

Why Sweden's pension reform was able to be successfully implemented

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Abstract

Governments that do not reform pay-as-you-go (PAYG) pension systems will eventually face a pension crisis. In a democracy, reforms require majority support. The problem is that pension reform requires today's generation to bear the burden to avoid burdening tomorrow's generation. Sweden recently passed pension legislation that specifies a gradual transition from a public defined-benefit plan to a defined contribution plan. Why was Sweden successful in reforming its pension system? We find that a political economy perspective helps to answer this question: there are more winners who would vote in favour of the reform than non-winners who would vote against it. When comparing the net effect (present value of expected benefits minus present value of remaining contributions) of the new and old systems, contributions of the working generation (age <53) are reduced by more than their expected benefits.

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1. Introduction

In a pay-as-you-go (PAYG) pension system, the working population pays for today's pensions on the understanding that the next generation will pay for their pensions. Samuelson bases his well-known theorem (1958) on this idea and demonstrates that such a social contract between generations can increase welfare (assuming that the PAYG system does not affect labour and capital supplies), which results in each generation getting more out of the system than it pays in. An unfunded pension system generates gains for the introductory generation and all succeeding generations – if and only if the wage sum's growth rate (which can be approximated by the sum of the population growth rate and the productivity growth rate) exceeds the real market return rate (Aaron 1966). But this is currently not the case in all industrialised countries. So we need an explanation as to why defined-benefit PAYG pension systems are the dominant pension systems in most countries, and this is where political economy arguments come into the picture.

Reforms that swap the defined benefits for defined contributions will be supported or rejected, depending on personal interest. In majority voting models, the median voter has the decisive vote. The principle behind these models is that the equilibrium size of the pension system is too large if voters are fully aware of the consequences of the policy (Browning 1975). After individuals have contributed to the system for some years, it is to their advantage to vote for an expansion. Contributions that have already been paid are sunk costs, and individuals who have been working for some time prefer to make higher contributions during the remainder of their working life in return for higher promised benefits. The older the voter, the stronger the incentive will be to vote for an expansion. It follows that demographics – the age structure of the

population and the age of the median voter – are important for explaining changes in pension systems. In an ageing population, the age of the median voter is rising and support for a defined-benefit, PAYG system and for system expansion grows (the median-voter effect). And the return rate in an ageing population decreases because the return rate is equal to the economic growth rate in PAYG systems (the rate-of-return effect). This makes transition to a funded system an attractive option. Still, even when the economic growth rate is below the real market rate, most will vote for PAYG systems because return rates will be higher than market rates for older persons and lower than market rates for younger persons.

When the median-voter effect dominates the rate-of-return effect, then the preferred contribution rate increases with the individual's age. When calculating the marginal cost of a higher benefit level, past contributions are sunk costs that do not affect the trade-off between marginal costs of future contributions and marginal benefits of future pension benefits. The older the median voter, the higher the contribution rate, because the contribution-payment period is relatively short compared to the length of retirement. If retirees and those close to retirement outnumber younger voters, the majority may support a PAYG pension system with an internal return rate below the market return rate. Empirical studies support this explanation of the expansion of pensions in Sweden and other industrial countries, which introduced PAYG schemes after World War II (see Breyer and Craig 1997).

Defined-benefit, PAYG pension schemes become unsustainable as populations age, because fewer and fewer workers finance growing numbers of retirees. Shifting to a funded pension system burdens present voters and favours unborn generations who

cannot vote (Browning, 1975); yet most voters may support partial transition to a funded system if the contributions of the working generation are reduced by more than their own expected pensions (Sinn and Uebelmesser, 2002). This prediction led Sinn and Uebelmesser (2002) and Uebelmesser (2004) to conclude that voters will support such a reform up until 2012 in Germany, 2014 in France, and 2006 in Italy, after which these countries will have become gerontocracies.²

Sweden recently passed pension legislation that specifies a gradual transition from the public defined-benefit pension plan to a defined contribution plan; in one part, a notional defined contribution plan and in another, much smaller part, an individually fully funded plan. This paper responds to the question: *Why was Sweden able to successfully implement its pension reform?*

According to Borg (2005), any radical reform requires that (1) the problem be put on the political agenda; (2) an alternative solution be presented; (3) the question be forced to a decision; and (4) a majority be secured. From 1984–1990, Sweden’s Parliament-appointed, pension-system review commission could not come up with an acceptable solution, but it demonstrated that the system desperately needed reform. So instead of a large group, a small parliamentary group, which represented all political parties then in Parliament, would facilitate agreement on the reform (Könberg et al. 2006). Such a group was set up in 1991 and headed by the Minister for Social Policy in the non-Socialist government. The group proposed a pension alternative that satisfied requirements of practicability and interests of particular lobby groups. By adapting pensions to current economic and demographic trends, the group solved the

² This claim ignores the economic power of the working-age population that might threaten to go on strike or even emigrate if their earnings were taxed too heavily (Breyer and Stolte 2001).

most important problem. The Swedish Trade Union Confederation supported the commission's incorporation of the life-income principle into the reform. Political decision-makers' awareness of problem scope and need for a solution drove the initiative forward. Five of the seven parties, representing 85% of the parliamentary votes, signed the agreement. A large buffer fund from the former pension system (ATP fund) would help cover the baby boomers and ease transition.

Anderson (2001) argued that class-based interest groups (employers and unions) sometimes join with reformist politicians to promote restructuring – if the reform would enhance economic performance. Employers who are organised and face high levels of social insurance contributions are likely to lobby for a redistribution of financing. And Anderson and Meyer (2003) claimed that the combination of Swedish unions' broad interests and institutionalised co-operation with the Social Democratic Party helped pass the reform. But this reasoning ignores the fact that whether contributions are paid by the employer or by the insuree has no real significance. To varying degrees, the burden of payroll taxes can be shifted from those who bear formal responsibility for payment. This burden can be shifted backward onto wage earners so that real wages are lower than they would have been. Or, payroll taxes can be shifted forward onto consumers in the form of higher prices. (For public sector employees, a forward shift in the burden of the payroll tax would mean an equivalent increase in other taxes.) In small open economies, such as the Swedish economy, payroll taxes are largely shifted backward. In this way, companies in such economies avoid being placed at a competitive disadvantage when they compete on international markets (for empirical support see Palmer and Palme, 1989). Anderson also overlooks the fact that the former Swedish pension system favoured white-collar workers over

blue-collar workers. There, the average ratio between expected lifetime benefits and contributions was higher for white-collar workers than for blue-collar workers, i.e., white-collar workers had a higher return rate on lifetime contributions than blue-collar workers (Ståhlberg 1989, 1995a). Consequently, blue-collar workers and the Swedish Trade Union Confederation would have a personal interest in voting for the new defined contribution pension.

Reform success is sometimes attributed to the political skilfulness of one or a few individuals, which in the Swedish case might well be the Minister of Social Policy and his working group of parliamentary party members. But in this paper, we show that the explanation for why the Swedish pension reform was able to be successfully implemented may lay in a political economy perspective – that the reform created more winners (who would vote for it) than non-winners.

This paper continues with a discussion of the Swedish pension reform. Section 3 describes our method and data. Section 4 presents the empirical analysis and results, and the last section discusses conclusions.

2. The Swedish pension reform

While the old system had several other problems, the public pension reform was essentially motivated by a severe long-term financing deficit, where the entire burden of adjusting to increasing costs of changing demographic and economic conditions was placed on the working population. Under the old system, contribution rates would need to be raised from 23.5% in 1990 to 28.3% (annual real wage growth 2%) or

40.3% (annual real wage growth 0%) in 2015 (SOU 1994:21, pp 48). Furthermore, under the old system, redistribution was unsystematic, and incentives to work were weak. A redistribution of income occurred – but not between higher and lower wage earners. Income accrued by persons with long working lives and weak real wage growth (often lower level white-collar and blue-collar workers) were redistributed to persons with relatively short working lives and unevenly distributed lifetime incomes (often intermediate level and senior white-collar workers whose income was under the social insurance ceiling). So while benefits under the new system might be lower than under the old system (among other things depending on future real growth), it is worth emphasising that the old system was unsustainable.³

The old public pension system consisted of two main components: a flat-rate benefit independent of previous income (national basic pension) and an earnings-related benefit (ATP). In addition, a special means-tested supplement was paid to those with low or no ATP. At the normal retirement age of 65, then, the basic pension and ATP combined made up about 60% of individuals' 15 years of highest earnings (up to a ceiling) provided that they had the (minimum) 30-year labour force participation requirement for a full pension.⁴ A payroll tax financed this system (in principle, on a PAYG basis), although general tax revenues supplemented financing of the basic flat-rate pension.

In 1998, Sweden passed pension legislation to replace the public defined-benefit scheme with a pension system based on notional defined contributions that mimic a fully funded individual scheme while remaining a PAYG scheme. Tied to this is a

³ For a more comprehensive study, see Ståhlberg (1995b).

⁴ Occupational pensions that build on collective bargaining agreements and cover practically all employees provided a further 10%–15% of final salary in income replacement.

second tier of fully funded individual benefits (the premium pension). This reformed pension system went into effect in 1999, but in the transition period, benefits will be drawn from both the old and the new systems.⁵

The contribution rate in the new system is 18.5%, split between two individual accounts: 16% of gross earnings is credited to the notional account, while 2.5% is placed in the self-directed individual account, and pension rights are credited for every year individuals have income that earns pension rights. The return rate on the notional accounts is determined by average annual wage growth. But this use of average wage growth introduces potential instability into the system. For example, if the work force decreases, growth in benefits and pension rights will outpace the growth of the contributions base from which benefits are paid. To safeguard the system from this potential instability, an automatic balancing mechanism was introduced. The mechanism reduces indexation of earned pension rights and outgoing pensions when the system faces a deficit. In the self-directed individual accounts, return rate is determined by participants' investment allocations, which the participants choose from more than 700 funds; most are equity funds. The government established a default fund for persons who elect to not select their own investments.

Retirement age is flexible, and benefits can be withdrawn from age 61. Upon retirement, annual benefits are calculated by dividing the balance in the notional account by an annuity divisor. Average life expectancy at retirement for a given cohort and an imputed 1.6% real return rate determine this divisor, which is the same

⁵ The new pension scheme is described in Ståhlberg et al. (2005).

for men and women. But the account balance in the premium pension is converted to either a fixed or a variable annuity as per standard insurance practices.

Besides earnings-related benefits, the pension system also guarantees a minimum pension. The guaranteed benefit supplements annuities from the notional and funded accounts if their sum falls short of a certain level. The guarantee is payable from age 65, and it is financed from general tax revenues.

The transitional rules cover a long period. Those born in 1937 or earlier receive their pension under the old system. Those born in 1954 or later will be paid entirely from the new system. Persons born between 1938 and 1953 will receive pension payments from both systems; the share of the pension that is derived from the old system will be largest for persons born in 1938 and smallest for those born in 1953. Pension rights are credited for every year that persons earn pension-covered income from 1960 (the first ATP year).

Sweden's pension reform eases contributor's financial burden before retirement. But as retirees, they may face lower pension benefits.

3. Data and method

To estimate expected contributions and benefits in the two systems, we chose to use the random sample of the 1995 Swedish Household Income Survey (Statistics Sweden, 1995), which comprised about 20,000 individuals ages 18–65. Because we use data from the census database, the tax authority, and the social insurance board,

non-response is 0%. Their income histories from 1960 are known (the previous pension system was implemented starting in 1960).

We then calculate the proportion of winners in the electorate, i.e., those who benefit from the reform. We repeated the calculations for selected years, before and after the actual implementation of the reform in 1999. Given that those who benefit would favour the reform, the calculations indicate what the attitude of the electorate would have been – if the reform had been implemented from 1990, 1995, 1999, 2005, or 2015. The underlying question is: do changes in population structure or economic growth affect the expected proportion of winners?

For this exercise, we needed population and income data for the years after 1995.

Population data and population projections by age and sex are from Statistics Sweden.

We simulated income for the years after 1995 using a 2% annual real earnings growth assumption. Simulated earnings rise steadily from 1995. But to avoid a low lifetime income due to a low, possibly temporary income in 1995, we used the highest annual income that was earned between 1990 and 1995 as a starting point. That is, we used the maximum of these years for individuals with income below 1 basic unit.⁶ Our procedure does not account for switching to better-paid jobs, a deficiency that might be important but mainly for young people. We examine the effects of various economic growth rates and return rates on the individual accounts in the new system and test the sensitivity of our model against some other assumptions.

⁶ The average 1990–1995 income, rather than the maximum, results in changes of about 0.01 for the proportion of winners 2005 and 2015 in Table A1. A basic unit amounted to only about 320 hours of work for a blue-collar worker in the private sector in 2004.

The voting age in Sweden is 18. We assume that this age is fixed and that identical shares of voters of all age cohorts vote, although younger persons and low-income workers have lower voting rates than others.

We assume that the pension system does not affect lifecycle incomes. To cope with pension commitments in the old system, the future contribution rate must be raised, and this should result in lower wages and accordingly, lower pensions, especially for younger generations. The higher work incentives in the new system affect lifecycle incomes by increasing labour supply and reducing incentives for early retirement. This, in turn, should result in higher pensions, especially for younger generations. Consequently, our result might underestimate the number of non-winners in the old system and the number of winners in the new system, especially among younger generations.

We calculate

- 1) the present value of expected pension benefits in the old system ($P_{i,c,t}^{OLD}$) and in the new system ($P_{i,c,t}^{NEW}$), where i stands for individual i , c stands for the individual's cohort and t is the calendar year the new system comes into effect.
- 2) the present value of remaining expected pension contributions in the old system ($q_{i,c,t}^{OLD}$) and in the new system ($q_{i,c,t}^{NEW}$), along with the differences

$$NET_{i,c,t}^{OLD} = (P_{i,c,t}^{OLD} - q_{i,c,t}^{OLD})$$

$$NET_{i,c,t}^{NEW} = (P_{i,c,t}^{NEW} - q_{i,c,t}^{NEW})$$

In a hypothetical referendum, winners should vote in favour of the reform, where

$NET_{i,c,t}^{NEW} > NET_{i,c,t}^{OLD}$ indicates a winner. Those above age 62 are not affected by the reform.

We calculate the numbers of winners and non-winners for each birth cohort. Do winners outnumber non-winners in 1999, which was the year of the Swedish pension reform? Would there have been differences if the reform had come into force in any other year? We used the same values for economic growth rate (g) and return rate of individual accounts (r) as did the pension commission when it described its main alternatives. To simplify, we assumed that everyone reaches age 85.

4. Results

Figure 1 summarises the main findings, where we find a stable majority for the reform in all years, although the majority declines from about 69% in 1990 and 1995 to 59% in 2015. Table A1 in the Appendix lists the numbers of winners and percentages of the electorate behind these frequencies.⁷ The results are based on a sample of individuals, ages 18–65 in 1995, with income simulated for the years after 1995. This means that for 2005, for example, we only have observations for individuals age 28+.

⁷ People from various socio-economic groups are affected differently. The old defined-benefit design gave rise to *perverse* income redistribution within the pension system. The old system required only 30 years for receiving full benefit, and the benefit was based on the 15 best years of earnings. Empirical studies (Ståhlberg 1989, 1995a) confirmed that the system transferred life resources from low-income earners with long, flat, life income profiles to high-income earners in carrier jobs. High-income workers enter the labour force later in life and contribute for fewer years. They also live longer and receive benefits for more years and have steeper age-earnings profiles, so they end up with a high pension relative to their lifetime contributions. They will lose under the new system by comparison with the old system. It was also found that in the old system, the average ratio between expected lifetime benefits and lifetime contributions was higher for men as a group than for women as a group. But female senior white-collar workers had the highest ratio, because they often coupled a relatively short, professionally active life with relatively good income. The reverse was true for unskilled female blue-collar workers, who derived least benefit from their contributions to the earnings-related scheme, because they worked for many years and had a weak wage progression. When benefits are closely tied to contributions, then not much redistribution will occur.

But because the youngest observed cohorts are all winners, it is safe to assume that cohorts (ages 18–27), although not observed, will also be winners. Table 1 for 1999 illustrates the procedure. Here, all individuals in these cohorts (ages 22-39) are winners. Non-winners begin to occur in cohorts, ages 40+, and the winner frequency declines with age. In the last two rows, we consider cohorts, ages 18–21, to be winners and cohorts 62+ to be non-winners. One could argue that pensioners gain from a reform that increases the financial sustainability of the pension system and reduces the risk of a system collapse. We note here that those above age 65 (or even 62) are not directly affected by the reform but part of the electorate; by counting these as non-winners, we create a lower boundary for the proportion of winners.

Figure 1 about here

Table 1 about here

In 1999, the oldest cohort, in which there was a majority of winners was age 53. The proportion of winners then gradually increases for younger cohorts, while the proportion of winners turned into a gradually shrinking minority (by age) for the older cohorts. The median voter is below age 53 or, more precisely, age 45 in 1990; age 46 in 1995; age 47 in 1999; and assumed to be age 48 in 2005 and 2015.

How sensitive are these results to the assumptions made on future economic conditions? The Appendix contains three tables that list results of some experimentation. Table A2 illustrates sensitivity to the return rate in 1995; given economic growth of 2%, a return rate of 0.025, rather than 0.0325, reduces the

proportion of winners from 0.85 to 0.83, while a rate of 0.04 increases the proportion of winners (see the three middle columns). But changes in economic growth from 1% to 2% or 3% have an effect, albeit small, only in the age cohorts 50–59 years.

How important are the expected population changes for the results? Table A3 presents the results for the 1995 population structure and the 1990–2015 earnings profiles (the first row). The results are obtained by re-weighting the observations we used earlier, so that the 1995 cohorts are reproduced for each simulation year. Rows 2 and 3 in Table A3 report the opposite exercise. Here, the income profiles of 1995 and 1999 are constant, but we re-weighted our observations to reproduce expected population changes. We find that population changes are less important than changes in earnings: the differences in the first row are larger than the differences in rows 2 and 3. This is aligned with the small changes in the age of the median voter, reported above. But changes in income decrease the majority, from 0.88 in 1990 to 0.76 in 2015 (see the first row). Simulation of future earnings is much more difficult than population projections. As mentioned earlier, no provisions are made for moves to better-paid jobs. This could be important, especially for younger cohorts in which individuals have just started or are about to start their careers. But the younger cohorts are unequivocally winners, and a start from a higher earnings level can only improve their gains within the new system. Experimentation confirms these results. So the main shortcoming in our income projections can only increase the number of winners under the new system.

5. Conclusions

Governments that do not reform their PAYG systems will eventually find the systems unsustainable. In democracies, reforms require the majority's support. The problem is that pension reforms require today's generation to bear the burden of the transition to avoid burdening future generations. How is it that Sweden was successful in reforming its pension system?

We demonstrated that most voters are winners in a notional defined contribution reform by comparing net effect (the present value of expected benefits minus the present value of remaining contributions) of the new and old systems. That the contributions of the working generations (age < 53) are reduced by more than their expected pensions might explain the success of the reform.⁸

⁸One objection to our analysis is whether people in general know that they are the winners or non-winners in a pension reform. (But a survey by Boeri, Boersch-Supan, and Tabellini [2001] in France, Germany, Italy and Spain in 2000 shows that the rate of acceptance of a pension reform decreases with age, which is what one would expect.) The Swedish reform is not the outcome of a referendum but of an agreement between five of the seven parties in Parliament, representing about 85% of the voters; in a representative democracy, we might expect decision-makers to be well-informed.

Appendix

Table A1. The estimated electorate and numbers of winners (in thousands), and proportion of winners in various years (growth rate = 0.02, return rate = 0.0325).

	1990	1995	1999	2005	2015
electorate					
estimated ¹	5267	5455	5101	4604	3393
+ young ²	5267	5455	5506	5675	5776
+ 66 ⁻³	6706	6916	7003	7180	7586
winners					
estimated ¹	4606	4636	4189	3348	2062
+ young ²	4606	4636	4595	4419	4445
+ 66-	4606	4636	4595	4419	4445
share					
estimated ¹	0.875	0.850	0.821	0.727	0.608
+ young ²	0.875	0.850	0.834	0.779	0.770
+ 66 ⁻³	0.687	0.670	0.656	0.615	0.586

¹ Those 18–65 in 1990 and 1995, 22–65 in 1999, 28–65 in 2005, 38–65 in 2015.

² The 18 and above cohorts that are missing are added.

³ The 66 and above cohorts are added.

Table A2. Proportion of winners ages 18–65 in 1995 depending on economic growth (g) and return rate (r).

Age (yr)	Economic growth				
	1%	2%		3%	
	($r=0.0325$)	($r=0.0250$)	($r=0.0325$)	($r=0.0400$)	($r=0.0325$)
18–30	1.00	1.00	1.00	1.00	1.00
30–39	1.00	1.00	1.00	1.00	1.00
40–49	1.00	0.99	1.00	1.00	1.00
50–59	0.65	0.58	0.65	0.72	0.66
60–65	0.09	0.09	0.09	0.09	0.09
18–65	0.85	0.83	0.85	0.86	0.85

Table A3. Proportion of winners, ages 18–65, in various years for a 1995 population or with 1995 or 1999 earnings' profiles (growth rate = 0.02, return rate = 0.0325).

	1990	1995	1999	2005	2015
1995 population all years	0.88	0.85	0.83	0.77	0.76
1995 earnings' profile all years	0.84	0.85	0.86	0.86	0.87
1999 earnings' profile all years	0.81	0.82	0.83	0.85	0.85

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Figure 1. Proportion of winners, ages 18+, when the new rules are implemented in various years. Growth rate (g) = 0.02, return rate (r) = 0.0325.



Table 1. Number of winners and non-winners in the 1999 reform. Growth rate $g = 0.02$, return rate $r = 0.0325$, in thousands and for various age groups.

Age	Non-winners	Winners	All	Proportion of winners
18–29 ¹	0	1304	1304	1.00
30–39	0	1293	1293	1.00
40–49	8	1179	1181	1.00
50–59	439	783	1222	0.64
60–65	451	36	507	0.07
18–65 ²	898	4595	5506	0.83
18–65 and over ²	2395	4595	7003	0.66

¹ There are no income data for ages 18–21. We assumed that all four cohorts were winners, as were the 22–29 cohorts.

² The reform does not affect persons ages 62+. They are included in the non-winners column; so a lower boundary for the proportion of winners is provided.