

Chapter 4

A Stable Pension System: The Eighth Wonder

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Abstract Ageing, with increases in the old-age dependency ratio, puts a strain on pension systems organised as a pay-as-you-go system. The major part of the Swedish pension system is a pay-as-you-go one, but the specific Swedish design mitigates much of this strain. It is maintained to be financially stable. The question asked in this chapter is whether the system will be politically as well as financially stable in the future. The design is described and analysed with respect to sustainability. Political sustainability is analysed from the viewpoint of fairness, assuming that a fair system will be more stable than a system that is perceived not to be fair. The analysis of fairness is divided into fair outcome and fair procedure. Outcome varies much with chosen measure. The procedure has its draw-backs, but seems fair enough provided a well-functioning labour market.

4.1 Introduction

There is a vast literature reporting on the unsustainability of the pension systems in the industrialised world. The pay-as-you-go systems, i.e. unfunded systems where today's workers' contributions are used for benefits for today's pensioners, are put under strain when the number of workers in relation to the number of pensioners decreases. Due to ageing populations either the benefits will have to be lowered, the contribution rate (the tax) increased or a combination of both implemented; the changes are predicted to go far beyond what is supposedly acceptable. Thus, reform proposals are innumerable. However, it has also been shown that in a democracy (with majority voting) it will be difficult, if not impossible, to gain support for reforms (see Sinn and Uebelmesser 2002, among others). In fact, we have seen

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fierce resistance to reform proposals in, for example, France, Italy and Spain, although more or less radical reforms have been implemented despite this. In Sweden a radical reform was decided in 1994 and implemented in 1999.¹ According to a Government Report (July 2005, p. 4), “[. . .], a pension system that is both politically and financially sustainable in the long term is already in place.” Can the system be argued to present such ingenuity that it does the trick and solves the problems foreseen in the alarm reports? The purpose of this chapter is to discuss these different ways of funding pension costs and to give an assessment of possible political strain to come. The chapter begins with an outline of Swedish pension history, followed by an illustration of how demography influences a pay-as-you-go system, using Swedish data. Next, the Swedish pension system is described, a description which is then used to assess financial and political sustainability in Sects. 4.5 and 4.6. Section 4.7 concludes.

4.2 The Swedish Pension History

Four dates contain more or less the entire Swedish pension history: 1913, 1946, 1960 and 1994. Its history can be described as a circle; it starts with a defined-contribution, funded system, makes a detour over defined-benefit, pay-as-you-go systems and then largely comes full-circle, back to the current defined-contribution systems, albeit mainly unfunded, i.e. pay-as-you-go.

When the first public pension was introduced in Sweden in 1913, it was so in response to a heavily ageing population during the latter part of the nineteenth century. The population ageing was caused primarily by decreases in the fertility rate, but also by substantial emigration that left a large number of old people without supporting relatives. The municipalities, responsible for poverty relief for those without relatives or own means, were far too small to constitute an efficient insurer.

The 1913 pension insurance was a general one in that it covered the whole population. It consisted of a defined-contribution funded part supplemented by a small means-tested defined-benefit part. The first part had an actuarial design; for example women received a lower pension for the same contributions due to their expected longer lifespan compared to men. The pension system of 1913 suffered from the problem often ascribed to funded systems: it takes a lifetime to build the system and get “reasonable” pensions from it. Thus, in the 1930s the pension benefit was still less than 20% of an average wage (Kruse 1994). In 1946, the system was abolished and replaced by a basic pension (*folkpension*) with equal benefits for all, and on a pure pay-as-you-go basis. In the years to come, large groups in the labour market supplemented the basic pension with negotiated occupational pension. Most

¹There is research suggesting that the Swedish reform was possible to implement – it got an implicit majority – thanks to transition rules (Kruse 2005; Selén and Ståhlberg 2007). See also section 4.6 for a description of these rules.

white-collar workers were covered; however, blue-collar workers did not include pensions in their negotiations. Therefore, a majority of the working population only had their basic pension to live off as pensioners.

In the 1950s, pension commissions were tasked with investigating how a system where the standard of living was sustained into retirement could be arranged. The result was the ATP-system introduced in 1960. It supplemented the flat rate basic pension and was a defined-benefit, pay-as-you-go, price-indexed system where the benefit was determined as a percentage of the average of a person's 15 highest paid years. Thirty years of contributions were enough for a full pension; fewer years of contributions reduced the benefit with 1/30 for each missing year, additional years of contributions did not increase the benefit. There was a floor and a ceiling on benefits, but not on contributions. The price index meant that the distribution between co-living generations was determined by the growth rate in the economy; with a high growth rate, the pensioners' standard of living was lagging behind that of the working generation, and vice versa. The defined-benefit feature meant that the contribution rate had to be adjusted in response to forecasted economic and demographic changes (see for example Kruse 1994, 2005).

These features taken together made the ATP-system both unsustainable and unfair, both between and within generations. Furthermore, the 15- and 30-year rules, apart from redistributing from workers with many years in the labour market and flat life earnings profiles (usually blue-collar workers) to people with fewer working years and steeper earnings profiles (white-collar workers), subsidised leisure, which undermines a pay-as-you-go system.

Again, a number of pension commissions were put to work; in 1994 the current system was passed in the Swedish parliament and was launched in 1999. It consists of two parts, both defined-contributions with individual accounts. One part consists of notional accounts, i.e. a pay-as-you-go part, which has become known as a Notional Defined Contribution system (NDC), and the other part of real accounts, i.e. a funded part. The idea was to establish a tight connection between the individual's contributions and benefits; the "perverse" redistribution in the old system would thus be remedied as would the subsidising of leisure. However, the tight connection has its breaks, as we shall see in Sect. 4.6. In addition to these two defined-contribution parts there is a guarantee pension. The guarantee pension replaces the basic pension; it is a defined-benefit, price-indexed pension and the benefit is income-tested against the pension benefits from the two other systems.

Along with the public pension system there are occupational pensions. There are four major systems covering ~90% of the Swedish labour force. These systems used to have a defined-benefit design but as a result of the reform of the public system, they have started converging towards defined-contribution systems as well. As we shall see in Sect. 4.6.1, occupational pensions are more important for high-income earners than for low-income earners as they replace more of the income above the ceiling in the public system.

As one purpose of this chapter is to discuss the political sustainability of the new system, it is noteworthy that, in all cases but one, the pension systems have been passed largely by unanimity in the parliament. The exception is the ATP-system,

which was preceded by a fierce political fight and a referendum and was then finally passed with a majority of only one vote. The design of today's system is a result of an agreement between five out of seven parties in the parliament, constituting a majority of 85%. According to the quote from the government report mentioned in the introduction of this chapter, the system is sustainable. The task here is to discuss possible pitfalls.

4.3 Ageing and Pensions

There is no doubt that ageing puts a strain on pension systems organised as pay-as-you-go systems. This can easily be shown by using the budget restriction of a pay-as-you-go system and combining it with demography. In Table 4.1, this is done applying historic and forecasted demographic changes in Sweden to the budget restriction of a 'pure' pay-as-you-go system. In such a system the contributions of the workers in a given year are used for disbursement of benefits to contemporary pensioners in that same year, which can be expressed as:

$$q w L = b R \quad (4.1)$$

where q is contribution rate, w average wage, L labour force, b average benefit and R number of pensioners. ($w L$) is the wage sum, i.e. the 'tax' base; thus the left side of the equation is the sum of contributions and the right side the sum of disbursements. The equality sign has to hold in order not to run a surplus or a deficit. Rearranging (4.1) gives

$$q = b/w R/L \quad (4.2)$$

that is, the contribution rate has to equal the replacement rate (b/w) times the old age dependency ratio (R/L). Changing demography (R/L) forces either the replacement rate or the contribution rate to be adjusted in order to keep the budget restriction. The degree of the adjustment needed is shown in Table 4.1.

Table 4.1 Replacement rate or contribution rate in a pay-as-you-go system at different old-age dependency ratios

| | Replacement rate at a given contribution rate; and contribution rate at a given replacement rate, with dependency ratio defined as R/L | | | Replacement rate at a given contribution rate; and contribution rate at a given replacement rate, with effective dependency ratio R/E | | |
|------|--|-----------------------|--------------------|---|-----------------------|--------------------|
| | R/L | b/w if $q = 18.5\%$ | q if $b/w = 0.6$ | R/E | b/w if $q = 18.5\%$ | q if $b/w = 0.6$ |
| 1960 | 0.20 | 0.93 | 0.120 | 0.26 | 0.71 | 0.156 |
| 2010 | 0.32 | 0.58 | 0.192 | 0.40 | 0.46 | 0.240 |
| 2030 | 0.42 | 0.44 | 0.252 | 0.53 | 0.35 | 0.318 |
| 2050 | 0.44 | 0.42 | 0.264 | 0.54 | 0.34 | 0.324 |

Source: Statistics Sweden BE0101, BE0104

Using ‘pure’ demography in the old-age replacement rate, i.e. the number of persons aged 65 and older in relation to the number of persons aged between 20 and 64, R/L , the replacement rate, b/w , will decrease from 58% in 2010 to just above 40% in 2050 given a contribution rate of 18.5%, which is the contribution rate in the Swedish public system. However, everyone between the age of 20 and 64 does not work. In a pension system, the ‘L’ that is of importance is of course the actual amount of labour, determined by the number of workers and the number of hours worked per week, the number of weeks per year and the number of years over a lifetime. By deducting a hypothetical number of people in the age group 20–64 supported by social insurance, we get the effective old-age dependency ratio R/E .² In this case the replacement rate is 46% in 2010 and decreases to approximately one third in 2050, given a contribution rate of 18.5%.

Table 4.1 illustrates the strain an ageing population puts on a pay-as-you-go system. Despite this forecasted demographic development and its effect on the benefit level, the Swedish pension system is said to be both financially and politically stable.

4.4 Pensions in Sweden: A 4-tier System³

As described in Sect. 4.2, the new public system consists of three tiers, the *guarantee pension*, and two defined-contribution parts. These are termed *inkomstpension* and *premium pension*. In Fig. 4.1 (see Sect. 4.6.1.1), the benefits from these different parts are shown. The fourth tier consists of the occupational systems.

In the public system, the contribution rate is set at 18.5% of the pension-qualifying income. Contributions are paid on all earnings in all years in the labour market.⁴ All individuals have two personal accounts, one for each of the two parts. The contribution rate of 18.5% is divided between the two parts; 16 out of the 18.5% go into the *inkomstpension*, the notional defined-contribution system (NDC) which is a pay-as-you-go system. This account is indexed by the growth rate in average wages. Regarding the second part, the *premium pension*, with 2.5% of the 18.5% contribution rate, real money goes into the personal account. The individual can choose among more than 800 funds in which to invest the money. The rate of return on the funded part is determined by the rate of return on the chosen funds. There is a ceiling on the income qualifying for pension credits; the ceiling is at 7.5

²SOU 2006, p. 86 shows that the number of individuals being supported by sickness insurance, unemployment insurance and disability insurance has increased from around 11% in 1970 to 21% in 2005. E in Table 4.1 is calculated based on the assumption that 20% have been and will be supported by these systems.

³For a fuller description of the Swedish system, see Kruse and Palmer (2007).

⁴There are a couple of minor exceptions. Full contribution is not paid on incomes below 42.3% of one price-related base amount and not on incomes above the ceiling (7.5 price-related base amounts). These incomes do not give pension credits.

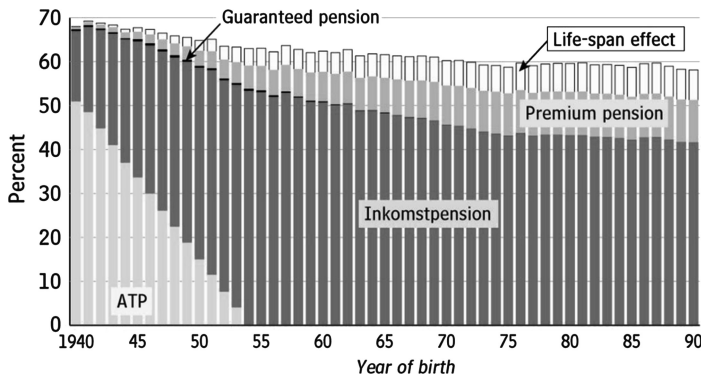


Fig. 4.1 Pension at the age of 65 in relation to income in age groups 16–64 for different birth cohorts

Source: Swedish Social Insurance Board (2005:47)

income base amounts⁵ (45,900 SEK in 2007). Half the contribution rate is levied on income above the ceiling as a tax on high-income earners.

The personal accounts grow each year with new contributions plus the rate of return/the interest on the account. Inheritance gains are also credited to the accounts; the pension balances of deceased people are distributed to those belonging to the same cohort as the deceased. In addition to this, the accounts are credited with so-called pension-qualifying amounts for sickness and disability insurance, unemployment insurance and remuneration from parental leave. Non-contributory amounts are also credited for child years, military service and higher education. At the date of retirement the individual has a pension wealth in the two accounts, a wealth determined by the sum of deposited amounts plus compound interest.

Benefits from the NDC system are determined by dividing the pension balance at the date of retirement with an annuity divisor. The annuity divisor is determined for each cohort by the expected remaining lifetime estimated at the date of retirement and an added interest factor of 1.6%. Unisex life expectancy tables are used for calculating expected remaining lifetime. The interest factor makes the divisor smaller than the expected remaining lifetime and causes a forward shifting of consumption possibilities. Outgoing benefits are indexed by the growth rate in average wages minus the 1.6% that already have been received.

In the funded part, the individual can choose between claiming the annuity either as unit-linked insurance or as traditional insurance. If unit-linked insurance is chosen, the savings of the insured remain in the chosen funds and the size of the premium pension is re-valued once a year based on the value of the fund shares in December. Each month the following year, a sufficient number of fund shares are

⁵The income base amount is changed once a year in response to changes in the income index.

sold to finance the pension benefit. If a traditional insurance is chosen, the pension is calculated as a guaranteed life-long annuity.

The *guarantee pension* (GP) is income-tested against benefits from the other two parts of the public pension system and is financed by general tax revenues in the state budget. As said before, this system is defined-benefit and price-indexed and determined in the following way:

If own pension \leq 1.26 price base amounts (pba),⁶ then
 GP = 2.13 pba – own pension.

If own pension $>$ 1.26 pba, then
 GP = 0.87 pba – 0.48 (own pension – 1.26 pba).

This gives a marginal effect of 100% up to own pension of 1.26 pba, and a marginal effect of 52% in the interval 1.26–2.13. Thus, in the lower range of the income scale the system gives no or only a weak incentive for work and hence “the tight connection between benefits and contributions” does not exist. Pensioners with guarantee pension are also eligible for housing allowances, paying at most around 90% of the rent.

There is no statutory retirement age in the Swedish public system. An individual can begin to draw pension from the age of 61. This of course means that the annuity divisor increases accordingly. The individual can choose to draw full pension or only part of a full pension and continue to work. If so, the pension wealth decreases with outgoing benefits and increases with new contributions. The guarantee pension, however, can not be drawn before the age of 65, and if an individual eligible for guarantee pension withdraws before the age of 65 – thus reducing the benefits from the other parts of the public system – her/his benefit from the guarantee system will be calculated as if the individual would keep on working until the age of 65.

Pension systems are long-running commitments. Abrupt changes cause problems as there will be many who do not have the possibility of adapting to new rules or have a very limited time in which to do so. Transitional rules were used to mitigate the change to the new system. People born in 1937 and earlier (57 years of age and older at the time of the reform decision) belong entirely to the old system, those born between 1938 and 1953 belong partly to the old and partly to the new system, while those born in 1954 or later belong entirely to the new system. The transition period is divided into 20s; a person born in 1938 belongs to 19/20ths to the old system and to 1/20th to the new one; people born in 1944 belong to 10/20ths to each system; and those born in 1953 belong to 1/20th to the old system and to 19/20ths to the new system. However, indexing of outgoing benefits follows the new rules, that is, are all indexed by growth.

The fourth tier consists of the *occupational pensions*. There are four main systems; one for blue-collar workers in the private sector, one for white-collar workers in the private sector, one for employees in local government and finally one

⁶The price base amount, pba, is used for price-indexing the benefits. It is adjusted once a year in response to inflation (consumer price index). In 2008 pba = 41,000 SEK; 1.26 = 51,660 SEK.

for state employees. The contribution rate varies between 2.5 and 4%. These systems are obligatory, i.e. the individual cannot choose not to join. All of them replace 10% of the income below the ceiling in the public system and all but the system for blue-collar workers in the private sector replace ~60% of the income above the ceiling. This makes the occupational pensions more important for high-income earners than for low-income earners.

In Sect. 4.6.1 estimates of the outcome from the various parts of the Swedish pension system will be shown for different birth cohorts, income groups and for men and women.

4.5 Financial Stability in the Swedish Pension System

The DC-feature in combination with the division number forces the system never to run into a deficit. Each individual receives a benefit determined by the (notional) pension wealth accumulated in her/his account, plus the benefit from the funded part. To arrive at the yearly benefit from the notional system, this pension wealth is divided by the number of years the wealth has to last, i.e. expected remaining lifetime (with the insurance feature to take advantage of the ‘law of large numbers’ and take care of the risk of an extraordinary long life). Thus, the sum of (expected) benefits never exceeds the sum of (expected) contributions plus compound interest. Also, the DC feature, the tight connection between contributions and benefits, rewards work and may induce people to work longer hours or retire later, thus alleviating at least part of the strain caused by an increasing dependency ratio.

However, there are a number of features in the system that may jeopardize stability. One is the index used: average wages instead of sum of wages, the latter being the contributions base. Another one is the method of calculating expected remaining lifetime. This is calculated for the cohort at the age 65. The increases in expected lifetime that come after that date are not accommodated for in the division number. Over the last decades life expectancy has on average increased by some 3 months per year. In a decade, that adds up to more than two additional years that have to be financed. To guarantee financial stability on an aggregate level, a balance sheet is constructed and financial stability is guaranteed by an automatic balance mechanism.

The financial balance sheet shows the assets and the liabilities of the system; these are embodied in the balance ratio, BR:

$$BR = (\text{capitalised value of contributions} + \text{buffer funds}) / \text{pension liabilities}$$

Whenever an imbalance occurs the automatic balance mechanism is triggered. With $BR = 1$, assets equal liabilities and the system is in balance. With $BR < 1$, liabilities exceed assets and the automatic balance mechanism lowers the rate of return on pension accounts as well as on outgoing benefits, reducing pension liabilities until balance is restored.

Until the year 2007 the pension assets were greater than the pension liabilities, but the financial crises in 2008 caused a drop in the value of the buffer fund of

Table 4.2 The NDC balance sheet, in billion SEK

| | 2002 | 2004 | 2006 | 2008 |
|--------------------|--------|--------|--------|--------|
| Contribution asset | 5,301 | 5,607 | 5,945 | 6,477 |
| Buffer fund | 488 | 646 | 858 | 707 |
| Total assets | 5,789 | 6,253 | 6,803 | 7,184 |
| Pension liability | 5,729 | 6,244 | 6,703 | 7,428 |
| Surplus | 60 | 9 | 100 | -244 |
| Balance ratio | 1.0105 | 1.0014 | 1.0149 | 0.9672 |

Source: Swedish Social Insurance Agency (2008)

almost 30%. This caused BR to fall below 1 for the first time and thus triggers the automatic balance mechanism, see Table 4.2. Due to a lag in the mechanism of 2 years, pension benefits will be lowered in 2010. The effect on the income pension should have been -3.51% in 2010 and -4.01% in 2011.⁷ Now, this reduction would come into effect in 2010 which also happens to be a year of election to the parliament. The political courage disappeared and a new balance mechanism was introduced. In the new one changes in the buffer fund is calculated as averages for a longer period, making financial crises live longer in the system (see Kruse 2009, for a critical note) Also, the reduction in pension benefits will be lower in 2010 with the new calculus, but larger in 2011 and 2012.

The design of the system, with balance sheets and an automatic balance mechanism, closes the system and makes it financially stable. It is also the basis for making the system autonomous, that is, outside the state budget.

4.6 Political Sustainability

Pensions are a long-running undertaking; people start paying contributions some 50, 60 or even 70 years before the last benefit is disbursed. To issue guarantees for such a timespan may seem unrealistic. However, a design that makes the system robust to political, economic and demographic risks and minimises adverse incentives and dead-weight losses has a greater potential for survival. In pay-as-you-go systems the economic growth gives the rate of return, while the rate of return in a funded system is the interest earned in the capital market. Neither can be guaranteed; a risk-reducing device is to divide the system between the two. This is done in the Swedish system with around 85% being pay-as-you-go and the rest being funded. What division would be an optimal one is beyond my power to judge, but using both reduces the risk. Also, indexing the pay-as-you-go system with the growth rate makes the working generation and contemporary pensioners share the fruits of good years and the strains of lean years, making the system more robust than if a price-index had been used. The DC-feature grants benefits for all

⁷Note, that the guarantee pension is price indexed and not subject for this change.

contributions, not distorting the choice between work and leisure, once again a risk-reducing device.

The major part of the Swedish system is a pay-as-you-go system. Such systems build on trust, trust between generations. The working generation paying contributions that are used for disbursement of benefits to contemporary pensioners does so in the hope that (being convinced) future generations will do the same when they are pensioners. A first prerequisite for this implicit social contract between generations to hold up is financial stability, discussed in the previous section. A second one is political sustainability.

There is a danger in pay-as-you-go systems; it has been shown – both theoretically and empirically – that pay-as-you-go systems tend to expand beyond an optimal (sustainable?) level (see Browning 1975, Sjoblom 1985, for theoretical results; Breyer and Craig 1997, for empirical results). There will always be a majority who prefers a higher level than the optimal one viewed from a life cycle perspective. This tendency is even reinforced with an ageing population. This finds its explanation in that when voting on the level, the older the electorate, the higher the level preferred; the older a person is, the longer the period of contributions has passed at the time of voting. Contributions already paid are thus sunk costs while the remaining period of contributions to be paid is shorter. Ageing also brings about an opposite tendency through the effect on the rate of return, which tends to decrease due to ageing. Therefore, ageing causes two effects which go in opposite directions. However, empirical studies find the expansive effect stronger than the retrenching one and such an expansion might threaten the system's sustainability.

The Swedish system is not exposed to this problem because the NDC feature protects it. An individual has nothing to gain from voting for an expansion. It will of course result in an increased benefit level but this will be fully paid for by the individual. In an NDC system there is no such thing as sunk costs. Also, the autonomy of the system guarantees that even if an expansion is launched the system is not threatened. In fact, the contrary may occur; an expansion (an increase in contribution rate) makes the guarantee pension – the part financed by the state budget – less important. A higher level of income pensions make fewer people eligible for guarantee pension.

It has also been shown that reforms retrenching the system are “impossible” to bring about in a democracy (see Sinn and Uebelmesser 2002; Cremer and Pestieau 2000). Evidently, this was not true for Sweden; it was possible to gain political support for the reform. Kruse (2005) and Selén and Ståhlberg (2007) credit the transitional rules for making the reform possible; according to their analysis the transitional rules made it possible to secure a majority in favour of the new system.⁸ But will the system be sustainable in its fully-functioning state? The Swedish system is said to be politically stable due to the fact that a broad political majority agreed to the reform; five out of the seven parties in the Swedish parliament which

⁸Könberg et al. (2006) describe the political process and the different aspects taken into consideration during the work on the proposal.

represent some 85% of the MPs voted in favour of it. However, as new generations enter the stage, they also have to find the contract agreeable in order to be willing to maintain the system. In the following section sustainability will be discussed using the concept fairness, assuming that a fair system has a greater potential for survival.

4.6.1 Fairness as an Estimate of Sustainability

There are – at least – two definitions of fairness: a fair procedure and a fair outcome. The analysis here will follow these two lines. With equal opportunities, a fair procedure will result in a fair outcome.⁹

4.6.1.1 A Fair Outcome

One of the criteria against which to judge the sustainability of the pension system is if the system provides “adequate” pensions, if it provides a decent standard of living in old age. The notion ‘a decent standard of living’ is a relative one. Firstly, it depends on what the pension is supposed to be able to buy; so is for example health care and old age care heavily subsidized in Sweden. Secondly, what should the pension benefit be compared with? Own income before retirement, for example final salary? Or average income of contemporary workers? Different measures give different answers. Compare for example the outcome according to estimates by Swedish Social Insurance Board (Fig. 4.1) and the one by Flood (2004) (Table 4.4). In Table 4.4 pension benefits for the fairly recently retired (between the age of 66 and 69) are compared to their income in the years before retirement (between the age of 60 and 64). In Fig. 4.1, the average pension for a cohort is compared with the average wage of contemporary workers aged 16–64. The outcome is of course higher with the latter definition since wages are lower. Which one to use – or which one that depicts a fair outcome – depends on which one we think is closest to how people think of their pensions.

Figure 4.1 shows estimates of the outcome from various parts of the public system and for various birth cohorts. The ATP-part shows how the old system is phased out and the new one is introduced; the transitional rules are such that individuals belonging to the birth cohort of 1940 have 70% of their pension calculated in accordance with the old rules, and those born in 1953 have 95% calculated according to the new system. From the birth cohort of 1954 and onwards, people belong fully to the new system.

The figure also shows that the replacement rate will decrease in the future. People born in 1940 have a replacement rate of just below 70%, while people born in 1970 and later will have a replacement rate of around 55%. An explanation

⁹For a fuller discussion on the problems of measuring distribution, fairness, etc., see for example Bergh (2007), Roemer (2002).

Table 4.3 Pension benefit for different cohorts compared to pension benefit for those born in 1930, average life expectancy, age of retirement and effect on pension benefits

| Cohort born in | Reaches 65 in | Life expectancy at 65(a) | Retirement age to neutralise life-expectancy effect on pensions(b) | Implying an expected length of retirement (a minus b) | Compared to those born in 1930 |
|----------------|---------------|--------------------------|--|---|--------------------------------|
| 1930 | 1995 | 82 years, 5 months | 65 years | 17 years, 5 months | 0 |
| 1940 | 2005 | 83 years, 7 months | 65 years, 9 months | 17 years, 10 months | + 5 months |
| 1950 | 2015 | 84 years, 10 months | 66 years, 7 months | 18 years, 3 months | + 10 months |
| 1960 | 2025 | 85 years, 7 months | 67 years, 2 months | 18 years, 5 months | + 1 year |
| 1970 | 2035 | 86 years, 3 months | 67 years, 7 months | 18 years, 8 months | + 1 year, 3 months |
| 1980 | 2045 | 86 years, 10 months | 68 years | 18 years, 10 months | + 1 year, 5 months |
| 1990 | 2055 | 87 years, 1 month | 68 years, 2 months | 18 years, 11 months | + 1 year, 6 months |

Source: Swedish Social Insurance Agency (2008)

to these decreases is that, due to increases in expected lifetime, the annuity divisor increases – from 15.7 for those born in 1940, to 17.0 if born in 1960, and to just above 18 for those born in 1990, causing a decrease in the benefit level. In Fig. 4.1, this is shown as “life-span effect”, i.e. the reduction in benefits due to increased longevity. The lifespan effect is also shown in Table 4.3. An individual born in 1990 will receive a reduction in the benefit compared to older cohorts, if the person born in 1990 decides to retire at 65. However, the lifespan effect can be mitigated by postponing retirement, as shown in Table 4.3. If the individual born in 1990 postpones retirement to the age of 68 years and 2 months, the effect of increased longevity on the pension benefit compared to a person born in 1930 will be fully neutralised.

It can be concluded that if people accept to postpone retirement, benefits will not decrease due to increased longevity. Also, despite postponed retirement the number of years as a pensioner will increase. The new system offers a choice between consumption and leisure, something that must be appreciated as welfare enhancing.

The results in Fig. 4.1 are based on the assumptions in the basic or main scenario. In a pessimistic scenario the automatic balance mechanism is activated in 2013, leading to a reduction in pension benefits for younger generations. For the cohort born in 1990 the balancing reduces the pension level by 1.1 percentage points (including the increase in the guarantee pension caused by reduced benefits) (Swedish Social Insurance Agency 2007). However, in the pessimistic scenario wages will also be lower. As pensions follow the developments in the economy due to the chosen indexation, the replacement rate will be approximately the same as in the basic scenario.

Table 4.4 shows the total replacement rate from different income sources in relation to own income in the years before retirement. The outcome is shown for different income classes and for three cohorts. Those born in 1940 receive almost their entire pension from the old system; those born in 1950 receive the major part of their pension from the new system and those born in 1960 receive their entire pension from the new system. As can be seen in Table 4.4, when transitional rules have passed, people in the highest income brackets will only get a 27–29%

replacement rate from the public system, and another 22–24% from occupational pensions.

When fully functioning, i.e. for the cohort born in 1960, the outcome from the public system is estimated to give a replacement rate of 57% for those in the lowest income bracket, 44% for middle-income earners, and 29% for the 25% in the top income group. The “high” replacement rate in the lowest income bracket is of course due to guarantee pension, and the low replacement rate in the highest income bracket to the ceiling on pension qualifying income, i.e. to deliberate redistribution. Will these replacement rates be perceived as fair or acceptable outcomes? Evidently, the ‘tight connection between contributions and benefits’ in a DC system is not all that tight.

Women’s labour market behaviour is different to men’s; they use more time for caring for children and elderly parents and thus more often have interrupted working careers and more often work shorter hours in paid work. A DC pension system is therefore often argued to be disadvantageous to women. In Ståhlberg et al. (2005) this is analysed and Table 4.5 gives a comprised result of that analysis. In Table 4.5, the outcome for women is compared to that for men; other definitions of outcome than the ones used in Fig. 4.1 and Table 4.4 are used to shed light on the

Table 4.4 Replacement rate at age 65–69 in relation to average income during age 60–64 for different cohorts and income groups. Percentiles below 25, between 25 and 75, and above 75^a

| Cohort | Income group | Replacement rate | Of which <i>public pension</i> | Occupational benefit | Private pensions |
|--------|--------------|------------------|--------------------------------|----------------------|------------------|
| 1940 | < p25 | 112 | 84 | 8 | 18 |
| | p25 – p75 | 74 | 54 | 10 | 9 |
| | > p75 | 67 | 37 | 17 | 11 |
| 1950 | < p25 | 87 | 63 | 12 | 11 |
| | p25–p75 | 68 | 46 | 13 | 7 |
| | > p75 | 57 | 27 | 22 | 7 |
| 1960 | < p25 | 79 | 57 | 13 | 7 |
| | p25–p75 | 65 | 44 | 15 | 6 |
| | > p75 | 59 | 29 | 24 | 5 |

^aThe result in Table 4.4 is derived by using a micro simulation model, SESIM, at the Swedish Ministry of Finance
 Source: Flood (2004:25)

Table 4.5 Pension outcome for women with varying behaviour profiles in relation to a full career man

| | Full career woman/Full career man | Full time/Part time woman/Full career man | 10-year woman/ Full career man | Part-time woman/ Full career man |
|----------------------|-----------------------------------|---|--------------------------------|----------------------------------|
| Annual own annuities | 80–100 | 80 ^a | 35–40 | 60–70 |
| Replacement rate | 100–120 | 100–120 | 120–145 | 100–125 |
| Rate of return | 115–130 | 120 ^a | 310–400 | 120–130 |

Note: The first figure in the interval shows those with no upper secondary school education, the last figure those with postgraduate education

^aThe outcome is the same for all educational groups

Source: Ståhlberg et al. (2005)

problem of “a fair outcome”. Three definitions of outcome are used: annual annuity; replacement rate, defined as pension benefit in relation to final salary; and rate of return, calculated as present value of expected lifetime benefits divided by present value of lifetime contributions. The table shows the outcome for women in five educational classes – from those with no upper secondary school education to those with postgraduate education – and with different labour market behaviour, and so on, compared to a man working full time throughout all his life. All women are assumed to have two children and to stay home with parental leave. Four types of careers are assumed: (1) the full-time career woman with the same behaviour as a man (apart from parental leave); (2) the full-time/part-time career woman who works full-time until the arrival of the children, then works part-time when the children are young and then returns to full-time work; (3) the woman who works for 10 years when young and does not return to the labour market after having children; (4) the part-time career woman who works part-time throughout most of her life.

It turns out that replacement rates are fairly similar between men and women; women have a slightly higher replacement rate due to the fact that men have higher wages and thus hit the ceiling in the public system more often than women do. Women get a higher rate of return but a lower personal annual benefit. The outcome for the “10-year-woman” shows the outcome for those with no or very low own income; it thus shows the result of the guarantee pension.

Table 4.5 serves as an excellent example of the difficulties in using outcome for judging adequacy or fairness of a pension system. The table draws attention to the wide range of outcome depending on the measure chosen. Emphasis on procedure may therefore help in judging.

4.6.1.2 A Fair Procedure

Using the fair procedure approach means that we take into account that people’s preferences and choices influence the outcome. Assuming a fair distribution at the outset, the outcome depends on people’s choices – what education is chosen, how much labour is supplied (hours and years), what effort is put into labour, among other things. If we consider adult people to be competent to make decisions, with a fair procedure the result must be considered fair.

A number of features summarize the procedure. These are the life-income principle; the level, i.e. the contribution rate; the exceptions to the life-income principle (the guarantee pension, the ceiling, benefits for children, for higher education and military service); the indexing by average wage during the earnings period; the adjustment indexing of outgoing benefits; the opportunity to choose between funds in the financial part; the annuity divisor with its specific method of including a longevity factor; and the use of unisex life-expectancy tables.

The defined contribution system builds on a life-income approach. All income earned in the labour market awards pensions rights. There is an (exact) correspondence between what the individual pays into the system (+interest) and the outgoing benefits, with yearly benefits determined by pension wealth in the accounts

distributed over the expected remaining lifetime. To the degree that the labour market gives rise to ‘unfair’ distribution of wages, so too does the pension system in the sense that low income yields a low pension benefit. However, it will not influence the rate of return.

4.6.2 A Fair Starting Point?

Women have lower incomes than men. This is mainly due to shorter working hours; women work part-time to a greater extent than men do. There is empirical evidence suggesting that women also have lower wages than men even if equal to men in all other relevant respects. After controlling for “objective” differences (education, work effort, job experience) there remains a difference in wages of about 5% that might be ascribed to discrimination. The lower wage, irrespective of cause, will generate a lower annual pension benefit (see Table 4.5). However, the two other measures used show that women fare better than men. Further, Ståhlberg et al. (2005) argue that using the pension system to compensate for a badly functioning labour market may be counter-productive; instead of alleviating the malfunction such compensation may justify and make permanent these differences.

We also know that people are born with different bodies and minds. Some are strong, intelligent, and healthy while others have not been so lucky in the lottery of life. When it comes to the risk of sickness, of disability and of unemployment, risks that are unevenly distributed, the risk is pooled in the insurance collective as benefits from unemployment insurance, sickness and disability insurance are counted as income; contributions are paid into the pension accounts on income from these sources.

4.6.3 When Contributions Deviate from Benefits, i.e. Deviations from the DC Feature

The guarantee pension gives benefits to those who have had low or no income during working years. There is no doubt that “the good society” protects its members against the risk of poverty in old age and that most people find such an arrangement fair. However, there are two problems in this context that deserve attention. The first one is its level and the high marginal effects it causes. The second one is the indexing with prices.

The lowest level of benefit a single person can receive is 7,150 SEK per month. This benefit is supplemented by housing allowances of roughly 3,000 SEK per month. The median income for men and women was 18 700 SEK in 2005. The guarantee pension including housing allowances is thus around 54% of the median income. Women’s median income was 16,600 SEK; the guarantee pension is 61% of women’s median income. Is this benefit too low? Or is it too high? It is worth mentioning that, according to Table 4.5, a person with only guarantee pension gets a

replacement rate far above that of a full career man. Furthermore, the guarantee pension awards almost equal benefits to a person who never worked and never paid contributions and a person who worked for many years in a low-income job. In the Swedish system – as is almost always the case with means-tested or income-tested benefits – there are high marginal effects in the lower part of the income scale.

The ceiling on benefits but not on contributions (half the contribution rate is paid on income above the ceiling) means that high income earners pay an extra tax and get a lower replacement rate as well as a lower rate of return than those with income below the ceiling, clearly shown in Table 4.4. Many more men than women have income above the ceiling; this explains part of the result in Table 4.5. The ceiling together with the guarantee pension provides the Swedish pension system with a middle class bias.

4.6.4 Indexing

Indexing the guarantee pension with prices implies that the relative standard of living of those who depend on that pension will fall behind that of the working generation as well as that of other pensioners with benefits from the other parts of the system. The yearly growth rate in the economy need not be high in order to cause a substantial wedge. People who receive disability pension in their early years of life are at risk of ending up with a very low standard of living as pensioners.

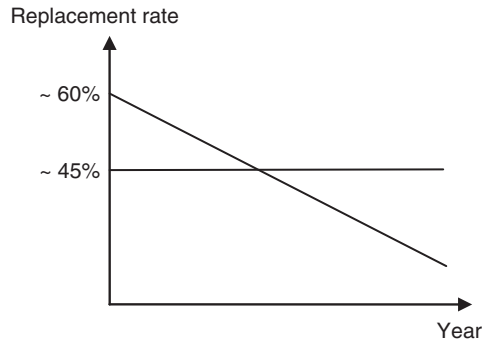
The NDC system is indexed by wages. This means that workers and pensioners share the same economic development, be it fat or lean years. This probably strengthens the system. However, indexing with average wages instead of the wage sum, which is the contribution base, increases the risk of activating the automatic balancing. This, in turn, implies a lower accrual rate and lower outgoing benefits, which might cause tension between co-living generations.

The benefits from the funded part may display substantial differences between individuals even if the contributions are the same. There are more than 700 funds to choose between, and the benefit will depend on the rate of return of the chosen funds. Today we can only speculate in possible reactions if the outcome proves to show considerable differences. Conclusions from research seem to suggest that women have a higher risk aversion but also that women seem to do just as well as men in their investments. People with less education are more conservative in their investments, and do not spread the risk as much as high-income earners (Ståhlberg 2006). These differences may give rise to differences in outcome.

Outgoing benefits are indexed by a so-called adjustment index. In the division number an interest of 1.6% is already credited to the benefit; this results in a forward shifting of consumption possibilities illustrated in Fig. 4.2. The two replacement rates represent the same sum of pension wealth. The downward sloping “60%” line illustrates the Swedish adjustment index.

People who live longer will end up with a lower benefit than would otherwise have been the case. Low pension benefits coincide with old age and a higher

Fig. 4.2 A schematic illustration of outgoing benefits with front-loaded benefits with front-loaded indexation compared to benefits without front-loading



demand for healthcare and old-age care. Will this benefit profile be considered fair to those who will pay taxes to finance healthcare and old-age care?

4.7 Concluding Comments

The major part of the Swedish pension system is a pay-as-you-go one. Such systems will have sustainability problems due to the predicted ageing population with increases in the old-age dependency ratio. The specific Swedish design mitigates much of this strain.

The indexation with average wage takes care of (most of) the economic changes. The annuity divisor takes care of (most of) the demographic changes, i.e. changes in longevity. Financial stability is guaranteed by the automatic balance mechanism that is activated whenever the balance of the system is threatened, for example by an increase in average wages combined with a decrease in the labour force or by severe financial crises.

The tight connection between contributions and benefits means that excess burden from taxes/contributions decreases and also that incentives to work longer hours or to postpone retirement are increased, counterbalancing some of the demographically induced decrease in the labour force. However, the range within which this tight connection is effective is rather narrow; the guarantee pension and housing allowances in the lower part of the income scale and the ceiling in the upper part weakens these incentives.

The new system will offer lower replacement rates than the old system promised to provide. Note, however, that the old system was considered unsustainable by a number of investigations – benefits that had been promised would probably not have been paid out. The lower replacement rates are mostly due to the construction of the annuity divisor; increases in longevity decrease the annual benefit. The bill for increased longevity is not passed on to the younger generations but paid for by those enjoying it. The reduction in benefits can be counterbalanced by postponed retirement. Thus, the new system empowers people to choose between consumption and leisure, provided that the labour market is flexible enough to accept older

workers. This is not the case today. Labour market institutions demand people older than 67 years to leave salaried employment. Without changes in the labour market, pension benefits will be low and the stability of the system threatened.

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