people aged over 65 per cent of population incomes			Incomes of single over 65s relative to other over 65s	Average incomes of over 65s (USD, PPP)
	All aged over 65	Age 66-75	Aged over 75		
Canada	90.8	94.8	85.4	73.7	26,510
Netherlands	87.0	89.3	83.8	86.9	26,538
New Zealand	68.0	69.7	64.5	75.8	14,921
Sweden	82.0	91.6	69.8	65.0	18,165
OECD30	**82.4**	**85.9**	**77.9**	**73.1**	**18,271**

Note: PPP exchange rates are based on cross-national comparisons of actual consumption.

Source: OECD (2011, p.147).

Defining poverty as income of less than 50 per cent of median household disposable income, Table 4.2 shows that in the mid-2000s these figures translated into a poverty rate in Sweden of 6.2 per cent of people over 65, of whom 3.4 per cent were aged 66-75 and 9.8 per cent were over 75. These figures compare favourably with the OECD average, though the poverty rates tend to be somewhat higher than in the other countries in Table 4.2, which have more fully-articulated non-contributory pensions.
These data suggest that in Sweden:

- Average relative pensioner income is close to the OECD average, slightly below that in Canada and the Netherlands, but higher than that in New Zealand.
- The guaranteed pension is residence based, so the incidence of elderly poverty (6.2 per cent) is considerably below the OECD average (13.5 per cent), but somewhat higher than in the Netherlands (2.1 per cent) and New Zealand (1.5 per cent).
- The poverty risk rises with age: pensioners face a higher risk of poverty than younger people, and older pensioners a higher risk of poverty than younger pensioners.

Table 4.2 Income poverty rates by age, sex and household type, selected countries

Income poverty rates

Percentage with incomes less than 50 cent of median household disposable income

	Older people (aged over 65)							Whole population (all ages)
	All 65+	By age		By sex		By household type		
		66-75	75+	Men	Women	Single	Couple	
Canada	5.9	5.2	6.8	3.1	8.1	16.2	3.9	12.0
Netherlands	2.1	2.2	2.0	1.7	2.4	2.6	2.3	7.7
New Zealand	1.5	1.6	1.4	2.1	0.9	3.2	1.1	10.8
Sweden	6.2	3.4	9.8	4.2	7.7	13.0	1.1	5.3
OECD30	**13.5**	**11.7**	**16.1**	**11.1**	**15.2**	**25.0**	**9.5**	**10.6**

Source: OECD (2011, p. 149).

These data need to be interpreted carefully. It is well-known that measured poverty is sensitive to the choice of equivalence scale. An equivalence scale that assumes substantial economies of scale in household formation will give a smaller weight to an extra family member, and will therefore find less measured poverty among larger households (typically those with children) and relatively more measured in smaller households, typically childless households like pensioners. In contrast, a per capita equivalence scale (i.e. based on the assumption of no economies of scale in household formation) will find fewer small households and more large households in poverty. The OECD equivalence scale gives a relatively lower weight to extra family members and thus, it can be argued, might exaggerate elderly poverty in Sweden. Thus it is right not to be too dogmatic about the absolute level of poverty; but since data for all the countries in Tables 4.1 and 4.2 are based on the same equivalence scale, the position of Sweden in comparison with other countries is much less sensitive to such factors.

THE TREATMENT OF COUPLES. Single pensioners and pensioners couples fare very differently. The figure for poverty of 6.2 per cent of people over 65 in Sweden breaks down into 1.1 per cent for couples and 13 per cent for single people, both the absolute and relative difference being much higher than in the Netherlands and New Zealand. In 2012, the guaranteed pension was SEK 7,810 per month for a single person and SEK 6,967 for each partner in a couple. As noted earlier, 15 per cent of men

retiring in 2011 received at least some guaranteed pension, and 51 per cent of women. Many single pensioners are women whose husbands have died; women on average outlive their husbands and women, on average, have smaller pensions in their own right. Thus it is not surprising (Table 4.2) that 7.7 per cent of women aged over 65 are poor, compared with 4.2 per cent of men. The caveats about equivalence scales apply equally here: one should not be dogmatic about the absolute levels of poverty; the data on Sweden compared with other countries, however, is robust.

THE AGE TEST. Section 7.3.2 discusses the earliest eligibility age and its adjustment to accommodate changes in life expectancy. The choice of eligibility age for the guaranteed pension should be part of that discussion.

THE DESIGN OF THE TAPER. The options include no taper (e.g. New Zealand and the Netherlands), an affluence test to screen out the highest income recipients (Canada), or a more stringent pensions test, as in Sweden. A pensions test or income test reduces the cost of a given level of benefit but may have effects on labour supply, discussed in section 6.2.2.

Given its purpose, one aspect of the guaranteed pension is unambiguously bad design – the fact that the pensions test applies to the inkomstpension and premium pension but not to occupational pensions. The anomaly that can result is that someone with only a partial career in Sweden (e.g. someone who has worked elsewhere in the European Economic Area for a good part of his career) might have only limited entitlement to inkomstpension and premium pension, and hence be eligible for the guaranteed pension even if his time working in Sweden was high earning, hence with a substantial occupational pension. An additional anomaly is that foreign occupational pensions are included in the pensions test. There are good reasons for extending the pensions test for the guaranteed pension to all pension income.

THE RESIDENCE REQUIREMENTS. Residence requirements for non-contributory pensions vary considerably across countries. The most stringent, the Netherlands, requires 50 years of residence for a full non-contributory pension. In contrast, New Zealand Superannuation is subject to ten years' residency since the age of 20 and not less than five since the age of 50. In Canada, the residence requirement for Old Age Security (OAS) is 10 years since the age of 18 for pensioners living in Canada, and 20 years for

a person who wishes to receive an OAS pension while living outside Canada.

These findings raise a number of questions:

- Poverty relief:
  - The level of benefit: price indexation implies the aim of relieving absolute rather than relative poverty. Is this still the desired objective?
  - The treatment of single pensioners and couples: is the relative size of the guaranteed pension for single people (SEK 7,810 per month in 2012) and couples (SEK 6,967 for each member) is the right one?
  - Are the residence requirements a non-trivial cause of elderly poverty?
- Consumption smoothing and insurance:
  - Are the arrangements for sharing entitlements to earnings-related pensions between spouses or cohabiting couples the right ones?
  - Are the arrangements for joint-life annuities the right ones?

The latter two questions are discussed in section 4.3.

4.2 Consumption smoothing

4.2.1 Accumulating benefits during working life

It is necessary to consider separately the way contributions during working life are indexed and the treatment of benefits in payment.

THE TREATMENT OF CONTRIBUTIONS DURING WORKING LIFE. A worker's contributions grow in line with the notional interest rate. The definition of the notional interest rate is an important design feature. In principle, it can be related to the rate of growth of average wages, w, or to the rate of growth of the wage bill, wL, where L is the number of workers. In a system which uses wL as the notional interest rate, pensions adjust more to adverse macroeconomic and demographic shocks, helping to protect the sustainability of the system. A system which uses w as the notional interest rate protects replacement rates relative to a worker's previous earnings, and hence the relative living standards of pensioners, but may require periodic adjustment to preserve sustainability.

In Sweden, as discussed, a worker's notional accumulation grows each year via the income index, a three-year moving average of changes in the nominal wage bill, wL. Thus, other things equal,[13] the notional interest rate will be lower if L declines. Such a decline could be the result of short-term macroeconomic turbulence (as after the economic crisis of 2008 which reduced employment rates) or of longer-term demographic change such as declining fertility which reduces the labour force. The income index thus combines indexation in line with increases in living standards with adjustment for macroeconomic and demographic conditions.

The definition of the notional interest rate as wL has advantages. A separate question – how the system adjusts to imbalances – raises problems which are discussed in section 7.

THE SIZE OF THE MANDATE. As discussed in section 1.2.1, workers pay contributions up to a ceiling of 8.07 times the income-related base amount. Employers pay contributions without limit but contributions on income above the ceiling are treated as general government revenue and do not entitle the worker to any additional pension.

The starting point for discussion is the purpose of the ceiling. The well-known failings of relying on voluntary pension choices create a strong argument for making contributions mandatory (Barr, 2012, section 6.2.1). However, a uniform mandate takes no account of varying preferences across individuals and different constraints, including:

- Different preferences about the time path of saving for retirement and about the balance of living standards in old age compared with working years;
- Differences in the timing of important events, e.g. whether children are born earlier or later;
- Different degrees of risk aversion;
- Different working conditions so that industries in which people work in harsh conditions, or where working life is short for other reasons, can provide for earlier retirement.

These differences matter. The well-known problems with undue reliance on voluntarism make a mandate that is too small sub-optimal. But a mandate that is too large is also sub-optimal. A

[13] In practice, the indexation of a worker's accumulation will be affected not only by changes in wL, but also by other factors such as the return on assets in the buffer fund.

person may want or need to consume more during working years, so that too high a savings mandate is sub-optimal. Or he may want to keep some pension wealth as capital, for example as a buffer against the need to finance long-term care, in which case too high a mandate to annuitise is sub-optimal.[14]

In principle, therefore, the mix of mandatory and voluntary pensions should strike a balance between (a) inefficiencies that arise from a uniform mandate that takes incomplete account of differences in preferences and constraints and (b) inadequate benefits and/or gaps in coverage that arise if the mandatory system is small. The inefficiency is greater:

- The greater the variation in individual preferences and circumstances; and
- The larger the mandate in terms of (a) the ceiling on contributions and benefits and/or (b) the percentage contribution rate which finances a high replacement rate.

The reverse is also true: the inefficiency from a well-chosen uniform mandate is smaller where preferences are homogeneous and where the mandate is smaller in terms of (a) a ceiling on contributions and benefits and/or (b) the replacement rate the system provides.

It would be useful to discuss whether the size of the mandate is still the most appropriate one, taking account jointly of the inkomstpension, premium pension and occupational pensions. Is the ceiling for contributions and benefits for the inkomstpension and premium pension pitched at the right level? Specifically, given the complexities created by the system of occupational pensions (section 10), is there a case for gradually raising the cap over time?

4.2.2 Benefits at and during retirement

THE INDEXATION OF BENEFITS IN PAYMENT (see also the discussion in Barr and Diamond, 2008, section 5.3.4).

The purposes of indexation. Effective consumption smoothing requires that the real value of a person's pension should not vary sharply or erratically. In the absence of indexation, one source of

[14] For example, a person may want to accumulate savings in case he or she needs long-term care. On the problems of financing long-term care, see Barr (2010).

such variation is inflation, which can be high and can vary significantly across years, even nearby ones.

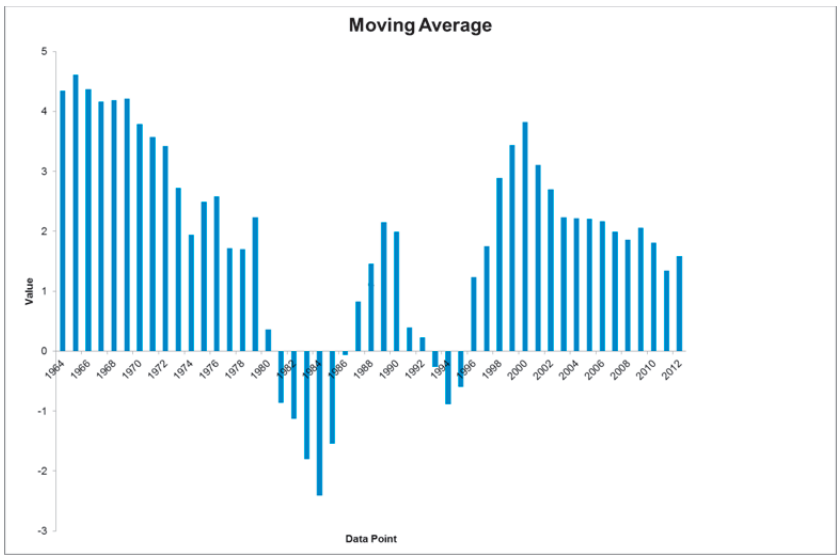
- Price indexation: if pensions are fully indexed to price change, their real value is preserved, but over time retirees will fall increasingly behind living standards generally.
- Wage indexation: if pensions are indexed to changes in nominal wages, they will keep pace with inflation provided wages do so, and will preserve the position of retirees relative to workers. However, wage indexation is more expensive for a given level of initial benefits. Wage indexation provides some risk-sharing between workers and retirees. For example, if real wages fall, the real value of pensions in payment will also fall in the short run.

Either of these rules, or a proper weighted average, is reasonable ('proper' meaning that the weights add to one). A country that is worried about sustainability and where policy makers give a relatively low weight to preserving the position of pensioners relative to living standards generally might choose price indexation, for example, from the late 1980s the UK Basic State Pension was indexed to prices, reducing the cost of the system but increasing the incidence of pensioner poverty. Many countries index pensions in payment to wage change. In Finland, benefits in payment are indexed 80 per cent to price change, 20 per cent to wage change; as a result, pensioners face some risk if real wages fall but less risk than workers, since pensions are indexed only 20 per cent to wage change.

Indexation of the guaranteed pension. As noted in section 1.2.3, price indexation is one of the sensible options, though with the risk over time of increased pensioner poverty.

Indexation of the inkomstpension. As noted in section 1.2.1, inkomstpension benefits in payment grow at the notional interest rate minus 1.6 per cent. With the notional rate equal to average earnings growth, if real earnings grow at 1.6 per cent, benefits keep pace with inflation. However, this arrangement means that pensioners who do not receive a guaranteed pension face the full risk of wage change. This, it can be argued, is suboptimal for the following reasons.

Figure 4.1 Real wage growth in Sweden, 1944-2012



Notes: Data are five-year rolling averages.

Source: Swedish National Mediation Office 2013.

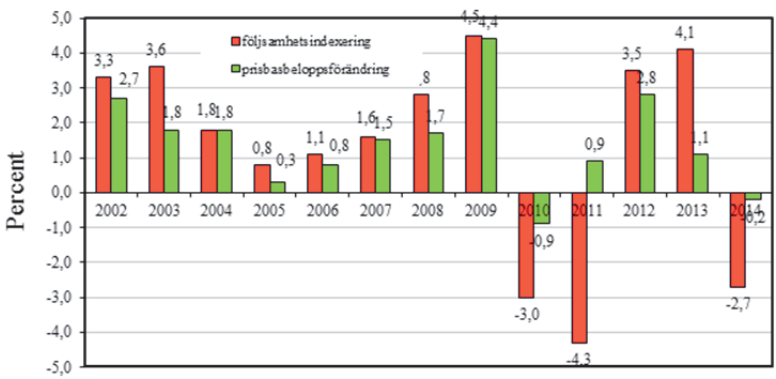
Wages on average grow faster than prices but also tend to fluctuate more than prices. Consider two systems with the same initial benefit, one which is price indexed and one which is indexed to the change in wages minus a constant set equal to the anticipated growth rate of real wages. Thus both systems have the same expected cost, but with different degrees of risk. Choosing a wage index minus a constant involves the possibility that the chosen constant may deviate from average real wage growth (a) by a significant amount and (b) for an extended period. Historically, as Figure 4.1 shows, Sweden has experienced extended periods with different rates of real wage growth.

Thus the use of average wages minus a constant exposes pensioners to more risk than a weighted average of price and wage change with the same expected cost. Figure 4.2 shows the difference: the red bars (real wage growth minus 1.6%) show greater variation in most years than the green bars (price indexation) and in some years considerably greater variation. Though the expected cost of the two sorts of indexation may be the same, actual costs may be different, hence risks are shared differently. The argument against the current method of indexation

is that though sharing risks is beneficial, the way risks are shared matters: those who are more risk averse should bear less of the risk. Workers have a greater capacity to bear risk than retirees: they can adjust their earnings and their saving; and their remaining life expectancies are longer, so that they can make smaller adjustments over more years (see further discussion in section 7.1.2).

These considerations suggest that inkomstpension benefits in payment should adjust less than wages, rather than relying on wages minus a constant. The way inkomstpension benefits in payments are indexed merits serious and detailed consideration.

Figure 4.2 Indexation of inkomstpension in payment, current method and price indexed



Note: The red bars show indexation to average wage growth minus 1.6%, the green bars indexation to price change.

Source: Swedish Pensions Agency

4.2.3 Coverage

Coverage is high, but high coverage does not necessarily guarantee low rates of poverty. The arguments in section 4.1 apply to the inkomstpension, in particular the trend towards greater varieties of labour market attachment.

A question for discussion is whether over time more varied labour market attachments will erode contribution densities and, if so, whether the trend will compromise consumption smoothing.

4.2.4 Consumption smoothing: PAYG or funded pensions?

It is sometimes argued (in Sweden and elsewhere) (a) that the return to financial assets (relevant to funded pensions) exceeds the rate of wage growth (relevant to PAYG pensions), and therefore (b) that funded pensions are superior. There are three analytical flaws in that argument (Barr and Diamond, 2008, section 6.4 and Box 6.4).

- It makes inappropriate use of steady state analysis. It can be shown that in a frictionless world, the lower return to PAYG pensions is entirely the result of the 'gift' to the first generation, who receive a pension when they have paid little or no contributions. The fundamental point is that the first generation of pensioners and subsequent generations face a zero-sum game. In any move from PAYG towards funding, the cost of the gift to the first generation A has to be paid. It can be paid by the transition generation (generation B) if generation B receives no pension, or by the generation of workers at the time of transition (generation C) by financing generation B's pension out of higher current taxes, or spread over succeeding generations by financing the transition through borrowing. It is possible to alter the time path of the cost, but not to avoid the cost. Box 4 explains why the analytical error is serious.
- The argument takes no account of differences in risk.
- The argument takes no account of differences in administrative costs.

Box 4: Why inappropriate use of steady-state analysis is a major error

The errors that result from inappropriate use of steady-state analysis are more profound than is immediately apparent. The argument that a move towards funding is necessarily beneficial makes a claim for Pareto superiority that is invalid.

The point is most obvious if policymakers are establishing a pension system in a brand new country. If they introduce a PAYG system, the first generation of retirees receives a pension, but returns to subsequent generations are lower; if they introduce funding, later generations benefit from higher returns, but the first generation does not receive a pension. Thus it is mistaken to present the gain to pensioners in later generations as a Pareto improvement, since it comes at the expense of the first generation. The same argument applies in a country that already has a PAYG system: a decision to move toward funding redistributes from the current generation to future generations. The claim that a move to funding is a Pareto improvement is invalid.

4.3 Insurance

As noted in section 1.2, the inkomstpension and premium pension are structured on an individual basis. Each spouse receives the pension to which he or she is entitled on the basis of his/her individual record of work and earnings; though there is choice about when to draw pension, once pension is taken, full annuitisation is mandatory. A number of issues arise.

PENSION CREDITS are awarded to several categories of people, including university students, people who are unemployed or receiving disability pension, and people outside the labour force who have caring responsibilities.

It would be useful to discuss a number of questions about these arrangements:

- **Is it appropriate to pay pension credits to university students, who on average will receive higher wages because of their degree?**
- **Are the pension credits for recipients of unemployment benefit and disability pension high enough?**
- **Is the child-care pension credit the right size? Should it be higher, to provide a larger pension in the future; or should support be more in the present (e.g. through a larger family allowance)?**

MANDATORY FULL ANNUITISATION. Annuitisation insures the individual against the life-expectancy risk. There is a strong case against leaving the decision to the voluntary choice of each pensioner: though insurance is generally welfare-enhancing, behavioural economics gives insights into why a voluntary system leads to people not annuitising, spending too much too soon, and later regretting it (sometimes referred to as the 'red truck' syndrome, whereby a person retires, takes his lump sum and buys a red truck (or sailing boat, or similar), and subsequently regrets the choice). Such tendencies, however, do not imply that mandatory full annuitisation is optimal. Uncertainty about future expenditures and bequest motives both imply that not all wealth should be annuitised. In many countries (in the past including the UK) there is a requirement to annuitise, but also an option for a worker to

take part of his or her accumulation as a lump sum when first drawing pension.[15]

It would be worth discussing whether someone whose pension is large enough to disqualify them from entitlement to the guaranteed pension should be allowed to take a fraction of his/her pension accumulation – at least for the premium pension – as a lump sum.

TRANSFERRING BALANCES BETWEEN PARTNERS. Consider a couple where the husband has a record of continuous high earning employment, and the wife one of low earnings and a low contributions density. Thus the husband has a large inkomstpension/premium pension and the wife a small one. Where a couple (a) stays married throughout working life and retirement, (b) does not differ greatly in age, and (c) shares income amicably this arrangement might be a useful rule of thumb. However, in many countries (e.g. Canada) couples have some leeway over the division of pension capital. The issue is particularly relevant where a couple divorces during working life, and hence is more salient today than in the past. The system in Sweden does not allow for transfers between partners in the case of the inkomstpension.

It would be useful to discuss the option of allowing the transfer of pension balances in the inkomstpension between spouses and registered partners upon divorce. The design of such transfers would require detailed study.

In contrast with the inkomstpension, it is possible to transfer premium pension balances between spouses and registered partners. However, pension capital transferred between spouses is reduced by 8 per cent, the argument being that most such transfers will be from men to women, who on average live longer.

It would be useful to discuss possible refinements to this blanket 8 per cent reduction.

JOINT-LIFE ANNUITISATION. The main argument in favour of joint-life annuitisation of at least of a part of a worker's pension is to prevent poverty for the surviving spouse, most often the wife. The root of such poverty is twofold. First, there are economies of scale in household formation. A single survivor of a couple typically needs about 65-70 per cent of the couple's income to maintain a broadly constant standard of living. Thus, in the absence

[15] In the UK workers used to be required to convert at least 75 per cent of their accumulation into an annuity, so could take up to 25 per cent as a (tax free) lump sum. Recently the rules have been relaxed.

of other resources, if two spouses are the same age and have identical earnings histories and identical pension benefits, the death of one may lower the living standard of the other. This is part of the reason why poverty is more frequent among widows than among married elderly women. A second reason for elderly poverty is that women frequently have lower earnings and/or a lower contribution density than men. While social policy may help to address the second reason, the first is inherent.

For both reasons, survivor pensions are an important element in preserving the living standards of the elderly.[16] However, the inkomstpension contains no provision for joint-life annuities. Thus when (as is more usually the case) the husband dies, his inkomstpension dies with him. The premium pension allows joint-life annuities, but with no requirement or 'nudge'.

Commentators in Sweden argue that a requirement to joint-life annuitisation could discourage the labour supply of married women; this outcome, it is argued, cuts against gender equality. There are several possible counter-arguments.

- In efficiency terms, it places heavy emphasis on simple, first-best rationality, i.e. that the prospect of a low pension in the future, will increase a woman's labour supply in the present.
- It implies that the costs of parenting should fall on women in old age to the extent that a woman earns less than her husband. Many would dispute this value judgement, both directly, and particularly if the reason she earns less are the career opportunities forgone because of caring activities.
- It ignores the reality that a couple is not in all respects the same thing as two single individuals. For fuller discussion of gender and family, see Barr and Diamond (2008, Ch. 8).

A central part of the debate concerns the definition of gender equality: should it focus on process, i.e. labour-force participation and child caring during active years, or on outcome, i.e. avoiding elderly poverty particularly among widows.

There are several ways of organising survivor pensions. A worker's accumulation could be used to buy a joint-life annuity with a suitable fraction (50 per cent is common) for the survivor, based on the actuarial conversion of a single-life annuity into the

[16] Though not discussed here, survivor benefits in a well-designed system should also cover young survivors, in particular young children.

relevant joint-life annuity. In a two-earner couple this could be done by both partners.

Any such arrangement could be mandatory or voluntary. With mandatory joint-life annuitisation there might be winners and losers: for example, in many countries life expectancy at a given age is lower among lower earners than higher earnings, in which case a failure to adjust annuities for differences in income could redistribute from poorer to richer people. In some systems, survivor benefits take no account of the age difference between spouses, thus redistributing from couples with a small age difference to ones with a large difference. If joint-life annuitisation is voluntary, the potential issue is one of adverse selection: couples who think that, even having adjusted for the age difference between spouses, one will live considerably longer than the other are more likely to purchase such annuities.

Different designs give different degrees of 'nudge'. Joint-life annuitisation could be voluntary, or could be the default, or could be a stronger default by requiring both partners to agree in writing that the default should be replaced by a single-life annuity for the worker. Alternatively, joint-life annuitisation could be mandatory.

The structure of benefits takes insufficient account of changes in family structure, in particular that divorce is more frequent and living arrangements vary more widely. It would be useful to discuss what these changes might imply, including:

- **Widening and improving options for sharing pension capital at divorce;**
- **Improving the design of survivor's benefits, in particular whether the inkomstpension should retain its current strict individual basis.**

THE CALCULATION OF ANNUITIES.In Sweden (as in many other countries), people with better education and higher earners tend to live longer than people with low education and low earnings. If annuities take account only of a person's age and pension wealth, everyone aged (say) 65 retiring in a given year will receive a pension based on the same life table. As a result, the system will redistribute in two ways: from short lived to long lived; and, if life expectancy rises with income/wealth, also from poorer to richer. The first redistribution is that which annuities are designed to bring about; the second was presumably not the intention of those

who designed the system. Principle 1 is that every kronor should be worth the same for every person. A more sophisticated implementation of the principle, while remaining true to its spirit, would be more refined life tables which take account of wealth as well as age.

WHO SHOULD PROVIDE ANNUITIES? Insurance can cope with risk (where the probability is known) but not with uncertainty (where it is not). In principle, annuities are priced on the basis of the expected remaining lifetime of the annuitant, which is treated as a risk. That model may have been appropriate when the gap between typical retirement age and life expectancy was small, e.g. 5 years. Today, however, many people retire in their early 60s and may live for another 30 years, so that the 'funnel of doubt' about remaining life expectancy is large. It could therefore be argued that life expectancy is not a simple risk but has a significant element of uncertainty.

There are two strategic ways of addressing the problem. Governments, unlike private insurers, have sources of income other than insurance premiums; in addition, governments can change contractual arrangements (e.g. raising state pension age in the USA or UK) in ways that have democratic legitimacy – forms of adjustment that are not available to private insurers. Thus one way to address uncertainty is for the government to be the annuity provider. This is the approach in Sweden.

A private-sector solution would be through longevity bonds. Suppose that official figures consistently under-estimate increases in life expectancy. As a result, annuity providers makes losses and either leave the market or price future annuities cautiously. One way to address the problem is for government to offer longevity bonds for annuity providers to buy. In this arrangement, in (say) 2015, an insurance company would sell an annuity to an individual aged (say) 70 priced on official estimates of the remaining life expectancy of a 70-year old person in 2015. If the cohort of annuitants lives longer than the 2015 projection the taxpayer finances the resulting extra cost through the longevity bonds. Thus the insurance company takes on the risk, the taxpayer the uncertainty. This is a sensible division of labour. The role of government is to fill the missing market.

Given the range of uncertainties about life expectancy, there is a strong case for continuing the present arrangement for providing annuities.

5 Choice and competition

Founding principle 5 is that part of the system should be fully-funded and should provide individual choice. Section 5.1 considers how much choice is appropriate. Section 5.2 discusses the implications for pension design.

5.1 How much choice?

There is a strong case for limiting choice. The text here summarises arguments set out more fully in Barr (2012, section 7.3.1).

THE COSTS OF CHOICE. Choice is beneficial only where the resulting welfare gain outweighs the cost. With individual pension accounts, the costs of choice can be considerable. Over a full career an annual management charge of 1 per cent of a person's accumulation reduces the accumulation (and hence his or her pension) by 20 per cent (Barr and Diamond, 2008, Box 9.4). In addition, the administrative costs of individual accounts are close to a fixed cost, and thus bear more heavily on small accounts and in small countries with no economies of scale. Given those costs, does choice make workers better off?

INFORMATION PROBLEMS. Many people have little sense of the risks they face; many do not understand probability well; and many do not understand basic concepts in finance: Orszag and Stiglitz (2001, p. 37) quote the chairman of the U.S. Securities and Exchange Commission as stating that over 50 per cent of Americans did not know the difference between a stock and a bond. The problem has distributional implications, since information poverty and financial poverty are highly correlated.

Even if someone has the knowledge to choose well, the gain from choosing more effectively in any particular month is small, whereas the transactions costs in terms of time are significant.

Thus workers, particularly low earners, for whom the gain in any month is smallest, have little incentive to keep up with the changing details of alternative investments and alternative charges.

The fact that information is frequently asymmetric aggravates the problem, creating space for mis-selling. One of the roots of the financial crisis was that sellers of financial products often had a better idea of their riskiness than buyers.

BEHAVIOURAL PROBLEMS arise with pensions in two ways: people may do a bad job of working out their optimal pension strategy (bounded rationality), or they may know the right strategy but fail to carry it out (bounded will power).

Bounded rationality arises where a problem is too complex for a person to make good decisions, even when provided with the necessary information. Such problems are more likely where the time horizon is long, the outcome involves complex probabilities, or the details are complex, all of which characterise most pension products. Bounded rationality leads to poor choices in several ways. Of particular relevance to pensions is immobilisation: complexity and conflicting information can lead to passive behaviour, where people act like rabbits in a car headlight. More options can result in lower participation.

Bounded will-power: though many people know that they should be saving more, they frequently do not do so. Experimental evidence supports a tendency in some circumstances for people to have a higher discount rate in the short run (that is, a tendency to instant gratification) and a lower one in the medium term. Thus people are more rational for the future than for the present. The problem is that when the future arrives, it becomes the present; hence short-term gratification continues, leading to time-inconsistency.

5.2 Implications for pension design

5.2.1 General discussion

These information and behavioural problems help to explain the considerable divergence between what first-best economic theory predicts (optimal voluntary savings and voluntary purchase of annuities) and what we observe in practice, including procrastination, inertia and immobilization.

The literatures suggest a number of lessons of direct relevance to Sweden, where workers are supposed to choose a premium pension provider from nearly 800 funds, yet the great majority make no choice at all.

- Voluntarism plus public education are insufficient. Automatic enrolment or mandatory contributions are generally beneficial.
- In sharp contrast with simple first-best theory, keep choices simple. Constrained choice is a deliberate and welfare enhancing design feature.
- Design a good default option for people who make no choice. That default option should include life-cycle profiling, whereby young people's savings are mainly in the stock market, with assets moved into bonds as the person moves towards retirement.
- There are cost savings if administration decouples account management, which should be centralised, from investment decisions.
- Similar arguments apply to the decumulation phase, suggesting mandatory annuitisation of at least part of a worker's accumulation.

There are different ways of implementing these principles so as to simplify the choice for workers and keep administrative costs low.

SIMPLE, LOW-COST INDIVIDUAL SAVING SCHEMES. The US Thrift Savings Plan (TSP), organised by the U.S. government for federal civil servants (www.tsp.gov), has the following characteristics.

- Workers are auto-enrolled and choose from six funds, e.g. an equities fund, a government bonds fund, etc. There is also a life-cycle option.
- A government agency keeps centralised records to keep costs low.
- Fund management is on a wholesale basis. Investment in private-sector assets is handled by private financial firms, which bid for the opportunity and which have to manage an identical portfolio for their private clients, providing some insulation against political interference.

- As a result, administrative costs are astonishingly low: as little as 6 basis points annually, or 60 cents per $1,000 of account balance.

In 2012, the UK started to phase in a similar system, the National Employment Savings Trust (NEST), established under the UK Pensions Act 2008, to provide a low-costs savings vehicle, particularly for low-to-moderate earners (http://www.nestpensions.org.uk/).

Kiwisaver individual accounts in New Zealand, introduced in 2007, are a variant of this approach, and the first example of automatic enrolment on a national scale, reinforced by a government match for contributions up to a ceiling, plus a one-off payment when the account is first opened. The combined effect of these factors was considerable. In 2007, 13 per cent of workers belonged to an occupational scheme and 5.5 per cent to a personal scheme. KiwiSaver achieved coverage of 44 per cent within its first year, about three-quarters of which was through occupational provision, the rest through personal plans – see Rashbrooke (2009) for further details.

COLLECTIVE DEFINED-CONTRIBUTION SCHEMES. Alongside the non-contributory pension described in Box 3, the Netherlands has a system of de facto mandatory membership of occupational pensions. The system has evolved over the years in the face of financial pressures.

- In 1998 about two-thirds of workers were in final-salary defined-benefit schemes, and most of the rest in career-average schemes.
- In the early 2000s there was a move from final pay to career average, which reached three-quarters of the work force by 2004, and a smaller move to defined-contribution arrangements.
- As a response to stricter funding requirements and declining financial returns, there was a restructuring of pensions, with a reduction in the accrual rate and of the indexation of benefits in payment if funding fell below a threshold, and with some increase in contributions, depending on the solvency of each fund.

These reforms were not sufficient to bring the system back into balance. The Pension Accord of Spring 2010 recommended further reforms, of which two stand out.

- A formula for increasing the earliest eligibility age, both for the citizen's pension and occupational pensions as life expectancy increases, with an actuarial increase for a delayed start to benefit.
- A ceiling on contributions, thus moving the system from a career-average DB scheme more towards a DC scheme.

5.2.2 The inkomstpension

The arguments in section 5.2.1 lend support to two aspects of limited choice in the inkomstpension.

- **Choice over how much to save: the system is mandatory; thus workers do not have the choice to save less.**
- **Choice over pension provider: workers have no choice of pension provider.**

These elements should be protected from naïve arguments that increased choice necessarily increases welfare.

5.2.3 The premium pension and default fund

THE PREMIUM PENSION. At the end of 2012, the premium pension encompassed 793 funds administered by 104 different fund management companies. A worker has three choices: choose one of the 793 funds; or choose one of the funds offered by AP7; or do nothing, in which case he or she is placed in the default fund.

The premium pension is controversial, particularly because it transfers risk from the government, who faced most of the risk under the old system, to the individual. Some Swedish participants in the debate are worried about a move to shift risk back to government. Others talk about it as a 'Trojan horse' for further privatisation, and others as a necessary price for Conservative support for the reforms.

THE DEFAULT FUND. Though in principle workers should choose their own Premium Pension, few do so. Table 5.1 shows that, despite a major push to educate workers at the time of the

reforms, by 2005 over 90 per cent of new entrants to the labour force and by 2010 over 98 per cent ended up in the default fund. It is true that some new entrants make a choice later, but even so, as of 31 December 2011, 42 per cent of all participants were in the default fund. This outcome should not be surprising. Three out of four Swedes regard themselves as having insufficient knowledge to choose their own premium pension investments (http://www.ap7.se/en/Our-products/) (bounded rationality), quite apart from the behavioural issues discussed earlier.

Table 5.1 Share of first-time choosers investing in the Swedish default fund, 2000-2011, per cent

2000	33.0
2001	82.0
2002	86.0
2003	91.6
2004	90.6
2005	92.0
2006	92.6
2007	98.4
2008	98.4
2009	98.4
2010	98.4
2011	98.5

Risk profile. The default fund invests heavily in equities for younger workers, where 'younger' is currently defined as under-55. The argument for an age as high as 55 for younger workers is twofold: life expectancy at 55 is 85; and most people choose to base their annuity on unit-linked insurance, since that is the default at retirement, rather than conventional insurance (chosen by 15 per cent at retirement), and are therefore dependent on fund performance not only during the accumulation phase but also during drawdown. A separate argument is that what matters is the risk profile of the pension system as a whole rather than that of one of its components. The premium pension is the most risky. However, there is also risk in the inkomstpension (sections 7.4 and 7.5); and occupational pensions are becoming more risky for the individual worker than previously as the move towards defined-contribution arrangements takes place.

Fund management. The underlying principle is to maximise diversification and reduce political risk via a global equities fund with 50 per cent leverage. To keep costs low, the base portfolio is under passive management.

Choice in the premium pension is excessive. As discussed, even for someone with the necessary knowledge, the gain from choosing more effectively in any particular month is small, whereas the transactions costs in terms of time are significant. The problems of procrastination and immobilisation are amplified by the information problems and behavioural issues discussed in section 5.1.

A number of questions arise.

- **Riskiness:**
  The cutoff between younger and older workers at 55 seems old.
  Is the riskiness of the system as a whole too great?
- **Choice:**
  Should people be allowed to choose unit-linked insurance?
  Should people be allowed choice outside the funds offered by AP7? Illustrating the limited benefit of choice, many knowledgeable professionals choose to be in the default fund.
  Should the extent of choice increase with the size of the person's premium pension accumulation, i.e. should the choice outside the default fund be open only to individuals whose accumulation exceeds a specified size?

Depending on the answers to those questions, several strategic options are open.

- **Incorporate the contribution to the premium pension into the inkomstpension, thus changing the balance of choice, risk and administrative costs in ways that can be argued to be beneficial.**[17]
- **Reform the premium pension, in particular to slim down choice sharply as, for example, in the Thrift Savings Plan or NEST.**

[17] The argument that the premium pension offers excessive choice suggests restricting or removing choice. The argument that to assist balancing, the contribution to the inkomstpension could be increased and that to the premium pension reduced is entirely separate.

- Continue the present practice of allowing anyone who wishes to join the default fund.

One of the arguments in favour of decentralising investment decisions is to avoid giving a single entity too much market power and in particular to guard against government failure. The approach in the premium pension is one method, but not the only one. The Thrift Savings Plan/NEST arrangements make it possible to decentralise investment decisions as much as desirable.

6 Labour markets

As discussed in section 2, an implication of second-best analysis is the recognition that any pension system which provides poverty relief will create labour-market distortions. Thus the right objective is not to minimise distortions but to contain them, i.e. to avoid distortions that make little contribution to the objectives of the pension system. Section 6.1 considers this aspect of pension design; section 6.2 discusses the labour supply of older workers.

6.1 Containing labour market distortions

6.1.1 Strategic aspects of pension design

FINAL-SALARY PENSIONS HAVE WELL-KNOWN PROBLEMS (Barr and Diamond, 2008, pp. 57-59). They create inefficiency.

- Final salary schemes weaken the incentive to work extra hours or take on a harder job early in a person's career and, correspondingly, create undue incentives to work extra hours towards the end of a person's career. Such incentives are inefficient.
- Except in national schemes, final-salary pensions create incentives that lock a worker into his or her current job. Historically, that was one of the purposes of that benefit design. In a modern economy, labour immobility is a serious impediment to national economic performance.

They also create inequity.

- In a final-salary scheme, benefits are based on final salary but contributions are broadly on the basis of career average. At its extreme, if someone's salary doubles in his final year, his pension will double. Thus there is a cross-subsidy from

people whose earnings grow more slowly to those whose earnings grow rapidly later in their career. The former group tends to be those with lower earnings, the latter the high flyers. Thus on average, final-salary schemes redistribute from low-paid workers to senior managers. Many regard this as unfair.
- Final-salary schemes encourage mischief in the form of spurious promotions late in a person's career, favouring the well-connected.

The inkomstpension and premium pension, being NDC/DC, respectively, avoid these problems.

6.1.2 Assisting labour mobility

Multiple pension arrangements can create labour immobility. The national system of inkomstpension and premium pension avoids this problem, since there is a common structure of contributions and benefits for all workers, including workers in the private, public and municipal sectors. Alongside the national system, however, are occupational plans. As discussed in section 1.2.5, younger workers in the private sector are covered by defined-contribution arrangements, limiting impediments to mobility. But private-sector white-collar workers born before 1979 and government and municipal employees have pension plans with a defined-benefit element, some of which have formulae which give greater weight to earnings in the later years of a career, so that a worker could lose pension by changing jobs. Thus occupational pensions continue to create significant concerns about labour mobility.

When a worker moves from firm A to firm B in the private sector, he or she continues to contribute to the inkomstpension and there is no necessity to change premium pension provider, so those elements of the pension system are neutral with respect to labour mobility. So, too, are the defined-contribution occupational pensions for younger worker in the private sector. As discussed, however, older workers in the private sector and government and municipal workers may lose defined-benefit entitlement if they change jobs. The effect could be regarded as unimportant if occupational pensions were small, but some pensions, for example

for civil servants, can be large, so that the potential problem is significant. **Mobility both within and between the private and public sectors is important and merits further study. Three strategic solutions (or a combination) should be considered:**

- Portability of occupational pensions, i.e. allowing a worker who moves to a new job to take his previous accumulation with him;
- Preservation of pension rights, i.e. ensuring that person's pension benefits in a former job are not affected by his move to a new job; or
- Over time raising the cap in the national system.

6.2 Labour supply among older workers and pensioners

6.2.1 Adjusting pension benefits for earlier or later retirement

Good design suggests two elements to the relation between pension benefits and age at which pension is first received:

a) **The pension should be larger for a worker who is older when benefits begin, so as to preserve incentives to work until a suitable age for stopping work.**
b) **Either benefits should start at a given age without requiring an end to work, or they should increase significantly for a delayed start.**

Benefits under the inkomstpension and premium pension rise actuarially for a delayed start, complying with (a). And workers can choose whether they wish to defer their pension, wholly or in part, and in either case pension that is deferred increases actuarially, thus complying with (b). Another praiseworthy feature is that there is no upper age limit for starting the inkomstpension and no upper age limit for continuing to work and make contributions. **Thus the system in Sweden complies with the criteria in the previous paragraph; these aspects should all be protected.**

6.2.2 Incentive effects of benefit design

Suppose, that the poverty line is 100: regime A has a pension of 80 that is non-contributory and not income tested, topped up by an income-tested guarantee of up to 20; regime B has an income-tested guarantee of 100. In regime A, a pensioner faces an income test only over the first 20 of his income from earnings or savings; in regime B he faces an income test over the first 100 of income. If the objective is to reduce work and savings disincentive among lower earners (for whom the guarantee is relevant), regime A is better.

However, with less income testing, a given benefit costs more, and hence requires higher taxation, potentially affecting the labour supply of workers. Thus the larger is the non-contributory pension relative to the guarantee the less the disincentive for older workers and pensioners, but the greater the potential disincentive for younger workers. In theory, the optimal design will be a balance which depends on (a) technical factors such as the labour supply elasticities of younger and older workers, and policy objectives such as (b) the weight given to the labour-supply of low-earning older workers and (c) the weight given to poverty relief (since one option would be to have less income testing combined with a lower non-contributory benefit).

In Sweden, the guaranteed pension faces a taper of 100 per cent in respect of any inkomstpension up to a fairly low limit, and of 48 per cent above that, as shown in Figure 1.3, but is not reduced in respect of earnings, premium pension or occupational pension. The incentive effects are different for different groups:

- Lower-paid workers face a labour-supply disincentive (since higher earnings lead to a higher inkomstpension and hence a lower guaranteed pension), but not a disincentive against saving (since guaranteed pension faces a pensions test, not an income test).
- Someone with a small inkomstpension who continues to work past minimum pension age also faces a labour-supply disincentive.

As noted earlier, 15 per cent of men and 51 per cent of women retiring in 2011 received at least some guaranteed pension. Even allowing for the fact that some of those were previously on disability pension, the issue of labour-supply disincentives potentially arises for large numbers of people. Additionally, there is an apparent inconsistency between relying on the incentive effects of the longevity coefficient in encouraging longer working life but ignoring the disincentives of the taper for the guaranteed pension.

These considerations pose the following questions:

- **Should the taper facing the guaranteed pension be reduced or replaced by a zero taper, so that the system incorporates a citizen's pension similar to that in countries like Canada or the Netherlands?**
- **If so, should there be an affluence test (see section 4.1.1) to screen out those with the highest incomes?**

A zero taper for at least part of the guaranteed pension would be beneficial if the gains in labour supply for people of working age outweighed any disincentives from the higher taxation necessary to finance a more expensive system. The affluence test would apply only to people with a large pension, hence with high earnings during working years. Two potential gains result: an affluence test for the guaranteed pension would be unlikely to have a substantial effect on labour supply during working years for high-earning workers and, by reducing the fiscal cost of the guaranteed pension, would have less of a disincentive lower down the earnings distribution.

6.2.3 Extending working life

The arguments for later but more flexible retirement are discussed in section 7.3.1. The discussion here is not about the Why of such a move, but the How. Discussion looks in turn at the supply of older workers and the demand for them.

IMPEDIMENTS TO THE SUPPLY OF OLDER WORKERS. Choices by workers about how much work they would like to do can be hampered by a range of factors.

Attitudes. The reasons why most countries have (or had) a retirement age of 65 go back to times when life expectancy was much lower. With more public discussion, young people should

enter the labour market with the attitude (a) that the default retirement age is older than 65 and (b) that it is not a constant, but a variable whose value will rise gradually if life expectancy continues to rise. **Gradually increasing the earliest eligibility age in Sweden, the desirability of which is discussed in section 7.3.2, is important not only for fiscal reasons but because of the signal it gives, which will help to change attitudes on both on supply and demand sides of the labour market.**

A second set of helpful changes in attitude is a weaker expectation (a) that earnings will be highest just before retirement and (b) that full-time work is the norm. **It should not be regarded as unusual if earnings reach a peak and then fall as a person chooses to downshift to less stressful work and/or part-time work as he or she moves into partial retirement. It would be useful to foster public discussion of this topic.**

Rigidities in pension design. A pure final-salary scheme is death to downshifting – a problem which the system in Sweden avoids. **Sweden is unusual (and praiseworthy) in that the national system does not force workers to make a binary choice between work and pension, but allows partial deferral, e.g. the option to draw 25%, 50% or 75% of a person's pension, while the deferred element continues to grow.**

Rigidities in design arise also for occupational pensions, particularly for older workers with entitlements built up under earlier versions of occupational plans. Occupational pensions are discussed in section 10.

Loss of benefits on transfer from work to retirement. If a move from full-time employment creates a step drop in fringe benefits, the disincentive to downshift is clear. In the USA, for example, the potential loss of health benefits creates a direct disincentive for a worker to change employer or to downshift. Again, the system in Sweden avoids this problem.

Rigidities in labour markets. Labour markets in most countries are still heavily geared to a binary choice – no work or full-time work – affecting people's attitudes.

IMPEDIMENTS TO THE DEMAND FOR OLDER WORKERS. The supply side of the labour market – i.e. the willingness of older people to work – is important. But the demand side – i.e. the willingness of firms to hire older people – is equally important.

Age discrimination is an important problem and one that needs to be addressed. But it is mistaken to think that it is the only

problem. Imagine an enlightened employer who wants to employ older people but also has to pursue shareholder value. What factors would an employer legitimately and rationally regard as impediments to employing older people? If policy takes insufficient account of these factors, the result will be indirect discrimination; regulation (i.e. against discrimination) and incentives need to be aligned.

Fixed costs of employment. If an employer pays a fixed medical insurance premium for each worker, the incentive is to minimise the number of workers and maximise hours of work. This is death to part-time work. Any non-proportional employer contribution has a similar effect. It would be useful to check that employer costs are as proportional as possible to pay and hours of work.

Higher insurance premiums for older workers create a direct disincentive to hire them.

Contractual issues. There are also indirect costs.

- Transactions costs: if a worker wants to downshift at his/her existing employer, time is needed to negotiate the deal. This is true where downshifting involves a move to part-time work, and even more where it involves a move to a different type of work.
- Uncertainty: legal uncertainties can add to transactions costs, e.g. whether it is legitimate to reduce the wage of a worker who has become less productive or wishes to reduce stress by moving to a lower productivity job.

It may be that employment law in Sweden should be reviewed to mitigate any such problems. It would also be useful for employer organisations and trade unions to draw up some sample contracts to illustrate best practice.

Rigidities in labour markets. Employers wish to hire people at a wage that reflects their productivity, which in turn depends, inter alia, on their skills and health. To the extent that rigidities interfere (e.g. agreements that prevent a worker being offered a job at a lower wage by his existing employer) there is a clear disincentive against employing older workers. Again, a review of labour law might be useful.

Skills and training. On the face of it, the payoff to training earlier in life is higher because the payoff period is longer. However, with technological advance, skills go out of date more

quickly, reducing the payoff period and thus making it more worthwhile than previously to train older workers. **Access to training is central to extending working life. Thought needs to be given separately (a) to delivery, e.g. what training, decided by whom, delivered by whom?, and (b) to finance, i.e. who should pay for training?**

Health at each age is improving on average over time. However, it remains the case that older workers might experience more health problems than younger workers. An empirical question is the relative productivity of younger and older workers. The latter group might have poorer health on average but less absenteeism for other reasons (e.g. binge drinking); and greater experience may partially offset health effects. **Public discussion would be useful (a) on the empirical facts and (b) of the implications for labour law, e.g. the terms on which less productive workers can be paid less.**

7 Risk sharing

The future is an uncertain business. Thus it is inevitable that pension systems face risks, and a central feature of a pension system is how it shares those risks. Pensions can be adjusted on different margins, with major implications for the distribution of contributions and benefits, both for a given cohort of workers and pensioners and across cohorts. Adjustment also has considerable relevance to sustainability. Thus there is a close connection between the discussion in this section and the next.

After discussing the principles of risk sharing in section 7.1, the next three sections discuss risk sharing through the guaranteed pension (section 7.2), and through adjustment of the inkomstpension in the face of demographic change (section 7.3) and economic fluctuations (section 7.4). Section 7.5 discusses whether risk sharing should be wider.

7.1 Principles

7.1.1 Risk-sharing in pure defined-contribution and defined-benefit systems

In a defined-contribution system, each member's contributions are used to buy assets; the accumulation of assets in a person's account finances his or her consumption in retirement through an annuity or in some other way. In a pure defined-contribution system, a person's consumption in retirement, given life expectancy at retirement age and the rate of interest, is determined by the size of his or her lifetime pension accumulation. Though annuities offer protection against the risks associated with longevity, a pure defined-contribution system leaves the individual facing the wide range of risks associated with varying real rates of return to

pension assets, the risks of higher or lower future earnings and the future pricing of annuities.

In a defined-benefit system, the plan sponsor promises to pay an annuity which is related to the worker's wage history and length of service, and hence is, in effect, wage indexed until retirement. The employee contribution is generally a fraction of her salary. Thus, the employer's contribution becomes the endogenous variable. In a pure defined-benefit scheme, unless the firm goes bankrupt, the firm or industry bears the risk of unanticipated changes in the real rate of return to pension assets. Thus defined-benefit systems have the capacity to share risks more widely than defined-contribution schemes.

7.1.2 Guidance from economic theory

RISK-SHARING GENERALLY RAISES WELFARE, hence the amount that people are prepared to spend voluntarily on insurance. Facing the individual with the entire risk (as in a pure defined-contribution scheme) is sub-optimal.

OPTIMAL RISK-SHARING SHOULD TAKE ACCOUNT OF AGE. Adjustment should avoid sudden large shocks, particularly for pensioners and for workers close to retirement. This argument applies even if the underlying utility function of an older person is no more risk averse than that of a younger person, because the welfare loss from a given adjustment will be larger for an older person, with less time to adjust. Among current workers, those closer to retirement have more constrained options for adjustment than younger workers. Adjustment to pension systems should accommodate age-related differences in the ability to accommodate shocks.

PARTIAL FUNDING ALLOWS WIDER RISK SHARING. The previous two conclusions apply whether or not a pension scheme is fully funded. Partial funding makes it possible to share risks more widely.

If (a) the target funding ratio is a binding rule, (b) any shortfall has to be made up immediately, (c) there is no taxpayer support, and (d) the pension plan continues to pay the benefits it promised, the risks in an employer-sponsored scheme fall wholly on the employer and hence on current workers, current shareholders and current customers to the extent that additional employer

contributions fall on wages or profits, or are passed on in higher prices of the firm's products. If the firm borrows to finance the deficit (e.g. by selling corporate bonds), the costs can be shared with future workers, shareholders and customers.

If legislation allows flexibility about timing, i.e. where a pension scheme is allowed to accumulate a surplus or borrow to finance a deficit, it becomes possible to share risks more widely across cohorts. And if the system includes some tax finance, risk is shared widely across today's taxpayers and, if the government borrows, with future cohorts of taxpayers.

7.1.3 Political economy: Is partial funding beneficial?

Where discretion is used well, there is a potential welfare gain from wider risk sharing, for example the Norwegian Government Pension Fund - Global (Norway Central Bank 2011) is accumulating a buffer against demographic change, thus providing some tax smoothing. On the other hand, the political risks might be larger in a system which allows more discretion. Box 5 discusses the central question of the counterpoint between (a) the potential welfare gains from wider risk sharing and (b) welfare losses if the discretion necessary to bring about such risk sharing encourages government failure. Thus the question is whether, as an empirical matter, political discretion is an additional risk or an additional insurance mechanism.

Box 5: How much discretion is optimal?

Consider the following statements:

- A major advantage of fully-funded defined-contribution pensions is that they are transparent ex ante about how risks are shared between the different stakeholders and, partly for that reason, are less prone to interference.
- Partial funding in a public or occupational defined-benefit scheme plays two important roles. One is to buffer shocks, so that short-run perturbations can be accommodated through long-run adjustments rather than large immediate changes. Second is to spread the costs and benefits of the pension system across cohorts

The first statement argues against discretion; the price is that all risk falls on current participants. The second argues that less-than-full funding makes it possible to share risks more widely. In principle, that is possible without discretion if the system incorporates automatic adjustments but it is not practical to design an automatic system that works in a satisfactory way in all circumstances – at some stage discretionary action is likely.

The second statement describes a process of long-run optimisation. The empirical question is whether that model is a good description of the behaviour of government or other plan sponsors. If government failure is a significant risk, policy may be driven more by short-term political considerations than by long-run optimisation, e.g. postponing necessary adjustment or reneging on past promises. If so, the potential benefits of wider risk sharing may be offset by the costs of sub-optimal behaviour, and hence be illusory.

The choice between (a) a more stringent defence against government failure but less risk sharing and (b) wider risk sharing, necessitating somewhat less defence against government failure is fundamental. The right answer depends, inter alia, on the weight policy makers give wider risk sharing and an empirical view of the quality of government in the country in question. The implications for pension design, however, are not clear-cut. Fully-funded individual accounts are not immune from government interference such as changing their tax privileges, interfering with their investment decisions, or outright nationalisation (e.g. Argentina or *de facto* Hungary).

THREE STRATEGIC QUESTIONS arise about risk sharing:

- Question 1: How is any shortfall measured?
- Question 2: How quickly does any shortfall have to be rectified?
- Question 3: How are the costs of making good any shortfall shared? In principle, risks can be shared by adjusting on different margins:

  Adjusting expenditure can take place (a) through transfers to the pension system, e.g. from taxpayers and/or (b) through higher contributions by workers.

Adjusting benefits can take place through (c) reducing the benefits of future pensioners, for example by reducing the accrual rate and/or (d) by reducing benefits in payment, for example through less generous indexation.

Sections 7.2, 7.3 and 7.4 focus mainly on question 3. We return to questions 1 and 2 in section 7.5.

7.2 Risk sharing: the Guaranteed pension

As discussed earlier, in 2011, 42 per cent of all pensioners and 33 per cent of all new retirees received at least some guaranteed pension. There is also a significant gender dimension: 51 per cent of women retiring in 2011 received at least some guaranteed pension. The guaranteed pension is thus an important part of the system.

Several questions arise. Is the guaranteed pension large enough? Is the relative size of the guaranteed pension for single people (SEK 7,810 per month in 2012) and couples (SEK 6,697 for each member) is the right one? Is the residence test too stringent? These questions were considered in the discussion of adequacy in section 4.1.2.

A separate issue is whether the guaranteed pension gives adequate protection against inflation to people receiving their pension. Since the guaranteed pension is indexed to changes in prices, it protects recipients from absolute poverty, since the real purchasing power of the guaranteed pension is maintained in the face of inflation. However, strict adherence to price indexation means that the replacement rate provided by the guaranteed pension will fall over time as living standards rise. In practice, the level of the guaranteed pension has been kept under review, and tax changes have meant that its real value has increased.

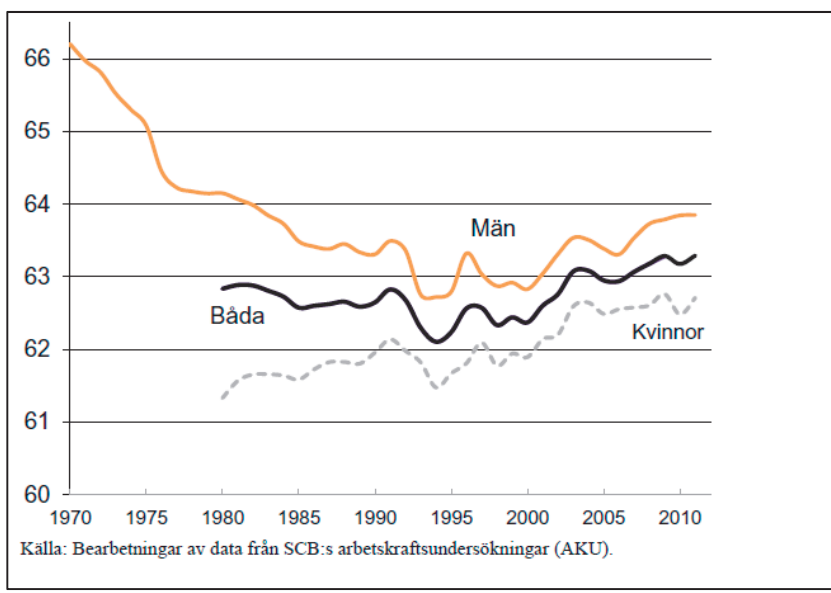
The real value of the guaranteed pension should address the risk of relative poverty, not only of absolute poverty. **It is therefore a matter of discussion whether indexation should be via a rule (e.g. indexed to increases in average wages) or whether the review process should be formalised.**

7.3 Risk sharing: Adjusting the inkomstpension in the face of demographic change

7.3.1 Later and more flexible retirement

The problem of paying for pensions is largely the result of rising life expectancy with a fixed retirement age. The obvious solution is that pensionable age should rise in a rational way as life expectancy increases. As Figure 7.1 shows, the decline in the average retirement age has been arrested, with a slight increase in recent years.

Figure 7.1 **Average age of expected exit from labour force (individuals who were in the labour force at age 50)**



Source: Compilation of data from the Labor Force Survey, Statistics Sweden. The orange line is men, the dotted line women and the black line all.

Alongside the argument for later retirement is a separate but increasingly important argument for more flexible retirement. When retirement was invented, its purpose was to weed out unproductive older workers, so it made sense for retirement to be mandatory and complete. Since then policy has faced two opposing trends: people are living longer, which implies that on average they

should work longer; and countries have become richer, so that we can afford to give people a period of leisure at the end of their working lives. The latter policy, however, means that the purpose of retirement has changed. **Today it is right to recognize that individuals vary widely in their preferences and personal circumstances. Many people do not want to retire fully as soon as they are allowed, because of the extra earnings, because postponing retirement raises their pension, and/or because they continue to enjoy working in their current job or another one.**

Pension design should seek to raise the average retirement age to accommodate aggregate resource pressures, but to accommodate differences across individuals by offering choice over how a person moves from full time work to full retirement. It is important to be clear that facilitating such choice would be good policy even if there was no problem in paying for pensions. Increasing the average pensionable age imposes the cost of adjustment on future pensioners, but flexible retirement options allow individuals to respond in the way that suits each best. As already noted, a praiseworthy aspect of the arrangements in Sweden (and one which other countries will increasingly copy) is the option to draw only a part pension.

Specifically, any well-designed pension should have three elements:

- An initial retirement age that makes it fiscally possible to provide a genuinely adequate pension;
- A subsequent retirement age that increases in line with rising life expectancy in a way that is rational and transparent, so that people know well in advance broadly when they will be able to retire;
- Labour-market institutions (section 6.2) that allow people to move from full-time work towards full retirement along a time path of their choosing.

7.3.2 Automatic adjustment via the level of benefits or eligibility age?

Founding principle 3 (section 3.2.1) is that there should be automatic adjustment to changes in life expectancy. There are two instruments for doing so: reducing monthly benefits actuarially to reflect longer life; and/or increasing the earliest eligibility age.

ADJUSTMENT VIA THE LEVEL OF BENEFITS. The chosen way of implementing the principle is by reducing actuarially the pension a person receives at earliest eligibility age as life expectancy rises.

When a person first draws inkomstpension, the pension is determined by the size of his/her accumulation and an annuity divisor based on the current life expectancy of the person's birth cohort estimated from historic data. If the cohort lives longer than expected, such that the balance ratio falls below one, the costs of adjustment fall on workers though a slower indexation of notional capital and on pensioners through slower indexation of benefits in payment. The problems with the brake as currently designed are discussed in section 7.4. In the case of the premium pension, in contrast, the annuity divisor is based on forecasts of future life expectancy, thus imposing more of the risk on pensioners.

These arrangements raise a number of questions.

- The measurement of the annuity divisor is complicated by the use of historic data for the inkomstpension and of forecasts for the premium pension. The gains in terms of risk sharing of having two different methods are not clear.
- Should the risks connected with changes in life expectancy all necessarily be borne within the pension system? As discussed in section 4.3, with longevity bonds risks are borne within the pension system and uncertainty is shared with taxpayers.
- More fundamentally, is the underlying assumption that people will act rationally appropriate? Lessons from behavioural economics call into question uncritical adherence to the assumption of rationality. There is good evidence that many people retire as soon as they are allowed to do so, whether or not that is in their own long-run best interests or those of their dependants. Thus a different mechanism might work better.

ADJUSTMENT VIA THE LEVEL OF BENEFITS AND EARLIEST ELIGIBILITY AGE. These arguments suggest that in addition to the application of the longevity coefficient at the time a person retires, there should also be a gradual increase in the earliest eligibility age. If policy makers regard it as appropriate that people on average should have a period of retirement that is half of their working life, one option is to increase the earliest eligibility age by 8 months for

every year's increase in life expectancy. Thus the earliest eligibility age is adjusted to relate the number of expected years receiving benefit to the number of accrual years.

A simple rule of this sort, may be suboptimal in theoretical terms: people are living longer, adding to the cost of pensions, but that effect is partially offset by the fact that people are better off than in the past and so can afford to spend more on retirement. However, a simple rule has advantages in terms of transparency and, through predictability, also political advantages; and the existence of a rule does not prevent periodic discretionary adjustments. If it is decided to increase pensionable age, either via a rule or through discretion, the decision should be implemented on the basis of the principles set out in Box 6.

In pursuing this approach, a number of surrounding factors are relevant.

- It would be desirable to consider simultaneously the eligibility ages for inkomstpension/premium pension (currently 61) with that for the start of guaranteed pension and the end of unemployment benefit and disability pension (currently 65).
- The increase in eligibility age should not take place on its own, but in the context of the wider labour-market policies discussed in section 6.2.3.
- Of particular importance is to address the concerns of blue-collar workers through training and health-promoting activities.

Adjusting to demographic change thus has two elements: a reduction in the monthly pension by applying the longevity coefficient at the time a person retires, in the interests of sustainability, and an increase over time in the earliest eligibility age, in the interests of adequacy.

This approach has several advantages. It addresses non-rational behaviour. The increase in the earliest eligibility age is easy to explain to the public, not least because of similar changes in many other countries. And it makes sense in terms of policy design because it uses two instruments to pursue the twin targets of sustainability and adequacy.

Box 6: Principles for adjusting pensionable age

Any automatic adjustment of pensionable age should be based on three principles.

- The rules should relate to date of birth, not to the date of retirement; otherwise there will be a wave of retirements just before any reduction in the generosity of benefits goes into effect. Such an incentive to retire is inefficient.
- Changes should be made annually, to avoid large changes in benefit levels across nearby cohorts. Large changes are inequitable and politically difficult, since benefits could differ significantly between people born only days apart. The combination of large changes and rules determined by date of retirement would exacerbate the inefficient incentive to early retirement.
- Rules for changing benefits should be explicit. Automatic adjustment with explicit rules leads to greater predictability and decreased political pressure. Automatic adjustments may function better if based on actual mortality outcomes rather than projections. Nevertheless, as with the indexation of income tax brackets, there always remains the option of legislation to change whatever the automatic rules produce.

The increase in women's pensionable age in the United Kingdom, announced in 1991, illustrates all three principles. The key date is April 6, 1950. For women born before that date, the state pensionable age continued to be 60. The pensionable age for a woman born on May 6, 1950 (one month after the key date) is 60 years and one month, which occurred in 2010, 19 years after the legislation, for a woman born on June 6, 1950, 60 years and two months, and so on. For women born on or after April 6, 1955, the pensionable age will be 65.

7.4 Risk sharing: Adjusting the inkomstpension in the face of economic fluctuations

7.4.1 Adjusting the indexation of benefits in payment

To provide efficient consumption smoothing, the real value of a person's benefit should not vary erratically with the level of inflation, all the more because inflation rates can vary significantly. The extent to which pensions in payment should be protected in the face of inflation should take account of a range of factors.

- Workers face some risks that pensioners do not, for example, a reduction in pay or job loss;
- Older people have less time to adjust. As discussed in section 7.1, optimal risk sharing therefore implies that protection should rise with a person's age. The implication is not that pensioners should be protected from all risk but that, other

things equal, they should be exposed to less risk than younger participants.
- Pensions also have a role as an automatic stabiliser which is stronger if pensions adjust less-than-fully to economic fluctuation.

Inkomstpension benefits in payment grow at the notional interest rate minus 1.6 per cent. This method of indexation is sub-optimal because retirees who receive no guaranteed pension face the full year-to-year variation in wage growth and thus face as much risk as workers. The guaranteed pension is indexed to price inflation and the taper in Figure 1.3 to a 50:50 mix of price and wage inflation. Thus the system gives people with small pensions greater protection against risk, but not those with pensions above a low level. In 2012, about 10 per cent of pensioners received only the guaranteed pension and hence were fully protected against price inflation, and about 59 per cent received no guaranteed pension and thus faced the full risk of wage change. The remaining 31 per cent of pensioners were indexed to a mix of price and wage change, some of them mainly indexed to price change, others mainly to wage change. As a broad approximation, around 60 per cent of pensioners face a regime where indexation faces them with the full risk of wage change. Unless policy makers give a very low weight to risks faced by pensioners, this method is suboptimal. Though optimal design suggests that retirees should face less risk than younger people, that does not necessarily mean that they should face no risk, hence the recommendation in section 4.2.2 that benefits in payment should be indexed in a way that retirees face less than 100 per cent of year-to-year variation in wages.

7.4.2 The operation of the brake[18]

When the balance ratio described in section 1.2.1 falls below one, reflecting a potential long-run shortfall, the brake is applied automatically, reducing the indexation of workers' notional capital and of pensions in payment. Specifically, both accruals and the indexation of benefits in payment are based not on the rate w, but

[18] The analysis in this section draws on Barr and Diamond (2011).

on the rate $(1+w)$BR-1.[19] These lower rates of accrual and indexation continue until financial balance is restored. If the balance ratio moves above one, there is period of catch-up, with higher rates of accrual and indexation. In contrast, the discount rate used to calculate a person's annuity at retirement does not change. The design of the brake has two ill-effects: it operates sharply, and it has unintended distributional consequences.

PROBLEM 1: THE BRAKE OPERATES SHARPLY. The balance ratio fell below one for the first time in 2008 so that, given lags in calculation and implementation, benefits were set to be lower in 2010 than would otherwise have been the case. Even without the brake, benefits in payment were scheduled to fall by 1.3 per cent in 2010 because of slow wage growth. The automatic brake rule would have reduced this further, the combined effect being a reduction of 4.6 per cent (Sundén, 2009, Table 2).

The magnitude of the adjustment was a result of two sets of problems. First, as discussed in section 7.4.1, the method of indexing pensions in payment (i.e. average wage growth minus 1.6%) is sub-optimal because it exposes pensioners to excessive risk. Second, the measurement of the balance ratio, particularly the estimated value of the contribution asset and the current value of the buffer fund, reflects not only long-run factors (e.g. increased longevity) but also short-run macroeconomic fluctuations that may have little to do with the long-run sustainability of the system. The problem was recognised in 1998 creating what, at the time, was an unsolved problem.

Faced with an adjustment of this magnitude, Parliament responded to a government recommendation by passing legislation altering the workings of the mechanism (i.e. through discretionary action) by averaging the buffer-fund values to reduce the initial

[19] 'When balancing is activated, pension balances and pensions are indexed by the change in a balance index instead of the change in the income index. The change in the balance index is determined by the change in the income index and the size of the balance ratio.
'An example: If the balance ratio falls below 1.0000 to 0.9900 while the income index rises from 100.00 to 104.00, the balance index is calculated as the product of the balance ratio (0.9900) and the income index (104.00), for a balance index of 102.96. The indexation of pension balances is then 2.96 instead of 4 percent. Indexation of pensions is reduced to the same extent.
'If the balance ratio exceeds 1.0000 during a period when balancing is activated, pension balances and pensions will be indexed at a rate higher than the increase in the income index. When pensions regain the value that they would have had if they had been indexed only by the change in the income index – that is, when the balance index reaches the level of the income index – balancing is deactivated, and the system returns to indexation solely by the change in the income index.' (Swedish Pensions Agency, 2012, p. 24).

impact on benefits in payment, thus spreading the adjustment over a longer period. For fuller discussion, see Sundén 2009.

PROBLEM 2: THE OPERATION OF THE BRAKE HAS UNINTENDED DISTRIBUTIONAL CONSEQUENCES. Alongside the brake mechanism is a procedure for catch-up. The combined operation of brake and catch-up has adverse distributional effects, explained in Box 7 in terms of simple examples and then discussed in more detail.

Box 7: Simple examples of the operation of the brake

The examples assume an economy where steady wage growth of 5 per cent is used as the notional interest rate. In two years when the brake is applied the notional interest rate is 4 per cent and during two years of catch-up 6 per cent. It is helpful to consider two stylised cases.

Case 1: someone who is in the labour force throughout the period of brake and catch-up. The worker is assumed to have 1000 kronor in his account when the brake is applied, to which he adds 100 each year. In years 1 and 2, the brake interest rate of 4 per cent is applied, in years 3 and 4 the catch-up rate of 6 per cent. As Table 7.1 shows, 100 is added to the account during year 1, with 4 per cent interest added at the end of the year to the initial balance plus new deposit, a total of 1144 kronor. In year 2 another 100 is deposited and the brake interest rate of 4 per cent applied to the total. In years 3 and 4 the process is identical, except that the catch-up rate of 6 per cent is applied. At the end of the period of brake and catch-up, the account balance is 1672 kronor.

Table 7.1 Example of the effect of brake and catch-up on accumulation

Year	Brake an cathc-up			Steady indexation		
	Interest rate	New deposit	Account balance	Interest rate	New deposit	Account balance
			1000			1000
1	0.04	100	1144	0.05	100	1155
2	0.04	100	1293.8	0.05	100	1317.8
3	0.06	100	1477.4	0.05	100	1488.6
4	0.06	100	1672.0	0.05	100	1668.1

In contrast, in the absence of the brake, a return of 5 per cent throughout would have produced a total notional balance of 1668.1. Thus, someone working throughout the period of brake and catch-up comes out ahead. The reason is that the catch-up rate is applied not only to the initial balance (i.e. 1000 uprated by 4 per cent) but to the initial balance plus the deposits made while brake and catch-up were in effect.

The gain is larger:

– the higher are annual deposits during the period of brake and catch-up
– the longer the period of brake and catch-up, since the higher catch-up rate is then applied to a greater volume of deposits during the brake and catch-up

phases; and

– the longer the period of brake and catch-up, since the higher catch-up rate is then applied to a greater volume of deposits during the brake and catch-up phases; and

Case 2: someone who is retired throughout the period of brake and catch-up. The retiree is assumed to have a benefit of 100 prior to the operation of the brake. With steady growth, the pension would be indexed by wage growth minus 1.6 per cent, i.e. 3.4 per cent. The application of the brake reduces this to 2.4 per cent; the catch-up rate is 4.4 per cent Table 7.2 shows the pension each year for brake and catch-up, and where steady indexation applies.

Table 7.2 Example of the effect of brake and catch-up on benefits in payment

Year	Brake an cathc-up		Steady indexation		Annualt difference
	Index	Pension	Index	Pension	
1	0.024	102.4	0.034	103.4	2.0
2	0.024	104.9	0.034	106.9	1.0
3	0.044	109.5	0.034	110.5	1.0
4	0.044	114.3	0.034	114.3	0.0

The loss is greater:

– The longer the period of brake and catch-up; and

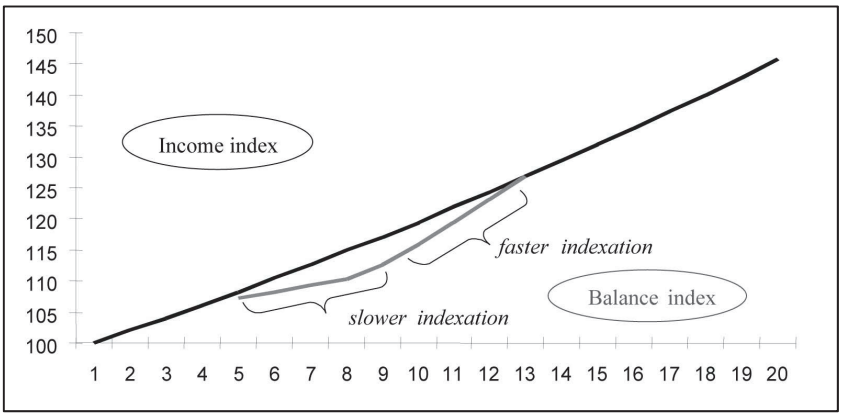
– The larger the difference between brake and catch-up rates relative to the steady growth accrual rate.

Someone who retires during the period of brake and catch-up, faces a combination of the above effects. Though the details of who gains and who loses depends on a range of factors, the major driver is timing. The later is retirement during the period of brake and catch-up, the more the situation resembles case 1, so that the person may be a net gainer, the earlier, the more it resembles case 2, so that the person may be a net loser.

In sum, the operation of the brake benefits workers and harms pensioners. For someone who retires during the period of brake and catch-up, the balance of the two effects depends on whether the person retires earlier or later.

Settergren's (2001) analysis is illustrated in Figure 7.2, where the brake is applied for 5 years with a 1 per cent lower interest rate on accumulations, followed by one neutral year and 5 years of catch-up, with a one per cent higher interest rate on accumulations.

Figure 7.2 Illustration of brake and catch-up



Source: Settergren, 2001, Figure 3.

The period of brake and catch-up restores cumulative indexing. Thus a krona in an account before the brake has the same cumulative value after catch-up is complete as if the brake had not happened. However, a krona added to an account during the period of brake or catch-up also earns the higher catch-up rate, and so is worth more than if the brake had not been applied. Thus someone contributing throughout the period of brake and catch-up comes out ahead, as discussed in Box 7, because the catch-up rate applies to the whole of a worker's account, both the amounts that were subject to a lower rate and additional deposits after the brake started.

The story is very different for those already retired before the brake starts. The increase in benefits in payment is based not on the rate of wage change minus 1.6 per cent, but by the (lower) level from multiplication by the balance index, also minus 1.6 per cent, so that the retiree gets a lower benefit. During catch-up, the index grows more rapidly than wages so that benefits are eventually restored to where they would have been without brake and catch-up, but without any adjustment for the years with lower benefits. Thus in the example, retirees have lower benefits throughout the period of brake and catch-up until the pension is restored to its previous trend level, a loss shown stylistically in Figure 7.2 as the area between the trend line and the line showing the lower level of benefits during the years of slower and faster indexation.

In sum, the operation of brake and catch-up has distributional effects across different cohorts and, within a working cohort, across workers with different age-earnings profiles. Those effects are largely arbitrary. In addition, adjustment tends to benefit younger workers and harm retirees, which is sub-optimal since retirees on average are more risk averse than workers.

7.5 Should risk sharing be wider?[20]

7.5.1 Discussion of principles

The discussion of risk sharing thus far has considered the ways in which the pension system in Sweden shares risk:

- The indexation of worker's notional capital, broadly the rate of growth of earnings, imposes the risk of economic outcomes on future pensioners;
- The life-expectancy coefficient imposes risk on workers to the extent that they work longer, and on pensioners if they end up retiring on a lower pension than would otherwise have been the case.
- The way benefits in payment are indexed imposes on pensioners the risk of fluctuations in the rate of wage growth.
- The brake imposes risk both on workers and pensioners, though the operation of brake and catchup tends to benefit younger workers and harm retirees.

These are the answers to question 3 at the end of section 7.1 (How are the costs of making good any shortfall shared?). The discussion in this section returns to the first two questions: How is any shortfall measured? and How quickly does any shortfall have to be rectified? This report does not make detailed recommendations, not least because the area is the subject of other reports, but indicates a possible direction of travel.

THE FOUNDING PRINCIPLES. The starting point for discussion are two of the founding principles.

[20] The analysis in this section draws on Barr and Diamond (2011).

Principle 1 (The Life Income principle), as discussed in section 3.2.1, embodies a self-imposed constraint that adjustment should be (a) automatic and (b) falls entirely on the benefits side. We return in section 7.5.3 to the question of what fairness between generations means.

Principle 2: Automatic adjustment to economic fluctuations. It follows from principle 1 that if adjustment is necessary, it should be rapid, to ensure that each generation is self-financing. The brake mechanism is designed to achieve that objective automatically.

Thus the constraints implicit in principles 1 and 2 are that adjustment is (a) automatic and (b) rapid, and hence (c) forgoes the potential benefits of intergenerational risk sharing. These are the answers to questions 1 and 2 at the end of section 7.1. The two principles together raise fundamental questions about the definition of intergenerational fairness, the optimal degree of risk sharing across generations, and whether or not government is to be trusted with any discretion.

RISK SHARING AMONG PARTICIPANTS. Principle 1 is that the system should be actuarial, and, as discussed in section 3.2.1, the chosen method of implementing the principle was to mimic the actuarial element in a fully-funded defined-contribution system. As discussed in Box 8, it is mistaken to compare defined-contribution and defined-benefit arrangements only in terms of the two corner solutions of strict adherence to defined-contributions on the one hand and final-salary defined-benefit on the other. It is more informative to discuss pension design as a continuum between the two extremes.

Box 8: Defined-contribution and defined benefit: How much difference?

Defined-contribution and defined-benefit systems are often presented as polar opposites, a strictly actuarial defined-contribution plan being compared with a final salary plan. The reality is more subtle. Suppose a person's earnings in a particular year is 70 per cent of average earnings that year; call that variable *x*. Call the average wage-indexed value of *x* over *n* years, $\overline{X}$, which is thus a measure of the person's earnings each year indexed by the rate of wage growth. $\overline{X}$ is the earnings base on which a person's pension in a defined-benefit plan can be determined. If *n* relates to earnings in the last year before retirement, we have a final-salary plan. But if *n* relates to a person's entire working life, and if the contribution rate has been constant, we have a career-average defined-benefit plan in which pensions are based on lifetime contributions compounded each year by the rate of wage growth. In a funded defined-contributions plan, annual contributions are compounded by the interest rate. Defined-contribution plans often have annuitisation options; defined-benefit plans can offer a lump-sum option, as in the UK and as has become more common in the USA. If the rate of interest and the rate of wage growth are similar, the difference between defined-contribution and defined-benefit can be minor.

In the limit, suppose that a defined-benefit plan *(a)* bases benefits on a person's entire working life, *(b)* has an accrual rate that is age-related (i.e. contributions in early years have a heavier weight, in the same way as compound interest), and *(c)* offers an annuity rate that is announced only at the time that a person retires. In that case, defined-benefit and defined-contribution converge for matching parameters.

In the limit, suppose that a defined-benefit plan (a) bases benefits on a person's entire working life, (b) has an accrual rate that is age-related (i.e. contributions in early years have a heavier weight, in the same way as compound interest), and (c) offers an annuity rate that is announced only at the time that a person retires. In that case, defined-benefit and defined-contribution converge for matching parameters.

The conclusion to which Box 8 leads is that it would be possible to design career average arrangements with many of the same characteristics as the inkomstpension. This is not intended as a recommendation but, rather, to indicate that continuing to adhere to Principle 1 is compatible with different ways of implementing it.

RISK SHARING ACROSS COHORTS. Principle 2, that adjustment should be immediate, is a corner solution. The opposite corner solution is that adjustment can all be imposed on future generations. In general, both solutions are sub-optimal in welfare terms.

The 1998 definition of intergenerational fairness embodied in Principle 2 is that each generation stands on its own feet. This

argument can be assessed as an aspect of solidarity, hence as a value judgement. But it is also possible to think of intergenerational adjustment as combining consumption smoothing with some insurance against adverse economic outcomes, to complement insurance via an annuity.

The strategic question is whether to adhere to the 1998 definition of intergenerational fairness. Underlying questions include:

- Is intergenerational risk sharing via the guaranteed pension sufficient, or should there be at least some risk sharing via the inkomstpension?
- How should adjustment be spread across generations? Rather than a corner solution, it might be better to frame the issue in terms of optimal national debt.
- What is the optimal time horizon for assessing the financial health of the system? And should there be measures of the financial health of the system other than the balance ratio, for example projections?
- In the light of the answers to the two questions in the previous bullet, how should the buffer fund be used (a) to provide a cushion against short-run fluctuations and (b) to avoid the necessity for sharp adjustments to long-run developments so that, as far as possible, adjustments reflect trend, not cycle? The buffer fund currently represents a funding ratio of about 11 per cent, approximately 4½ years of outgoings. Projections suggest that at the height of the baby boom the figure will be about 2.5 years outgoings. Would a larger buffer fund, allowing wider risk sharing, be desirable?
- Alongside answers in economic terms is the political economy question of the extent to which policy makers or the electorate wish to place trust in government.

The rest of this section discusses three aspects of risk sharing. Section 7.5.2 considers how to modify the design of the brake so as to share risks more fairly between workers and pensioners, i.e. continuing to adhere to principles 1 and 2. Section 7.5.3 considers a relaxation of the full application of these principles, allowing potential welfare gains from sharing risk more widely across cohorts.

7.5.2 Sharing risks differently between current participants

ADJUSTING THE INDEXATION OF THE NOTIONAL CAPITAL OF CURRENT WORKERS IN RESPONSE TO IMBALANCE. The outcome discussed in Box 6 – that workers gain higher future benefits at the same time that retirees get lower current benefits – seems wrong. It would be desirable to adjust the indexation of the notional capital of current workers, thus ensuring that workers do not gain at the expense of pensioners purely because the system goes through a period of brake and catch-up.

One solution is to have two accounts for workers during a period of brake and catch-up, one with the brake-and-catch-up applied, the other not. At the end of catch-up, each worker's account is set to the lower of the two values, so that the maximum value of the worker's account is what would have happened without brake and catch-up. For someone who retires during this period, the two separate accounts could be used for two separate benefit calculations, again with the lower of the two used to determine benefits. An alternative approach is that taken in the agency's report to government in March 2012, with proposed legislation in February 2013.[21] There are two gains from adopting one of these approaches. It prevents undesirable and unintended distributional effects; and since it avoids unintended gains, it reduces the liabilities of the system, and thus allows the balance ratio to be higher, thus limiting the losses of retirees.

A separate issue is the relative impacts on the benefits of different members of a cohort of a sustained brake without catch-up. The impacts vary, depending on the age-earnings profiles of workers. A standard defined-benefit pension plan might respond to a projected shortfall of funds by cutting all benefits by the same percentage. A deviation from equal percentage cuts might take the progressive form of a lower percentage cut for people with lower benefits. The current brake leads to a larger percentage reduction in benefit for workers with more of their earnings early in their careers, since the cumulative impact of a lower notional interest rate applied earlier in a worker's career is greater. Since age-earnings profiles tend to be steeper for higher earners, the brake on

[21] In this alternative, new pension credits are reduced before they are credited to the participant to take account of previous balancing. Pension credits are multiplied by the ratio of the balance index and income index in the year before the pension credits are earned. The ratio equals the product of all balance ratios during previous balancing periods.

average leads to larger cuts in the inkomstpension for lower earners.

A more appropriate adjustment might be a uniform decrease, since it is a response to current projections of future problems in a national system. One way to make such an adjustment is to apply the brake not to a worker's accumulation but to the calculation of his or her initial benefit. Specifically, at the time that the initial benefits of a cohort are determined, one could calculate the percentage fall in aggregate balances for the cohort as a result of the current brake mechanism compared with balances without application of the brake. That percentage could be applied uniformly to the balances of each member of the cohort, calculated without regard to the brake, and limited to being an actual decline.

Thus a person's initial pension would be based on his/her accumulation subject to adjustment for (a) past economic-performance and (b) the longevity of the person's birth cohort. The complication with this approach is not conceptual or operational, but of communicating with workers and pensioners why and how the quasi-actuarial determination of a worker's initial benefit incorporates an adjustment for imbalances in the past.

ADJUSTING THE INDEXATION OF BENEFITS OF CURRENT RETIREES IN RESPONSE TO IMBALANCE. Different methods of indexation share risks differently, and each has advantages and disadvantages. As discussed in section 7.4.1, a significant problem with the use of wage growth rate minus 1.6 per cent as the basis for indexing benefits in payment is that it puts too much risk on recipients of inkomstpension. One way to put some risk on retirees is to use a weighted average of price change and wage change. If the increase in benefits in payment is based 80 per cent on price change and 20 per cent on wage change (as in Finland), applying the balance ratio to the wage growth factor makes it only 20 per cent as large as if the balance ratio were applied to all of benefit growth. Thus retirees face some risk, but less than is borne by the future benefits of current workers, for whom the brake applies to the full amount being accumulated toward retirement. The resulting change in costs and risks should be considered alongside the welfare gains from giving pensioners better protection against risk.

Alternatively, if the present method of indexing benefits in payment were retained, the brake could be applied to part of wage growth, rather than all of it. For example, during stable times,

benefits in payment could be increased by the rate of wage growth minus 1.6 per cent, but when the brake was in effect it would be applied to 20 per cent of wage growth. That is, for the indexation of pension benefits, instead of using the rate (1+w)BR-1 (minus 1.6 per cent), the rate would be 0.8[w]+0.2[(1+*w*)BR-1] (minus 1.6 per cent).

Table 7.3 illustrates a range of cases. The first four lines illustrate the workings of the brake for different balance ratios, with modest inflation of 2 per cent and real wage growth that matches the norm of 1.6 per cent. Lower balance ratios result in lower accrual rates on a roughly one-for-one basis: an accrual rate of 3.6 per cent (equal to the rate of nominal wage growth) with a balance ratio of 1, 2.56 per cent for a balance ratio of 0.99, and 1.53 per cent and 0.49 per cent when the balance ratio is 0.98 and 0.97, respectively. Benefits in payment are indexed by the rate of wage growth minus 1.6 per cent. Thus with a balance ratio of 1 and wage growth of 3.6 per cent, benefits rise by 1.97 per cent in nominal terms and thus remain broadly constant in real terms. When the balance ratio is 0.99, nominal benefits rise by 0.95 per cent, hence real benefits fall by about 1 per cent. With a lower balance ratio, the existing indexation rule implies that benefits in payment decline in nominal terms, hence more so in real terms. Under the modified indexation rule the declines are moderated by extending the time period of adjustment, reducing the risk retirees face in any one year. With a balance ratio of 0.97 per cent, for example, real benefits fall by 0.63 per cent under the modified rule, compared with about 3 per cent under the current rule.

The next four lines show the effects of lower wage growth (0.6 per cent real), hence nominal and real benefits grow roughly 1 per cent more slowly.

The last line of the table shows the situation in 2010, based on the balance ratio in 2008, and illustrates what happens if low wage growth and a low balance ratio occur together. With low wage growth (0.3 per cent), application of the balance ratio of 0.97 would have reduced benefits in payment by 4.52 per cent in nominal terms and by 4.8 per cent in real terms. With a balance ratio as low as 0.97 and slow wage growth, modified indexation still faces pensioners with a loss, but significantly softens the decline. **It is a misreading to think of these events as a 'perfect storm' – macroeconomic turbulence will tend to affect both the balance ratio and wage growth, so that the combined effect is no**

accident. The design of the brake should recognise that the two sets of events are correlated.

Table 7.3 Effect of brake and modified brake on pensions in payment[22]

Inflation rate (%)	Nominal wage growth (%)	Balance Ratio	Nominal accrual rate (%)	Benefit growth, current indexation (%)		Benefit growth, modified indexation (%)	
				Nominal	Real	Nominal	Real
2.00	3.60	1.00	3.60	1.97	-0.03	1.97	-0.03
2.00	3.60	0.99	2.56	0.95	-1.03	1.76	-0.23
2.00	3.60	0.98	1.53	-0.07	-2.03	1.56	-0.43
2.00	3.60	0.97	0.49	-1.09	-3.03	1.36	-0.63
2.00	2.60	1.00	2.60	0.98	-1.00	0.98	-1.00
2.00	2.60	0.99	1.57	-0.03	-1.99	0.78	-1.19
2.00	2.60	0.98	0.55	-1.04	-2.98	0.58	-1.39
2.00	2.60	0.97	-0.48	-2.05	-3.97	0.38	-1.59
0.30	0.30	0.97	-2.99	-4.52	-4.80	-1.93	-2.22

7.5.3 Sharing risks across cohorts

The proponents of principle 2 (immediate and automatic adjustment) argue that it guards against government failure. That potential gain, however, comes at a price: full and immediate adjustment means that risks can be shared only among current participants. Slower adjustment makes it possible to share risks more widely, with the potential welfare gains discussed in section 7.1.2. Thus there are potential advantages to modifying the brake to reduce the likelihood of sharp shocks.

SLOWER ADJUSTMENT: SHARING RISKS ACROSS COHORTS. It is useful to have some automatic adjustment of the notional interest rate in the face of prospective problems of long-run sustainability. However, as recent experience has shown, the way the balance ratio is calculated can have a sharp impact on workers and retirees. While the balance ratio declined mainly because of the fall in asset values in the buffer fund, the ratio can also move with other variables, being based on only a few years of actual data, rather than on a

[22] Indexation of benefits in payment under the current brake is [(1+w)BR-1] minus 1.6% and under the modified brake 0.8[w]+0.2[(1+w)BR-1] minus 1.6%. In both case, the accrual rate of workers' account balances is [(1+w)BR-1].

projection that includes the extent to which recent history is thought to be permanent.

To spread the impact of a decline in the balance ratio, the brake could follow the suggestion of Auerbach and Lee (2009), and phase the impact of the balance ratio on the notional interest rate. The intuition is that, other than for a small adjustment, less than the full brake is applied; thus the period of adjustment is longer, so that the change to the system in any one year is smaller.[23]

The amount of adjustment should depend on whether the problem is one of long-run sustainability only, so that there is time to adjust, or whether there is also an immediate need to improve net cash flows. The latter could occur when the funding ratio declines to the point where significant immediate adjustment is necessary. Though a cash-flow problem is possible if the constraint of full funding is relaxed, it is less likely in a national system with considerable automatic adjustment and an adequate buffer stock of financial assets.

Strict adherence to Principle 1 in designing the brake creates problems in the relative treatment of retirees and workers, for which there is no apparent normative justification.

RISK SHARING FROM OUTSIDE THE INKOMSTPENSION? In the approach just discussed, risk sharing takes place within the inkomstpension by using the buffer. An alternative approach would be to have a guaranteed pension which rises automatically during adverse economic circumstances and falls when times are good (analogous to a petrol tax stabiliser), in which case risk sharing is financed from outside the inkomstpension. The advantage is of wider risk sharing, but with the risk that governments will increase the guaranteed pension during bad times

[23] 'That is, when the brake is in effect, the adjusted net rate of return, r_t^a , is given

(4) $r_t^a = (1+r_t)b_t - 1$.

At low values of b, this mechanism implies a near confiscation of pension wealth, a not very desirable outcome if one is trying to spread fiscal burdens among generations. We, therefore, consider a generalized version of the balance mechanism in which equation (4) is replaced by:

(5) $r_t^a = (1+r_t)[1+A(b_t-1)]-1$,

where r and b are defined as before and $A \in [0,1]$ is a scaling factor. Setting $A=1$ results in a brake like that in equation (4); when $A < 1$, full confiscation will result only when b reaches $1\text{-}1/A < 0$. Setting $A=0$ eliminates the brake mechanism, and a positive value of A that is too small will still fail to provide adequate financial stability' (Auerbach and Lee 2009, p. 54).

but claw back the increase only incompletely. For that reason, this approach is not recommended.

WHAT ROLE FOR DISCRETION? Box 5 discussed the counterpoint between tighter defences against government failure but at a price of forgoing the welfare gains of wider risk sharing. The desirability or otherwise of discretion should be seen in that context.

Given the earlier history of pensions, strict adherence to principles 1 and 2 at the time of reform in the 1990s is understandable. There are two sets of arguments why that policy might usefully evolve. First, it may well have been necessary to have a firm version of those principles at the time of the reforms as a swing of the pendulum against the faults of the old system. But after 15 years of successful reform it can be argued that the changes are embedded; the political economy of pension design has changed for the better, reducing the likelihood that limited discretion would be abused. Second, there is today greater sophistication about formulating budgetary rules and monitoring compliance with them. Third, recent events have shown that a system that is completely automatic in all circumstances is not possible. Thus a process is needed for non-automatic adjustment.

One approach is to have a procedure for periodic review. The potential gains from such a process are twofold: it allows risks arising from economic fluctuations to be shared across cohorts; and it makes it possible to adjust the system in response of risks other than economic fluctuations, notably changing social needs.

Assisting long-term financial sustainability. Governments tend to be rapid in responding to good news, for example that it would be possible to increase benefits or decrease contributions while preserving projected sustainability. Thus the risk of having a system where the primary means of adjustment is through the political process is that changes may be too large or too focused on current generations. On the other hand, governments tend to be slow in addressing a need to reduce benefits or increase contributions, hence the advantage of an automatic mechanism to take on the political heavy lifting of addressing projected unsustainability. Hence, too, the important role of the independent periodic review, whose remit includes potential adjustments to the rules for the indexation of notional capital, to the discount rate used to calculate a worker's initial benefit, and to the indexation of benefits in payment. The remit also includes consideration of

desirable replacement rates for the guaranteed pension and inkomstpension.

A half-way house between fully-automatic adjustment and a discretionary system is to establish automatic adjustment as the default, but with a lag in execution of (say) six months during which legislation would be possible. The system of automatic indexation of the thresholds for personal income tax in many countries has this feature. In this model the brake would be the default rather than a legal mandate. To some extent this approach is built into the system in Sweden, since the balance ratio is calculated in February the year before it is applied, giving time for legislative adjustment to manage the system (this is the mechanism which was used to attenuate the operation of the brake in 2010).

Adjusting to changing social needs. It is necessary periodically to make changes to a pension system to reflect changing social needs, e.g. the discussion of joint-life annuitisation in section 4.3. Another recent example in many countries is the ability of unmarried partners to share pension accumulations in the same way as married couples.

The review is intended to guard as much as possible against government failure, for example where a government postpones necessary adjustment or phases it in slowly on a timetable determined by short-run politics rather than prudent long-term management of the pension system. To that end, **two features are important. First, the review should meet at legislatively-specified times, say every five years; certainly at least every ten years. Secondly, the review should be non-party-political and independent, for example with the status of a Royal Commission**.

7.6 Conclusion

There are four ways – separately or in combination – in which the operation of the brake could be improved. While continuing to adhere to principles 1 and 2, it is possible to share the risks of macroeconomic fluctuations among existing participants more fairly:

- By applying the two-account mechanism or an analogous adjustment to accounts during build-up to avoid an unintended increase in accumulations.
- At the time of retirement, applying the cumulative effect of the brake over a cohort's working life to the calculation of each worker's initial benefit, thus applying the brake as a uniform percentage across all members of the cohort, thus avoiding redistributive effects that arise solely from the profiles of earnings relative to the timing of the brake and catch-up.
- By applying the balance ratio only to part of the wage growth rate for the purposes of indexing pensions in payment, thus giving retirees, who are less able to adjust, relatively greater protection than workers.

It is possible to share risks more widely across cohorts by retaining automaticity as the primary form of adjustment, but allowing some relaxation of the strict application of principles 1 and 2:

- By slowing down the operation of the brake along the lines suggested by Auerbach and Lee, thus reducing sharp impacts on workers and retirees.
- By legislating the timing and construction of an independent periodic review.

8 Sustainability

Sustainability is important for reasons much wider than prudent economic housekeeping. What matters is not only sustainability *per se*, but also that the finance of the system is robust enough to avoid short-term volatility in benefits. A central purpose of pensions is as a long-term institution to enable people to redistribute over their life cycle. Sustainability is thus an element in risk sharing, to avoid sharp, short-run shocks. Many of the topics discussed in the previous section are therefore directly relevant.

The biggest problem is the clash between the long-run needs of sustainability and the short-term pressures of politics. Political sustainability depends on agreement about the level of pension benefits (section 4) and the age from which they are paid (section 7.3) and, more broadly, on the way risks are shared (section 7). Economic sustainability depends on political support for contributions sufficient to pay for those benefits and on whether timely adjustments are politically feasible.

MARGINS OF ADJUSTMENT.[24] Earlier sections discussed three dimensions:

- The notional interest rate (section 7.4.2) addresses the inflation risk and in part also labour-market risk;
- Adjusting for changing life-expectancy (section 7.3) addresses demographic risk and assists efficient consumption smoothing;
- Indexation of benefits in payment (section 7.4.1) addresses the inflation risk.

THE TIME SCALE FOR ADJUSTMENT. The guaranteed pension is tax financed and the inkomstpension has a buffer fund , which offers partial protection against short-run fluctuations, and the tax-financed element makes it possible to spread risks widely across the

[24] For fuller discussion, see IMF Fiscal Affairs Department (2011).

current generation and, through borrowing, across future generations. These elements do not sidestep the need for adjustment to long-run change, but create a measure of freedom over the time scale. As discussed in Box 5, such flexibility can be an advantage or disadvantage depending on the quality of governance.

HOW ROBUST IS THE SYSTEM? The sharp decline in equity prices in 2008 led to a fall in the value of the buffer fund of 21.3 per cent (Sundén, 2009, p. 2). As discussed in section 7.4.2, this decline contributed to a 3.28 per cent drop in projected assets relative to projected benefits. Thus a person claiming benefit one year after the application of the brake faced a 3.28 per cent fall in benefits that year. The balance period is projected to continue for several years. The system was in catch-up in 2012 and 2013 but in 2014 the balance ratio is projected to fall below 1. The discussion in sections 7.4 and 7.5 questions whether adjustment as sharp as that which took place was necessary.

That said, by design the system is more robust than a fully-funded defined-contribution arrangement. In the face of economic fluctuations, the brake affects the annual return to a person's accumulation but not the capital value of his or her previously-accumulated notional capital. If a decline in the value of assets of 21.3 per cent experienced in the Swedish system were to occur in an individual defined-contribution account for someone on the verge of retirement, the result would be a 21.3 per cent drop in benefits at retirement and in each subsequent year. Thus pensioners in Sweden did not fare anything like as badly as the worst sufferers under fully-funded DC account (i.e. people who retired in 2008). On the other hand, the loss was spread more widely both in terms of pensioners and over time – a consequence of wider risk sharing.

WHAT IS THE REAL SUSTAINABILITY ISSUE? In many countries, the sustainability issue is that rising life expectancy and/or political short-termism lead to current or projected spending on benefits that outstrips contributions. The system in Sweden avoids this problem since its central design feature is that benefits are actuarially connected to contributions. Thus a decline in the value of the contribution asset, other things equal, leads to a decline in the present value of a person's pension, and increased longevity, other things equal, maintains the pension in present value terms but pays a lower monthly pension, commensurate with increased life expectancy. Since adjustment is all on the benefits side, the

issue is not one of sustainability but of potentially declining adequacy (section 4) and of uncertainty, given the sharp operation of the brake (section 7.4.2).

A number of strategic question arise:

- Is the size of the buffer fund broadly appropriate, or would a larger or smaller fund have strategic advantages?
- Should the operation of the brake be liberalised, to enable the buffer fund to be used to extend the time period of adjustment? The argument for some flexibility is that a buffer fund makes it easier to accommodate short-run fluctuations. Used well, the mechanism makes it possible to share risks across current and future cohorts; used badly – for example failing to take action early enough to address threats to long-run sustainability – impose inefficiently high costs on future cohorts.
- Does the current regime encourage optimum risk taking by the managers of pension funds, both in terms of the buffer fund and the premium pension, or does it encourage an inefficiently conservative approach?

Sweden is in the fortunate position that the 1998 reforms were designed from the ground up to provide sustainability, so that there is no need for emergency measures.

9 Disability pensions

MEASURING DISABILITY. A central difference between old-age pensions and disability pensions is the ability to measure whether the insured risk has occurred. With old-age pensions the key variable is whether or not a person has reached pensionable age, which is easily measurable in any country with the capacity to run a system of birth certificates. With disability pensions, in contrast, the key variable is whether or not someone is disabled – an issue which raises inherent problems both of definition and of measurement.

The simplest system of disability pension awards benefit on the basis of a binary variable – a person has long-term health problems which prevent paid work, or he/she does not. Or a system might classify a person's disability as (say), 25 per cent, 50 per cent, 75 per cent, or total. In all these cases, policy is based on a scalar. However, the entire enterprise of boiling down different dimensions of ill-health into a unique, objective scalar is misconceived. Suppose that we have a vector of different attributes of health for a given individual:

$$[h_1, h_2, \ldots, h_n,]$$

The only way to convert this vector into a scalar is to multiply it by another vector,

$$[w_1, w_2, \ldots, w_s],$$

where w_1 is the weight we attach to h_1, etc.

Saying the same thing, we could express each element in the first vector as a score out of 100 and then calculate the average. A simple average implicitly assumes that we weight all elements equally. Alternatively, we could take a weighted average.

Measuring health thus faces strategic problems. Though government cannot duck the problem of deciding a scalar level of disability pension (i.e. €X) for an individual, any decision depends on both (a) the accuracy with which the hi are measured and (b) the value judgement implicit in the choice of weights, w_i.

The problems of quantifying the h_i are intrinsic and insoluble. Even if there is an objective measure of the clinical facts:

- The effect of a given injury on productivity will vary by type of work. If I lose the little finger of my left hand in an accident, it will reduce my typing speed but not otherwise interfere with my academic capacities, hence no issue arises of paying disability pension. If I were a concert violinist, my playing career would be over.
- The extent of a person's disability can vary on a day-by-day basis.

Even in principle, therefore, there is no unique answer. It is therefore not surprising that problems arise.

ADDRESSING DISABILITY. For any measure of disability, policy includes (a) paying a cash benefit and/or (b) helping to find a match between the person's abilities/disabilities and suitable paid work, the latter embracing questions both about the nature of the work and whether full-time or part-time.

Issues that arise are a shortage of suitable jobs, hence problems about moving the partly-abled into paid work. These are important issues, both because of the cost of benefits and, more importantly, because having a suitable job on average has a considerable beneficial effect on a person's welfare. Discussion needs to involve social policy expertise, clinical expertise and labour-market expertise.

10 Occupational and voluntary pensions

Alongside the mandatory national system are voluntary pensions. The term 'voluntary' has different meanings. A pension can be voluntary for the individual, for example, 401(k) plans in the USA. Or a pension can be voluntary for an industry, but workers may be obliged to belong to the employer scheme (as in the Netherlands), in which case the pension is voluntary for the worker only to the extent that he or she could choose to work in another industry. This is the case of occupational pensions in Sweden, outlined in section 1.2.5.

VOLUNTARY INDIVIDUAL PENSIONS. As Figure 1.1 shows, this part of the system in Sweden is small.

Voluntary pensions should be kept under review to ensure suitable quality assurance and the availability of simple savings products with low administrative costs, so that small pension savings accounts (typically of people with low earnings) are not eroded by charges. Since it is mainly better-off people who make use of voluntary pensions, any tax advantages should be limited. The earliest age at which it is possible to draw pension from a tax-advantaged scheme should also be kept under review.

OCCUPATIONAL PENSIONS are a significant part of the system (Figure 1.1), with about 90 per cent of employees covered by collective agreements. They are an important part of retirement income, especially for people with earnings above the cap.

Though a detailed critique of occupational pensions is outside the remit of this report, it is important to consider the pension system as a whole, as discussed in section 2. More specifically, the national system and occupational pensions should be considered together to ensure that they are complementary in providing consumption smoothing and insurance in ways that assist labour

mobility, later and more flexible retirement, and risk-sharing that offers greater protection to older than to younger people.

From that perspective, occupational pensions raise a number of issues.

- Complexity: the system is complicated and, within that, each scheme is complicated. It is not clear how the complexities contribute to the achievement of desirable objectives.
- Integration with the national system has several aspect. First, the pensions test for the guaranteed pension should include occupational pension benefits as well as the inkomstpension. Second, harmonising retirement ages in occupational plans and the public system is desirable to avoid unnecessary labour-market distortions.
- Labour mobility: occupational pensions can restrict labour mobility, particularly for older workers whose pension entitlement includes a significant defined-benefit element.
- Later and more flexible retirement: occupational pensions should comply with the characteristics of good design set out in section 6.2.1. Current arrangements can restrict the labour supply of older workers in a number of ways: contributions that rise with age or income can create incentives for employers to grant early retirement if this is cheaper than continuing to employ the worker; or a scheme may have a low retirement age. Mandatory retirement is particularly bad design.
- Risk sharing: how much investment risk should a worker face? The move towards defined-contribution occupational schemes raises the question of whether the system, with a 2.5 per cent contribution rate for the premium pension and 4.5 per cent for occupational pensions, faces workers with too much investment risk.
- Family structure: as in the national system, there is no option to share pension wealth between spouses or partners on divorce.

Though the sponsors of occupational plans, understandably, wish to maintain their autonomy, those rights should not be considered in isolation, but set alongside the national need for a pension system which fosters labour mobility, longer working life, flexible retirement options and well-designed risk sharing

across the system as a whole. It would be desirable to phase out features which hinder the achievement of these objectives. As discussed in section 4.2.1, the case for gradually increasing the cap over time should be part of that review.

11 Conclusion

11.1 Formulating pensions policy

A considerable strength of the process of making pensions policy in Sweden is its basis on agreement across political parties. This approach is desirable because it helps to make pension institutions more durable. Since a primary purpose of pension systems is to provide consumption smoothing over a person's lifetime, long-run institutions are desirable, with reforms brought in carefully. The approach, however, depends on (a) attitudes that are consensual and (b) a capacity to take a long-run view. That both have been the case in Sweden since the mid-1990s is not a guarantee that either will necessarily continue – both will need maintenance.

The major responsibility for strategic policy design lies with the Pensions Group, comprising all the major parties at the time of reforms in the 1990s.

The Pensions Group is an institution that works and should be preserved. A number of questions arise:

- **The Green Party was not in Parliament when the original reforms were being discussed. Should the Green Party be added to the Group?**
- **Should the Pensions Group be extended beyond the political parties, e.g. to include representatives of workers and employers?**
- **Should there be a periodic review of membership?**

11.2 Broad conclusions

Recommendations and suggestions for discussion appear at relevant places in the text, and are summarised in the Executive Summary. This section is therefore brief.

11.2.1 Strengths and weaknesses

The strengths of the system are the following.

- The system involves all interested parties and is run consensually.
- Partly as a result, there is long-run support for the broad strategy.
- The system scores well in terms of adequacy for most people.
- Coverage is high because (a) the guaranteed pension is based on residence, and (b) employment rates are high for both men and women.
- The system adjusts benefits actuarially for a delayed start to pension, and also allows a worker to draw less than 100 per cent of his/her pension.
- Sustainability is built into the strategic design of the system. Thus the system was able to cope with the turbulence caused by the economic crisis.

The system has a number of weaknesses.

- Since the NDC design places all adjustment is on the benefits side, sustainability has priority over adequacy, apart from poverty relief via the guaranteed pension.
- Adjustment to rising life expectancy, by adjusting pension benefits at the age of 61, places heavy reliance on rational behaviour. If people continue to retire at broadly the same age as at present, benefits will over time become less adequate.
- The design of the system takes insufficient account of changes in family structure.
- Occupational pensions can impede labour mobility and later and more flexible retirement.
- The indexation of benefits in payment faces retirees with excessive risk.

– The design of the brake mechanism means that adjustment (a) may be too sharp and (b) has the unintended effect of benefiting workers at the expense of retirees.

11.2.2 Strategic issues

PRESERVE A CONSENSUAL APPROACH. The pension system is not in crisis. Thus it is better to reform somewhat later on the basis of wide and continuing consensus than to reform sooner at risk of destabilising long-run political support for the system.

OBJECTIVES OF THE SYSTEM. As part of the process of building and preserving consensus, it would be useful to encourage public discussion of (a) the objectives of the system and (b) the relative weights that should be accorded to each. A particular debate should be about whether it remains necessary to take a strict interpretation of the founding principles discussed in section 3.2.1.

As discussed in section 7.5, principle 1 (the Life Income Principle) and principle 2 (automatic adjustment to economic fluctuations) taken together, imply that adjustment to any imbalance should be (a) automatic and (b) rapid. The result is a system which, in principle, is immune from government failure, but with at a price of limited risk sharing. Thus the two principles raise fundamental questions about risk sharing and the definition of intergenerational fairness.

A strategic question is whether strict adherence to principle 1 should continue, or whether policy design should allow for wider risk sharing. The argument for strict adherence is to minimise the scope for government failure. The argument for at least some relaxation is that intergenerational adjustment can be thought of as combining consumption smoothing with some insurance against adverse economic outcomes, to complement insurance via an annuity. Assessing the balance between these two sets of arguments should consider whether the political economy of reform today is more supportive of limited discretion than was the case 15 years ago and, if so, what institutions (e.g. a periodic independent review) would give the best combination of flexibility and caution.

HOW MUCH RISK SHARING? Issues discussed in section 7 include that optimal risk sharing should take account of age, the potential welfare gains from sharing risk across cohorts, and the

move towards defined-contribution arrangements in occupational pensions.

HOW MUCH CHOICE? The analysis in section 5 lends support to a mandatory national system, so that workers have no choice in that part of the system over how much to save. However, the analysis suggests that choice in connection with the premium pension is too great, and that a simpler system with considerably less choice for most workers would have advantages.

11.2.3 Policy directions

ADJUSTING FOR CHANGES IN LIFE EXPECTANCY (section 7.3.2). Instead of adjusting to rising life expectancy only by reducing pensions at the earliest eligibility age, there should also be a gradual increase in the earliest eligibility age, the first element to ensure sustainability, the second in the interests of adequacy. This policy direction raises the question of whether increases should be ad hoc or whether earliest eligibility age should be indexed to changes in life expectancy.

LATER RETIREMENT BUT MORE FLEXIBLE RETIREMENT. There is general agreement that additional life expectancy should be divided in some sensible way between extra years of work and longer retirement.

- It is important that the inkomstpension continues to be increased broadly actuarially for a delayed start to benefit (section 6.2.1).
- It would be useful to review the design of occupational pensions to seek ways to assist (a) labour mobility and (b) later and more flexible retirement (section 10).
- It would be useful (a) to check that that the fixed cost of employing a worker is small, to avoid creating an incentive against part-time employment and (b) to review employment law with the aim of reducing transactions costs and legal uncertainty where a worker wishes to downshift at his/her existing employer (section 6.2.3).
- Additional policy directions concern the productivity of older workers and policies to change attitudes (section 6.2.3).

ADJUSTING THE RELATIVE TREATMENT OF INDIVIDUALS AND FAMILIES.

- It would be useful to discuss whether the relative size of the guaranteed pension for single people and couples is the right one (section 4.1).
- Given the high incidence of poverty among single pensioners (section 4.1), it would be useful to discuss whether to encourage or mandate joint-life annuitisation in the national system and occupational pensions, to ensure adequate pension benefits for a surviving spouse (section 4.3).
- Given increased fluidity in family structure over time, there is a good argument for an option to transfer implicit or explicit pension capital between partners at divorce (section 4.3).

INDEXING BENEFITS IN PAYMENT. The method of indexation should be adjusted so that retirees face less than 100 per cent of year-to-year variation in wages (section 4.2.2). Specifically, inkomstpension benefits in payment should adjust less than wages, as with a mix of price- and wage-indexation.

THE BRAKE MECHANISM. Some unintended consequences of the design of the brake mechanism are discussed in section 7.4.2 and possible reform directions in section 7.5. One approach is to share risks between current participants differently (section 7.5.2). A more radical approach is, in addition, to share risks more widely across cohorts (section 7.5.3). The latter approach implies less than strict adherence to the founding principles.

11.2.4 Topics for discussion

THE DESIGN OF THE GUARANTEED PENSION (section 6.2.2). Does the taper of 100 per cent/48 per cent of the pensions test in the guaranteed pension cause significant adverse labour-supply incentives? If so, should the design of the taper be adjusted? Should the guaranteed pension be subject to an affluence test to screen out those with the highest incomes?

THE CONTRIBUTIONS REGIME. Though there is no significant concern about coverage currently, it is important to continue to monitor contribution densities to make sure that more varied

forms of labour-market attachment do not compromise consumption smoothing (section 4.2.3).

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List of earlier reports to the Expert Group

2013

- Bäste herren på täppan? En ESO-rapport om bostadsbyggande och kommunala markanvisningar.
- Allmän nytta eller egen vinning? En ESO-rapport om korruption på svenska.
- Var skapas jobben? En ESO-rapport om dynamiken i svenskt näringsliv 1990-2009.
- Transportinfrastrukturens framtida organisering och finansiering.
- Investeringar in blanco? En ESO-rapport om behovet av infrastruktur.
- Bonde söker bidrag – en ESO-rapport om effektivitet i det svenska landsbygdsprogrammet.

2012

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- Den akademiska frågan – en ESO-rapport om frihet i den högre skolan.
- Income Shifting in Sweden. An empirical evaluation of the 3:12 rules.
- Samhällsekonomin på spåret – en ESO-rapport om att räkna på tunnelbanan.
- Hjälpa eller stjälpa? En ESO-rapport om kontrollfunktionen i arbetslöshetsförsäkringen

- Lärda för livet? – en ESO-rapport om effektivitet i svensk högskoleutbildning
- Forskning och innovation – statens styrning av högskolans samverkan och nyttiggörande

2011

- UD i en ny sits – organisation, ledning och styrning i en globaliserad värld.
- Försvarets förutsättningar – en ESO-rapport om erfarenheter från 20 år av försvarsreformer.
- Kalorier kostar – en ESO-rapport om vikten av vikt.
- Avtalsbestämda ersättningar, andra kompletterande ersättningar och arbetsutbudet.
- Sysselsättning för invandrare – en ESO-rapport om arbetsmarknadsintegration.
- Kollektivtrafik utan styrning
- Vägval i vården – en ESO-rapport om skillnader och likheter i Norden
- Att lära av de bästa – en ESO-rapport om svensk skola i ett internationellt forskningsperspektiv.
- Rapport från ett ESO-seminarium – decenniets framtidsfrågor.

2010

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- Kåren och köerna. En ESO-rapport om den medicinska professionens roll i styrningen av svensk hälso- och sjukvård.

2009

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- Regelverk och praxis i offentlig upphandling.
- Invandringen och de offentliga finanserna.
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2003

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- Axel Oxenstierna – Furstespegel för 2000-talet.

2002

- "Huru skall statsverket granskas?" - Riksdagen som arena för genomlysning och kontroll.
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- Den svenska sjukan - sjukfrånvaron i åtta länder.
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- Hoten mot kommunerna - en ESO-rapport om ansvarsfördelning och finansiering i framtiden.

2001

- Mycket väsen för lite ull - en ESO-rapport om partnerskapen i de regionala tillväxtavtalen.
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- Nya bud - en ESO-rapport om auktioner och upphandling.
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- Konkurrens bildar skola - en ESO-rapport om friskolornas betydelse för de kommunala skolorna.
- Priset för ett större EU - en ESO-rapport om EU:s utvidgning.

2000

- Att granska sig själv - en ESO-rapport om den kommunala miljötillsynen.
- Bra träffbild, fast utanför tavlan - en ESO-rapport om EU:s strukturpolitik.
- Utbildningens omvägar - en ESO-rapport om kvalitet och effektivitet i svensk utbildning.
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- Med många mått mätt - en ESO-rapport om internationell benchmarking av Sverige.
- Kroppen eller knoppen? - en ESO-rapport om idrottsgymnasierna.
- Studiebidraget i det långa loppet.
- 40-talisternas uttåg - en ESO-rapport om 2000-talets demografiska utmaningar.

1999

- Dagis och drivkrafter - en ESO-rapport om 2000-talets demografiska utmaningar.
- Återvinning utan vinning - en ESO-rapport om sopor.
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- Med backspegeln som kompass - om svensk musikexport 1974 – 1999.
- Med backspegeln som kompass - om stabiliseringspolitiken som läroprocess.

1998

- Staten och bolagskapitalet - om aktiv styrning av statliga bolag.
- Kommittéerna och bofinken - kan en kommitté se ut hur som helst?
- Regeringskansliet inför 2000-talet - rapport från ett ESO-seminarium.
- Att se till eller titta på - om tillsynen inom miljöområdet.
- Arbetsförmedlingarna - mål och drivkrafter.
- Kommuner Kan! Kanske! - om kommunal välfärd i framtiden.
- Vad kostar en ren? - en ekonomisk och politisk analys.

1997

- Fisk och Fusk - Mål, medel och makt i fiskeripolitiken.
- Ramar, regler, resultat - vem bestämmer över statens budget?
- Lönar sig arbete?
- Egenföretagande och manna från himlen.
- Jordbruksstödet - efter Sveriges EU-inträde.

1996

- Kommunerna och decentraliseringen - Tre fallstudier.
- Novemberrevolutionen - om rationalitet och makt i beslutet att avreglera kreditmarknaden 1985.
- Kan myndigheter utvärdera sig själva?
- Nästa steg i telepolitiken.
- Reglering som spel - Universiteten som förebild för offentliga sektorn?
- Hur effektivt är EU:s stöd till forskning och utveckling? - En principdiskussion.

1995

- Kapitalets rörlighet Den svenska skatte- och utgiftsstrukturen i ett integrerat Europa.
- Generationsräkenskaper.
- Invandring, sysselsättning och ekonomiska effekter.
- Hushållning med knappa naturresurser Exemplet sportfiske.
- Kostnader, produktivitet och måluppfyllelse för Sveriges Television AB.
- Vad blev det av de enskilda alternativen? En kartläggning av verksamheten inom skolan, vården och omsorgen.
- Hushållning med knappa naturresurser Exemplen allemansrätten, fjällen och skotertrafik i naturen.
- Företagsstödet Vad kostar det egentligen?
- Försvarets kostnader och produktivitet.

1994

- En effektiv försvarspolitik? Fredsvinst, beredskap och återtagning.
- Skatter och socialförsäkringar över livscykeln En simuleringsmodell.
- Nettokostnader för transfereringar i Sverige och några andra länder.
- Fördelningseffekter av offentliga tjänster.
- En Social Försäkring.
- Valfrihet inom skolan Konsekvenser för kostnader, resultat och segregation.

- Skolans kostnader, effektivitet och resultat En branschstudie.
- Bensinskatteförändringens effekter.
- Budgetunderskott och statsskuld Hur farliga är de?
- Den svenska insolvensrätten Några förslag till förbättringar inom konkurshanteringen m.m.
- Det offentliga stödet till partierna Inriktning och omfattning.
- Den offentliga sektorns produktivitetsutveckling 1980 – 1992.
- Kvalitet och produktivitet - Teori och metod för kvalitetsjusterande produktivitetsmått.
- Kvalitets- och produktivitetsutvecklingen i sjukvården 1960 – 1992.
- Varför kulturstöd? Ekonomisk teori och svensk verklighet.
- Att rädda liv Kostnader och effekter.

1993

- Idrott åt alla? Kartläggning och analys av idrottsstödet.
- Social Security in Sweden and Other European Countries Three Essays.
- Lönar sig förebyggande åtgärder? Exempel från hälso- och sjukvården och trafiken.
- Hur välja rätt investeringar i transportinfrastrukturen?
- Presstödets effekter en utvärdering.

1992

- Statsskulden och budgetprocessen.
- Press och ekonomisk politik tre fallstudier.
- Kommunerna som företagsägare - aktiv koncernledning i kommunal regi.
- Slutbudsmetoden ett sätt att lösa tvister på arbetsmarknaden utan konflikter.
- Hur bra är vi? Den svenska arbetskraftens kompetens i internationell belysning.
- Statliga bidrag motiv, kostnader, effekter?
- Vad vill vi med socialförsäkringarna?
- Fattigdomsfällor.
- Växthuseffekten slutsatser för jordbruks-, energi- och skattepolitiken.

- Frihandeln ett hot mot miljöpolitiken eller tvärtom?
- Skatteförmåner och särregler i inkomst- och mervärdesskatten.

1991

- SJ, Televerket och Posten bättre som bolag?
- Marginaleffekter och tröskeleffekter barnfamiljerna och barnomsorgen.
- Ostyriga projekt att styra stora kommunala satsningar.
- Prestationsbaserad ersättning i hälso- och sjukvården vad blir effekterna?
- Skogspolitik för ett nytt sekel.
- Det framtida pensionssystemet två alternativ.
- Vad kostar det? Prislista för statliga tjänster.
- Metoder i forskning om produktivitet och effektivitet med tillämpningar på offentlig sektor.
- Målstyrning och resultatuppföljning i offentlig förvaltning.

1990

- Läkemedelsförmånen.
- Sjukvårdskostnader i framtiden vad betyder åldersfaktorn?
- Statens dolda kapital. Aktivt ägande: exemplet Vattenfall.
- Skola? Förskola? Barnskola?
- Bostadskarriären som en förmögenhetsmaskin.

1989

- Arbetsmarknadsförsäkringar.
- Hur ska vi få råd att bli gamla?
- Kommunal förmögenhetsförvaltning i förändring – city-kommunerna Stockholm, Göteborg och Malmö.
- Bostadsstödet - alternativ och konsekvenser.
- Produktivitetsmätning av folkbibliotekens utlåningsverksamhet.
- Statsbidrag till kommuner: allt på en check eller lite av varje? En jämförelse mellan Norge och Sverige.
- Vad ska staten äga? De statliga företagen inför 90-talet.
- Beställare-utförare - ett alternativ till entreprenad i kommuner.

- Lönestrukturen och den "dubbla obalansen" - en empirisk studie av löneskillnader mellan privat och offentlig sektor.
- Hur man mäter sjukvård - exempel på kvalitet- och effektivitetsmätning.

1988

- Vad kan vi lära av grannen? Det svenska pensionssystemet i nordisk belysning.
- Kvalitet och kostnader i offentlig tjänsteproduktion.
- Alternativ i jordbrukspolitiken.
- Effektiv realkapitalanvändning i kommuner och landsting.
- Hur stor blev tvåprocentaren? Erfarenheten från en besparingsteknik.
- Subventioner i kritisk belysning.
- Prestationer och belöningar i offentlig sektor.
- Produktivitetsutveckling i kommunal barnomsorg.
- Från patriark till part - spelregler och lönepolitik för staten som arbetsgivare.
- Kvalitetsutveckling inom den kommunala barnomsorgen.

1987

- Integrering av sjukvård och sjukförsäkring.
- Produktkostnader för offentliga tjänster - med tillämpningar på kulturområdet.
- Kvalitetsutvecklingen inom den kommunala äldreomsorgen 1970-1980.
- Vägar ut ur jordbruksregleringen - några idéskisser.
- Att leva på avgifter - vad innebär en övergång till avgiftsfinansiering?

1986

- Offentliga utgifter och sysselsättning.
- Produktions-, kostnads-, och produktivitetsutveckling inom den offentliga finansierade utbildningssektorn 1960-1980.
- Socialbidrag. Bidragsmottagarna: antal och inkomster. Socialbidragen i bidragssystemet.

- Regler och teknisk utveckling.
- Kostnader och resultat i grundskolan - en jämförelse av kommuner.
- Offentliga tjänster - sökarljus mot produktivitet och användare.
- Svensk inkomstfördelning i internationell jämförelse.
- Byråkratiseringstendenser i Sverige.
- Effekter av statsbidrag till kommuner.
- Effektivare sjukvård genom bättre ekonomistyrning.
- Samhällsekonomiskt beslutsunderlag - en hjälp att fatta bättre beslut.
- Produktions-, kostnads- och produktivitetsutveckling inom armén och flygvapnet 1972-1982.

1985

- Egen regi eller entreprenad i kommunal verksamhet – möjligheter, problem och erfarenheter.
- Sociala avgifter - problem och möjligheter inom färdtjänst och hemtjänst.
- Skatter och arbetsutbud.
- Produktions-, kostnads- och produktivitetsutveckling inom vägsektorn.
- Organisationer på gränsen mellan privat och offentlig sektor – förstudie.
- Frivilligorganisationer alternativ till den offentliga sektorn?
- Transfereringar mellan den förvärvsarbetande och den äldre generationen.
- Produktions-, kostnads- och produktivitetsutveckling inom den sociala sektorn 1970-1980.
- Produktions-, kostnads- och produktivitetsutveckling inom offentligt bedriven hälso- och sjukvård 1960-1980.
- Statsskuldräntorna och ekonomin effekter på den samlade efterfrågan i samhället.

1984

- Återkommande kostnads- och prestationsjämförelser - en metod att främja effektivitet i offentlig tjänsteproduktion.

- Parlamentet och statsutgifterna hur finansmakten utövas i nio länder.
- Transfereringar och inkomstskatt samt hushållens materiella standard.
- Marginella expansionsstöd ekonomiska och administrativa effekter.
- Är subventioner effektiva?
- Konstitutionella begränsningar i riksdagens finansmakt - behov och tänkbara utformningar.
- Perspektiv på budgetunderskottet, del 4. Budgetunderskott, utlandsupplåning och framtida konsumtionsmöjligheter. Budgetunderskott, efterfrågan och inflation.
- Vem utnyttjar den offentliga sektorns tjänster.

1983

- Administrationskostnader för våra skatter.
- Fördelningseffekter av kommunal barnomsorg.
- Perspektiv på budgetunderskottet, del 3. Budgetunderskott, portföljeval och tillgångsmarknader. Modellsimuleringar av offentliga besparingar m.m.
- Produktivitet i privat och offentliga tandvård.
- Generellt statsbidrag till kommuner – modellskisser.
- Administrationskostnader för några transfereringar.
- Driver subventioner upp kostnader - prisbildningseffekter av statligt stöd.
- Minskad produktivitet i offentlig sektor - en studie av patent- och registreringsverket.
- Perspektiv på budgetunderskottet, del 2. Fördelningseffekter av budgetunderskott. Hushållsekonomi och budgetunderskott.
- Enhetligt barnstöd? några variationer på statligt ekonomiskt stöd till barnfamiljer.
- Staten och kommunernas expansion några olika styrmedel.

1982

- Ökad produktivitet i offentlig sektor - en studie av de allmänna domstolarna.
- Offentliga tjänster på fritids-, idrotts- och kulturområdena.

- Perspektiv på budgetunderskottet, del 1. Budgetunderskottens teori och politik. Statens budgetfinansiering och penningpolitiken.
- Inkomstomfördelningseffekter av livsmedelssubventioner.
- Perspektiv på besparingspolitiken.