The Swedish Pension Reform Model: Framework and Issues

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Abstract

This paper describes the recent Swedish reform and available options on major issues within this reform framework. In June 1994, Sweden's Parliament passed legislation replacing the old defined benefit system with a combination of a pay-as-you-go *notional defined contribution* (NDC) and a DC *privately managed financial account* scheme, based on a total contribution rate of 18.5 percent on earnings. The financial account scheme is run using a state-clearing house as a broker, and will have a state monopoly supplier of annuities. During the accumulation period, participants can choose among all registered funds, about 500 when they make their first choice in the autumn of 2000. Accounts were created in 1999, and two annual statements have been sent out since then.

If the NDC and financial account schemes together do not reach a minimum level by age 65, and the individual chooses to retire at this age, benefits from these systems will be supplemented up to the guarantee level, determined by Parliament and financed with a state budget transfer. This reflects the fact that the PAYG NDC and financial account schemes are designed to function autonomously from social policy. Life expectancy is factored into the NDC annuity, and together with the financial account system, this innovation helps to shift the risk of an aging society onto workers while they are still active. There is no maximum retirement age, and the system offers a broad range of options for labor-force exit for older workers. Full, partial or no earnings from work can be combined freely with full or partial annuities from one or both of the public schemes from the minimum pension age of 61.

The Swedish Pension Reform Model: Framework and Issues[1]

Part I   Introduction and Overview of the New System

1   Introduction

In legislation passed by Parliament during and after June, 1994, Sweden replaced its pay-as-you-go, defined benefit system with a pay-as-you-go (PAYG) notional defined contribution (NDC) system and an advance funded second pillar with privately managed individual accounts, supplemented with a guarantee at age 65 for persons with low lifetime earnings. The earnings-related NDC PAYG commitment emulates the principles of a market-based defined-contribution insurance scheme, although without advance funding – other than that which follows with changes in cohort size – and with a rate of return based on the performance of the economy rather than the financial market.

The old system being replaced combined a flat-rate universal benefit (*Folkpension*) with an earnings-related supplement (*ATP*). A full earnings-related benefit could be obtained with 30 years of covered earnings at age 65, based on an average of the best 15 years. This system was unfair for persons with long working and large contribution histories and was expected to require increases in contribution rates that were believed to be unacceptable to future workers. In line with this, beginning in the 1980s, there emerged an increasingly widespread belief among new entrants into the labor force and the general public that the system could not meet its "promises" in the future. Younger workers were becoming more and more skeptical about their prospects as pensioners. In short, trust in the system was eroding, and it became clear to experts and policy makers that something had to be done.

The old system was conceived in the 1950s in an economic environment with 4 per cent real growth and much lower life expectancies. As the rate of per capita wage growth slowed down to an average of around 2 percent and labor force growth stagnated, experts began to become concerned that the contribution base would not grow rapidly enough in the future to support the anticipated increase in old-age pensioners. Actuarial calculations showed it would be necessary to raise the contribution rate considerably in order to meet future commitments, although the extent of the problem, as usual, depended on the underlying assumptions. The fact that it was not possible to say today what the likely outcome would be tomorrow was itself seen to be a problem. There is general agreement that it is important to be clear about the content of the intergenerational commitment of the pay-as-you-go system.

A deep economic recession and accompanying fall in the contribution base by around 10 percent in the early 1990s finally brought home the acute need for reform to a broad spectrum of political interests. The recession came on the heels of the final report from the Pensions Commission in 1990. In 1992, a newly elected government formed what was called the Pension Working Group, with a representative from each of the parties in Parliament and a few experts, and with a mandate to reform the then existing pension system. The principles of the reform were cast into the public arena for debate in the autumn of 1992. The first legislation for the reform came in June 1994. Since this time, additional legislation has been introduced, specifying more of the details of the reform, including some of the unresolved political issues left in 1994.[2]

Social security reforms are inherently political and in the end inevitably represent compromises among various interests. One of the strengths of the Swedish reform process is that it emerged out of a political consensus among five of the seven parties in Parliament in 1994, representing over 80 percent of the voters, and this wide political support of the reform has continued. Hopefully, the broad spectrum of political support, together with the content of the reform itself, will be sufficient to guarantee that it will not only serve its purpose well but will be supported by a strong political majority for a long time to come.

My aim in this monograph is broader than simply to document the Swedish reform. The Swedish reform has brought together ideas that when woven together represent what many consider to be a paradigm shift in old-age social security. For this reason, my goal is to present the general framework and main options available at each juncture, and to comment on their strengths and weaknesses.

2   Overview of the Reform and Reform Goals

The overriding principle of the reform is that which has guided Swedish social policy since the 1950s. This is to provide an adequate earnings-related retirement benefit with universal coverage for all persons working and residing in Sweden, backed up by a safety net that guarantees an adequate standard of living for the elderly. The Swedish reform has four main goals. The first is *fair* treatment of persons with different contribution histories. Two persons who have paid the same amount in contributions and who retire at the same time and at the same age should be entitled to the same benefit. This entails relating the benefit solely to lifetime money contributions, and not to the number of years of contributions, a specified number of best years and/or seniority, all of which are frequently found components of European social insurance systems, including the old Swedish system.

The second goal is *transparent redistribution*. This goal is achieved with redistributional policy financed with general budget resources earmarked specifically for this purpose. The most important example is the minimum guarantee benefit designed to protect the lifetime poor.

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[2] One of the most difficult technical issues has been the specification of the transition from the old system with an extra tax deduction for pensioners to a system where all income (earnings and pension benefits) are given equal tax treatment.

The third goal is *financial stability* in the face of changes in demography and the economy. In the "old" defined benefit system, it was assumed that future workers would pay the bill, regardless of its size. In contrast, in the NDC system individual decisions about work and retirement are reflected in the size of the individual annuity, and the long-run aggregate contribution rate future workers will pay to finance the system is the same as that paid individually by workers today.

A fourth goal is to create *financial saving managed by private financial institutions*. During the period in which the large birth cohorts of the 1940s will drain the reserves of the present PAYG pension fund, the public financial saving will be maintained through the creation and growth of new second pillar saving from younger workers.

A result of the reform is that older workers will be able to combine earnings from work and retirement income in any way, with the *same tax rules* applying for both earnings and benefits. In fact, a part of the reform was changing the tax rules for pensioners – from a system with an extra deduction for pensioners – to create neutrality between sources of income. The NDC and second pillar benefits can be claimed wholly or in part – together or separately – after reaching the minimum retirement age of 61. This in turn means that work and benefits can be combined in many different ways after this age.

The total contribution rate on earnings for the new old-age system will be 18.5 percent. Half will be an employer contribution and half an employee contribution. For persons covered fully by the new rules, 16 percentage points will go to the NDC PAYG component of the system and 2.5 percentage points to a mandatory funded component. This specific split reflects the goal to create the funded component, while honoring acquired rights under the old system and staying within a given cost restriction (18.5 percent of earnings). A split within the framework of the mandatory scheme between PAYG and funded components provides a portfolio that combines economic and financial returns.

3   Implementation

Implementation of the reform began in 1995, when contributions for the second pillar were put into an aggregate interest-bearing account at the National Debt Office. Additional contributions have been set off every year since then. New information technology was introduced in the Social Insurance Administration, and this made it possible to create account data consistent with the ideas of the new reform.

Individual accounts were created for the NDC system using historical files from 1960. Notional capital through 1994 is based on a contribution rate of 18.5 percent and from 1995-1998 on 16.5 percent and from 1999 and thereafter on 16 percent, with the difference from 18.5 percent going to the second pillar. Once information from the old system had been converted (and some new information was created, e.g., retrospective child-care credits) into the format of the new system, account statements could be sent out to the entire covered population. This occurred in early 1999.
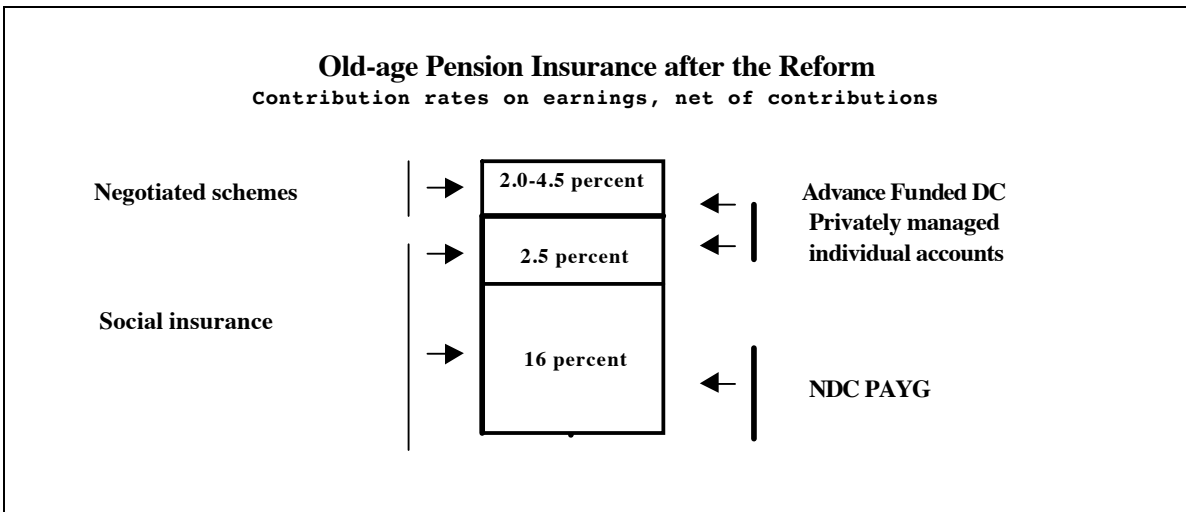
Individuals make their first choices of private funds with their second-pillar accounts in the autumn of year 2000. They will choose from around 500 privately managed funds for investment of their

accumulated capital. Thereafter, new contributions will be accrued annually, and individuals will be allowed to change funds at their own discretion.

The first benefit computed according to the new rules can be paid on January 1, 2001. The first recipient would be a person born in 1938, the first age cohort covered by the new rules, and retiring at the age of 63. Assuming people keep with current practices, the first large age cohort claiming the new benefits will be composed of persons born in 1938 when they turn 65 in the year 2003.

There is a gradual transition into the new system, beginning with persons born in 1938 and ending with persons born in 1953. Persons born in 1934 will receive 20 percent of their benefit from the new system and 80 percent from the old system. These proportions change by 5 percent per year for each younger age, and persons born in 1954 and later are completely within the new system.

Finally, in order to have a complete picture, it is important to note that a typical employee in Sweden is also covered by collectively bargained group insurance. Until the reform of the public system, these benefits were based on defined-benefit schemes. With the reform of the public system, the major occupational-based group schemes, covering about 85 percent of the labor force, have begun to convert into advance-funded defined-contribution, to coincide with the public scheme. The blue-collar workers (roughly 25 percent of the labor force) were the first to convert, in 1998. By the end of 2000 just about all employees, the main exception being those employed by the state, will have some degree of coverage based on an advance-funded defined contribution scheme in their negotiated (occupational) scheme, where they choose their own provider, with contributions of 2 - 4.5 percent of earnings (see figure).

Old-age Pension Insurance after the Reform
Contribution rates on earnings, net of contributions

Negotiated schemes → 2.0-4.5 percent ← Advance Funded DC Privately managed individual accounts

→ 2.5 percent ←

Social insurance

→ 16 percent ← NDC PAYG

Part II   Defined-Contribution PAYG with Notional Accounts

1   The Basic Idea

The basic idea of the pay-as-you-go system based on defined contributions with individual notional accounts (NDC) is that of underlying conventional defined contribution insurance schemes. Contributions based on a *defined contribution rate* applied to earnings from work are recorded on individual accounts. Account values represent a claim on a future pension. There is no advance funding, as opposed to in what we normally call a defined contribution. For this reason, we say that the system is notional defined contribution. Instead, contributions flowing into the system are used to finance current pension obligations, in the traditional PAYG manner.

The account value at the close of any current year consists of contributions during the year to date plus the account value from the previous year, the latter indexed to the rate of growth of covered earnings. Continuous indexation of account values from all years means that contributions accredited in earlier years have the same relative weight as those earned in later years. In the most straight-forward version of this model, an annuity is calculated by dividing the capital balance at the chosen time of retirement by average (unisex) life expectancy for men and women together in that year, i.e., by an estimate of life expectancy for a person of that specific age:

$$\textbf{Annuity} = \frac{\textbf{Capital}}{\textbf{Life expectancy}}$$

The demographic instability created by an aging society is counteracted automatically by a change in the life expectancy factor. The system is actuarial in nature. The individual can handle the increasing life expectancy factor by working and contributing more or by postponing his/her annuity claim a little longer.

As the idea has been developed in Sweden, the annuity also includes an imputed *real* rate of return of 1.6 percent. This is equivalent to giving the capital in the account a real rate of return for a specified time, determined by life expectancy. This front-loading gives people a share of real economic growth in advance, and provides a higher *initial* benefit than they would have been entitled to under a straightforward application of the NDC system with wage indexation of benefits. The amount of the annuity will not be fixed, however, since benefits will be adjusted annually both for changes in the CPI *and* for the discrepancy between actual real earnings growth and the 1.6 percent used to compute the annuity. Appendix 1 discusses the calculation of the annuity and indexation in greater detail.

Front-loading the annuity "moves" future income into the present, given that the alternative would have been to wage-index the annuity. With wage indexation, the annuity would increase in value a little each year throughout the retirement career. A wage-indexed annuity costs a certain amount of money over a

given life expectancy profile. Front-loading the annuity with "expected real growth" is a way to shift some of this fixed sum of money into the initial retirement years, but at a price: compared with normal wage indexation, the benefit will be relatively lower towards the end of retirement. This procedure is consistent with an assumption that people would rather have more money now than later, i.e., positive time preference. The figure below illustrates the difference between front-loading the annuity with an assumed real growth rate and annual indexation of the annuity to the equivalent growth in the real wage, given that the annuities will be price-indexed in both cases.

Front-loading compared to wage indexation
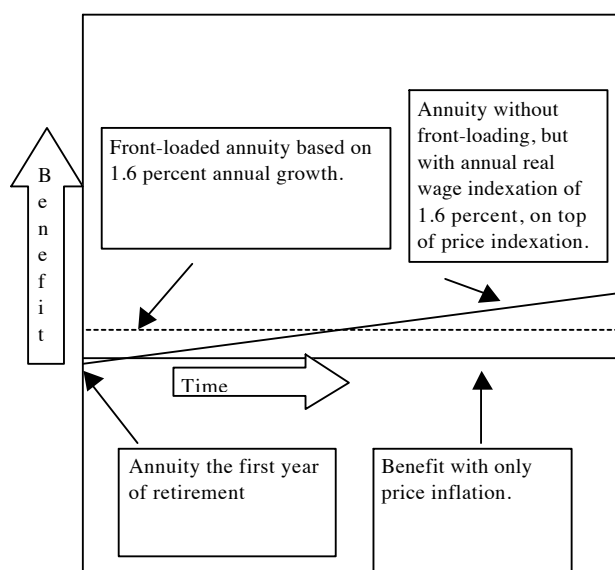
An illustration of NDC accounts

The idea of how the notional account is built up during working years and how a pension is calculated upon retirement is illustrated with an example in Table 1. In the example, the contribution rate is assumed to be 18.5 percent. The calculations assume that the individual does not earn any income or pay contributions until age 22 and that from this age he/she works continuously until retirement with nominal earnings that grow at an average rate of 2 percent per annum. In the example, the individual's rate of wage growth also happens to coincide with the rate of growth of the economy-wide wage, which is used in the example for indexation of notional capital. Of course, in practice individual wage growth will seldom coincide with the economy-wide growth rate. The annuity is calculated for a Swede born in 1975, based on the projected life expectancy of this person from age 61, etc. Note that unisex life expectancy is already projected to be almost 21 years from age 65 for a person born 1975. This means that for a person beginning work at age 22, the working period if it stops at age 62 will be only twice the number of years of retirement.

Table 1. NDC. An example with an individual who begins work at 22 and works every year until he/she decides to retire fully at sometime between age 61 and 70. Conmtribution rate on earnings=18.5 %. Values in US dollars.

Age	Earnings. *Individual growth of 2 % per annum*	Capital index. *2 % per annum*	Capital balance. *End of year*	Unisex life expectancy. *Swede born 1975*	Annuity. *Based solely on life expectancy*	Replacement rate. *% of earnings last year*	Unisex life expectancy and 1.6% growth. *Swede born 1975*	Annuity. *Based on life expectancy and a real return of 1.6%*	Replacement rate. *% of earnings last year*
22	27061	1.082	5006						
23	27602	1.104	10213						
24	28154	1.126	15626						
::	::	::	::						
::	::	::	::						
::	::	::	::						
::	::	::	::						
60	57432	2.296	414368						
61	58580	2.342	433493	24.24	17096	0.30	19.69	21043	0.37
62	59752	2.389	453217	23.41	18516	0.32	19.14	22654	0.39
63	60947	2.437	473557	22.59	20061	0.34	18.58	24397	0.41
64	62166	2.486	494528	21.78	21746	0.36	18.02	26287	0.43
65	63409	2.535	516150	20.97	23588	0.38	17.45	28342	0.46
66	64677	2.586	538438	20.16	25603	0.40	16.88	30580	0.48
67	65971	2.638	561411	19.36	27814	0.43	16.30	33024	0.51
68	67290	2.691	585088	18.55	30262	0.46	15.72	35716	0.54
69	68636	2.744	609488	17.76	32944	0.49	15.14	38654	0.57
70	70009	2.799	634629	16.96	35927	0.52	14.54	41906	0.61

It makes a considerable difference if the benefit is front-loaded using the real growth rate of 1.6 percent in the calculation of the annuity. At the age of 65, the benefit is about 5,000 dollars greater, according to Table 1.

The benefit level and replacement rate (compared with earnings the year prior to retirement) increase as (i) notional capital increases for each additional year individuals work and contribute, (ii) as the capital balance from the previous year is indexed up and (iii) as the retirement and, hence, payment period decreases. It is worth noting that, for the older worker, indexation of capital from the previous year can provide a larger increment to the capital balance than contributions from working an additional year. In other words, there is always much to be gained by postponing a benefit claim and continuing to work, even with reduced hours or a lower hourly wage.

A word of caution about replacement rates

Replacement rates provide us with a picture of the income standard of the retiree relative to his/her standard prior to retirement and for this reason are of general interest. Nevertheless, there are two good reasons to be cautious about replacement rates, including those shown here.

First, in many countries, including Sweden, tax rates have some degree of built-in progression. For this reason, individual earnings, which are normally higher than retirement income, may be taxed at a higher rate than the same individual's pension income. This gives an after-tax replacement rate that is higher than the pre-tax replacement rate.

Second, if we are examining pre-tax replacement rates, as we often do (since complex tax systems can make it difficult to provide simple illustrations), it makes a difference what we assume about earnings growth towards the end of the working career. Typically, earnings profiles flatten out as we age, even if there is overall real wage growth. Table 2 illustrates that simply letting earnings remain constant after age 60, instead of assuming that they continue to increase, makes a big difference for the calculated replacement rate – but *little* difference for the amount of the benefit at retirement.

Table 2. Replacement rates are a poor guage of coverage. They depend greatly on end-career earnings, as this table illustrates. (This example is based on Table 1.)

Age	Annuity based solely on life expectancy	Replacement rate	Annuity with 1.6 % real growth	Replacement rate
Individual earnings growth of 2 % throughout career				
62	20368	0.35	24919	0.43
63	22019	0.37	26777	0.45
64	23817	0.39	28790	0.47
65	25782	0.41	30978	0.50
66	27930	0.44	33360	0.53
67	30286	0.47	35959	0.56
68	32893	0.50	38821	0.59
Individual earnings growth of 2 % through age 60, but no change thereafter				
62	20359	0.35	24908	0.43
63	21990	0.38	26742	0.47
64	23757	0.41	28717	0.50
65	25676	0.45	30851	0.54
66	27763	0.48	33161	0.58
67	30040	0.52	35667	0.62
68	32545	0.57	38411	0.67

Overall replacement rates – NDC, 2nd pillar and occupational schemes

The NDC and 2nd pillar components of the public pension scheme are both account systems. From the point of view of the individual, the only difference – potentially – is in the rate of return. During the past 50 years, the real yield on equities has been around 8 percent. Bonds have yielded 2-3 percent. Real economic growth was around 2 percent in the two decades preceding the deep recession in 1991-

1994, during which the wage sum decreased by around 10 percent. Thereafter, real growth has been well over 2 percent, on average.

Table 3 provides an illustration of what the NDC, 2nd pillar and occupational schemes together can mean for the "typical" individual, in this case a blue-collar worker. The calculations are based on the same assumptions as those underlying Table 1 – i.e., for an individual born in 1975 who works from age 22 and with a projected life expectancy according to the figures in Table 1. Earnings are assumed to grow throughout the individual's earnings career at a real rate of 2 percent per year. Given the present design of the "semi-mandatory" negotiated schemes, 2 percent is the smallest advance-funded DC contribution an individual can have, while some municipal employees will have as much as 4.5 percent. It is possible to have various mixes of bonds and equities, and, based on historical results, different rates of return, also depending on individual choice and market performance. Table 3 shows replacement rates for three rates of return, and assuming that the contribution rate to the negotiated scheme is 2 percent.

The total contribution rate for all three schemes together is 20.5 percent, with 4.5 percentage points going to financial account schemes. As is obvious, the rate of return makes a big difference. At age 65, a real rate of return of 2 percent overall gives a replacement rate of 51 percent, which is the same as what the NDC system would deliver with a contribution rate of 20.5 percent. With a 5 percent real rate of return on financial funds, the replacement rate increases to over 60 percent. With the highly optimistic rate of return of 8 percent (which implies that the worker chooses a 100 percent equity fund), the result is still better, but less likely to occur.

What is important is that the overall result for the typical individual in Sweden will resemble that illustrated in Table 3. Table 3 shows the relative proportions of the systems taken together, with various rate-of-return assumptions. Of course, with a flat earnings profile, as we have illustrated above, replacement rates would look better as the individual gets older – although the final annuities themselves are hardly affected by a slightly lower level of contributions. Once again, it is important to keep this point in mind.

Table 3. Replacement rates under different rates of return.

Age	PAYG Contribution rate of 16 %	Public Second Pillar (2.5%) + Group Occupational (2.0%) Return of :			Total. Public PAYG and Second Pillar plus Group Occupational Return of:		
		2%	5%	8%	2%	5%	8%
61	0.32	0.09	0.16	0.32	0.41	0.48	0.64
62	0.33	0.09	0.17	0.35	0.43	0.51	0.69
63	0.35	0.10	0.19	0.39	0.45	0.54	0.74
64	0.37	0.10	0.20	0.43	0.48	0.58	0.80
65	0.39	0.11	0.22	0.47	0.51	0.61	0.86
66	0.42	0.12	0.23	0.52	0.53	0.65	0.93
67	0.44	0.12	0.25	0.57	0.57	0.69	1.01
68	0.47	0.13	0.27	0.63	0.60	0.74	1.09
69	0.50	0.14	0.29	0.69	0.64	0.79	1.19
70	0.53	0.15	0.32	0.76	0.68	0.85	1.29

Note. The individual´s earnings are assumed to grow at a real rate of 2 % per year throughout the earnings career.

The rate of growth for indexation of capital in the PAYG system is 2 %. The pay-as-you-go, second pillar and group

occupational annuities are all based on unisex life expectancy and a real rate of return on capital from retirement of 1.6 %.

2   Features of the NDC Scheme

The system is fair

A fundamental feature of the NDC model is that it is fair. For two persons working in identical jobs – or more generally in careers with identical earnings profiles – the person with a longer earnings history and, consequently, who has contributed more, will receive a proportionately higher benefit.

Similarly, a person whose lifetime earnings stream is higher, for example resulting from a longer period of education, but who is born at the same time and retires at the same time as his lower income neighbor, will receive a higher benefit.

The system accommodates redistribution

Traditionally, the notion of fairness in social security has also been associated with redistributive goals. The NDC account framework provides a framework that can be used for many redistributive aims. Money can be transferred into the NDC system to finance "rights" that give rise to additions to individual accounts. In the Swedish reform, rights are granted for time spent in military conscription, care of younger children, higher education, and compensated days of sickness and unemployment, as well as disability. These credits will be discussed in greater detail below. Note that *financed* rights can also be credited to 2nd pillar financial accounts – and are in the Swedish scheme.

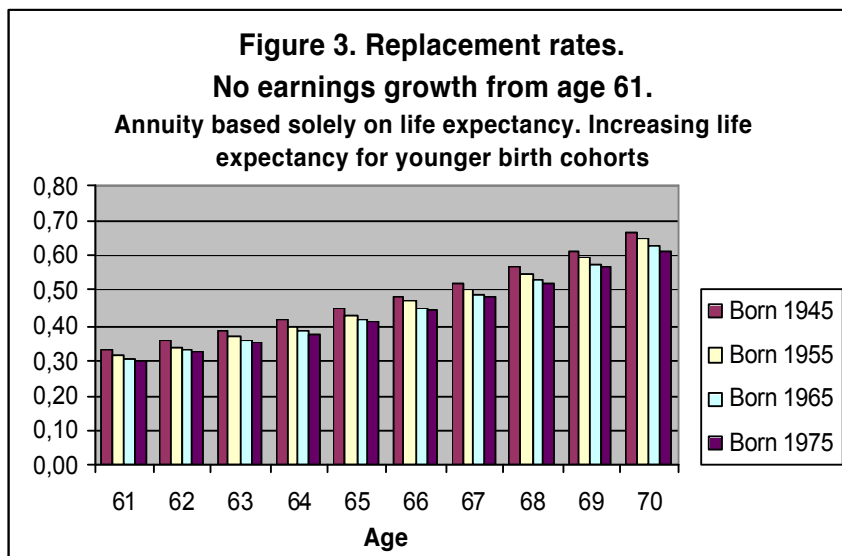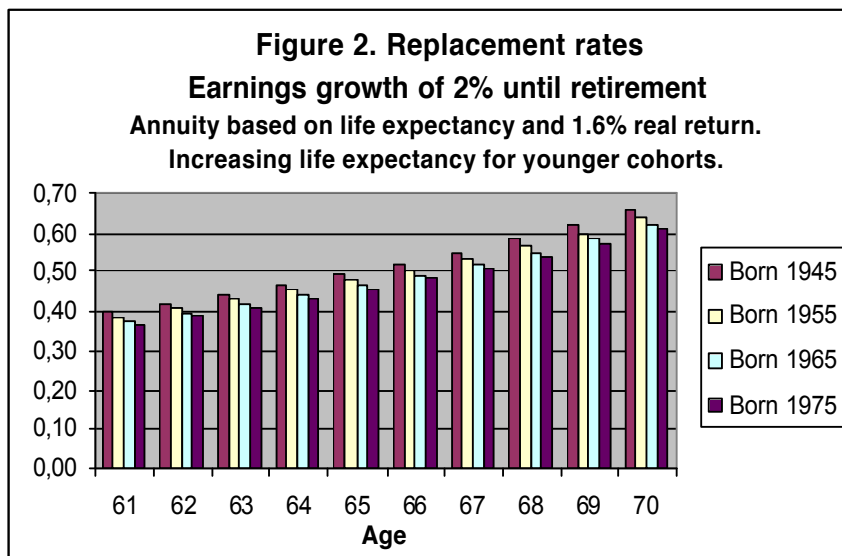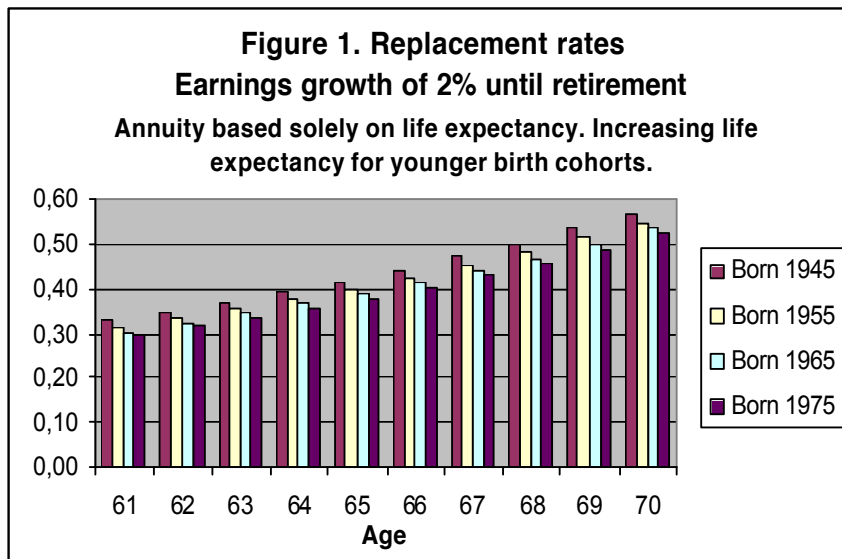## *Annuities adjust to changing life expectancy*

In the more advanced economies, improvements in dietary, exercise and living habits, better working conditions and advancements in medical care have all led to improvements in life expectancy, which are continuing to rise. Although improvements in life expectancy have been absent in some countries, in time they are inevitable in all countries. For this reason, it is important for the pension system to respond smoothly to improvements in longevity.
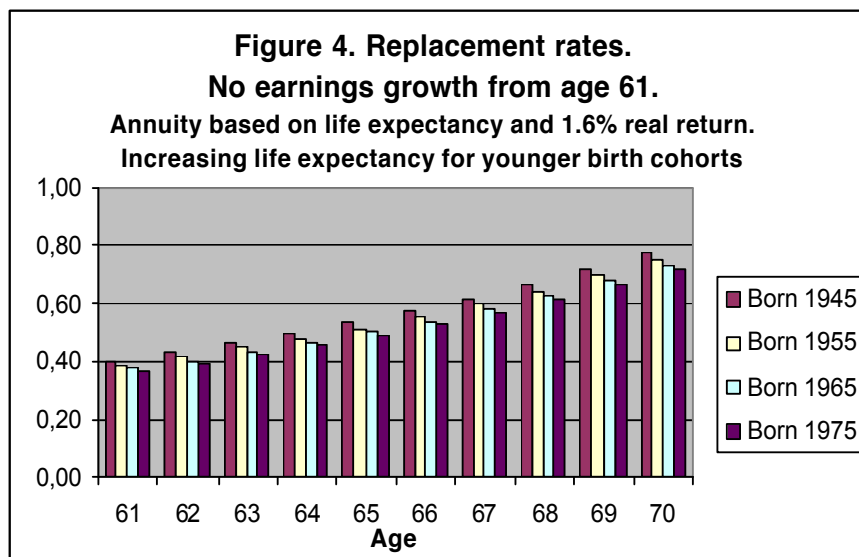
This is where the NDC scheme is superior to many defined benefit schemes, as they are usually designed. Namely, a serious problem with standard defined-benefit systems is that they typically promise a full benefit at a fixed retirement age. Ideally, the full-benefit retirement age in a defined-benefit system would be adjusted automatically with changes in life expectancy – but this should be made known long enough in advance to give people time to adapt. Governments are understandably reluctant to change their promises as life expectancy changes. In fact, the failure to adjust regularly for increases in life expectancy has contributed to the cost crises that many national social security systems are facing today.

One of the most appealing characteristics of the NDC system is, then, that the annuity responds automatically to the financial pressure created by an aging population. For any given amount of accumulated capital, a benefit is less at a given retirement age the greater the length of life expectancy. Life expectancy changes slowly, and current life-expectancy projections are something people can and – in the Swedish framework – will be informed about. They can take this information into account in formulating their decisions about work, retirement and personal saving.

Figures 1-4 illustrate the effects of increasing life expectancy for younger birth cohorts. Between the mid-1950s and the turn of the century, unisex life expectancy increased at the rate of about one year every ten years in Sweden. Presently, the projected change in life expectancy between persons born in 1945 and 1975 is around two and a half years. The calculations are based on the same assumptions as those elaborated in Table 1. The only difference is that the values for projected life expectancy change with the age cohort.

In sum, the fact that newly granted benefit levels change with changes in life expectancy provides an incentive for people to spend more time in the labor force as average life expectancy increases. This contributes to maintaining the long-term financial stability of the overall system with an aging population.

Figure 1. Replacement rates

Earnings growth of 2% until retirement

Annuity based solely on life expectancy. Increasing life expectancy for younger birth cohorts.

Legend: Born 1945, Born 1955, Born 1965, Born 1975

X-axis: Age (61–70)

Figure 2. Replacement rates

Earnings growth of 2% until retirement

Annuity based on life expectancy and 1.6% real return. Increasing life expectancy for younger cohorts.

Legend: Born 1945, Born 1955, Born 1965, Born 1975

X-axis: Age (61–70)

Figure 3. Replacement rates.

No earnings growth from age 61.

Annuity based solely on life expectancy. Increasing life expectancy for younger birth cohorts

Legend: Born 1945, Born 1955, Born 1965, Born 1975

X-axis: Age (61–70)

Figure 4. Replacement rates.
No earnings growth from age 61.
Annuity based on life expectancy and 1.6% real return.
Increasing life expectancy for younger birth cohorts

Born 1945
Born 1955
Born 1965
Born 1975

Age

Flexible retirement is made easy

Notional accounts grow in the manner described above until the individual chooses to retire sometime after the statutory *minimum* retirement age. People are free to choose partial or full retirement at any age above the statutory minimum. In principle, a partial benefit claim could be any percentage of a full claim. In Sweden choices will be limited to 25 percent, 50 percent, 75 percent or a full annuity. With partial retirement the individual can continue to work and accumulate additional notional capital from contributions on earnings, and hence, enhance the value of a recalculated pension upon full retirement. A recalculation can be made any number of times.

In other words, the NDC account scheme system makes retreating gradually from the labor force easy. Work and earnings can be combined in any way with an annuity, and all new contributions count towards a recalculated annuity. In occupations where early retirement might be the rule rather than the exception, occupational schemes could provide various choices for programmed withdrawal that could be combined with the social insurance benefit or taken for a period instead of it.

Finally, there is a tendency in Sweden, as in many other countries, for employers to buy out employees before they reach the minimum retirement age in the public system. A strong argument for increasing the minimum age in the public system, as life expectancy increases, is to make this practice more expensive and thereby encourage employers (and employees) to set their sights on a higher normal exit age for retirement.

3   Some NDC Design Issues

Setting the minimum retirement age

It is important to set the minimum retirement age with respect to two interrelated considerations. The first is that the purpose of mandatory social insurance is to provide an adequate earnings replacement rate. The benefit amount to which people are entitled in both the NDC and financial account systems is determined by life expectancy at retirement. The longer the life expectancy, the smaller the benefit will be. It is important to set the minimum age high enough to provide an adequate benefit for the typical claimant. If this is not the case, some people will enter into permanent old-age poverty.

Given the long life expectancies of Swedes (presently unisex life expectancy is close to 22 years from age 61, with women expected to live about 5 years longer than men) it is not clear that Swedish politicians gave this matter enough thought. A person who works 40 years to age 61 will spend more than a third of his/her adult life in retirement. Although the cost is neutral for the system, all other things being equal, the benefit amount is around 30 percent higher at age 65 than at age 61.

For Sweden, there is a case for setting the minimum age higher – at 63-65 – in order to *force* people to remain longer at work in order to get a good lifetime benefit. This ought to be one of the goals of further reform work in Sweden. Persons entitled to a disability benefit, or who have supplementary occupational benefits covering earlier retirement, would then receive income replacement at an earlier age through these channels.

Should benefits be recalculated for changing life expectancy?

Life expectancy changes throughout our lives, including, of course, the period after the annuity has been granted. Should benefits that have already been granted be recalculated as life expectancy increases beyond what it was at the time of the calculation? In principle, financial stability requires that it should; otherwise, a source of instability is introduced into the system.

There are several possible responses to this problem. One is to adjust all benefits on a regular basis as changes in life expectancy become known. This means that people have to get used to small continuous changes. Another approach is to take *expected* future changes – estimated conservatively – into consideration in calculating the initial level of the benefit. This sort of a projection would be based on a long-term estimate that would be gradually changed. The latter approach is more appealing in that it suggests a once-and-for-all calculation of the annuity.

The floor and ceiling for covered earnings

It is not reasonable to cover all earnings – from the smallest to the largest. Persons with very high earnings should be entitled to make private decisions about how much insurance to purchase. A lowest level is usually desirable for reasons of administration. How can the floor and ceiling be determined?

A practical way to set the minimum is to put it at the level of earnings above which people are required to report their earnings for income tax purposes. This is the approach taken in Sweden. The ceiling should be high enough to provide an adequate retirement standard for the average worker, but low enough to leave room for individual variation in choosing optimal lifetime patterns for saving and consumption. Both the floor and the ceiling should be indexed to *per capita* wage growth so that they will maintain their relative values. The ceiling in the Swedish scheme is roughly 50 percent above the average wage, which is relatively low. The ceiling is indexed to average wage growth from the year 2002 onward.

Should voluntary contributions be allowed?

Should people be allowed to contribute more into the NDC scheme voluntarily? Of course this is possible in principle. In practice, however, it makes more sense to put voluntary contributions into financial accounts, and normally there will be many private insurance options available for this purpose. It will not be possible to make voluntary contributions into the Swedish public schemes.

Periods of unemployment, sickness and disability

Contributions can be paid into both the PAYG and 2nd pillar funded components of the mandatory public old-age pension system to cover periods of compensated unemployment, sickness, work injury and disability. This has the additional advantage of forcing these systems to include both the direct costs of program-related benefits and the indirect cost of contributing to the PAYG and funded accounts in the old-age system. The cost of the transfers from the various income-replacement schemes is a part of their *total* cost to society, and for this reason their contributions to the old-age system are really a component of social policy.

In principle, any amount can be credited to an individual pension account, using any form of rule, and it is possible to make the rules more or less generous as time goes on, without affecting the acquired rights (notional or financial capital) accredited in the past. Note also that it is important that financial transfers to the old-age pension system actually be made, since without them there is no financial backing for these rights.

In Sweden, benefits replacing earnings during sickness and unemployment will be treated as earned income, and 18.5 percent of these amounts give pension rights and will be accredited to individuals and transferred from these systems into individual accounts in the pension system. Similarly, the earnings replaced by compensation for work injury and disability will provide the basis for accrediting individual accounts. Appendix 2 discusses possible models for dealing with disability.

Child care and other social policy motives for enhancing pension accounts

Pension rights can be given for activities other than market activities yielding earnings or social insurance replacing these earnings. Obvious examples are time spent caring for younger children and in military conscription. Rights accredited for military conscription can be based on a fictitious wage, a minimum wage etc.

There are several issues associated with constructing a child-care credit. The issues are how to compensate, for how long, whether persons have to be wholly out of the labor force to obtain a credit, whether the credit can be taken by either parent, and whether this latter decision is made by the parents themselves.

The simplest child-credit model is to grant a sum (credit) per child, regardless of whether the mother (or father) works or not. More complicated models can also be devised, and Sweden has pursued this path.

In Sweden the parent with the lowest earnings in the year(s) in question will be automatically accredited with child-care pension rights, unless the parents choose otherwise. Child-care "earnings" will be imputed according to the most favorable of the following three computations:

- a supplement equal to 75 percent of average earnings for all covered persons
- a supplement up to the individual's own earnings the year prior to child birth
- a supplement consisting of a fixed amount, indexed in time to the (covered) wage per capita

Each is targeted to a specific type of recipient. The first model covers persons without earnings immediately prior to childbirth. The second replaces own earnings for a person who leaves her(his) job after childbirth and is wholly or predominantly at home. It also provides a supplement for someone who works less than he/she did prior to childbirth. The third provides an extra supplement after return to work – thus not discriminating against those women(men) who return shortly (in Sweden usually after 8-12 months) with earnings equal to or higher than those prior to childbirth.

For each child, the parent has the right to four years of imputed earnings according to the most favorable of the three models. If women continue to bear close to two children and, as is common, give birth to their second child within 2-3 years after giving birth to the first child, one of the above forms of credit will typically be received during 6-7 years. It is estimated that an average Swedish woman can expect to have her benefits enhanced by close to 10 percent from pension credits for child-care years. On average, she will then have about the same number of earnings years as a typical man.

Contributions will be paid from the state budget for child-care years, conscripted military service (based on imputed earnings equivalent to 50 percent of the average covered wage) and years in higher education – the latter provision was enacted in spite of the strong arguments against it.[3] The military and educational credits will be very small, however.

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[3] Namely, higher education or advanced training should yield an earnings premium over the life cycle, compensating years lost for time spent studying or training.

Survivors

An individual life can be separated into an economically active and a retirement period, the latter corresponding to the period beginning with the average retirement age. Deaths occurring up to the retirement age create a "surplus" in the system that can be utilized in a number of ways. The most obvious of these are to create:

- a survivor benefit for young (under the pension age) survivors,
- a higher old-age benefit, or
- a general reserve to cover imperfections in the actual system design.

The second option is that which has been chosen for the Swedish scheme. This option requires keeping track of the notional capital of the deceased and distributing it proportionately to the accounts of survivors.

Gender Issues

In most countries the average woman earns less than the average man for a number of reasons. Among these are the choice to work fewer hours per week, employment in occupations with lower wage and salary levels, and, over the life cycle, fewer years in full-time work because of years spent caring for children. What are the implications within the structural framework discussed here?

Bearing and raising children is an important activity that society normally wants to promote. On this premise a mandatory pension system should not disfavor persons who spend time out of the labor force during early child-care years. It is easy to argue that time spent at home for care of younger children should be compensated by transferring money from the state budget to the account systems to provide financial backing for additional pension rights in the NDC and 2nd pillar schemes. The Swedish approach has already been described above.

Should capital be redistributed from men to women to compensate for the gender-specific wage bias? The annuity in both the NDC and financial account systems is calculated on the basis of life expectancy without regard to gender. In most countries, though, women live considerably longer than men. For this reason alone, there is already a considerable built-in transfer of capital to women; an additional transfer is provided by the childbirth credit.

Nevertheless, lower earnings generate lower account values, and consequently a lower pension. This effect could be neutralized by adjusting individual accounts. An argument against incorporating such a mechanism into the scheme, however, is that we do not know today what the relative earnings of men and women will be in the coming decades. For this reason, in the Swedish scheme, this sort of transfer will not be made.

The "Rate of Return" in the NDC Account System

The *contribution wage sum* and the rate of growth of this sum determine the capacity to finance benefits. The contribution wage sum can be viewed as the product of the per capita wage and the number of contributors. Wage sum indexation always moves the system in the direction of financial stability. *Per capita* wage growth reflects the growth in productivity, but not changes in the size of the labor force. For this reason, per-capita wage indexation does not yield financial stability if wage growth is greater than the growth of the contribution wage sum.

A birth rate lower than that needed to reproduce the population or net migration out of the country are demographic factors that can lead to a decline in the labor force over time, and thus reduce the system's financial capacity if per-capita wage indexation is chosen. Nevertheless, the Swedish scheme has per-capita wage indexation. However, in addition, the system is provided with a balance mechanism that operates as a downside brake. It is based on the relationship between the actual debt and the "theoretical" debt with wage sum indexation and takes the reserve fund into account. This mechanism is described in more detail below under the section on financial stability.

Transition from the old system

The question of how to go from the old to the new system is one of the most difficult of all design issues. There are two principal questions. The first is how to convert rights acquired under the old system. The second is, which age cohorts should be included in the new system?

Rights earned up to the time of the reform should be honored, to the extent possible. It may not be a simple matter to place a value on these rights in practice. The Swedish defined-benefit system provides an example of the problems that might arise. Benefits in the income-related *ATP*-component are based on the average of the best fifteen years of earnings of a maximum 30 years needed to receive a full benefit. We do not know when the best years have occurred until all are accounted for. In principle, in terms of rights in the pension system, people could begin to work at age 35 and still qualify for a full benefit at age 65.

Availability of records is also a key issue. Sweden is fortunate in that there are computerized historical earnings records from 1960. A person born 1938 (the first covered by the new system) was 22 years old then, so very little history was unretrievable, and, one could argue, earnings histories prior to the introduction of the ATP system in 1960 gave no rights in the ATP-system anyway. In Sweden, earnings histories from1960 have been used to compute NDC accounts for everyone covered by the new rules, using the contribution rate of 18.5 percent through 1994, before 2nd pillar rights occur in 1995, and the contribution rate excluding the 2nd tier rate thereafter.[4]

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[4]Other procedures for computing acquired rights have been devised in countries where earnings histories do not exist or are not a good measure of contributions. For example, Latvia has used the number of recorded service years and a more current measure of earnings. Poland has devised a formula to convert acquired DB rights up to the time of the reform into initial capital.

Which birth cohorts should be covered in the new system? Swedish politicians argued that a short transition period would be unfair to persons who for one reason or another had planned their careers so that they had not entered the labor force at an early age. Specifically, female participation in the labor force has been increasing steadily since the end of the Second World War. Women born around the 1940s were the first whose participation in the labor force matched that of men (with the exception of an average of two years, which we can guess have to do with childbearing). This suggests that in terms of gender neutrality, a starting year encompassing persons born 1938 and later was reasonable.

There is gradual transition for persons born 1938-1953. Persons born 1938 enter with 20 percent of their pension calculated according to the new rules and 80 percent according to the old rules. The proportions change successively with increments of 5 percent per year up to persons born 1954 who are entirely in the new system.

Calculations show that if earnings per capita grow by over two per cent per annum, it is generally better to be in the new system – rather than the old system with price indexation. Similarly, the second pillar real rate of return is likely to be well over two per cent during the next decades. In sum, there is a strong probability that an immediate transition for persons born 1938 (or perhaps 1940) would have provided better – and potentially much better – benefits for the vast majority of pensioners now covered by the long transition. Moreover, an immediate transition would also have afforded more financial stability in the event that the downside scenario – i.e., continuous real growth of 0.5-1.5 percent – were to occur. Seen in this perspective, the long transition is highly questionable.

Finally, even persons born before 1938, most of whom are already pensioners, will notice a difference – at least in principle, if not in practice. This is because the flat-rate *folkpension* in the old system will to be converted into a guarantee and the extra tax deduction for *all* pensioners will be eliminated, but with compensation provided through the construction of the guarantee.

Exportability of benefits

The NDC and 2nd pillar financial account benefits are based on contributions from earnings and in principle should (and in Sweden in practice will) be exportable to persons who have earned rights but are not residing in the country during retirement. On the other hand, the guarantee can and, it can be argued, ought to be restricted to residents. This implies also that it should be prorated according to the number of years of residence prior to reaching the qualification age.

4   A Guarantee for the Poor

The overall framework and design issues

In Sweden, as in many other countries, the safety net of last resort for the very poor is financial social assistance, and for persons in need of special care, various care arrangements. These are provided at the municipal level. Social assistance is means-tested. Low-income families and pensioners may also

qualify for untaxed housing allowances, which are both means-tested and related to housing-standard norms for families of different sizes. Disability and old-age pensioners also have these options if their pensions are so low that they qualify for extra assistance.

Prior to the reform, the universal basic pension (*folkpension),* even together with a small *ATP* benefit, may have been below the Social Board's defined minimum standard for a single or married person. In this case the individual would have been entitled to a means-tested housing allowance. Normally the pensioner with combined benefits reaching the "housing allowance level" has a living standard roughly equivalent to the defined minimum. On the other hand, at the threshold, as the ATP benefit increased in size, the *folkpension* supplement and housing allowance decreased, so that total income remained practically unchanged. Hence, around the tax threshold, the composition of disposable income – although not its level – could change considerably.

The reform replaced this arrangement with a guaranteed minimum pension. The guaranteed minimum is also now a *gross amount,* i.e., a pre-tax benefit. The *net,* i.e., after-tax, benefit is roughly equivalent to the *folkpension*, including its supplement. With the reform, both present and future pensioners will receive a guarantee benefit based on the new model. One aim of the reform is to make the switch as neutral as possible to avoid *ex post* changes for persons already receiving benefits. Since tax rates vary between municipalities, the highest tax rate was used in calculating the conversion – thus creating "winners" in low-tax municipalities.

Generally, there are two approaches to constructing a guarantee. The first is to establish a flat-rate guarantee. The alternative is to design the guarantee so that even persons with small NDC benefits always receive more than a flat guarantee. This graduated guarantee has been adopted in the Swedish reform.

There are also two general approaches to computing the amount of the guarantee with respect to the recipient's – or the recipient household's – other earnings. The first is to apply a means test, reducing the guarantee for other sources of income, including other, e.g., third pillar or private, pension benefits. This is clearly the most efficient use of public money, and the least encouraging to "free-riding." In the absence of means-testing, individuals are free to avoid paying contributions and purchase private assets instead, or to have other sources of income, and still be entitled to the guarantee. In spite of these problems, however, the Swedish politicians have generally favored a guarantee without regard to means, this alternative is the one that will be implemented in Sweden.

In the Swedish scheme, a full guarantee can be claimed at the age of 65, with 40 years of residence. It will be reduced by 1/40 for each year under 40. It will also be reduced by about 11 percent for a married pensioner.

The guarantee and the 2nd pillar

How can the guarantee be coordinated with a 2nd pillar benefit that can be claimed separately from the NDC benefit? Of course one approach is to avoid the problem by requiring people to claim both

benefits at the same time. If both are fixed annuities, then there is no coordination problem. This approach is inflexible, however. That is, it may be important to be able to claim the 2nd pillar annuity separately – for example the stock market may be down at the time a claimant wants to claim the NDC annuity.

One approach to allowing flexibility is to impute a rate of return in calculating the value of unclaimed 2nd pillar annuity. This requires accepting the fact that the imputed annuity will undoubtedly not be the same as the actual annuity, once the account is converted. To avoid this, in calculating the guarantee in Sweden, instead of using the actual 2nd pillar benefit, the 1st pillar NDC annuity will be calculated as if it were based on the total contribution rate, encompassing the second pillar rate of 2.5 percent, i.e., 18.5 percent. Since the second pillar is relatively small in Sweden, the difference between these methods is also likely to be small in practice.

For relative large 2nd pillars, the Swedish method becomes more questionable if the aim is to create an economically efficient guarantee (i.e., money is transferred to the very neediest individuals). The alternative of using the current converted value as the imputed value may be preferable. Yet another alternative would be to require people to convert their 2nd pillar benefit in order to qualify for the guarantee.

5   Medium and Long-Term Financial Stability

Rising contribution rates with the old system

The major impetus for reform of the Swedish system was the threat of financial disaster. The old system would have collapsed with permanent wage growth under 1 percent. Even permanent real growth around 1 percent per annum would have required steady increases in contribution rates during the coming 30 years. In addition, increasing longevity has steadily contributed to rising costs, and it is likely that people will continue to surprise us by living longer than present estimates. Finally, Swedes, like their counterparts in all OECD countries, have been leaving the labor force earlier and earlier during the past couple of decades – even though they are healthier by just about any objective measure. This trend contributes to long-term erosion of the payment base.

The sensitivity of the old system to adverse demographic developments, e.g., a decreasing work force and/or increasing longevity after retirement, will be demonstrated in this section with scenarios based on the two most recent official demographic projections from Statistics Sweden. The first scenario is the baseline scenario used in official calculations in 1994, when the reform concept was passed by Parliament. The second scenario is from 1997, when the reform was legislated.

In the short time interval between the computation of figures for 1994 and 1997, the survival rates of both older men and women increased by several per cent. In part because of persistently high unemployment, net immigration in the coming decade was adjusted downwards by about 20 percent and the forecasted fertility rate was lowered from about 2.0 to about 1.8 children per woman – which is still high by European standards. The working-age population is constant to slightly increasing in the

1994 scenario, which we call the optimistic scenario. The 1997 scenario is more pessimistic. In this scenario there is a roughly constant labor force over the first 30 years but a steady decline thereafter with the accumulating effects of fewer births and lower net immigration.

Figures 5, 6 and 7 illustrate how these two demographic scenarios, together with three assumptions about real per capita wage growth (annual rates of 1 percent, 2 percent and 3 percent), affect the financial future of the public old-age pension system. The figures show the development of expenditures for the income-related parts of both the old and new systems (i.e., expenditures excluding the cost of the guarantees in the two systems). To achieve comparability of the old and new systems, in the reformed system the rate of return in the 2nd pillar has been set equal to the scenario rate of growth. This is tantamount to giving the new NDC PAYG system a contribution rate of 18.5 percent. This contribution level will also be equivalent to the long-run cost of the NDC PAYG system, i.e., the ratio of actual expenditures on benefits to the contribution base. A long-run contribution rate is also the target rate set for the reformed system, within a "pure" NDC framework.

Now, how does the old system perform with the different economic and demographic scenarios? Figure 5 shows that, in order to finance the old system with permanent real growth of 1 percent per annum in the contribution base, the contribution rate would have to rise to
24-27 percent by the year 2030, depending on whether the outcome resembled the "optimistic" or "pessimistic" demographic scenario. In the pessimistic scenario, the contribution rate needed to pay benefits at the time children born in the late 1980s become pensioners hovers around 29 percent. This sort of increase is not reasonable. Without reform of the old system, the alternative would undoubtedly have been repeated increases in the pension age, downward adjustments in benefit levels or, most likely, both.

Growth of 2 percent provides a much rosier picture of the old system. The pessimistic scenario leads to a – still too high – contribution rate of around 22 percent for much of the coming half century. But with the optimistic demographic scenario, the cost of financing the old system actually coincides roughly with the "target" contribution rate of 18.5 percent set for the reformed system. With consistent long-term real growth of 3 percent, the cost of the old system falls to the target of 18.5 percent during the coming half century even in the pessimistic demographic scenario, and about 17.5 percent in the optimistic scenario.

Why does the old system respond so perversely to economic growth? *Benefits are price-indexed in the old system*. This means that contribution costs fall as real wage growth rises. Conversely, the burden on current workers increases as wage growth falls.

Probably no one believes that real wage growth will average 3 percent during the coming 50 years. These days many are even pessimistic about the prospects of maintaining real wage growth as high as 2 percent over the next half decade. More importantly, with growth in real per capita wage rates below 2 percent and/or an outcome resembling the pessimistic demographic scenario, the old Swedish defined-benefit system would soon become unaffordable. As I have stated in the introduction, this was the main impetus for reform.

The financial stability of the reformed system

The new system is designed to maintain financial stability in the face of both economic and demographic changes. If benefits are calculated to reflect longevity exactly (so that the factor used to compute the annuity fluctuates randomly around the perfect-information outcome), and if indexation reflects exactly the development of the contribution wage sum, the ratio of expenditures to the contribution base will fluctuate around the individual contribution rate of 18.5 percent.

The calculations in these figures assume that the NDC annuity is based on the exact longevity outcome for a cohort and a real rate of return of 1.6 percent (in accordance with the Swedish law). In addition, economic indexation is applied (also in accordance with the Swedish law), so that actual benefits are adjusted annually for the difference between the annuity factor rate of growth of 1.6 percent and the actual rate of growth. This mechanism keeps the system in financial balance. For the individual pension, this results in an annual deduction of 0.010 -0.016 = -0.006 per year with real growth of 1 percent, but there will be an increment of 0.0200 - 0.0160 = + .004 per year with 2 percent real growth, and 0.0300 - 0.016 = +0.014 per year with 3 percent real growth. This economic indexation is also applied to benefits granted under the old rules. Finally, for purposes of illustration, two forms of "economic indexation" and indexation of notional capital are applied, per capita and wage-sum indexation. With a stable labor force they should give the same result. With declining or increasing labor forces, the wage-sum index alone will keep the system in financial balance.[5]

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[5] This is not exactly true. One can construct examples with *substantial* changes in the labor force where even the wage-sum index may fall slightly short of exact balance. However, it provides an approximate balance, whereas the per capita index fails entirely. This will be demonstrated in a coming paper to be published in this series.

Figure 5. Ratio of Benefit Payments to Contributions. Growth = 1 %

Figure 6. Ratio of Benefit Payments to Contributions. Growth = 2 %

Figure 7. Ratio of Benefit Payments to contributions. Growth = 3%
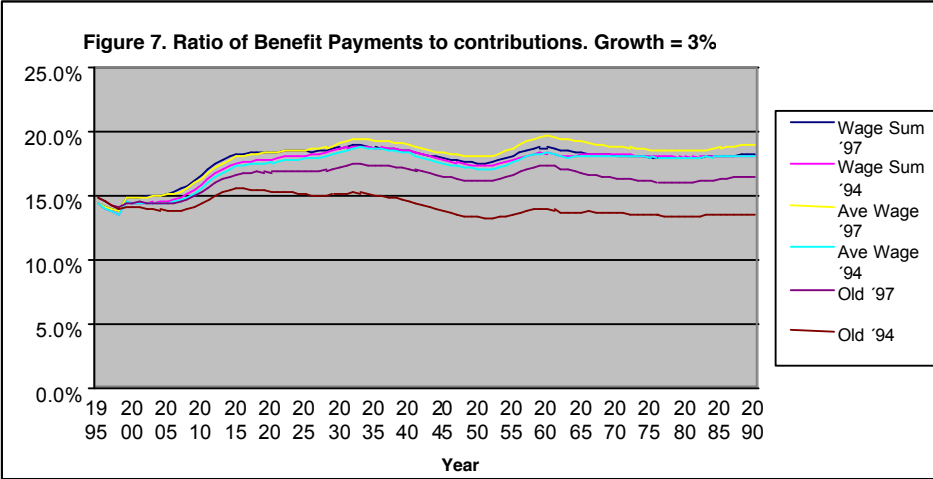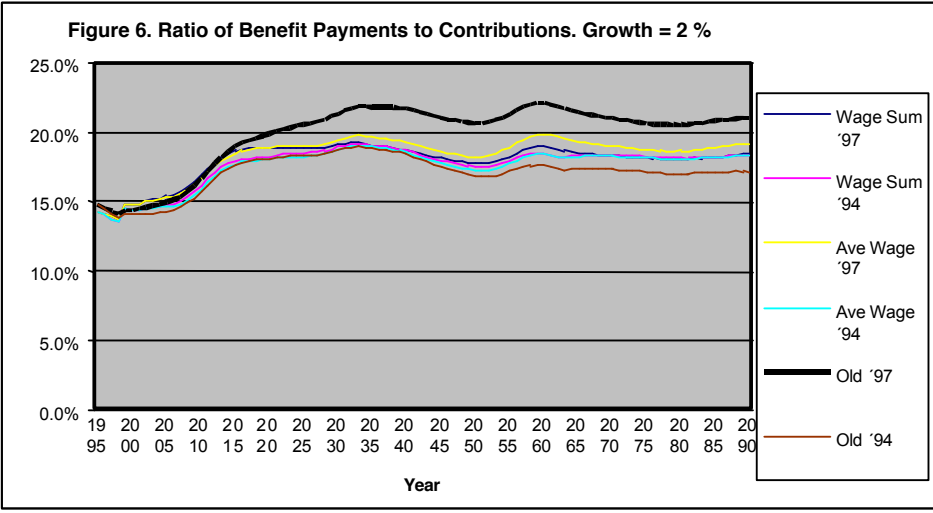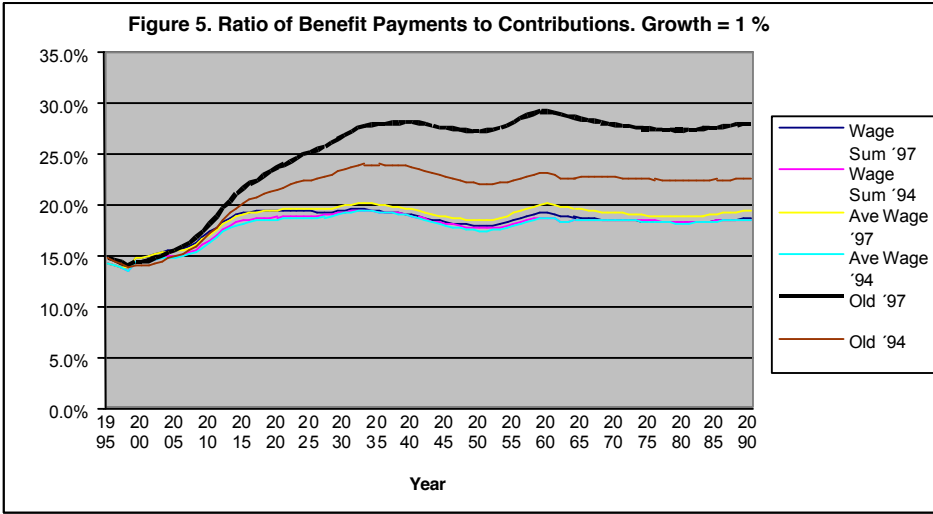
Figures 5 – 7 also demonstrate the central features of indexation in the NDC system. In the long-run – around 2030, when the last beneficiaries of pre-reform benefits have died off, we see that relatively extreme assumptions about the rate of real growth in the wage rate (1 to 3 percent) all lead to about the same financial result.

What can we discern from the different demographic and labor market scenarios? With the 1994 demographic scenario the rate of growth in the wage sum is for all practical purposes the same as the rate of growth in the per capita wage. As a result, the development of costs is largely the same, regardless of the form of indexation applied. With the 1997 demographic scenario, labor force growth falls off by about a tenth of a percent per year from around 2025. As a result, with 2 percent per capita wage growth, for example, the *contribution wage sum* grows by only 1.9 percent. Per capita indexation of notional accounts and benefits means that the cost of benefits increases faster than the contribution base, leading to a long-run increase in costs and a growing financial deficit. With wage-sum indexation, financial balance is maintained.

Finally, what is immediately clear from a quick glance at the three figures is that the new system is inherently financially stable, whereas the old system yields very different financial results depending on the economic and demographic scenario.

Automatic real-growth adjustment – "economic indexation" – of benefits acquired under the old system

It will take time before the majority of beneficiaries have benefits calculated according to the new rules. For the coming two decades a significant part of benefits will have been calculated according to the old formulas. How will financial crisis in the medium-term be averted, then? The answer is that even benefits paid according to the old rules will be subject to a new form of indexation. The mechanism to be employed is "the economic adjustment factor," i.e., economic indexation, described above.[6]

We have just seen that cost neutrality required a real per capita growth rate of over 2 percent and an "optimistic" demographic forecast. With growth of 2 percent, benefits granted according to the old benefit formulas actually cost *more* than they would have without reform. One can wonder, then, why Swedish politicians would choose to increase benefits granted under the old rules for per capita growth in the range of 1.6-2.0 percent over the coming three decades. The answer is straightforward. They were not willing to provoke elderly voters – i.e., persons on fixed incomes who usually have little chance of influencing their own economic situation through work. At the time the decision was made, many thought that per capita growth was more likely to fall well below 2 percent over the coming 20 years.[7]

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[6] This method was first proposed to the government in a report from the National Social Insurance Board in 1989.

[7] It is probably worth pointing out that when the Pension Reform Commission of the 1980s presented its first voluminous report Swedish economists and politicians alike all believed in long-run growth of over 2 percent. Shortly thereafter, during the first four years of the 1990s, with the collapse of the housing market and commercial banks, extreme recession set in and the wage sum declined by about 10 percent. This created a much more sober atmosphere during the time the reform was being formulated and discussed.

Increased longevity of old system (ATP) pensioners – generous transition rules – is still a source of financial instability in the medium term

There is another problem with the fact that benefits granted under the old system (with no adjustment factor for increasing longevity) will account for a dominant share of costs for well over two decades after the reform. There is no adjustment for increased longevity for benefits granted according to the old rules – including part of the transition benefit based on the old rules for persons born 1938-1953.

In addition, the large baby-boom cohorts of the 1940s, with part of their benefits calculated according to the old rules, create additional strain on finances. In principle, these costs can be covered by the reserves that the system will take over from the old system. In practice, whether the fund will suffice to cover the generous transition rules depends on how large a sum is transferred to the state budget for partial compensation of additional costs associated with the budget transfers for child-care years, disability, etc. For such a transfer is also a part of the reform package. If an amount sufficient to cover the costs to the budget of budgetary transfers is moved from the present pension fund reserves to the treasury, it is likely that the reserves will not be sufficient to cover costs of commitments to persons born before 1950.

A large sum of money – the equivalent of about one year of benefit payments – will already have been transferred from the pension fund to the state treasury by the year 2001. This transfer has already been decided. A second transfer is to be made in 2001. If it is, the two transfers together will decrease the total pension reserves by up to 50 percent. What does this mean for the generous transition rules?

If it turns out that politicians have been too generous to persons born in the late 1930s and 1940s, the "overly generous benefits" will be reduced by yet another index – the "pension-debt adjustment mechanism." This index corrects in the end all downside technical failings of the system. What this means is that politicians have chosen generous transition rules for the age cohorts of the 1930s and 1940s, but have also chosen a mechanism[8] that probably will gradually reduce benefits once these people have become pensioners. In the final analysis this feature may be judged by social and political historians to have been the major failing of the reform.

The cost of the guarantee

The guarantee in the reformed system – financed separately from the general budget – costs more in the new system than in the old system. Why? The pre-tax amount has been set so that it will be neutral after the extra tax deduction for old-age pensioners is abolished in the year 2001. However, in order to do this for all, the gross amount has been set high enough so that no one will lose due to high local tax rates. This meant using the highest local tax rate to compute the conversion amount for all old-system pensioners. In other words, for many existing pensioners the reform provides an improved benefit.

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[8] This mechanism is explained below.

At the outset, the guarantee costs (gross) about 2.2 percent, measured in terms of the contribution base. About 30 percent of this cost will be collected as local taxes, however, giving an after-tax cost of about 1.5 percent (and a tax-distribution problem between national and local jurisdictions). The guarantee will be price-indexed. This means that as older pensioners with relatively low ATP pensions die and new individuals begin to retire with higher pensions, the need for the guarantee will decrease. By the year 2015 it is expected to cost about 1.2 percent (1.0 percent after tax) and by 2050 less than 0.5 percent (under 0.35 percent after tax) of the contribution base, if price indexation is maintained during all this time.

Will the long-run cost of the guarantee really be so low? Probably not. The size of the guarantee is a political decision, which is one of the main features of the reform. The door is open for future political decisions about new distributional transfers through the tax-transfer system, including "simply" increasing the guarantee.

The contribution base

It should be noted that the contribution base is not the same in the old and the new systems. In accordance with the new rules, the contribution base includes transfers into the system to finance pension credit for disability, unemployment and insured sick leave, as well as for child-care years for women. On the other hand the base has been narrowed because contributions will no longer be assessed on earnings over the ceiling for the 50 percent of contributions payable by employees, and employer contributions on earnings over the ceiling will go to the state treasury as a tax. The calculations in the above figures have been performed according to the old rules for the old system and the new rules for the new system.

Long-run financial equilibrium and reserves

Reserves created by large cohorts of workers are needed to help pay for benefits when these cohorts retire. With a stable development of the labor force, the system will maintain its long-run equilibrium financial balance – with reserves changing according to cohort size – regardless of whether wage per-capita or wage-sum indexation is chosen. Demographically driven declines/increases in the labor force will lead to financial disequilibrium with per-capita wage indexation of notional capital and benefits. Declines lead to lasting deficits and increases to lasting surpluses. Wage-sum indexation largely avoids financial disequilibrium.

In the "pessimistic" 1997 scenario in Figures 5-7, where the labor force decreases slowly over time, wage per-capita indexation of notional capital and benefits creates costs that on average slightly exceed the equilibrium level of 18.5 percent. This method has in fact been chosen by the politicians designing the new Swedish system. To counteract this downside risk, the Swedish system will include a "pension-debt adjustment mechanism" (to be explained below); in terms of the figures presented here, the system will react on the downside *as if it were wage-sum indexed*.

Financial stability in the face of lower mortality rates

Swedish politicians have made another decision that runs counter to long-term stability. If the system were 100 percent consistent with its underlying principles, it would be necessary to successively recalculate the pensions of *all* pensioners as life expectancy increases, or to attempt to perform a sound actuarial forecast. As the Swedish law is presently specified, however, pensions will not be adjusted once they have been granted, and they will not be based on a sound actuarial forecast. Instead, the life-expectancy calculation will be based on an average of observed outcomes prior to retirement. The factor will be biased towards to produce benefit levels that are persistently too high, thus creating an additional source of financial stress.

Calculations show that if people live on average 2.5 years longer in 2050, the fact that benefits are not adjusted after retirement will cost around an additional 1 percent in contributions. While this feature gives the starting generations a "free ride," eventually the "pension-debt adjustment mechanism" to be described below will bring the system into financial equilibrium. This may be one of the first changes in the system once the public has really understood the consequences and younger voters put pressure on politicians to bring an end to the some of the transitional privileges given persons born before 1951.

A pension-debt adjustment mechanism

Now, what is the "pension-debt adjustment mechanism?" To deal with the built-in causes of financial imbalance, an additional index will be created that reflects changes in the pension debt. The principle is to calculate the ratio of the actual debt (for current workers and pensioners) to the debt that would arise with wage-sum indexation and actual changes in longevity, accounting for a measure of reserve fund liquidity. If the index falls below unity, notional capital of workers and benefits are indexed downward to create equilibrium.

The long-run result is equivalent to using a true longevity indicator and wage-sum indexation. This mechanism will cover the downside risk. Presently there is no political decision about what to do with any "surplus" fund. (Wage sum indexation even distributes the "surplus" reserves as they occur, leaving no surplus above what fluctuating birth cohorts would require.) So in practice, the results for the Swedish system will be those described here under the heading of wage-sum indexation.

Is the reform financially neutral?

The question of whether the Swedish reform is financially neutral may be debated forever. One conclusion, though, is easy to reach: compared with the risks involved in keeping the old system, Sweden now has a system with a foreseeable long-run cost of 18.5 percent of the contribution base – plus an additional cost (primarily) for child-care years, disability recipients, compensated sick leave and compensated unemployment. The latter cost components can still be regulated by political decision.

What are the additional costs to the state budget? The cost of child-care years is estimated to be around 0.8 percent of the wage bill with 2 children per mother (which according to the present forecast is too

high).[9] With the present disability rate, another estimated 1.5 percent of the wage bill will be contributed from the general budget to finance the capital of disability beneficiaries in the new system. Presently, unemployment, including persons in training programs financed by the unemployment system, is around 12 percent. Pension contributions payable on compensation received by these persons represent an additional transfer from the state budget to the pension system of roughly 2 percent of the wage bill. Clearly, not only the direct costs – but even the indirect costs in terms of accrued pension rights – of the present high levels of unemployment and disability are extremely high. In my opinion, one of the advantages of this transparent "accounting" system is that it reveals the true costs of unemployment, sickness and disability. This may help encourage politicians to consider the structural changes that could reduce these costs.

With the present high levels of disability and unemployment, the additional cost to the state budget for transfers to the old-age pension system is around 4.5 percent of the wage bill. Had we based the estimate on average figures for the 1980s, the additional cost to the budget would have been under 3 percent of the wage bill. Finally, there is the guarantee, which after the initial transition period will cost 0.75 percent. This suggests a long-term cost to the state budget of around 3.75 percent, if the unemployment rate is brought down to 5 percent.

The financial package involves two other features. One is the gradual abolishment of the widow's benefit (to be replaced largely by a benefit for male and female survivors with school-aged children and a temporary benefit designed to give people a year to adjust to new circumstances). The other is, as I have already discussed, a large transfer of money from the current reserves of the pension system to the state treasury. The former yields a long-run saving of around 1 percent of the wage bill. With a market portfolio rate of return (5 percent), the amount discussed for the transfer from the pension reserves would be equivalent to a contribution rate of around 2.25 percent. Together, these two sources amount to a contribution rate of roughly 3.25 percent.

In sum, with a long-run unemployment rate of around 5 percent (including persons in labor market training courses) and a 20-25 percent lower disability rate, there is an additional long-run financial burden on the state budget equivalent to a contribution rate of 0.5 percent – or perhaps 1 percent if we are less optimistic. However, we must keep in mind that, with a *fixed* contribution rate of 18.5 percent to the old-age pension system, the reform also avoids an otherwise likely substantial increase in the contribution rate. In addition, it helps to channel reserves from the public system into the financial market.

The 2nd pillar and the development of total reserves in the public systems

There is a long-standing tradition in Sweden of considering the potential effect of a mandatory PAYG pension system on personal and national saving. As early as the 1950s, when the Swedish ATP system was conceived, Swedish pension reformers were worried about the potential negative effect of a mandatory PAYG-system on private and, hence, national saving. To counteract an anticipated negative

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[9] Fewer children per mother and more time working when children are young give lower costs.

effect, from 1960 through 1990 more contributions than were needed on a current accounting PAYG basis were collected and funded. Econometric studies of the period 1960-1980[10] show that this mandatory (public) saving was also successful in counteracting a drop in personal saving attributable to the ATP-system.

Presently, the reserves in the PAYG fund are about 40 percent of GDP and are sufficient to pay over 5 years of current benefits. By 2035, after three decades of demographic pressure – mainly associated with the transition-age cohorts, who are not fully included in the new system – reserves could decline to a much lower level, perhaps to around 5 – 10 percent of GDP. Thereafter they will increase again, as indicated in the above figure.

As the PAYG reserves decline, the 2nd pillar reserves will be increasing. By the year 2025, with a (very) conservative real rate of return of 1.5 percent per annum, they will be equivalent to 25 percent of GDP. Hence, there will be no drop in the ratio of total pension reserves to GDP. This was also one of the goals in introducing the 2nd pillar.

Part III   The Mandatory Advance Funded 2nd Pillar with Individual Privately Managed Accounts

1   Options for Setting Up the Advance-funded 2nd Pillar

Introduction

In a private insurance system individuals enter into contracts with insurance companies whereby the terms of the contract are agreed to as specified and accepted by the participant. One approach to mandating advance-funded insurance is to require by law that all employees have such insurance, for example, based on a specific contribution rate on earnings. The insurance provider can be chosen by the *employer*, as in Australia, or by the *individual*, as in Chile,[11] and all transactions occur between employers/employees and the insurance companies, suggesting that disputes arising under these insurance arrangements should also be regulated by statutes and procedures in civil law. The arrangements thus build on existing insurance institutions; contracts are established between employers or individuals and fund managers and insurance providers.

Alternatively, the system may be viewed as an integral part of the social security system. In this case a social security agency contracts with fund managers and insurance providers on behalf of the public sector as a collective group, thus moving the system from the civil to the public domain. This is the basic legal framework chosen for the Swedish system. After considerable discussion, this alternative was seen as the most suitable path to follow, given that the system is a part of the overall mandatory system for all

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10Cf. Markowski and Palmer (1979), Palmer (1981) and Berg (1983).

[11]The self-employed are left to participate – voluntarily -- on their own behalf.

persons residing in Sweden, including self-employed individuals, and all earnings income in Sweden. This choice is consistent with the general principle of mandatory social security: to redistribute lifetime income so as to create an adequate stream of income for persons who because of advanced age are no longer able to provide adequately for themselves.

The following sections describe considerations behind specific choices in constructing the details of the Swedish 2nd pillar.

Capital accumulation and insurance

At the time when the Swedish 2nd pillar scheme was being designed there were three principal models in the international arena: Chile, Australia and the UK. There are several options for setting up a mandatory advance-funded 2nd pillar scheme with privately managed individual accounts. Each of these three countries developed a model that fit the initial conditions in that country well. Sweden has developed yet another model – with the initial conditions in Sweden as a point of departure. A useful approach to examining the options more generally is to view the scheme as if it consisted of two periods, a period of capital accumulation and an insurance period. This is the approach taken here.

The capital accumulation *period* is the time during which individuals work and contribute to the scheme from their earnings. Their contributions are transferred into an individual financial account, to become a part of an investment portfolio. Exactly how this is accomplished has turned out to be one of the major areas of innovation in the design of mandatory advance-funded systems.

The insurance period begins when the individual chooses to retire. At this point, the individual begins to make a withdrawal, according to some set of specified rules. Withdrawals can take several forms: one is a lump-sum withdrawal. Another is a programmed withdrawal following certain specifications (conditions), an annuity or an annuity combined with a survivor benefit. An annuity can also have a fixed or variable value. A variable annuity fluctuates in value with the rate of return on the individual's fund. If the insurance company is a mutual insurance company, owned by its participants, it may provide a "fixed-rate" annuity that increases in value if the company's investments perform better than anticipated when the value of the annuity was established.[12] Insurance products may be a part of a package including both the capital accumulation and insurance phases, or they can be separate.

The choice of model

In the pension reform discussion in Sweden in the 1950s, an alternative similar to the model introduced in Australia in 1992 was discussed as an alternative to the public PAYG ATP scheme eventually implemented in 1960. This alternative, which would have taken existing employer-based schemes as a

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[12] In calculating the value of the annuity, the insurance provider needs to estimate both life expectancy and the yield on remaining capital. Given the former, better than expected fund performance can justify a bonus.

point of departure, did not re-enter into the 2nd tier discussion in the 1990s.[13] Instead, there was general agreement that the choice of investment manager should rest with the individual and should not be limited only to funds associated with insurance companies. Instead, all funds registered to do business in Sweden could be considered for participation, although subject to more specific requirements regarding information disclosure and, as it turned out, administrative costs. These considerations meant that the investment period in the emerging the Swedish model would resemble more the UK model for opting out of the SERPS.

Another possibility, that of reducing the fund choices to one or a few public index funds, was not politically acceptable to the non-socialist parties, which viewed any undertaking to construct a large public fund as an attempt to introduce "socialism through the back door." This would also have led to a concentration of ownership to a few large funds, presumably with a similar concentration in representation on boards of directors. Opening up the system to the whole fund market, which even in the mid-1990s potentially included several hundred managers, appeared to be a good way to spread ownership and investment decisions.

There was less of a consensus from the outset on the organization of insurance provision. Needless to say, the insurance market promoted the idea of competitive insurance providers, while politicians across party lines favored the idea of a single (state) monopoly provider. The logic of opting for the private insurance-market model is that it could lead to the development of new insurance products. The logic of a single provider emerged from the aim of politicians to specify the insurance products in the mandatory 2nd pillar scheme in the law, including the use of unisex life expectancy in computing the insurance annuity.

Lump-sum withdrawals were not considered appropriate for social insurance, since the *râison d´être* for the overall mandatory system is to prevent poverty in old age, thus implying that the paternalistic state should provide a life annuity. On the other hand, one of the requirements imposed was that it should be possible to receive a partial or full benefit that could be *recalculated* at some future date chosen by the individual, taking contributions from new earnings during the benefit period into consideration in the recalculation. This would help in creating more flexibility for older workers.

The decision to legislate how insurance would be provided reduced the scope for potential competitive advantage to administrative costs. It was not clear that it would be cheaper to let private companies compete solely on this basis – as opposed to using some of the existing facilities of the social insurance administration in running the insurance "business." Finally, many Swedish politicians – across party lines – favored a state monopoly as a matter of principle, since the system was to be a part of the overall mandatory social insurance system. In creating a state monopoly for insurance provision, Sweden diverged from all three of the existing 2nd pillar models.

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[13] As in Australia before 1992, in Sweden in the 1950s the old-age insurance that existed for private employees was provided sporadically, and in Sweden normally covered only white collar workers. Generally speaking, in the 1950s, blue-collar workers had only the flat-rate *folkpension* (a less than subsistence amount) provided to everyone at age 67.

One aspect of the problem that received little attention in the political discussion was the investment of funds accumulated by the monopoly during the annuity period for persons who choose to withdraw their funds from their fund manager's account to fund a fixed-rate annuity with the monopoly provider. In time the cumulative effect will be to create a large fund, and it is likely that fund management will be awarded by contract to private companies on the basis of competitive bidding.

The Swedish model closely resembles the UK model in another respect. In both countries, a single tax authority collects all taxes and contributions, including the contributions for social security. Given that this institution already exists and has tax accounts for all individuals, companies and organizations, and that the tax authority performs all of the other necessary functions of money collecting (audits, judicial processes, etc.), it was obvious that the same collection structure should be used for 2nd pillar contributions. The marginal cost would be close to zero.

The details of the model as it will work in practice are described in a separate section below. Table 4 compares the main features of the model developed and legislated for Sweden with the Chilean, Australian and UK models.

The Swedish "clearinghouse" model of administration

A central question in the development of the Swedish model was how to set up the system so as to minimize administration costs. It was generally held by those familiar with the Chilean and UK systems that these generate high costs. Was there a less costly alternative to these models? With this objective the Swedish "clearing house" model of administration was created.

The idea of the clearing house is to allow freedom of movement of money into and out of funds at minimum expense. This is important in the Swedish system, since people are allowed to invest in virtually all market funds, but *at their own risk*. (The question of guarantees as it was addressed in Sweden is discussed separately below.) Because the participant bears the consequences of his/her own decision, it is important for him/her to be able to move money from one fund to another within a 24-hour period. This model already existed in the financial market, where there were private fund managers with more than one fund offering this service within their own groups of funds. In the public clearing house, all individual transactions *vis á vis* a fund are aggregated at the end of the day and transmitted as a net (purchases minus sales) aggregate to the fund in question. The transaction price is determined by the fund value at the time of the transaction.

The clearing house keeps all the individual accounts of individual shares and fund share values and has one aggregate account *vis á vis* each participating fund. The funds have no information on individual participants. The latter should prevent personal soliciting of clients, which is an 'unnecessary' cost. What people need to know to make fund choices is information on fund performance, risks and administration costs. This can be made available to everyone in a format that allows comparison. To this end, managers of funds seeking to participate in the Swedish system are required to provide daily information on fund values. This information must be available to everyone through the clearing house,

by phone, fax, mail or internet communication, and through the local insurance offices. Many large daily newspapers also present information on the Swedish fund market.

The clearing house is a part of the social security administration, although it has a separate board of directors and its own managing director. Year-end statements summarizing the individual financial status in both the PAYG and 2nd pillar components of the system are produced by the social insurance administration. Benefits will also be paid through the same system, with the same statement, using the social insurance administration's existing payment
routines, and general information on the system is available at local social insurance offices.

Mandatory Financial Account Models at the Time of the Swedish Reform and the Swedish Model.

	Who chooses fund manager?	Who collects contributions?	Who keeps accounts/sends statements?	Number of funds/ Who chooses the funds?	Who chooses annuity provider?	Insurance provider(s)	Benefit forms
Chile 1981	Worker	Private manager	Private manager	Each manager has one fund. This becomes the worker´s fund.	Retiree	Choice of leaving the account with the same manager or purchasing an annuity from an insurance company.	Gender specific annuity or programmed withdrawal from pensionable age. A withdrawal can be exchanged for an annuity.
Australia 1992	Employer manager	Private manager	Private manager	If the manager chosen by the empoyer has more than one fund, the worker chooses the fund.	Retiree	Choice of leaving the account with the same manager or purchasing an annuity from an insurance company.	Lump sum or gender specific annuity from age 55. Survivor benefit if the institution allows it.
UK 1986	Worker	Tax authority	Private manager	Managers provide more than one fund choice. The worker chooses the fund.	Retiree	Choice of leaving the account with the same manager or purchasing an annuity from an insurance company.	Up to 25 % lump sum and/or gender specific annuity from pensionable age to age 75. Possible survivor benefit.
Sweden 1995 -2000	Worker	Tax authority	A public agency, which is a part of the socical insurance organi-zation, operates as a "clearing house" between individuals and funds.	Worker chooses among (several hundred) registered mutual funds.	Government	State monopoly/part of social insurance orgnaization	Unisexual annuity, partial or full from pensionable age. Possible survivor benefit.

Guarantees

The Swedish system contains no guarantees regarding the rate of return, nor are there any additional regulations, other than those required in general for operating a business in the Swedish financial market. The laws regulating conditions for ownership of funds, e.g., required equity, where money is to be deposited physically (and the responsibilities of the depository institution), rules on information

disclosure and auditing requirements for financial companies together provide a *general guarantee*. Fraud is a legal offense in any case, and is prosecuted as such. In sum, in the Swedish 2nd pillar system, privately managed funds entrusted with social insurance assets are subject to the general requirements of all funds operating in the country. It is the responsibility of the public licensing and supervisory authority to make sure that funds operate according to the law. Improper behavior can constitute grounds for the supervisory authority to withdraw a fund's license, and in certain cases to confiscate the owner's equity.

Are more guarantees needed for the social insurance system? This is a question that is debated internationally. Some argue in favor of a explicit guarantee against fraud as an additional minimal guarantee for persons with privately managed mandatory saving, although it is not an easy matter to construct appropriate legislation for this purpose. The only real sanction can be confiscation of owner equity (and the threat of incarceration). This suggests that the amount of owner capital required is an important indirect guarantee – as it sets the level of the owner's stakes.

Some countries have guarantees on returns built into their 2nd pillar systems. In systems with a limited number of funds, e.g., as in the Chilean case, funds may be induced to construct portfolios that resemble each other. This might even be the aim of the system's designers. With the goal of having a large choice of funds – with various profiles – as in the Swedish system, it makes no sense to have a guarantee on returns. Instead, given the Swedish model, people who wish to follow "the" index should be advised to choose an index fund, or a mix of appropriate index funds.

In fact, if an index-related guarantee is the goal, it would be cheapest to create a small number of index funds (with competition for administration) covering appropriate domestic and foreign equity and bond markets. This arrangement holds down administrative costs, but it leaves only limited room for individual choice of risk and returns. In addition, in the Swedish context it was thought to be inappropriate, for the reasons discussed above, to create a few large "semi-public" funds.

Timing of the conversion of the capital account into an annuity

It is important for the *individual* to be given the choice of when to convert his/her capital account into an annuity, after a given minimum age. In the Swedish context, the 2nd pillar benefit is only one of a potentially large portfolio of "retirement assets" on which the retiree can draw, including his/her PAYG retirement benefit. Since financial markets are volatile, individuals should not be forced to convert their investment portfolios into an annuity at a time when doing so may be disadvantageous for them. Part of the information provided to individuals must include general advice on moving individual funds from more to less risky funds as they approach the annuity phase.

Benefits

A benefit can be claimed at any time from the age of 61, and it can be claimed together with or separately from the NDC benefit. The individual can choose:

- a single life annuity,

- a joint life annuity,
- a single life annuity with a survivor benefit, or
- a survivor benefit.

Annuities are based on the unisex life expectancy of persons in the age cohort from the year the annuity is claimed. The life annuity can be a fixed-rate or variable-rate annuity. A fixed-rate annuity will be modeled after a mutual insurance product, taking into account a rate of return on the insurance fund. The annuity should cover inflation plus a real return of at least 1.5 percent, but perhaps more, depending on the composition of the insurance fund portfolio. The variable-rate annuity arises if the individual chooses to leave his/her capital in the fund(s) in which he/she had money during the accumulation period. If this option is chosen, the size of the annuity will reflect the current value of the fund(s).

Participants can choose to purchase a survivor benefit, instead of or in combination with his/her own lifetime annuity. The survivor benefit will be calculated on a customary actuarial basis. A survivor benefit can also be purchased during the individual's active period in the labor force. Individuals participating in this separate scheme will bear the cost of this insurance.[14]

It will be possible to claim a partial annuity in proportions that follow the legal design of the NDC system, which allows for 25, 50, 75 or 100 per cent of a full benefit. It is possible to discontinue an annuity and then to reclaim a recalculated benefit later. It is also possible to combine work and a benefit and continue to contribute to this system, thereby enhancing pension capital.

Taxation

Benefits, but not fund capital, will be taxed in the Swedish system, thus providing equal treatment of all components of the mandatory social security system. If in addition, as in the new Swedish system, there is no separate deduction for pensioners, the package for the elderly worker will provide the same tax status for both benefits and income.

2 How the Swedish 2nd Pillar Model Operates

The Premium Pension Authority

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[14] Note that it is questionable whether the 2nd pillar mandatory scheme should offer a voluntary benefit of this type as the risk for adverse selection is considerable.

The model which Sweden has chosen separates the capital accumulation phase from the annuity phase institutionally. Sweden has set up a separate authority, the Premium Pension Authority (PPA), to act as the clearing house during the investment phase for individual transactions *vis á vis* funds and to be the sole provider of annuities during the insurance phase. This section of the paper is devoted to explaining what this authority does and how it is integrated into the rest of the social insurance system.

The PPA was established in July, 1998. Its first major task was to design its business. The most urgent technical development problem was to construct the IT-program for trading fund shares and keeping individual accounts on a daily basis. In addition, staff at the PPA, at a call center and in the local offices of the social insurance administration had to be trained, and in general all of the procedures of a new business had to be set up. Money has been allocated each year to the 2nd pillar system beginning in 1995. This money has accumulated in an "interim fund" (see below). From September 2000, contributions from 1995-1998 will be transferred into funds chosen for the first time by individuals.

The principal responsibilities of the PPA are the following:

- enter into contracts with funds applying to participate in the system,
- execute aggregate purchases *vis á vis* the participating funds,
- collect and make available information on fund share values on a daily basis,
- keep the individual accounts for the system, and
- provide the insurance products specified by law.

In principle, there will be no limit to the number of funds in which an individual may have shares at any given time. Neither is there a limit on the number of transactions which an individual may make. In the initial years the costs of all fund changes will be shared among all participants. The logic behind this is that it may be difficult for some to make what they themselves consider to be satisfactory choices in the beginning. Presently, only about half the Swedish population has money of their own in funds, so for many people making this type of investment choice will be a very new experience. In time, however, an individual fee might be charged for persons who make more than some "normal" number of transactions per year.

The PPA will use the facilities and services of:

- the National Tax Authority to collect contributions;
- the National Debt Office to invest funds during the interim between collection of contributions and the establishment of individual rights (following tax assessment);
- the National Social Insurance Board to report new contributions (including those deriving from child credits, etc.) produce and distribute annual account statements to individuals and, in general, to co-ordinate all information to individuals with regard to the public pension system;
- the local social insurance offices for most face-to-face client services.

The NSIB and PPA have set up call centers with a joint switchboard so that clients can be channeled to the appropriate service. Information and services for the entire pension system will be available on the internet as well as through local offices.

The Financial Supervisory Agency licenses and supervises market funds operating in Sweden in the course of its normal business. It will also oversee the business of the Premium Pension Authority. The NSIB has the legal responsibility to supervise the business of the PPA.

The figure on the following page provides a schematic overview of how the system is set up.

Conditions for participating funds

All funds licensed to operate as investment funds in Sweden can participate in this system, including companies owned by foreign interests. Furthermore, companies licensed within the European Union and supervised in their own countries can operate within this system.

In addition to being appropriately licensed, companies seeking to participate will have to

- register and conclude an agreement with the Public Pension Authority,
- on request provide information to individual shareholders (general information about the fund and its periodic reports, to an individual having the right to subscribe),
- agree not to charge withdrawal fees, and
- provide a detailed report of administration costs charged.

A public fund for "non-choosers"

Since the 2nd pillar is mandatory, the question arises as to how to treat persons who do not wish to make an explicit fund choice. For this group a separate fund will be established. This fund will hold a mixed portfolio of bonds and domestic and foreign equities. Portfolio management policy will be decided by the Board of Directors of the fund, with only general restrictions on maximum portfolio shares for the various components.

Swedish Pension Model – 2nd Pillar

National Social Insurance Board

- Transfers information to PPA
- Coordinates information to public
- Monitors the PPA

Local Social Insurance Office

Clients

State Financial Supervisory Agency

Premium Pension Authority (PPA)

- Keeps individual accounts
- Registers individual fund choices
- Purchases aggregate fund shares
- Provides insurance

Tax Authority

- Collects aggregate monthly contribution payments
- Calculates individual earnings – yearly basis
- Transfers money to Interim Fund
- Transfers information to NSIB

Employers and self-employed

Independent Auditors

Public Fund

Gamma Fund

Beta Fund

State Treasury - Interim Fund

- Interim investment - average 18 months
- When individual rights are established:
- Money is registered in individual accounts
- Investment capital is moved into individual funds

The Tax Authority collects contributions and establishes earnings

Swedish employers make preliminary tax and contribution payments on a monthly basis, but report information on individual earnings to the tax authority on an annual basis. This means that individual earnings and contributions are also established *legally* on an annual basis, and then only after individuals and employers have filed their income tax returns for the past year and after these have been reconciled with each other. One of the complicating factors is that individuals can have earnings from self-employment or a combination of self-employment and employment with one or more employers. Another complicating factor is the ceiling on earnings that give pension rights in the public system. Calculation of the exact amount of the contribution requires information from all sources.

After income tax returns have been processed and information from different sources has been checked for consistency, information on earnings and contributions is transmitted to the accounting system at the NSIB. This occurs near the end of the year following the year for which earnings have been reported.

The National Debt Office holds the interim fund

It will take almost two years from the first accounting day of a new year until current increments to personal accounts will be established, and money will need to be held and invested somewhere for an average of about 18 months. For this purpose, an interim fund has been established at the National Debt Office (i.e., the Swedish treasury). The rate of return will be close to that offered on government financial debt.

The National Social Insurance Board establishes and records contributions and sends out statements

On the basis of the information on earnings and contributions provided by the National Tax Authority, and information on other sources providing pension rights (child-care, military service and education rights and rights for compensated days of sickness, unemployment and disability) individual total contributions are determined and recorded by the NSIB. This computation is then entered into the accounting system for the clearing house at the PPA. Information about individual account values is transferred to the NSIB accounts at the end of the year.

The NSIB prepares and sends out year-end statements with information about the individual's current status in both the NDC and funded components of the public system. Statements are to be sent out in February/March each year. At this point, all individuals will be provided with a formal opportunity to confirm or change their fund choices. They will express their choices on a form to be sent to the Premium Pension Authority. In this way there will be at least one transaction per year for all participants.

The NSIB is responsible for producing statistics on the entire system and monitoring its performance.

Local Social Insurance Offices provide general client services

Clients can also visit and get information from the local offices of the Social Insurance Administration. The back office at the local offices will be connected with experts at the PPA to deal with some of the more technical questions that might arise. These meetings, which are expected to be relatively infrequent, will usually involve inquiries about the participant's overall status – i.e., including the NDC. The call center may be used more frequently. It is designed to deal with all aspects of the entire pension system, including both front- and back-office services. In addition, clients can obtain both general and individual information through the internet. There is an internet program designed to enable individuals to feed in data on their own historical and projected earnings careers. to specify other assumptions, including fund performance, and thereby to create their own pension projection for chosen retirement profiles.

Administrative costs for asset management

In the first year of operation, year 2000, over 500 funds registered to manage assets. The PPM is a single client, with at most one transaction per day vis á vis any specific fund manager – and normally the transaction amount will be very small relative to the amount of total assets managed on the PPM's behalf. On the other hand, a large amount of money will be transferred on an annual basis, in conjunction with the transfer of new contributions covering a whole year.

The fund manager's cost of administrating PPM assets should be very low under these circumstances. For this reason, the PPM uses a fee schedule designed to keep asset management costs low for the participants. To participate in the system fund managers must agree to a fee schedule. Managers are allowed to charge what they normally charge in the way of administration fees, but have to return a certain amount to the PPM if their administration fees exceed a specified amount. This "rebate" is calculated according to the formula in the box.

Calculation of the Administrative Cost Reduction,
for Funds with Fixed Administrative Charges

$$reduction = \left[NC - (Free + (1-R)(NC - Free)) \right] (Asset \ in \ PPM \ system)$$

NC -   Fund manager's normal fee charge
Free -   Flat rebate for an asset interval (see Table)
R -   Incremental rebate for an asset interval (see Table)

Note that this computation is made on a daily basis.

The following table illustrates how the rebate system will work in practice. Funds managing PPM assets of 7 billion SEK or more (800 million USD at an exchange rate of 8.75 SEK/USD) are freed from a rebate if they charge 0.12 percent or less. At the other extreme a small fund can charge, after

paying the rebate, just over 1.2 percent.

Fund Manager

Normal administrative cost, % of fund´s PPM assets	Flat rebate rate, % of fund´s PPM assets	Incremental rebatefactor	Rebate payable to PPM, % of fund´s PPM assets	Administrative cost after rebate, % of fund´s PPM assets
1. Managers holding less than 70 million SEK in PPM Funds				
1.5	0.4	0.25	0.275	1.225
1.0	0.4	0.25	0.15	0.85
0.5	0.4	0.25	0.025	0.475
0.12	0.4	0.25	0	0.12
2. Managers holding 70 to 300 million SEK in PPM Funds				
1.5	0.35	0.65	0.7475	0.7525
1.0	0.35	0.65	0.4225	0.5775
0.5	0.35	0.65	0.0975	0.4025
0.12	0.35	0.65	0	0.12
3. Managers holding 300 million to 500 million SEK in PPM Funds				
1.5	0.3	0.85	1.02	0.48
1.0	0.3	0.85	0.595	0.405
0.5	0.3	0.85	0.17	0.33
0.12	0.3	0.85	0	0.12
4. Managers holding 500 million to 3000 million SEK in PPM Funds				
1.5	0.25	0.95	1.1875	0.3125
1.0	0.25	0.95	0.7125	0.2875
0.5	0.25	0.95	0.2375	0.2625
0.12	0.25	0.95	0	0.12
5. Managers holding 3000 to 7000 million SEK in PPM Funds				
1.5	0.15	0.95	1.2825	0.2175
1.0	0.15	0.95	0.8075	0.1925
0.5	0.15	0.95	0.3325	0.1675
0.12	0.15	0.95	0	0.12
6. Managers holding more than 7000 million SEK in PPM Funds				
1.5	0.12	0.96	1.3248	0.1752
1.0	0.12	0.96	0.8448	0.1552
0.5	0.12	0.96	0.3648	0.1352
0.12	0.12	0.96	0	0.12

Appendix 1.   The NDC Annuity and Indexation

Denote the age and gender-dependent one-year death risk in the population by q, and define the survival (rate) probability as h = 1 - q. This is the probability that a person of a given age will survive in period t.

From the survival probabilities a function

(1)   lx (age i) = lx(age i-1) h(age i)

can be constructed for each gender. The value for the lowest age in the calculations is set at unity.

An annuity without a rate of return

Life expectancy for a person of age i at some given time is obtained by summing over the lx-values to the last year for which people presently living are alive, N, and divide by the lx-value for the age we are considering:

$$(2) \quad G_i = \frac{\sum_{T=i}^{N} lx_i}{lx_i}$$

The result is called the G-value.

The annuity is calculated by dividing notional capital accredited at the time of retirement, C, with life expectancy from the time of retirement:

(3)   Annuity = C/G

This annuity can be price-indexed, indexed to the contribution-wage sum or to the per-capita wage sum, or indexed with some combination of wages and prices. It should be kept in mind, however, that the system is financially stable in the insurance sense – i.e., contributions are always what are needed to pay for benefits in the long-run, *only* with contribution-wage-sum indexation. For example, as long as the wage sum grows, a perpetual surplus will arise with price indexation of benefits. If per-capita wage indexation is chosen, the system will encounter growing financial deficits with a persistently decreasing labor force and surpluses with a persistently increasing labor force.

An NDC annuity with an imputed rate of "economic" return

The G-value with a *real* rate of return, r, is expressed as

$$
(4) \quad G_{i,r} = \frac{\sum_{t=i}^{N} (1+r)^{-(N-i)} lx_i}{lx_i}
$$

and the corresponding annuity is

$$
(5) \quad \text{Annuity}_{\text{with r}} = C/G_{i,r}
$$

In the NDC PAYG system, the rate of return is an assumed – i.e., "norm" – real rate of growth in earnings based on the contribution base.

The difference between expression (5) and that underlying an annuity in the 2nd pillar system is simply the rate of return. In the funded system the rate of return is the market yield on funded capital. With a system of individual accounts invested in private funds or competing insurance companies, this rate will vary among individuals. In the NDC PAYG framework, everyone receives the same rate of return.

In order to maintain financial stability in the annuity version of the model, benefit adjustments must be made when real economic growth deviates from the norm rate of return. The "real-growth adjustment factor" works as follows:

7) $\text{Benefit}_{t+1} = \text{Benefit}_1 (1 + \pi) [1 + (\text{actual growth rate percent - norm})]$

The benefit is price indexed (π) and then adjusted for the deviation of actual real growth from the norm. If the norm were 2 percent, i.e., representing an assumed 2 percent annual "return", then real growth of 2.5 percent would lead to an "economic" supplement to price indexation, and real growth of 1.5 percent would lead to an adjustment downward.

Why not discretionary benefit adjustments?

There is one final option for indexing benefits that deserves mention. Instead of employing some form of automatic real indexation of benefits, indexation could be combined with discretionary "bonuses". This means that an actuarial calculation would be made periodically, and when it is evident that real growth has created "excess" funds, a bonus would be provided. In other words, the bonus would be based on actuarial long-term prognoses of the system's solvency.

What can be said in favor of this alternative is that the size of the annual "bonus" can be determined in terms of successive calculations of long-term affordability. The method is essentially that used by mutual insurance societies.

There is an important difference between the government and an insurance society, however, that detracts from the appeal of letting the social insurance administration propose discretionary changes in benefits based on long-term financial evaluations, unless this decision is completely autonomous from the government. As opposed to an insurance society, the pension system is but one of many government commitments (such as national defense, roads, policies tailored for special interest groups, etc.). The politicians will thus have trouble keeping their hands off the pension system's money. A method of indexation based on fund calculations would also have to be clearly specified to avoid political manipulation and the risk of public mistrust. Note that, if there is no fund at the starting date for the system,[15] in practice, such a mechanism would end up doing exactly what wage-sum indexation will do.

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[15] For example, Sweden has a large initial fund which could be distributed in the future according to some rule encompassing both past and new system commitments.

Appendix 2. Models of Transforming Disability Benefits into Old-Age Benefits

An important question regarding disability is when and how this benefit should be transformed into an old-age benefit. There are several options. Among these are the following:

Model 1. No transfer of contributions based on imputed earnings during time with disability benefits. Instead, when the disability recipient reaches the minimum age for retirement with an old-age benefit, the old-age pension from notional capital in the NDC and financial capital in the 2nd tier are computed. The pensioner has the option of taking the higher of two alternatives, the old-age benefit or his/her current disability benefit. If the disability benefit is higher, the old-age system can be paid the excess amount to supplement the financing of the old-age benefit.[16]

Model 2. Transfer contributions for imputed income for persons on disability into the NDC and 2nd pillar accounts up until the established age for conversion of the disability pension to an old-age benefit. There are different approaches to conversion. Examples are:

- Convert the disability benefit to an old-age pension at the minimum retirement age for the old-age benefit. In Sweden this would be at the age of 61. This means that the individual earns no extra capital after age 60 and receives the same actuarially reduced benefit that any (non-disability) person choosing to retire at the age of 61 would have received.

- Convert the disability benefit to an old-age benefit at some other age above the minimum retirement age, e.g. the age of 65, *with continuation of transfers into the NDC and 2nd pillar accounts until the conversion age*.

- Convert the disability benefit to an old-age benefit at some other age above the minimum retirement age, e.g. the age of 65, *with continuation of transfers into the NDC and 2nd pillar accounts until the conversion age but using a less generous formula for computing rights, from some specific age*. In the Swedish reform, the current proposal is to give reduced rights to persons aged 60-64 and convert to an old-age benefit at the age of 65.

- Convert the disability benefit to an old-age benefit at some other age above the minimum retirement age, e.g. the age of 65, but from a specified age, e.g., 60, *discontinue transfers into the NDC and 2nd pillar accounts*.

In the latter three alternatives, it would be possible also to: a) discontinue indexation of NDC notional capital after the minimum age for an old-age benefit, or b) use a less advantageous indexation formula.

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[16] Note that this is the model proposed in the Polish reform.

Model 3.For Model 2 it would also be possible to guarantee, as in Model 1, that the benefit a former disability recipient receives in old age will not fall below the amount of the disability benefit previously. If the difference is positive, this sort of guarantee would constitute an extra cost to be borne by the state budget or disability insurance system.

Perhaps a word of caution is appropriate here. As is well known, the opportunity cost for older workers of remaining in the labor force instead of "taking" a disability benefit can be high. Generally, the goal of designing policy in this respect is to provide adequate and fair income replacement for individuals who have no reasonable alternative to taking a disability benefit.

There are two conditions for successfully achieving this goal. First, disability criteria must be applied stringently, and, second there should exist good occupational schemes to help older workers *who are not disabled* but nevertheless for various reasons (usually a combination of age and work requirements) need to withdraw from the labor force earlier. If these conditions are not fulfilled, experience tells us that employers – often with the strong support of labor representatives – will make use of liberal disability rules to lay off workers whose performance capacity is not 100 percent, but who could still work, albeit perhaps with a lower wage.

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