

Two Thousand Five hundred Words on the Swedish Pension System

November 28, 2005

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1 Introduction

Faced by largely the same demographic challenges as other OECD countries, Sweden opted in 1992/94 for a radical reform of its national old-age pension system. Most of the legislation on the new system was passed in 1998. Three central principles have guided the decade of research and decision-making on the reform:

- For every krona paid in contribution to the system by or for an individual, that individual should receive the exact same amount of pension credit – i.e., no pension credit without a corresponding contribution.
- The financing of pension payments should be *guaranteed* by a fixed contribution rate.
- The average pension in relation to average income (here referred to as the *pension level*) in the new system should equal the corresponding ratio if the old system would have been retained in the following scenario. An average working time of 40 years, the life expectancy measured in 1994 and an annual growth in average income of 2 %. The pension level in the old system is about 50 %, while the average replacement rate is about 60 %.

All legislation has been processed in The Pension Reform Group before being submitted to parliament. This group consists of representatives from the five parties behind the reform proposal, assisted by economic and legal experts. The process has been consistently supported by some 85 % of the members of Parliament.

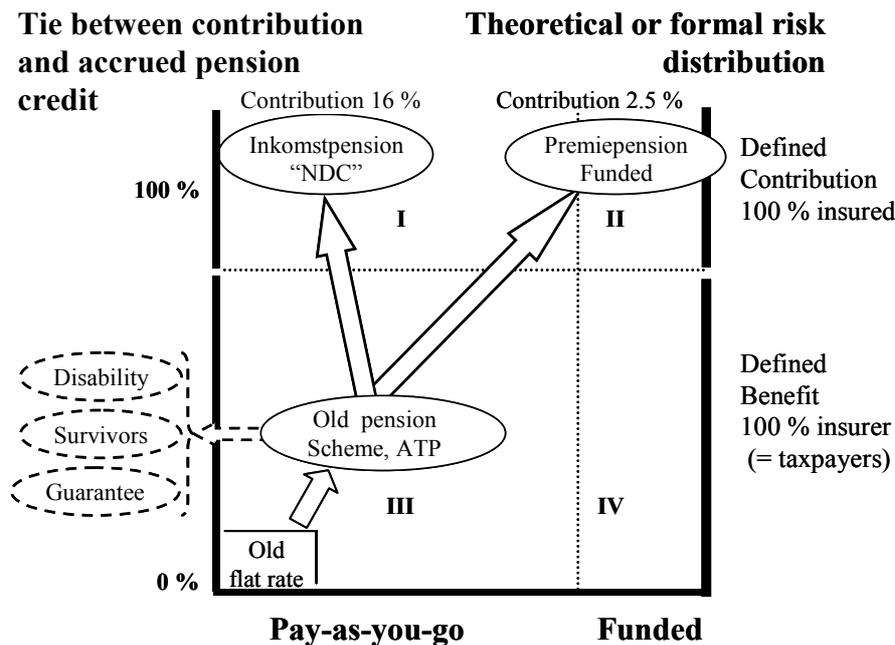
2 The Direction of the Swedish Reform

Sweden has moved from a traditional income related defined-benefit system, complemented by a flat rate system, to two types of defined-contribution systems. In the new system, about 14 % of contributions will go into individual financial accounts, the fully funded *premium pension*, while the remaining 86 % will be channelled into the new pay-as-you-go system, *inkomstpension*. The survivors and disability schemes that were a part of the old pension scheme have been diverted to separate systems.

Defined-contribution systems have traditionally been associated with fully funded schemes. In Figure 1, defined-contribution schemes are represented by quadrants I and II. It may be argued that quadrant I does not represent a defined-contribution system, largely because the pension liability is not backed by funded assets and hence the return on contributions will differ from the market return on capital. To distinguish between defined-contribution systems that are fully funded and those that are financed on a pay-as-you-go basis, the latter are often called *Notional Defined Contribution (NDC)* systems.

National pension schemes have universally been defined-benefit and financed more or less entirely on a pay-as-you-go basis. Schemes designed in this manner are found in quadrant III of Figure 1.

Figure 1. Four Generic Types of Pension Systems and the Direction of the Swedish Reform



Differences in the Dynamics of Defined Benefit and Defined Contribution Systems

The demographic and economic developments that unavoidably lead to changes in the contribution rate or the value of pensions can be considered as *uninsurable risks*. A defined-benefit system can be designed to accommodate uninsurable risks by altering the contribution rate *or* by adjusting the value of pensions *or* by a combination of both. In a defined-contribution scheme (whether funded or pay-as-you-go), accommodation must, in principle, be effectuated by adjusting the value of pensions. Increasing the contribution rate is not a viable response to a deficit.¹

3. The NDC System

The equivalent of 16 % of each individual’s annual pensionable income, defined in Section 6, will be credited yearly to his or her notional account. The corresponding amount is transferred in monthly instalments to the system’s buffer fund, which finances pension payments. The “interest” earned on the notional account is either the increase in nominal average (pensionable) income as measured by an income index or an approximation of the internal rate of return in the system, as measured by the balance index, explained in Section 8. Each year, the indexation of the notional accounts is augmented by inheritance gains and reduced by administrative costs.

There is no formal retirement age in the new system. Pension credits will always be earned and added to the notional (as well as financial) accounts if the individual has pensionable

¹ In an NDC system, a temporary deficit can be remedied by increasing the contribution rate, but it is risky to do so. If the original cause of the deficit persists, the deficit may become even larger than at the outset. In both a fully funded DC system and a NDC system, the long-term pension level can be increased or maintained by increasing contribution rates, but the pension level in the short term cannot. Some analysts have considered the NDC “formula” to be a redressing of a career average defined benefit formula, see for example Cichon (1999). This view fails to recognise that uninsurable risks in a defined contribution system in principle must be, and in the Swedish NDC system is, assumed by the pension level, rather than by the contribution rate.

income, regardless of his or her age and of whether the individual has begun to draw a pension. Pension can be drawn at 25, 50, 75 or 100 % from age 61 and upwards, without any upper age limit.

Pensions from the pay-as-you-go system are calculated at the time of retirement by dividing the notional-account balance by a so-called annuity divisor. The annuity divisor reflects the life expectancy at retirement. Final annuity divisors, one for every age over age 64, are determined for all individuals in the same birth cohort the year the cohort reaches the age of 65. If average life expectancy increases, this implies that the same notional capital will produce a successively lower yearly pension for younger cohorts if conversion to an annuity (pension) is made at the same age. To maintain a fixed pension level when life expectancy increases, retirement must be postponed. Further, the annuity from the notional account is calculated at an interest rate of 1.6 %. The pension is subsequently indexed by the growth in the income index or the balance index minus this interest rate. The interest rate of 1.6 % is imputed in the conversion to an annuity to achieve a more even distribution of real income during the retirement period.

All participants receive an annual statement, “The Orange Envelop”, containing joint information on the movement on their notional and financial account. The cost of administering the system is presently estimated at some 0.02 % of notional capital or 0.7 % of contributions.

The Buffer Fund of the NDC system

The buffer fund of the NDC system actually consists of four different funds. The funds started the 1 January 2001 by inheriting from the “old” buffer funds a capital of 540 billion Swedish kronor. SEK (\approx 54 billion \$ US), divided equally between the funds. The ratio of total assets to expenditure is almost 400 %.

The pension reform has included significant liberalisation of the investment rules for the funds. From 1 January, only 30 % of assets must be invested in bonds. This means that 70 % of assets can be invested in equities. A maximum of 40 % of assets may be exposed to currency-exchange risks. There are, of course, some additional restrictions on the investment policy of the funds.

A transfer of some 250 billion SEK from the fund to the national budget has been made over the past two years. This is a form of compensation from the pension system to the central-government budget for the increased costs initially incurred by the reform. The national debt has been reduced by the assets transferred (government bonds). The size of the initial buffer fund has been decided by calculating how much could be transferred without triggering the balance mechanism (see section 8) in any year during the period 2001-2050, in a specific scenario. In brief, this scenario was developed from the demographic forecast for Sweden by Statistics Sweden, on the assumptions of “recent” age-related income patterns, 2 % real annual growth in average income, and a buffer fund real return of 3.25 %.

4. The Premium Pension

The contribution base for the premium pension is identical to that of the NDC system. Contributions to the two systems are collected together. From intermediary management by the National Debt Office, the money is transferred to the premium pension funds in yearly

amounts with a delay of approximately 18 months until the taxation process is completed. When the taxation process has been completed, the Premium Pensions Agency (PPM, a new agency) distributes the cash as a lump sum to the funds chosen by the insured.

There are at present some 700 different funds in the FDC system. An individual may choose a maximum of 5 different funds, and the number of fund changes is unrestricted. The latest choice of funds is always the default choice. Contributions of individuals who do not respond when requested by the PPM to choose a fund are invested in the default fund, managed by a government agency with liberal investment guidelines. The capital of each individual increases with annual contributions and the return on investment. In addition, inheritance gains are credited and administrative costs are deducted, both on a yearly basis.

At retirement, the insured can choose to convert his or her capital either to a fixed interest annuity or to a variable annuity. In the former case, the PPM assumes/distributes the risk that the actual life span of the cohort will exceed its estimated life expectancy, as well as the investment risk. In the latter case, the monthly pension is re-calculated every year, depending on the return on investment of the funds chosen by the individual and on changes in the life expectancy of the cohort. Thus, in this case the insured cohort assumes the longevity risk, while the insured individual assumes the investment risk.

In 2001 some four million Swedes were requested to choose a fund. Almost 70 percent responded to this request. However subsequent years the number of choosers have dropped dramatically. Presently about ten percent of all new entrants to the system choose fund(s).

All information between the insured and the fund is transmitted through the PPM agency; in fact, the funds do not know who their individual customers are. From their perspective, the PPM agency is the customer. PPM negotiates fund fees and acts as a clearinghouse within the system. The total cost of operating the system is presently estimated at approximately 0.75 % of assets, with the PPM costing 0.22 %. It is assumed that the total cost of operating the system will decline to well below 0.5 % of assets. Different funds charge different fees.

5. Guaranteed Pension

Persons with low lifetime incomes will have accumulated only limited notional and financial capital. These individuals will from the age of 65 be entitled to a supplement guaranteeing them a minimum pension. The guaranteed-pension share of total pensions is indexed by the change in the Consumer Price Index. By implication, the total pensions of this group will show less negative growth in real terms than the pensions of other retirees, when real average income growth is less than 1.6 % and/or when the balance mechanism is activated. Those with the lowest pensions will not be affected at all by slow (or fast) growth in average income or by the automatic balance mechanism. The guaranteed pension is financed by general tax revenue.

6. Pensionable Income

Pensionable income consists principally of all annual earned income exceeding the minimum taxable income ($\approx 17\,000$ SEK / $1\,840$ €) but below the ceiling ($\approx 333\,750$ SEK / $36\,200$ €) in the pension system. Also included in pensionable income are all social-insurance benefits in the nature of income replacement, such as sickness, unemployment, disability, and maternity/paternity benefits. In addition, pension credits are also granted for “child-care

years”, university studies and compulsory national service. Pension credits for child-care years can be credited to men as well as women. This provision was included in the reform since it was judged both fair and politically necessary to minimise or eliminate the negative impact that the change from the defined-benefit formula to the defined-contribution formula otherwise would have had for women.

The pension credit for income-replacement benefits from the social-insurance system, for child-care years, etc. is financed annually by corresponding transfers from the national budget to the buffer fund. In 2004 about 17 % of all contributions derived from such transfers.

7. From Old to New System

Individuals born 1937 or earlier have their pensions calculated according to the old rules. Individuals born between 1938–1953 get their pension calculated according to the rules of both systems. Those born in 1938 receive 16/20 parts of the pension they would have received from the old system; 4/20 parts will be pension from the new system, (4/20 of pension credits in the old system as from 1960 have been converted to pension credits in the NDC system²). Those born in 1939 will receive 15/20 parts from the old and 5/20 parts from the new, ..., those born in 1953 will receive 1/20 parts from the old and 19/20 parts from the new. Persons born 1954 or later have had all accumulated pension credits in the old system converted to pension credits in the NDC system.

From year 2002 the consumer price indexation of pensions in the old system is replaced for all income related pensions by the new income indexation, i.e. change in nominal average pensionable income, minus 1.6 %.

8. The Balance Mechanism of the NDC system³

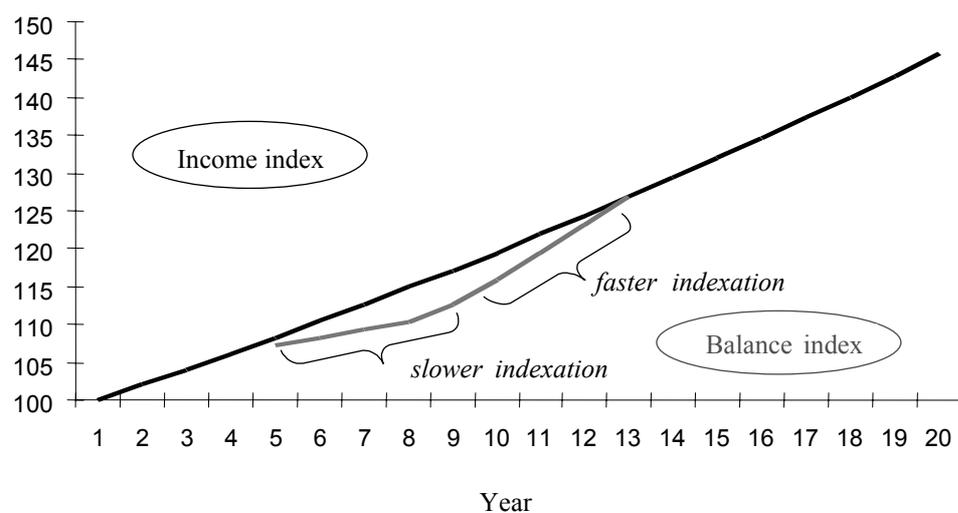
One primary social objective of the NDC system is to provide for a stable relationship between the average pension and the average income. Consequently the indexation of both notional capital and pensions is based on growth in average income. The growth in average income will normally deviate from the internal rate of return of the NDC system.⁴ Hence, assets may increase faster than liabilities, or vice versa. If and when liabilities should exceed assets, the basis for indexation is automatically switched to an approximation of the system’s internal rate of return, thus automatically adjusting pension levels as well. Figure 3 illustrates how balancing works in a scenario where it is first activated and later discontinued.

² 1960-1995 the NDC pension credit was 18.5 percent of the pensionable income, 1995-1998 it was 16.5, while the FDC pension credit was 2 percent. As from 1999 the NDC pension credit is 16.0 and the FDC is 2.5. These percentages are assumed to remain fixed.

³ A debate has been in progress at least since 1994 on the merits of notional defined-contribution systems. A criticism of NDC’s has been that they would not be financially stable (Valdés-Prieto 2000, Disney 1999), contrary to the more or less explicit claims of their advocates (Palmer 2000, Fox and Palmer 1999). This criticism of NDC’s is unjustified, at least in the special case of the Swedish system. The general outline of the balance mechanism was described in Settergren (1997, in Swedish). For an introduction to the balance mechanism in English, see Settergren 2001.

⁴ See the Settergren and Mikula 2005 for a definition of the internal rate of return in pay-as-you-go pensions systems.

Figure 3. *Income index and the balance index*



The balance mechanism implies that the assets and liabilities of the pay-as-you-go system are to be calculated and disclosed annually, thus providing the pay-as-you-go system with a *balance sheet*. The valuation of assets, i.e. the contribution asset, is determined with the aid of a new concept, *expected turnover duration*. The formula for calculating the assets and liabilities of the system is prescribed by legislation. Aside from the buffer fund, which is valued on the basis of capital-market transactions, the calculation is based exclusively on transactions that are recorded in the pension system. There is thus no element of forecasting in the calculation.⁵

Using the growth in average income as the “main” index and steering the system only if it is necessary to secure its financial balance minimises the volatility of the pension level relative to other design options. The asymmetric design of the indexing of the new Swedish pay-as-you-go system has been made possible by determining the relevant time aspect of the system. The inverse of the expected turnover duration can be interpreted as the discount rate in valuing the contributions to a pay-as-you-go pension system. The balance mechanism secures the financial stability of the NDC and provides for what might be called actuarial accounting, a form of double-entry bookkeeping for a pay-as-you-go pension system.

⁵ While the “old” defined benefit system (ATP) is being phased-out projections are used to calculate the value of the liability due to this obligation. The share of the total pension liability that was estimated with a projection was 20 percent in 2004. This share drop quite rapidly and becomes zero in 2019.

References

Cichon, M. "Notional defined-contribution schemes: Old wine in new bottles?", *International Social Security Review*, vol 52 4/99, p. 87–105.

Disney, R. (1999) "Notional Accounts as a Pension reform strategy: An Evaluation", Pension Reform Primer Nr. 1. World Bank Group, Washington D.C.

Fox, L. and Palmer, E. (1999) "Latvian Pension Reform", Social Protection Paper No. 9922. The World Bank, Washington, D.C.

Settergren, O Mikula, D. B. "The Internal Rate of Return in Pay-As-You-Go Pension Systems – a more exact consumption loan model of interest", *Journal of Pension and Finance Economics*, p. 115-138, 4(2) July 2005.

Settergren, O. (2001) "The Automatic Balance Mechanism of the Swedish Pension System – a non-technical introduction", *Wirtschaftspolitische Blätter* 4/2001.

Valdés-Prieto, S. (2000) "The Financial Stability of Notional Accounts Pensions", *The Scandinavian Journal of Economics*, Vol 102 2000, No. 3. p. 395-417.