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THE SWEDISH EXPERIENCE WITH PENSION REFORM

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Sweden is one of few countries in Europe to have introduced a comprehensive pension reform. In 1998, Sweden passed legislation that transformed its public pension system to a notional defined-contribution (NDC) plan—that is, a defined-contribution plan financed on a pay-as-you-go basis. In addition, a second tier of funded individual accounts was introduced. The reform had broad political support with more than 80 per cent of the votes in parliament. This paper discusses the trends in retirement in Sweden and assesses the experience with pension reform. The objective was to design a fiscally sustainable system tied to economic growth with a clear link between contributions and benefits. We discuss the challenges in meeting this goal, the extent to which the Swedish reform has succeeded, and how the system affects beneficiaries. The paper evaluates the experience of the individual funded accounts to date and concludes with an outlook for the future.

I. INTRODUCTION

Sweden is one of the few countries in Europe to have implemented comprehensive pension reform. In 1998, Sweden passed legislation that transformed Sweden's public pension system to a notional defined-contribution (NDC) plan, that is a defined-contribution (DC) plan financed on a pay-as-you-go (PAYG) basis. In addition, a second tier of funded individual accounts was introduced. The reform had broad political support, with more than 80 per cent of the votes in parliament.

Reform discussions in Sweden had already begun in the 1980s. As in many countries, the aging of the population motivated the discussions. Owing to a generous system and slowing productivity growth the public pension system faced large projected deficits around 2015, and contribution rates would have had to be increased dramatically for the system to be sustainable at current benefit levels. An important goal of the Swedish reform was to design a system that was financially as well as politically sustainable in the long run. In the summer of 1992 the Parliamentary Working Group of Pensions

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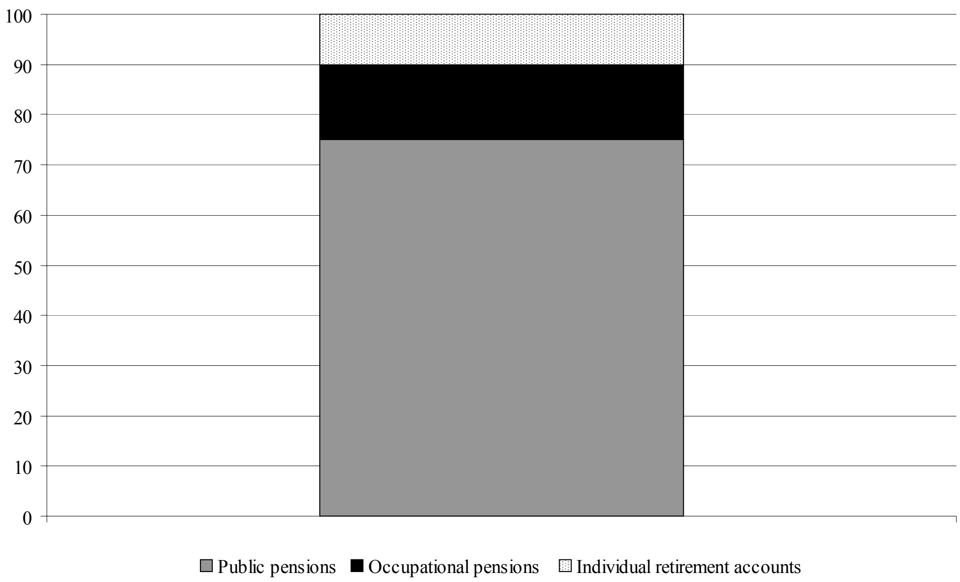
The views expressed herein are those of the author and not necessarily those of the National Social Insurance Agency. I am grateful for valuable comments from an anonymous referee and the editors.

Figure 1
Composition of Retirement Income (%)



Source: Annual Report for the Pension System (2003).

published a sketch that contained the essential elements of the reform.

The pension reform changed the provision of public pension benefits in a fundamental way and redefined the benefit promise. In the new system, benefits are closely linked to contributions and lifetime earnings will determine benefits. The reform also recognized the impact of increased life expectancy for the financial stability of the system, and built in an automatic adjustment of benefits in response to changes in longevity. The new system also puts increased responsibility on individuals to plan for retirement through the introduction of a funded individual account component.

The purpose of this paper is to discuss the Swedish experience with pension reform. It is organized as follows. Section II discusses the development of the retirement income system in Sweden, its objectives and challenges, and the need for reform. Section III provides an overview of how the new pension system works and evaluates how it will meet its objectives. Section IV turns to a discussion of how the pension system affects beneficiaries. The paper concludes with discussion of the challenges for the new pension system.

II. THE DEVELOPMENT OF THE RETIREMENT SYSTEM IN SWEDEN

(i) The Retirement System in Sweden

The retirement income system in Sweden has long involved two pillars: a public national pension that covers all individuals, and an occupational pension system that builds on collective-bargaining agreements between the labour-market organizations. Private individual retirement accounts constitute a third pillar.[2] Public pensions are the dominant source of income, comprising roughly 75 per cent of overall retirement income (Figure 1).

The pre-reform public pension system in Sweden provided a flat benefit (FP, introduced in 1913) to ensure income security in old age, and a supplementary benefit (ATP, introduced in 1960) to provide earnings-related benefits.[3] The ATP benefit was

[2] Contributions to employer-provided plans and private individual retirement accounts receive favourable tax treatment.

[3] The introduction of the public earnings-related scheme primarily affected blue-collar workers in the private sector because white-collar workers and employees in the public sector were already covered by earnings-related benefits through their occupational schemes. The public earnings-related system was the 'jewel in the crown' for the Social Democratic party and its introduction was only won after one of the toughest political fights in modern Swedish history.

based on a worker's 15 years of highest earnings; it also required 30 years of covered earnings for a full benefit, and it replaced 60 per cent of earnings up to a ceiling. The ceiling was approximately 1½ times the average wage. Individuals with no or very low ATP benefits received an additional benefit, the pension supplement. The pension supplement, together with the FP benefit, provided a minimum benefit level equal to approximately 30 per cent of the average wage. In addition, retirees with low pension benefits were eligible for housing allowances. Earned pension rights, benefits, as well as the income ceiling were indexed for inflation following consumer prices. Benefits were taxed as regular income, although individuals with low benefits received an extra deduction.

The FP, together with the earnings-related benefit, provided a gross replacement rate of roughly 65 per cent for an average worker in the pre-reform system (Ministry of Health and Social Affairs, 1994). Thus, the pre-reform system was quite generous: the average replacement rate in the OECD is roughly 57 per cent (OECD, 2005).

The FP and ATP benefits were financed primarily through payroll taxes levied on the employer. Payroll taxes for the FP and ATP systems were 5.86 per cent and 13 per cent respectively in 1997, and the financing of the FP benefit was supplemented by general tax revenues. Although pension rights were earned only up to a ceiling, the payroll tax was levied on all earnings. The system was PAYG with partial funding. When the earnings-related system was first introduced (in 1960), the contribution rate was set so that the system would build up a surplus to act as a buffer against cyclical shifts in contributions and offset the expected decrease in private saving following the introduction of a universal earnings-related scheme. The surplus was funded in a set of buffer funds (AP funds). By the time of the 1998 reform, the amount in the buffer funds was equal to approximately 5 years' worth of benefits. The majority of these reserves (85 per cent) had been invested in low-risk assets—mainly government and housing bonds.

The second pillar consists of occupational plans that build on collective-bargaining agreements between the labour-market organizations. Four types of plan are included—for national government workers; for local government workers; for white-collar workers; and for blue-collar workers—and they cover a majority of workers (90 per cent). In general the plans provide an additional 10 per cent in income replacement and, with the exception of the plan for blue-collar workers, the occupational plans also have provisions to cover earnings above the ceiling.

(ii) Trend towards Earlier Retirement

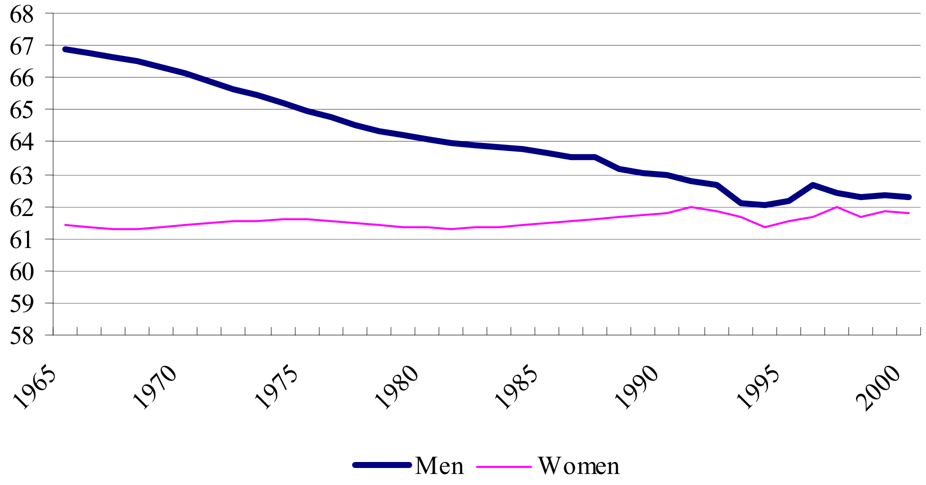
When the earnings-related system was introduced in 1960, the normal retirement age was 67. However, several of the occupational schemes had a normal retirement age of 65 and paid full benefits until benefits could be drawn from the public scheme. In the 1970s, several options to draw benefits early were introduced in the public scheme. In 1976, the normal retirement was lowered to 65. Benefits could be withdrawn early from age 60 with an actuarial adjustment or postponed until age 70. A partial retirement benefit allowed older workers to reduce the number of hours worked and receive a benefit in place of lost earnings from the age of 60. Furthermore, disability insurance was increasingly used as a pathway to early retirement and, until the time of the pension reform, disability benefits could be awarded for labour-market reasons only. Because benefits in the public scheme were determined by a relatively short time period, early retirement resulted in only small reductions in old-age benefits for many groups (Palme and Svensson, 1999).

As result, actual retirement age has been decreasing over time and was at the time of the reform around age 62 for men. For women, on the other hand, retirement age has increased slightly (Figure 2). One reason is that women entered the labour market during this time period and, in order to qualify for benefits, increased their number of years in the work-force.

(iii) The Need for Reform

In the mid-1980s, actuarial projections began to show that the Swedish public pension system would face considerable financial shortfalls in the future. Several factors contributed to the troubles: the system was sensitive to economic growth, and slowing productivity together with an aging population and the maturity of the system put increasing pressures on the scheme. At the time of the reform,

Figure 2
Retirement Age in the Swedish Pension System



Source: National Social Insurance Board.

projections showed that, with a future real wage growth of 1.5 per cent, increasing longevity, and unchanged contribution rates, the buffer funds would be exhausted sometime between 2010 and 2015, and, in order to maintain financial stability, total contribution rates would have to be increased to about 24 per cent by 2015 (from 18.86 per cent at the time of the reform) and continue to increase subsequently (to 30 per cent in 2025). In fact, projections showed that the system would only be sustainable at future real wage growth of 2 per cent; at this growth rate 50 per cent of men and 20 per cent of women would have earnings above the income ceiling (Ministry of Health and Social Affairs, 1994). But the Swedish public pension scheme also had design flaws that resulted in an unsystematic and inequitable distribution of benefits.

The challenges facing the system can be summarized in the following points.

- *Sensitive to changes in economic growth.* Both pension benefits and earned pension rights were indexed to follow prices rather than wages. The absence of a link between benefits and real wage growth of the working population made the system sensitive to changes in productivity growth. In the years leading up to the reform Sweden experienced low or negative economic growth, so earned pension rights and benefits rose faster than wages and contributions.

- *Sensitive to demographic change.* Similar to other industrialized countries, Sweden is experiencing an aging population. As a result, the number of individuals aged 20–64 relative to the number of individuals aged 65 and older will decrease from 3.2 in the early 1990s to 2.4 in 2025. The absence of a link to the labour-force meant that the pension system was exposed to the risk of a declining labour-force.

- *Principle of compensation for loss of income had eroded.* Only income up to a ceiling counted towards pension rights. Because the ceiling was indexed to follow consumer prices, real wage growth meant that successively larger proportions of the population earned wages above the ceiling, eroding the ATP system as a source of income replacement.

- *Unsystematic and inequitable distribution of contributions and benefits.* The connection between contributions and benefits was weak. Contributions were paid on all earnings from age 16 until retirement, while benefits were only based on the 15 years with highest earnings. Thus, the formula redistributed income from those with long working lives and a flat life-cycle income (typically low-income workers) to those with shorter work histories and rising earnings profiles (typically high-income workers).

- *Labour-market distortions.* The combination of the benefit formula and the fact that contributions were paid on all earnings meant that reducing labour-force participation did not necessarily translate into lower pension benefits.

- *Weak incentives to save.* A PAYG system may reduce national saving, although this is an empirical question. Studies for Sweden (Ståhlberg, 1988) suggest that the pension system has had a negative effect on the saving rate, even though the system is partially funded.

Thus, reform was prompted by a combination of problems. The driving force behind the reform was, nevertheless, the threat that the pre-reform system could not be financed in the future. In addition, the vulnerability in the financing of the system and the need for reform was emphasized in the early 1990s when Sweden went into a deep recession.

Reform discussions had, however, started already in the mid-1980s, when the government had appointed a commission to study the pension system. The commission completed its report in 1990 and concluded that the Swedish pension system faced serious financial difficulties, but could not agree on a reform proposal. Instead, it proposed to keep the framework unchanged and solve the long-term deficit by indexing the system to economic growth, and increasing the normal retirement age and the number of years required for a full pension.

In the elections in 1991, the Social Democratic party was defeated and replaced by a four-party liberal/conservative government. Pension reform became a top priority, and the new government appointed a parliamentary group with representatives of all seven parties then in the Parliament.[4] Because of the severity of the problem, the gradualist changes suggested by the previous pension commission were rejected. Instead, the consensus was that a complete overhaul of the system was necessary to create a robust and politically stable system. The conservative parties argued for a funded and privatized system but this was rejected by the Social Democrats, who strongly argued to keep the system public and a PAYG system. Because an important goal of the reform process was to design a system that all parties could support, the groups faced strong pressures to find a compromise that had broad support. The non-socialist parties were also under pressure to avoid an argument over pension reform that could threaten the stability of the government.

In the end, the result was a compromise including both PAYG and DC elements, rather than a defined benefit (DB) plan. A DC plan was favoured because it made it possible to create a strong link between contributions and benefits, and also ensure a contribution rate that would remain unchanged in the future. Overall payroll taxes are high in Sweden and the common view was that it was not possible to introduce a system in which the contribution rate would increase in the future. The new system also included a small component of funded individual accounts. Though the Social Democrats initially were opposed to these, they were finally adopted in exchange for keeping unchanged the scale of the public system. The conservatives had argued for a decreased role of the public system but accepted a contribution rate of 18.5 per cent if individual accounts were added to the system. The reform proposal was passed ‘in principle’ by Parliament in 1994. The details of the system were worked out during the next 4 years and the final legislation was passed in June 1998. The result was an NDC plan, a DC plan funded on a PAYG basis, combined with a funded individual account component.

III. HOW DOES THE PENSION SYSTEM WORK?

The earnings-related scheme in the new public pension system consists of two components: the NDC plan and the Premium Pension plan (funded individual accounts). The total mandatory contribution rate is 18.5 per cent of earnings: 16 per cent is credited to the NDC, and 2.5 per cent to the

[4] The group, which was headed by the Minister for Social Policy, was organized along rather unconventional lines for a Swedish commission. Membership was confined to the parliamentary political parties; no representatives of labour-market organizations or retired peoples’ associations were included. Although the labour-market organizations were not included in the group, a ‘reference group’ consisting of the unions was continuously briefed on the progress of the group.

Premium Pension. Contributions are split equally between employees and employers; employee contributions are limited by a ceiling, while the employer's share is levied on all earnings.[5]

Individuals earn pension rights from labour income, benefits from unemployment insurance, and other social insurance programmes, as well as from years spent at home taking care of children, time in military service, and in education.[6]

The transition to the new system will take place over 16 years. The first cohort to participate in the system is the group born in 1938; it will receive one-fifth of its benefit from the new system and four-fifths from the old system. Each cohort thereafter will then increase its participation in the new system by 1/20, so that those born in 1944 will receive half of their benefits from the new system and half from the old system.[7] Those born in 1954 or later will participate only in the new system. It is not until the year 2040 that benefits will be paid completely from the new system. This means that in 2015, soon after the baby-boom generation has begun to retire, a large share of benefits will still be paid from the old system, even though new retirees will get most of their benefits under the new system.

(i) The Principles of the NDC System

The key component of the new pension system is the NDC.[8] Contributions are recorded in workers' individual accounts and the account values there represent individuals' claims on future pension benefits. But contrary to a conventional funded DC scheme, annual contributions to the NDC plan are used to finance current pension benefit obligations, as in any PAYG system. Hence, the individual accounts are notional.

The account balance grows with annual contributions and the rate of return on the account. In order to link earned pension rights to the earnings of the working population, the rate of return is set equal to per capita real wage growth. The choice of how the rate of return on the individual accounts should be determined was a sticking point in the reform discussions. Initially, the policy-makers considered using the change in the total wage bill as the measure of the rate of return, to ensure the system's financial stability. However, a competing goal of the reform was to ensure that earned pension rights and benefits followed the growth in average wages for the working population, so that workers' relative income had the same effect on their pension income irrespective of when they earned it during their lifetimes. It was deemed that these goals were best achieved by using per capita wage growth. To ensure financial stability, the policy-makers added an automatic mechanism that abandons indexation by average wage growth when the stability of the system is threatened (see section III(ii) below).

Under the NDC, retirement ages are flexible and benefits can be withdrawn from age 61. At retirement, annual benefits are calculated by dividing the balance in the notional account by an annuity divisor. The divisor is determined by average life expectancy at retirement for a given cohort at age 65, and an imputed real rate of return of 1.6 per cent (the expected long-term real growth rate of the economy assumed by the reformers). Since the annual pension benefit is equal to the net present value of benefits using a real interest rate of 1.6, the initial benefit at retirement is higher than if benefits were adjusted fully for economic growth each year (as long as growth rates exceed 1.6 per cent). The rationale was to provide a relatively high initial benefit, rather than having an increasing benefit profile after retirement. The divisor is the same for men and women, which implies that a unisex mortality table is used. It is fixed at age 65 and no adjustments are made for cohort changes in life expectancy after age 65. Benefits will also be adjusted each year for inflation. Since the initial benefit calculation already includes an implicit rate of return (1.6 per cent), the post-retirement indexation takes account of this growth norm. For

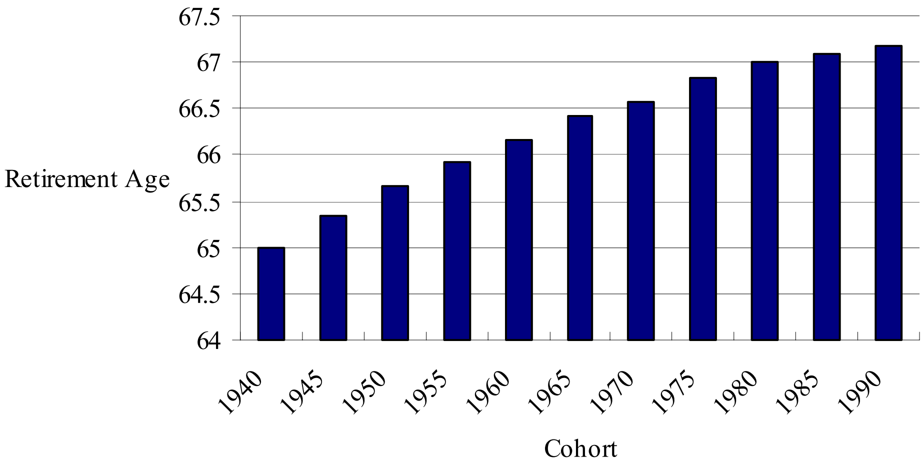
[5] The ceiling is approximately 1½ times the average wage.

[6] Credits for child rearing are earned until a child is 4 years old.

[7] Although individuals born in the late 1940s and early 1950s will get 50 per cent or more of their pension benefits from the new system, many of their decisions about labour supply (these cohorts have already been in the work-force for 20 years or more) and savings were made under the old system. In part for this reason, the pension rights for the transition cohorts earned in the old system until 1994 are guaranteed in the event their benefits in the new system are lower.

[8] For an overview of NDC plans see Holzmann and Palmer (2006).

Figure 3
Required Retirement Age to Neutralize the Effect of Increases in Life Expectancy



Source: The Swedish Pension System Annual Report (2004).

example, if real wage growth is 2 per cent and consumer prices change by 1 per cent, benefits will be adjusted by 1.4 per cent (inflation plus the difference between real wage growth and the growth norm of 1.6). On the other hand, if real wage growth falls below the norm, benefits will be adjusted by less than inflation. Over a worker's lifetime this type of indexation gives the same result as regular wage indexation (Palmer, 2002).[9]

The new system encourages labour supply by linking benefits to lifetime contributions: up to the income ceiling additional earnings translate into higher benefits. Furthermore, the automatic adjustment of benefits in response to changes in life expectancy implies that workers need to postpone their retirement to achieve the same replacement rate as earlier cohorts. For example, with current projections the annuity divisor for the cohort born in 1940 is 15.7, compared to 17.9 for the cohort born in 1980. Thus, those born in 1980 need to postpone retirement a full 2 years, compared to those born in 1940 who retire at age 65, to neutralize the effect of increased life expectancy (see Figure 3).

(ii) Financial Stability

One of the most important objectives of the pension reform was to design a pension system that would be financially stable, even if the system faced adverse demographic and economic developments. On the other hand, the system is still a PAYG system; the government must cover its pension payments from annual contributions. Increasing the contribution rate is not a viable option in the NDC framework, since higher payments automatically boost benefit promises. It is also important to keep in mind that the reform in and of itself does not solve the financial pressures associated with the retirement of the large baby-boom generation. Therefore, the introduction of an automatic balancing mechanism and the buffer funds are crucial for the system's financial stability.

Automatic balancing

Because the system is still a PAYG system it remains sensitive to demographic change. In particular, two features in the design of the system could introduce financial instability: the indexation of benefits to average wage growth rather than to the growth in the wage sum, and the use of fixed divisors in annuity calculations. The system's financial balance is also a function of work-earnings and payment profiles.

Earned pension rights and current benefits rise with the growth in the level of per capita earnings. Contributions, on the other hand, are determined by the growth in the total wage bill, which makes the system sensitive to demographic shocks. For

[9] Survivor benefits are provided for outside of the pension system and are temporary.

example, a fall in the size of the work-force means that average wages would grow faster than the wage bill and, in turn, total benefits would grow faster than the contributions financing them. This could introduce financial instability.

Another reason why financial imbalance can occur has to do with how the annuity divisor in the NDC is calculated. The annuity for a cohort when it reaches 65 is calculated using cross-section estimates of cohort life expectancy based on actual longevity in the immediate past, rather than on a projection of that cohort's life expectancy. The divisors are fixed and not adjusted to take into account changes in longevity *ex post*. If it turns out that actual longevity for a given cohort is longer than was used to calculate the divisor, total benefit payments for the cohort will exceed their total contributions.

To deal with these two sources of financial instability, the Swedish reform introduced an automatic balancing mechanism. Whenever automatic balancing must be applied, per capita wage indexation of earned pension rights and current benefits is reduced to bring the system back in balance. As indicated by its name, the mechanism works automatically and does not require any explicit action by politicians. An important aspect of the pension reform was that the pension system should be autonomous from discretionary changes, so as to minimize the risk of manipulation for political gain.

The automatic balancing mechanism requires that a measure of financial stability can be calculated. Prior to the reform, the National Social Insurance Board undertook traditional projections of the system in order to set the contribution rate. The new pension system has provisions for the type of financial information that must be reported, including an income statement as well as a balance sheet for the system.

The financial status of the system is summarized by the *balance ratio*. The balance ratio relates the pension system's assets to its liabilities:

balance ratio = (capitalized value of contributions + buffer funds) / pension liability.

System 'assets' consist of the capitalized value of contributions and the current value of the buffer funds. The capitalized value of contributions is equal to the pension benefits that the annual contributions could finance in the long run. It is derived by multiplying annual contributions by the turnover duration, which is the expected average time between when a contribution is made to the system and when the benefit payment based on that contribution is made.[10] The current turnover duration is approximately 32 years (National Social Insurance Agency, 2005*a*). The pension liability is the system's current vested liability.[11] A balance ratio of one means that the NDC system is in financial balance (i.e. assets and liabilities are equal). When the balance ratio is below one, the system is in imbalance and liabilities exceed assets. If the balance ratio exceeds one, the system has an accumulated surplus. Table 1 shows the financial balance of the NDC for the period 2001–4.

The automatic balancing mechanism is activated as soon as the balance ratio falls below one and the indexation of earned pension rights and current benefits will be less than average wage growth. [12] Changes in average real wage growth are measured by the *income index*. When the automatic balancing mechanism is activated, the income index is adjusted downwards by multiplying it by the balance ratio, thus reducing indexation. For example, if the balance ratio falls to 0.99 at the same time as the income index increases from 100 to 104, earned pension rights would increase by 3 per cent instead of 4 per cent. Taking account of the 1.6 growth norm, current benefits would increase by 1.4 per cent instead of 2.4 per cent.

Currently, the balance ratio is close to 1. Projections over the 75-year horizon shows that, with 2 per cent real wage growth and current demographic projections, the balance ratio will remain close to 1 during the next 15 years with a few short periods with automatic balancing. As the baby-boom generation

[10] The inverse of the turnover duration is the discount rate of the flow of contributions. For a detailed discussion of the valuation of assets see Settergren and Mikula (2005).

[11] The calculation of the balance ratio involves only current values and no projections are made for assets and liabilities. Traditional projections of the financial status of the pension system are presented in an appendix to the annual report.

[12] To smooth out the effects of temporary downturns, a 3-year moving average is used in the calculation of the balance ratio.

Table 1
Assets and Liabilities NDC 2001–4 (billions of Swedish kronor)

	2004	2003	2002	2001
Contribution asset	5,607	5,465	5,293	5,085
Buffer funds	646	577	488	565
Total assets	6,253	6,042	5,780	5,650
Pension liability	6,244	5,984	5,729	5,432
Assets – liabilities	9	58	52	218
Balance ratio	1.0014	1.0097	1.0090	1.0402

Note: 1 euro = 9 Swedish kronor.
Source: The Swedish Pension System Annual Report (2004).

moves through the system, the financial status will be strengthened after 2020 (National Social Insurance Agency, 2005*a*).

The buffer funds
The buffer funds are an integral component of the NDC scheme but also played an important role in the implementation of the new pension system. In the short term, these funds were used to alleviate pressures on the general budget owing to the reform. In connection with the reform, two programmes (disability insurance and survivor benefits) were detached from the old-age system and transferred to the general budget. To help offset the increased financial burden on the general budget, funds were transferred to the general budget from the buffer funds in 1999, 2000, and 2001. The amount was equal to a one-time transfer of about one-third of the balance in the funds.[13]

In the long run, the buffer funds will act as a 'demographic' buffer and cover projected deficits in benefit financing when the large baby-boom generation starts to retire. Thus, although the pension reform creates a pension system that is financially stable in the long run, the reform does not solve the entire problem of the baby-boom retirement.

Owing to the importance of the buffer funds for the financial stability of the system, the governance and investment rules of the funds have been re-evaluated. In the past, the Swedish buffer funds have been criticized for sacrificing returns in order to achieve political goals, in particular subsidizing housing. Accordingly, the new investment rules require that investments are made on risk-and-return considerations, so economically targeted investments are not allowed. The guidelines also allow a larger share to be invested in equities (up to 70 per cent of the portfolio) and international assets (up to 40 per cent of the portfolio may be exposed to currency risk). Members of the investment boards are appointed by the government and selected on the basis of financial competence.

(iii) The Minimum Guarantee

An important objective of the public pension scheme in Sweden has always been to provide adequate retirement income for all citizens. The new pension system, therefore, provides a basic guaranteed benefit to ensure a minimum standard of living in retirement for individuals with no or low earnings-related benefits. In addition low-income retirees receive a means-tested housing supplement.

This guaranteed benefit is means tested and offset by the income from the NDC component; it is financed by general tax revenues and in that way it is conceptually separated from the earnings-related scheme.[14] It is payable from age 65 and the benefit is worth approximately 35 per cent of the average

[13] Currently the buffer funds amount to about three times the annual benefit payments.
[14] After the reform, the system for earnings-related benefits became a separate system—schemes such as disability insurance that had previously been a part of the pension system were transferred outside. The calculations of disability benefits were changed and linked more closely to the scheme for sickness benefits.

wage of a blue-collar worker. In contrast to the earnings-related scheme, the guaranteed benefit is indexed to prices. Currently, approximately 30 per cent of retirees collect at least some pension income from the guaranteed benefit, typically women with low prior labour-force attachment.

The role of the guaranteed benefit in the new pension system is likely to be reduced over time. Because Swedish women today participate in the labour-force almost to the same extent as men, the need to provide a top-up benefit for this group will decrease as they approach retirement. The dependence on the guaranteed benefit will further decrease because contributions are paid on almost all types of income—earnings, disability benefits, parental benefits, unemployment benefits, etc.—and the system provides child-care credits for parents who stay at home and take care of children under the age of four. Thus, very few groups are expected to lack earnings-related benefits in the future.

This motivates the choice to index the guaranteed benefit to prices rather than wages. Real wage growth will reduce the share of the guaranteed benefit in total retirement income over time; on the other hand, few retirees should receive the guaranteed benefit in the future.

(iv) The Individual Account—the Premium Pension

The introduction of mandatory individual accounts in the Swedish pension system was contentious but eventually became part of the compromise. A motivation for the introduction was to allow participants to take account of the higher return in the capital markets as well as to tailor part of their pension to their risk preferences. The NDC component can be likened to a bond and allowing equity investments meant that participants could diversify their portfolios and thereby yield a higher retirement benefit.

The Premium Pension constitutes a relatively small portion of the new system: of the total contribution rate of 18.5 per cent, 2.5 percentage points go to the individual accounts. A new government agency, the Premium Pension Agency (PPM), has been established to administer the plan and acts as a clearing house. The clearing-house model was chosen to keep administrative costs down by drawing on economies of scale in administration.

Contributions are withheld by employers and submitted to the National Tax Authority. Swedish employers make monthly tax and contribution payments, but they report information on individual earnings on an annual basis. For this reason, individual pension rights cannot be established until each worker has filed his or her income tax returns and these reports have been consolidated with employers' reports, a process which takes an average of 18 months. Until pension rights have been established, pension contributions are placed on an interim basis in a government bond fund at the National Debt Office. When individual pension rights have been determined, participants select how to invest their funds. Contributions are invested by the PPM in lump sums; fund companies only know the total investment of pension contributions, not who the individual investors are. The PPM keeps all records of the individual accounts and fund share values. Individuals are allowed to change funds on a daily basis, and all such transactions are aggregated by the PPM, which then transmits them as a net purchase to each fund.

The funds

Policy-makers decided to offer investors a broad choice in the Premium Pension, so any fund company licensed to do business in Sweden is allowed to participate in the system. Fund companies seeking to participate must sign a contract with the PPM that governs reporting requirements and the fee structure. The total fee in the Premium Pension consists of two parts: a money management fee and a fixed administrative fee charged by the PPM. Fund managers charge the same fee for participants in the pension system as they do in private savings markets. Because the administration of the accounts is handled by the PPM, the actual costs for fund managers should be lower and they must rebate to the PPM a share of the fees, which the PPM then passes on to participants. In 2004, the average fund fee after the rebate was 0.43 per cent of assets.[15] The fixed administrative fee charged by the PPM is

[15] The default fund is included in this calculation. The average rebate was 0.37 per cent of assets.

0.3 per cent of assets resulting in a total cost of 0.73 per cent of assets for an average participant.[16]

In 2000, at the time of the first investment selections, approximately 460 funds were registered with the PPM.[17] Currently, roughly 700 funds participate in the system. The majority (more than 70 per cent) of funds are equity funds and about half of the funds invest primarily in international equities. A large number of funds specialize in one type of asset, such as IT funds, while few funds are designed with retirement savings in mind. For example, only 4 per cent of the available funds are life-cycle funds. Instead, participants are expected to put together a diversified portfolio suitable for retirement savings on their own.

The government also established two additional funds: one a default fund for participants who did not choose, and a second for participants who wanted to make an active choice but also wanted the government involved in the management. In initial discussions, reformers had suggested that the default should be a low-risk fund mostly invested in interest-earning assets. Yet, policy-makers were concerned that such a strategy would have a negative effect on the distribution of benefits, because low-income workers would be more likely to invest in the default.

Currently the default fund seeks to achieve a high long-run rate of return at an overall low risk level.[18] The fund follows a fixed allocation of stocks and bonds where equity holdings cannot exceed 90 per cent of the total value and may not fall below 80 per cent; of these, a maximum of 75 per cent can be invested in foreign stocks. The second fund can invest 100 per cent in equities, while the default must hold a minimum in interest-earning assets. Currently, the default fund holds 65 per cent of its assets in international equities and 17 per cent in Swedish equities. In the portfolio, 60 per cent of all assets are managed passively. The money management fee for the default fund is quite low: in 2003, the gross fee was 0.5 per cent, and only 0.16 per cent after the PPM rebate. Participants in the Premium Pension may choose up to five funds. A participant who makes an active investment choice may not invest any share of the portfolio in the default fund or shift to the default at a later date.[19]

Benefits in the Premium Pension plan can be withdrawn from age 61 and annuitization is mandatory. The PPM is the sole provider of annuities, and participants can choose between a fixed or variable annuity. The level of the annuity is based on standard insurance practices, and the PPM uses unisex life tables of persons in the age cohort from the year the calculation is made.[20]

Investment behaviour

The first investment election in the Premium Pension took place during the fall of 2000.[21] The objective was to induce as many participants as possible to make an active choice, and the Premium Pension Agency launched a large advertisement campaign to encourage participants to select their own portfolios. In addition to the PPM, private fund managers also put significant resources into advertisement campaigns to attract investors.

The number of investment options in the Swedish plan vastly exceeds what is available in other countries that have introduced individual accounts or in 401(k) plans in the United States.[22] Psychologists and economists in general believe that more choice

[16] The administrative cost is relatively high compared to, for example, the Thrift Savings Plan in the United States, which has expense ratios of less than 0.1 per cent of assets.

[17] Each fund manager is allowed to register a maximum of 15 funds.

[18] The 5-year return should be in the top quartile of the returns for all funds.

[19] The reason for this rule was that the centre-right parties wanted to limit the government's involvement in money management.

[20] The Premium Pension provides a voluntary survivor benefit. If a survivor benefit is chosen and the individual dies before retirement (during the accumulation phase), the survivor benefit pays a fixed amount for 5 years. If the individual dies after retirement, the survivor benefit will be paid as a lifelong annuity to the surviving spouse.

[21] In preparation for the new system, the government began collecting contributions for the funded individual accounts in 1995 and held the money in an interest-bearing government account at the National Debt office until the year 2000. According to the original timetable for the reform, the elections should have taken place in 1999 but were delayed owing to implementation problems with the computer systems handling the administration.

[22] In 1978, section 401(k) of the US Internal Revenue Code authorized the use of a new type of DC plan that allows the employee to make pre-tax contributions to the plan. Since then, 401(k) plans have become the most common employer-sponsored pension plan.

is better but recent research in both fields challenges this view by showing that a large number of options can in fact be demotivating.[23]

Initially, 68 per cent of participants chose their portfolios but in the second elections in 2001, that share had decreased dramatically to less than 20 per cent (Engström and Westerberg, 2003; Sundén, 2004). In the most recent elections in 2005, less than 10 per cent of participants made an active choice.

One explanation could be that the new entrants after 2000 are mostly young workers entering the labour market who are far from retirement. However, close to 60 per cent of participants in the same age group chose their own portfolio in the first investment elections in 2000. A more likely explanation for the downward trend is that the Premium Pension received much less attention in more recent enrolment periods, and that selecting a portfolio among almost 700 funds is just too difficult. The PPM provided information to new participants but decreased advertising dramatically, as did private fund managers compared to the initial elections. Furthermore, the default fund has performed better than the average portfolio. The initial investment selections in 2000 coincided with the peak of the run-up in the stock market and, in the year following the first investments, the stock market tumbled. The default fund is also considerably cheaper than other funds—the fund fee for the default fund is 0.16 per cent while the average fund fee for participants who made an active choice was 0.55 per cent.

Among participants who made an active investment choice in 2000, the average number of funds selected was 3.4. However, almost one-third of participants chose five funds, the maximum allowed. Experience with investing has shown that participants often fall back on simple rules of thumb. One such rule is the $1/n$ heuristic which means that participants divide their contributions equally among the available investment options (Benartzi and Thaler, 2001). The results indicate that a significant share of the Swedish participants appear to follow this type of rule by choosing five funds. A consequence of the $1/n$ heuristic is that participants tend to invest too much in equities when the number of choices increases. In Sweden, most participants invest in equities: the average participant invested 70 per cent of the portfolio in equity funds, and the equity share increases with the number of funds chosen (Sundén, 2004). Among participants who chose only one fund, more than half invested in a life-cycle fund. Thus, although most participants invested in more than two funds, the overall portfolios are clearly undiversified. Participants also exhibited 'home bias'—almost half of the portfolios were invested in Swedish stocks.

IV. WHAT DOES THE PENSION SYSTEM MEAN FOR BENEFICIARIES?

The reform completely changed the structure of the pension scheme and has implications for beneficiaries in several ways.

(i) Benefits

The new pension system creates a close link between contributions and benefits. However, replacement rates are likely to be lower in the new system compared to the old: the number of years that determines benefits has increased and the retirement age is going up as life expectancy is increasing. On the other hand, a comparison between the two systems must consider that the old system was not financially sustainable, requiring either reduced benefits or increased contributions. The comparison of replacement rates is also made difficult by the shift from a DB to an NDC plan. Because benefits are not defined but depend on contributions and the rate of return on contributions, it is difficult to express the expected benefits in terms of a replacement rate.[24] In order for participants to make decisions about how much to work

[23] See, for example, Lowenstein (1999) and Iyengar and Lepper (2000). Furthermore, making investment decisions is complicated, and many individuals have limited financial experience. As a result, they are likely to make mistakes, as shown by the experiences with 401(k) plans in the United States (Munnell and Sundén, 2004).

[24] One way to compare replacement rates between the systems would be to calculate actual benefits under the old and new rules for the cohorts currently retiring. This group will receive benefits from both the old and the new systems and, using their earnings histories, it would be possible to calculate replacement rates for the two systems. The analysis is beyond the scope of this paper.

and save, it is therefore important to understand how benefits are determined and how this has changed compared to the pre-reform system.

For workers in the lower half of the wage distribution, the link between contributions and benefits is blurred because the guarantee pension is offset by the benefit from the NDC. For these low-wage individuals, additional work does not necessarily increase pension benefits. The choice of retirement age is also less flexible for the group which is dependent on the guarantee pension, since that benefit is only payable from age 65. But a high-guarantee pension was important to ensure income security for individuals with no or low earnings.

The choice to index the system to the change in average wages supplemented by an automatic balancing mechanism has implications for the distribution of benefits between cohorts. The activation of the automatic balancing mechanism reduces the indexation of earned pension rights and current benefits by the same amount. Participants at the beginning of their careers have longer horizons to recoup the loss in benefits compared to retirees who have started to collect their benefits. The expected size of this type of redistribution has not yet been fully examined, but some cohorts are likely to bear a larger share of the burden and may as a result demand to be compensated.

(ii) Incentives to Work

In order to provide work incentives, an additional year's work translates into higher benefits and the retirement age under the new pension system is flexible. Furthermore, the Swedish system does not have an age limit for covered earnings: that is, participants earn pension credits for as long as they work. For example, a worker could start collecting benefits and then return to work and continue earning pension credits. However, labour-market legislation makes it difficult for workers to continue working past the age of 67. At the time of the reform, labour laws covered workers until the age of 65 and the nature of labour legislation in Sweden is such that employers are unwilling to continue employing workers after this age. Workers are also unwilling to continue working past this age because they no longer enjoy the same protections as other workers and are not covered by unemployment and sickness insurance. In response to the pension reform, the age limit in labour legislation was increased to 67, but workers are still not covered by sickness and unemployment insurance after the age of 65.

Currently, most workers in Sweden exit the labour market much earlier than age 67—the average retirement age is approximately 62 (National Social Insurance Board, 2000). Several of the occupational schemes provide early retirement incentives, and disability insurance is frequently used as a path to retirement (Palme and Svensson, 1999). However, as health improves and life expectancy continues to increase, the relationship between the age stipulated by the pension system and labour legislation may have to be revisited.

(iii) The Premium Pension System

The individual-account component allows participants to diversify their pension portfolio by investing part of the contributions in capital markets. The self-directed accounts shift the risk and responsibility for investing to the worker; the extent to which the system has positive effects on retirement benefits will depend on participants' ability to make rational investment decisions.

The reformers initially encouraged participants to make active choices. As a result, more than two-thirds of participants chose to put together their own portfolios. Making investment decisions is complicated and results from the first few years with Premium Pension show that workers are making similar mistakes to those documented in other individual-account systems (Sundén, 2004). As a result, groups of workers may experience systematically poor outcomes in the Premium Pension and, for many participants, the default fund may have been a better alternative than an active investment strategy. In later enrolment periods the PPM has taken a more passive role and limited its communication to providing information about the funds' risks and fees. The objective is to improve the public's financial knowledge so that participants can make good investment decisions. The question is whether this strategy will be successful. Experience with financial education programmes from the United States shows some positive effects but, overall, the results indicate that it is difficult to improve financial knowledge. Information and education are clearly important components of the Premium Pension but the experience with encouraging active choice illustrates how imperfect consumer information can lead to inefficient outcomes.

The individual-account component was set up to offer a wide investment choice. The intention was to allow participants the choice of both assets and fund managers. But contrary to intentions, the large supply of funds has had an immobilizing effect. Participants' interest in choosing their portfolios in the Premium Pension has decreased considerably since its inception. In the 2005 enrolment period, fewer than 10 per cent of new participants chose how to invest their portfolios. The experience with the Swedish Premium Pension makes clear the importance of carefully considering the number of funds in the system as well as the design of the default fund.

A system with broad choice is also associated with high costs. The clearing-house model has been successful in keeping costs down and the fixed administrative fee for the PPM is at 0.3 per cent of assets. However, money management is associated with large economies of scale and most funds in the system are considerably more expensive than the default fund or funds managed by institutional investors. The projected costs in the system are estimated to reduce pension benefits by 11 per cent for a participant aged 25 today. A system with fewer investment options, that takes advantage of the economies of scale in money management, could reduce costs considerably.

(iv) Information and Education

The new system puts more of the risk and responsibility on individuals to plan for retirement—so providing information to participants has been a crucial component in the implementation of the reform and continues to be so.

A broad information campaign was launched to educate participants about the new system in 1998. The campaign included a detailed brochure that described the new pension system; public-service announcements on radio and television and in newspapers; seminars that discussed the new pension system; and a website. During the campaign, participants also received their first annual account statement for the pension scheme, the 'orange envelope'. This orange envelope is sent out annually and includes account information as well as a projection of benefits for the NDC and for the Premium Pension. Following the initial campaign, the periodic mailing remains the primary source of information to participants about the pension scheme. In addition to providing information about expected benefits, the orange envelope summarizes how the new pension system works and promotes the main message that lifetime earnings determine benefits. For the individual account component, the PPM also sends out annual information on fund choices, investment risk, and fees, and the agency has its own website where participants can review and manage their accounts.

Results from surveys of the information and education initiative in Sweden indicate only limited success in increasing knowledge about the new system so far. For example, less than 40 per cent indicated that they had a good understanding of the new system. Many participants are still unaware of the key principles for how benefits are determined and the notion that the individual-account component is more important for retirement income than the NDC benefit seems to be widespread (National Social Insurance Agency, 2005*b*). It is important to remember that the system has only been in effect for just over 5 years. At the same time, participants also report that they need more information. But given the amount of information currently available, more information is probably not the solution. A challenge for the Nation Social Insurance Agency is to consider alternative ways of communicating with participants.

V. CONCLUSION AND OUTLOOK FOR THE FUTURE

The Swedish public pension reform took almost a decade. The reform was motivated by the sensitivity of the old pension system to economic growth coupled with the pressures of population aging. One of the most important objectives of the Swedish pension reform was to design a pension system that would be financially stable over time, even when faced with adverse demographic and economic developments. The new system also seeks to provide increased work incentives and give participants the possibility of controlling some of their pension funds. This combination of characteristics likely contributes to the system's appeal to other countries.

The Swedish policy-makers recognized that pension systems are dynamic institutions and must adjust to changing demographic and economic circumstances. They also recognized that it may be politically difficult to make the necessary adjustments or that governments may want to manipulate the pension system for political gain. They therefore 'tied their hands' by introducing a set of automatic adjustments to help insulate the system from political risk and contribute to maintaining its stability.

The automatic balancing mechanism adjusts benefits immediately when the system slips into financial imbalance. The activation of the mechanism does not distinguish the financial imbalances caused by temporary downturns from those caused by more serious economic and demographic developments. Thus, it is possible for the automatic balancing to be triggered unnecessarily. In terms of benefit levels, the effects of such an event would be small, but it could have an impact on the political stability of the system. When the automatic balancing mechanism was introduced, it was described as an 'emergency brake' that would only be used rarely and only in situations when the system was in crisis. Thus, if automatic balancing occurs it is likely to signal to the public that the system is in crisis and that people's benefits are threatened. A better strategy might have been to characterize the automatic balancing mechanism as a regular component of the indexation of earned pension rights and benefits. In general, benefits will grow with average earnings but the return can vary the same way the rate of return on capital varies. Because automatic balancing is likely to occur (the current balance ratio is 1.001), a challenge for the system will be to change the image of the automatic balancing.

An implication of the NDC design is that all adjustments to maintain stability take place on the benefit side. Increasing the contribution rate is not a viable option because it also increases the benefit promise. If the system comes under financial pressure, this design feature could lead to substantial benefit cuts which in turn could threaten retirement income security. To fill the gap, demands to increase tax-financed benefits, such as housing allowances, or other types of pensions, such as occupational plans, may arise. Furthermore, the adjustments of benefits in response to increasing life expectancy implies that individuals will have to work longer to reach a given replacement rate. It is always going to be difficult for some groups, such as those with physically demanding jobs, to extend their work lives, so these groups may end up with lower replacement rates than in a system that adjusted benefits as well as taxes (Diamond, 2002). The Swedish system provides a minimum guaranteed benefit that is well above the poverty level, which is why adjusting only benefits may be less of a problem than in countries with lower minimum benefits. For such countries, pension schemes in which adjustments take place on both the benefit and the contribution sides may be preferable.

The introduction of funded individual accounts was one area of much disagreement in the reform process. In the end, a small funded pillar with very broad investment choice was introduced. Participants were encouraged to choose their own portfolios—in fact, participants were given the impression that they gave up their opportunity to affect their pension benefits by investing in the default fund. However, the investment experiences during the first 3 years underscore the importance of a well-designed default fund. The sharp decrease after the initial elections in the share of workers making active choices illustrates that a vast number of investment alternatives, as in the Swedish system, can be immobilizing. Another topic of keen interest to countries considering the introduction of individual accounts is whether the clearing-house model will be cost-effective in the long run. Plan administration requires a well-developed infrastructure, and plan implementation has been more costly and complicated than anticipated. Finally, it is important to note that funds are not accessible before the age of 61, to ensure that they are not used for other purposes than retirement; further, annuitization is mandatory when the money is withdrawn.

Overall, the new pension system puts more responsibility on individuals to plan and prepare for retirement. The system is not perfect: it is complicated and the focus on contributions makes it difficult to predict benefits. Information and education are important components of the reform but the Swedish system could be made easier for participants. Finally, although the pension system is constructed to be financially stable, it does not solve the financial pressures associated with the retirement of the large baby-boom generation. The transition to the new system was facilitated by the fact that Sweden had accumulated large reserves in the old system in order to meet this obligation.

REFERENCES

Benartzi, S., and Thaler, R. (2001), 'Naïve Diversification Strategies in Defined Contribution Plans', *American Economic Review*, **91**, 79–99.

Diamond, P. (2002), *Social Security Reform*, Lindahl Lectures, Oxford, Oxford University Press.

Engström, S., and Westerberg, A. (2003), 'Which Individuals Make Active Investment Decisions in the New Swedish Pension System?', *Journal of Pension Economics and Finance*, **2**(November).

Holzmann, R., and Palmer, E. (eds) (2006), *Pension Reform: Issues and Prospects for Non-Financial Defined Contribution (NDC) Schemes*, Washington, DC, The World Bank.

Iygengar, S., and Lepper, M. (2000), 'When Choice Is Demotivating: Can One Desire Too Much of A Good Thing?', *Journal of Personality and Social Psychology*, **79**, 995–1006.

Lowenstein, G. (1999), 'Is More Choice Always Better?', *Social Security Brief*, Washington, DC, National Academy of Social Insurance.

Ministry of Health and Social Affairs (1994), *Reformerat Pensionssystem* (A New Pension System), Stockholm, Allmänna Förlaget.

Munnell, A. H., and Sundén, A. (2004), *Coming Up Short: The Challenge of 401(k) Plans*, Washington, DC, The Brookings Institution Press.

National Social Insurance Agency (2005*a*), *The Swedish Pension System Annual Report 2004*, Stockholm, National Social Insurance Agency.

— (2005*b*), *Survey of the Orange Envelope 1999–2005*, Stockholm, National Social Insurance Board.

National Social Insurance Board (2000), *Social Insurance in Sweden 2000*, Stockholm, National Social Insurance Board.

OECD (2005), *Pensions at a Glance—Public Policies Across OECD Countries*, Paris, Organization for Economic Cooperation and Development.

Palme, M., and Svensson, I. (1999), 'Social Security, Occupational Pensions and Retirement in Sweden', in J. Gruber and D. Wise (eds), *Social Security and Retirement around the World*, Chicago, IL, University of Chicago Press.

Palmer, E. (2002), 'Swedish Pension Reform: Its Past and Its Future', in M. Feldstein and H. Siebert (eds), *Social Security Pension Reform in Europe*, Chicago, IL, University of Chicago Press.

Settergren, O., and Mikula, B. (2005), 'The Rate of Return of Pay-As-You-Go Pension Systems—A More Exact Consumption–Loan Model of Interest', *Journal of Pension Economics and Finance*, **4**(July).

Ståhlberg, A.-C. (1988), *Pensionssystemets Inverkan på Hushållens Sparande (The Effect of the Pension System on Savings)*, Stockholm, Allmänna Förlaget.

Sundén, A. (2004), *How Do Individual Accounts Work in the Swedish Pension System*, Issue in Brief, No. 22, Boston, MA, Center for Retirement Research at Boston College, August.