

# THE SWEDISH PENSION SYSTEM ANNUAL REPORT 2005

Average Svensson  
 Street 1  
 123 45 Sweden

## Your Pension Accounts

Changes in your accounts during 2005, in SEK	Inkomstpension	Premium Pension
Value, 31 December 2004	550 419 — <b>A</b>	22 512 — <b>G</b>
Pension credit recorded for 2004	+ 25 740 — <b>B</b>	+ 4 251 — <b>H</b>
Inheritance gain	+ 1 582 — <b>C</b>	+ 53 — <b>I</b>
Charge for administrative costs	- 297 — <b>D</b>	- 60 — <b>J</b>
Change in value	+ 15 615 — <b>E</b>	+ 8 056* — <b>K</b>
Value, 31 December 2005 **	583 854 — <b>F</b>	34 740 — <b>L</b>

\* Includes change in the value pension investment funds and interest on pension credit for 2004.

\*\* The difference between the closing balance and the total of the items above is due partly to changes in tax assessment and to the fact that some individuals have drawn a pension during the year.

Your national old-age pension balance

Total balance of your accounts:

SEK 618 594

The front cover shows a subset of the pension assets of insured individuals in the form of a scatter diagram. Each point (square) represents the amount of an inkomstpension account balance. A white square shows the balance for one person. The darker the color, the more people with that particular balance.

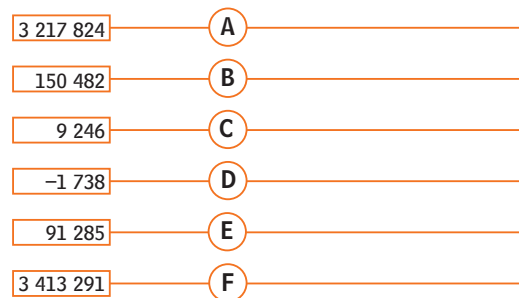
The illustration includes pension account balances between SEK 600 000 and 1 100 000 for persons aged 34–38. In the upper left corner, the balance is shown for an average individual, Mr. or Ms. Average Svensson, who is about 38 years old and has an inkomstpension account balance of approximately SEK 584 000.

The total of the pension account balances of all individuals is equal to the pension liability to the economically active population.

# THE SWEDISH PENSION SYSTEM ANNUAL REPORT 2005

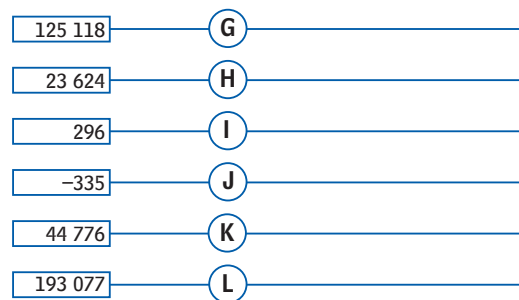


Inkomstpension,  
millions of SEK



See page 22

Premium pension,  
millions of SEK



See page 11

\* 5 557 847 persons with premium pension capital

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Further information on social security in Sweden is available on the web [www.forsakringskassan.se](http://www.forsakringskassan.se). Information on the premium-pension system can be found at [www.ppm.nu](http://www.ppm.nu).

For information on the National Pension Funds, please see the websites of each fund; [www.ap1.se](http://www.ap1.se), [www.ap2.se](http://www.ap2.se), [www.ap3.se](http://www.ap3.se), [www.ap4.se](http://www.ap4.se), and [www.ap6.se](http://www.ap6.se).

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Preface .....	5
Accounting for the Result of the Pension System in 2005.....	8
Income Statement and Balance Sheet.....	10
Notes and Comments.....	13
Accounting Principles.....	27
<i>Regulations and Guidelines.....</i>	<i>27</i>
<i>Where Do the Figures Come From?.....</i>	<i>27</i>
<i>Principles for Valuation of Assets and Liabilities.....</i>	<i>28</i>
<i>Valuation of Inkomstpension Assets.....</i>	<i>28</i>
<i>Valuation of Inkomstpension Liabilities.....</i>	<i>29</i>
<i>Valuation of Premium Pension Assets and Liabilities.....</i>	<i>30</i>
Audit Report.....	32
How the National Pension System Works.....	33
<i>Almost Like Saving at the Bank ... ..</i>	<i>33</i>
<i>... but Entirely a Form of Pension Insurance.....</i>	<i>33</i>
<i>One Krona of Pension Credit for Each Krona Contributed.....</i>	<i>34</i>
<i>Who Pays the Contribution?.....</i>	<i>34</i>
<i>Where Does the Contribution Go?.....</i>	<i>35</i>
<i>Interest on Contributions That Gave Rise to Pension Credit.....</i>	<i>38</i>
<i>A Rate of Interest Other Than the Income Index – Balancing.....</i>	<i>38</i>
<i>Pensions Reduced by Costs of Administration.....</i>	<i>39</i>
<i>How is the Inkomstpension Calculated?.....</i>	<i>40</i>
<i>How is the Premium Pension Calculated?.....</i>	<i>40</i>
<i>Guaranteed Pension.....</i>	<i>41</i>
<i>ATP.....</i>	<i>42</i>
Three Scenarios for the Future of the Pension System.....	43
<i>Net Contribution.....</i>	<i>44</i>
<i>The Buffer Fund.....</i>	<i>45</i>
<i>Financial Position of the Inkomstpension System.....</i>	<i>46</i>
<i>Development of Pension Levels for Different Birth Cohorts.....</i>	<i>47</i>
<i>Life Expectancy Effect and Retirement Age Required.....</i>	<i>49</i>
<i>Balancing, Rate of Return and Guaranteed Pension.....</i>	<i>50</i>
Special Feature Article: What Affects the Balance Ratio? .....	52
<i>Is the Low Balance Ratio Surprising?.....</i>	<i>53</i>
<i>What Has Affected the Balance Ratio?.....</i>	<i>53</i>
<i>How Is the Balance Ratio Affected?.....</i>	<i>58</i>
List of Terms .....	60
Appendix A. Calculation Factors .....	67
Appendix B. Mathematical Description of the Balance Ratio.....	72



## Preface

The preface to an annual report is frequently used to credit a good result to meritorious performance by the organization and its employees – or to blame a loss on unfavorable circumstances beyond the organization's control. The result of the pension system for 2005 was SEK 20 billion. Is that good or bad? And to what degree do the authorities concerned deserve the credit or blame?

With assets and liabilities amounting to SEK 6,730 billion, equivalent to Sweden's entire production of goods and services for two and a half years, The Annual Report of the Pension System is somewhat out of the ordinary. Yet the similarities between this report and those of ordinary companies are greater than the differences. The bottom line – the result for the year – is just as for a conventional business the increase in assets minus the increase in liabilities incurred during the year. The assets of the pension system, however, are calculated by a method specially developed for a primarily unfunded pension system, whereas the liabilities are reported according to generally accepted accounting principles.

### What Is a Good Result?

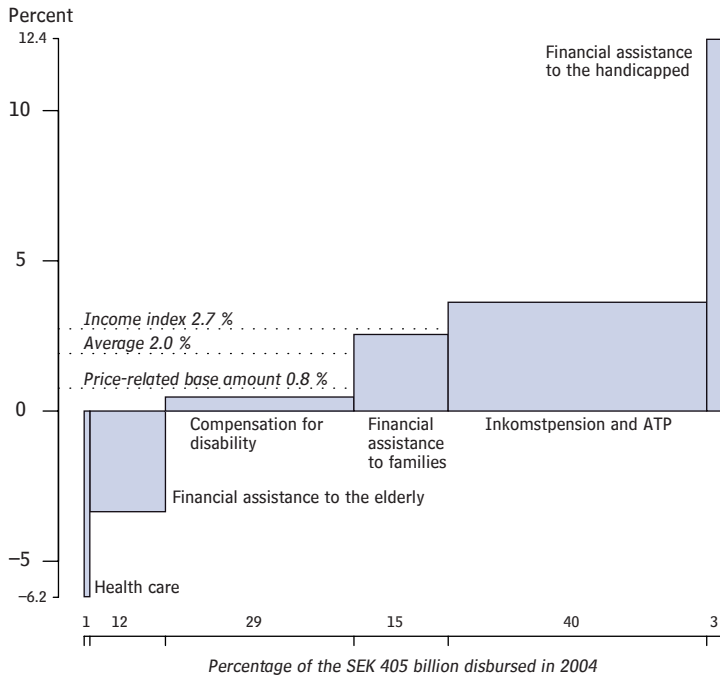
Pensioners and pension savers naturally want their pensions to be as high as possible. This implies that they would like the liabilities of the pension system to increase as much as possible, though of course there is a limit to how much the liabilities – pensions – can be allowed to grow. A positive result, may be interpreted as the system is economizing, in other words, that it does not provide as high a return on the pension liability as it could afford.

The rate of return on the pension liability, that is the annual indexation of pensions and of inkomstpension\* accounts, is determined by the growth in average income. The result of the pension system, however, depends primarily on whether the percentage increase in average income is greater or lesser than the percentage increase in the contribution base. If average income is rising faster than the contribution base, negative results are more likely; if the contribution base is growing faster than average income, positive results are more likely. Thus, a positive result for the pension system is neither good nor bad in itself. If pensions are to increase at a desirable rate, the principal requirements are healthy growth in average income and a retirement age that increases as life-expectancy rise. Even then, the pension system can report positive as well as negative results. Positive results mean higher assets in relation to liabilities and a stronger balance ratio; negative results weaken the balance ratio.

\*The Swedish name, *inkomstpension*, for the notional defined contribution, pay-as-you-go financed pension will not be translated in this report. The name refers to the fact that the indexation of this pension is a function of the growth in average income. The Swedish word for income is *inkomst*.

### Change in Costs of Social Insurance, 2005

In 2005, disbursements in the six areas of social insurance policy totaled SEK 414 billion



With the strong growth in incomes in recent years and increasingly large birth cohorts reaching retirement age, income-based pensions have shown a strong upward tendency; see the adjacent diagram. But thanks to the pension reform and the buffer funds, there is no cause for concern that this higher cost to the system lacks financing, or that it will crowd out other urgent commitments by the national government. The system is designed so that it always can finance its expenditure with a fixed contribution rate and the assets of the buffer fund. Naturally, this financial stability is not a gift from on-high. Rather, the explanation is that the value of pensions is not guaranteed, but depends on the development of the economy. If growth in incomes slows down, so will the increase in the value of pensions. It is almost certain that in some future economic downturn, there will be years with a negative development in the real value of income-based pensions. If inflation is as modest then as it is now, pensions may even decrease in nominal terms. In such case, however, individuals with the lowest pensions will not be affected, because the guaranteed pension ensures that their total national pension will always keep pace with prices.

### Who Is Responsible for the Result?

Of course the Swedish Social Insurance Agency has no influence over the development of the average income in Sweden, or of total income. Nor are we responsible for the capital management of the buffer funds or the premium pension funds. Thus, the Swedish Social Insurance Agency has virtually no way of affecting the development of the balance ratio. But what we can do, and are obliged to do, is to spread information about the pension system and to manage the system as cost-effectively as possible. Now that the pension reform has been fully implemented, it is natural to focus more on cost effectiveness. The costs for the Swedish Social Insurance Agency are headed in the right direction, and our efforts to maintain that course will continue.

Considering the personal pension information sent out each year together with the Premium Pension Authority (PPM) in the "Orange envelope" to all covered by the pension system and the system-level information provided by the Annual Report, I would contend that the Swedish Social Insurance Agency has been successful in its task to provide information. With the orange envelopes and the pension website [www.minpension.se](http://www.minpension.se), together with the Annual Report of the Pension System, the Swedish Social Insurance Agency provides abundant high-quality information on people's pensions. The pension statement in the orange envelope is focused on the individual, whereas the Annual Report is, roughly speaking, the aggregate of all individual pension statements. To ensure and further improve the quality of the information on the system, and public confidence in that information, the Swedish Social Insurance Agency has taken the step of commissioning independent auditors to review the Annual Report of the Pension System, beginning with fiscal year 2004.



Nevertheless, much work remains to be done, particularly in regard to information. The knowledge of insured individuals about their public pensions is not bad, but it could be better. This matter may be especially urgent since our studies reveal a clear connection between how much individuals feel they know about their pensions and their trust in the system. One factor that complicates the task of providing information on the pension system is that pensions are a market where significant financial interests are involved. It is far too common that insurance companies and banks try to generate demand for their savings products by arousing worry about the size and security of future pensions. The role of the Swedish Social Insurance Agency in this situation is to provide correct and balanced information.

As for the financial result of the pension system, obviously the Swedish Social Insurance Agency can neither claim the glory for positive figures, nor take the blame for negative ones. But this does not mean that we have made no contribution to the result. To the extent that we can spread knowledge about what is required to provide both good pensions and a financial sustainable pension system, there is probably an effect on the bottom line. The transmission of knowledge and its importance for the result of the system is discussed in this year's special feature article that describes the development of the balance ratio. Among other things, the article analyzes the surprisingly large negative effect of the increase in the basic tax deduction on the result of the pension system.

Another aspect worthy of special mention is that in both the sick-pay and disability insurance and the pension insurance, high uptake of benefits tends to depress the level of benefits. For the pension system, high uptake means a low retirement age. The fact that we are living longer and will therefore draw pensions for more years will make it increasingly necessary for us to keep working longer before we retire. Until 1976, the retirement age in the national pension system was 67. When the ATP system was introduced in 1960, the remaining life expectancy at age 65 was 14.5 years; it is currently 18.8 years and is increasing by more than a month each year. Unless we work longer in the future than we do today, pension levels will decrease.

The Swedish Social Insurance Agency is responsible for achieving the legislator's goal of a social insurance system that recognizes each individual's working capacity, not just incapacity. In the future, this key mission will become increasingly important also in the Swedish Social Insurance Agency's administration of pensions.

Stockholm, April 2006

Curt Malmberg  
Director General

## Accounting for the Result of the Pension System in 2005

### The Inkomstpension

The inkomstpension is so designed that the change in the value of the pension liability is closely linked to the changes in the value of the system's assets and liabilities. However, since the two sides of the balance sheet may change at slightly different rates, the result reported by the inkomstpension system can be either positive or negative. Since the total assets and liabilities of the system are so vast – SEK 6,500 billion – the result is often sizable as a monetary amount. If the accumulated surplus becomes a deficit, balancing will be activated. The system will then be guided toward a balanced surplus/deficit of SEK 0 as the indexation of pensions and pension balances is adjusted downward. Any accumulated surplus arising after balancing has been activated will be used directly to raise the rate of indexation and thereby restore the value of pensions as far as possible.

The assets of the inkomstpension system consist of the contribution asset and the First–Fourth and Sixth National Pension Funds. The contribution asset is the value of the system's inflow of contributions. In 2005 the contribution asset grew by SEK 114 billion, or 2.0 percent. The change in the value of the contribution asset is determined primarily by the number of persons gainfully employed, growth in per-capita income, and the turnover duration of the system. An increase in the contribution inflow added SEK 163 billion to the contribution asset, whereas lower turnover duration reduced it by SEK 49 billion. Despite longer pay-out duration (0.1 year), total turnover duration has been shortened by a considerable decrease (0.4 year) in average pay-in duration. To express it in another way, the expected average pay-in age has risen from 43 to 43.4, but the expected average pay-out age only from 75.4 to 75.5. Turnover duration has thereby been shortened from about 32.4 to 32.1 years. The change occurred between 2002 and 2004, but owing to the time lag and the use of the median value for the latest three years, the effects of the change appear for the first time in the accounts for 2005.

The buffer fund, i.e. the First–Fourth and Sixth National Pension Funds, grew by a total of SEK 123 billion, or 19 percent. Of this increase, the return on the buffer fund accounted for more than SEK 114 billion, equivalent to a capital-weighted return of 17.4 percent. Pension contributions exceeded pension disbursements, contributing more than SEK 8 billion to the fund after the deduction for administrative costs. Thanks to the favorable performance of the funds, their share of system assets has increased to nearly 12 percent.

The total assets of the system increased by SEK 237 billion, or 3.8 percent. The increase on the liability side of the balance sheet was 3.5 percent, equivalent to SEK 217 billion. The pension liability has been affected by indexation of 2.6 percent, or SEK 162 billion. Average pay-out period has increased by some 45 days, adding SEK 37 billion to the liability. The remainder of the increase is due to the excess of new pension credit, including certain adjustments, over pension disbursements for the year.

The year's result of SEK 20 billion increased the surplus of the system to SEK 28 billion. In relation to the pension liability, the surplus is 0.44 percent. The balance ratio of the system for 2007, which reflects its financial position as of December 31, 2005, is thus 1.0044.

#### Key Numbers for the Inkomstpension 2005–2001\*

Billions of SEK

	2005	2004	2003	2002	2001
First–Fourth + Sixth National Pension Funds	769	646	577	488	565
Contribution asset	5 721	5 607	5 465	5 301	5 046
Total assets	6 490	6 253	6 042	5 789	5 611
Pension liability	6 461	6 244	5 984	5 729	5 432
Accumulated surplus	28	9	58	60	179
Balance ratio	1.0044	1.0014	1.0097	1.0105	1.03

\* Because of rounding off, amounts shown do not always agree.

## The Premium Pension

The premium pension system is a fund-based system where pension savers select the funds in which their premium pension moneys are invested. Changes in prices of fund shares affect the value of the pension saver's holding of system assets directly and by the same amount. For this reason, the result of the premium pension system will in principle always be SEK 0. The premium pension system also includes conventional insurance, the result of which is separately presented as a portion of equity capital.

During the year, funded premium pension assets increased by SEK 68 billion, of which SEK 23 billion consisted of new pension credit and SEK 45 billion of an increase in value. The value of the fund holdings of pension savers as of December 31, 2005, was SEK 193 billion, and the increase in value during the year was more than 30 percent. The average annual rate of return since the first payments into the premium pension system in 1995 has been 5.1 percent. The value of the assets in the conventional-insurance portion of the system was SEK 307 million. The average rebate in 2005 was 5.2 percent.

During the build-up phase and until 2018, the PPM will be financed through a combination of fee withdrawal and borrowing on an interest-bearing account to meet working capital needs, as well as borrowing within authorized limits at the National Debt Office. The total result for the year was SEK 57 million. Aside from the result of SEK 85 million for fund operations, the total result is accounted for by SEK 9 million for conventional insurance operations, SEK 20 million for trade in fund shares via the trade inventory, and SEK -57 million for the net cost of interest. The technical result of insurance operations, i.e. the result for fund operations and conventional insurance, is required to be positive, one reason being to cover costs of interest. However, the outcome for 2005 exceeded estimates because of the higher market value of assets, which meant a higher fee withdrawal and lower costs than had been expected.

### Key Numbers for the Premium Pension 2005–2001

Millions of SEK

	2005	2004	2003	2002	2001
Fund insurance*	192 770	125 024	94 124	59 416	65 129
Conventional insurance*	307	94	31	4	1
Total pension assets	193 077	125 118	94 155	59 420	65 130
Fund-insurance commitments*	192 770	125 026	94 127	59 418	65 130
Provision for life insurance*	307	94	30	4	1
Total pension liability	193 077	125 120	94 157	59 422	65 131

\* Including inheritance gains arising.

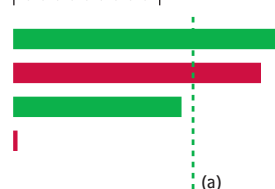
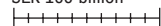
### Terms Relating to the Inkomstpension – Counterparts in Other Forms of Insurance

What is termed the "contribution asset" in the accounts refers to the value of the inflow of contributions. There is no equivalent concept in funded insurance. But if an analogy is to be made, the contribution asset would most closely correspond to the investment asset, or insurance capital, in funded insurance. By this analogy, the change in the value of the contribution asset would best correspond to what is called "return on capital" in funded insurance. The value of the contribution asset changes partly through changes in contribution revenue and partly through changes in turnover duration. The respective effects of these two determinants on the value of the contribution asset are shown separately in the income statement.

Other concepts used in the income statement and balance sheet for the inkomstpension have more direct counterparts in conventional accounting for life-insurance businesses. Pension contributions are the equivalent of premium revenue in funded insurance; pension disbursements correspond to insurance benefits paid; the change in pension liability, to changes in actuarial provisions; accumulated surplus/deficit, to accumulated profit/loss.

## Inkomstpension, Income Statement and Balance Sheet

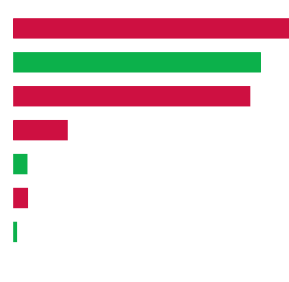
SEK 100 billion



(a)



(b)



(a)+(b)+(c)

Income Statement, millions of SEK

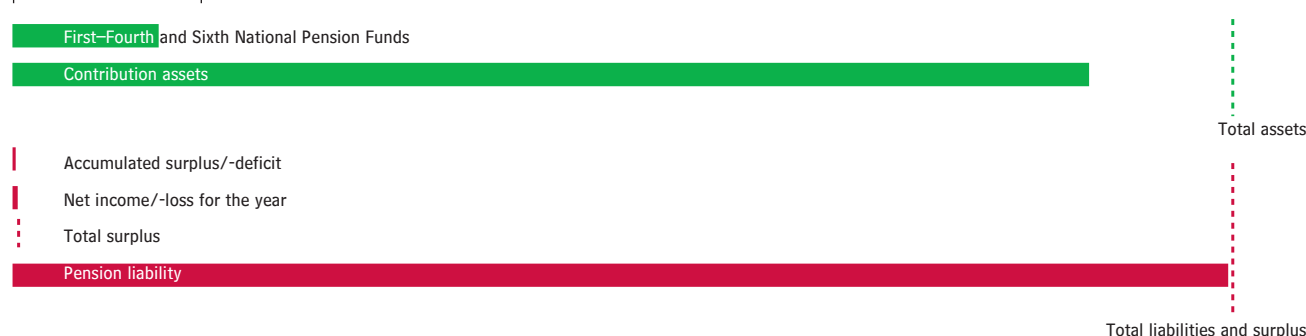
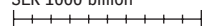
	Note	2005	2004	Change
<b>Change in fund assets</b>				
Pension contributions	1	179 552	171 600	7 952
Pension disbursements	2	-169 127	-164 762	-4 365
Return on funded capital	3	114 598	65 162	49 436
Administrative costs	4	-2 032	-2 736	704
<b>Total change in fund assets (a)</b>		<b>122 991</b>	<b>69 264</b>	<b>53 727</b>
<b>Change in contribution asset</b>				
Value of change in contribution revenue	5	163 453	141 518	21 935
Value of change in turnover duration	6	-49 367	0	-49 367
<b>Total change in contribution asset (b)</b>		<b>114 086</b>	<b>141 518</b>	<b>-27 432</b>
<b>Change in pension liability*</b>				
New pension credit and ATP points	7	-189 556	-244 879	55 323
Pension disbursements	2	169 071	162 783	6 288
Indexation	8	-161 809	-161 616	-193
Value of change in life expectancy	9	-36 519	-17 614	-18 905
Inheritance gains arising	10	8 854	7 789	1 065
Inheritance gains distributed	10	-9 246	-8 222	-1 024
Deduction for administrative costs	11	1 738	1 949	-211
<b>Total change in pension liability (c)</b>		<b>-217 467</b>	<b>-259 810</b>	<b>42 343</b>
<b>Net income/-loss (a)+(b)+(c)</b>		<b>19 610</b>	<b>-49 028</b>	<b>68 638</b>

\* A negative item (-) increases the pension liability, and a positive item ( ) decreases it, by the amount shown.

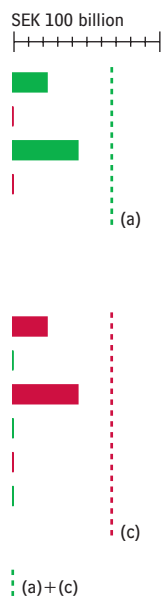
Balance Sheet, millions of SEK

Assets	Note	12/31 2005	12/31 2004	Change
First-Fourth and Sixth National Pension Funds	12	769 190	646 200	122 991
Contribution asset	13	5 720 678	5 606 592	114 086
<b>Total assets</b>		<b>6 489 868</b>	<b>6 252 792</b>	<b>237 077</b>
<b>Liabilities and Surplus</b>				
Accumulated surplus/-deficit		8 783	57 812	-49 028
Net income/-loss for the year		19 610	-49 028	68 638
Total surplus		28 392	8 783	19 610
Pension liability	14	6 461 476	6 244 009	217 467
<b>Total liabilities and surplus</b>		<b>6 489 868</b>	<b>6 252 792</b>	<b>237 077</b>

SEK 1000 billion



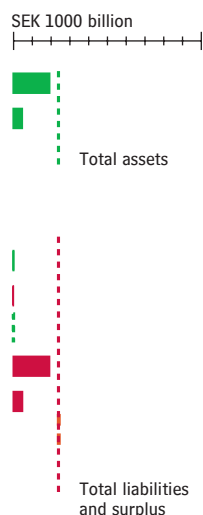
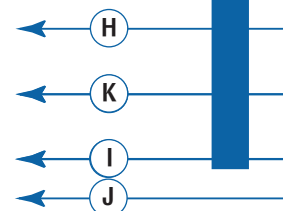
## Premium Pension, Income Statement and Balance Sheet



Income Statement, millions of SEK

	Note	2005	2004	Change
<b>Change in fund assets</b>				
Pension contributions	1	23 624	22 355	1 269
Pension disbursements	15	-105	-42	-63
Return on funded capital	16	44 785	8 983	35 802
Administrative costs	17	-287	-285	-2
Total change in fund assets (a)		68 017	31 011	37 006
<b>Change in pension liability*</b>				
New pension credit	18	-23 624	-22 355	-1 269
Pension disbursements	19	105	42	63
Change in value	20	-44 776	-8 981	-35 795
Inheritance gains arising	21	296	259	37
Inheritance gains distributed	22	-296	-259	-37
Deduction for administrative costs	23	335	331	4
Total change in pension liability (c)		-67 960	-30 963	-36 997
Net income (a)+(c)		57	48	9

\* A negative item (-) increases the pension liability, and a positive item ( ) decreases it, by the amount shown.



Balance Sheet, millions of SEK

Assets	Note	12/31 2005	12/31 2004	Change
Insurance assets	24	193 077	125 118	67 959
Other assets	25	47 410	45 378	2 032
Total assets		240 487	170 496	69 991
<b>Liabilities and Surplus</b>				
Accumulated surplus/-deficit		-1 679	-1 727	48
Net income for the year		57	48	9
Total surplus/-deficit		-1 622	-1 679	57
Pension liability	26	193 077	125 120	67 957
Other liabilities	27	49 032	47 055	1 977
Total liabilities		242 109	172 175	69 934
Total liabilities and surplus		240 487	170 496	69 991



## Earnings Related Old Age Pension, Income Statement and Balance Sheet

### Inkomstpension and Premium Pension

Income Statement, millions of SEK

Change in fund assets	Note	2005	2004	Change
Pension contributions	1	203 176	193 955	9 221
Pension disbursements	2, 15	-169 232	-164 804	-4 428
Return on funded capital	3, 16	159 383	74 145	85 238
Administrative costs	4, 17	-2 319	-3 021	702
Total change in assets (a)		191 008	100 275	90 733
<b>Change in contribution asset</b>				
Value of change in contribution revenue	5	163 453	141 518	21 935
Value of change in turnover duration	6	-49 367	0	-49 367
Total change in contribution asset (b)		114 086	141 518	-27 432
<b>Change in pension liability*</b>				
New pension credit and ATP points	7, 18	-213 180	-267 234	54 054
Pension disbursements	2, 19	169 176	162 825	6 351
Indexation/change in value	8, 20	-206 585	-170 597	-35 987
Value of change in life expectancy	9	-36 519	-17 614	-18 905
Inheritance gains arising	10, 21	9 150	8 048	1 102
Inheritance gains distributed	10, 22	-9 542	-8 481	-1 061
Deduction for administrative costs	11, 23	2 073	2 280	-207
Total change in pension liability (c)		-285 427	-290 773	5 346
Net income/-loss (a)+(b)+(c)		19 667	-48 980	68 647

\* A negative item (-) increases the pension liability, and a positive item ( ) decreases it, by the amount shown.

Balance Sheet, millions of SEK

Assets	Note	12/31 2005	12/31 2004	Change
First-Fourth and Sixth National Pension Funds	12	769 190	646 200	122 991
Insurance assets	24	193 077	125 118	67 959
Other assets	25	47 410	45 378	2 032
Contribution asset	13	5 720 678	5 606 592	114 086
Total assets		6 730 355	6 423 288	307 067
<b>Liabilities and Surplus</b>				
Accumulated surplus/-deficit		7 104	56 085	-48 981
Net income/-loss for the year		19 667	-48 980	68 647
Total surplus/-deficit		26 770	7 104	19 666
Pension liability	14, 26	6 654 553	6 369 129	285 424
Other liabilities	27	49 032	47 055	1 977
Total liabilities and surplus		6 730 355	6 423 288	307 067

## Notes and Comments

Notes 2–14 relate to the inkomstpension, Notes 15–27 to the premium pension. Note 1 applies to both parts of the earnings-related old-age pension system. All amounts in Notes 1–14 are shown in millions of SEK, and amounts in Notes 15–27, in thousands of SEK.

### Note 1 Pension Contributions

#### Contributions to the old-age pension system

Millions of SEK

Contributions to:	Inkomst-pension	Premium pension	2005 Total	2004 Total
Employer contrib. below income ceiling	74 450	19 635	94 085	91 318
Self-employment contributions below income ceiling	2 255	595	2 850	2 549
Individual pension contributions	74 762	–	74 762	72 287
Central govt. old-age pension contribution	26 450	3 641	30 091	27 464
Final settlements etc.	1 635	–247	1 388	337*
<b>Total</b>	<b>179 552</b>	<b>23 624</b>	<b>203 176</b>	<b>193 955</b>

\* Total of final settlement in 2004 for 2002, loss in collection, settlement and discrepancies between the accounting of the RFV (the former National Social Insurance Board), and of the National Pension Funds and the PPM, respectively, and adjustment.

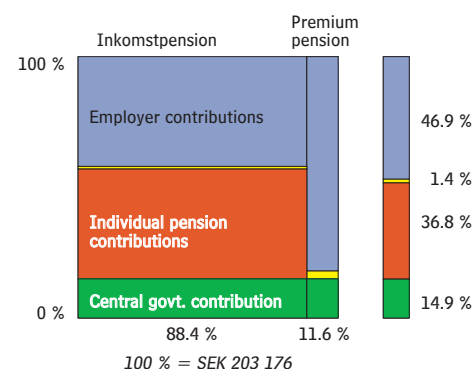
As can be seen in the table above, there are several different types of contributions in the old-age pension system. Moreover, not all contribution revenue goes to the pension system; contributions for incomes above the so-called income ceiling of 8.07 income-related base amounts are transferred to the central government budget. These contributions, which are actually taxes, are not included in the table. Contributions to the old-age pension are paid by employers and self-employed persons, individual pension contributions by all economically active recipients of pension credit. In addition, central government old-age pension contributions are paid through various appropriations in the central government budget, such as those for sickness and unemployment cash benefits. The central government also pays a pension contribution for so-called pension-qualifying amounts, such as pension credit for child-care years. The following section provides a more detailed accounting for pension contributions.

#### Detailed Accounting for Pension Contributions

Table A Pension Contributions by Type of Contribution

Millions of SEK

Contributions paid to:	Inkomst-pension	Premium pension	Cent. govt. budget (tax)	Total	of which contrib. to pension system
Employer contributions	74 450	19 635	11 985	106 070	94 085
Self-employment contributions	2 255	595	364	3 214	2 850
Individual pension contributions	74 762	–	–	74 762	74 762
Central govt. old-age pension contribution	26 450	3 641	–	30 091	30 091
Final settlement in 2005 for 2003	1 063	–66	–997	0	997
Loss in collection, settlement	–312	–	–	–312	–312
Discrepancy between accounting of Swedish Social Insurance Agency and of National Pension Funds and PPM	884	–181	–	703	703
<b>Total</b>	<b>179 552</b>	<b>23 624</b>	<b>11 352</b>	<b>214 528</b>	<b>203 176</b>



In the diagram final settlements etc. have been allocated between employer contributions and the central government old-age pension contribution.

<sup>1</sup> The income-related base amount for 2005 is SEK 43 300. Thus, 8.07 income-related base amounts equal SEK 349 431, and 7.5 income-related base amounts equal SEK 324 750.

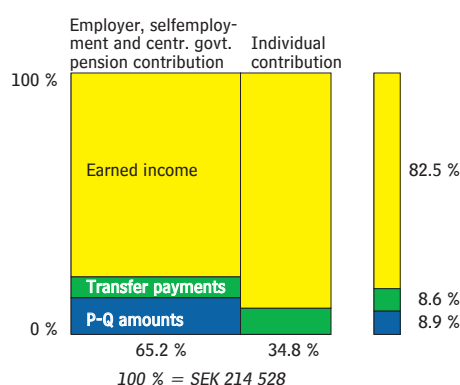


Table A shows pension contributions recorded in 2005. Some contributions are for previous years. Employer contributions, for example, are reported at least one month after the month when the related earnings are paid.

Individual pension contributions are allocated entirely to the National Pension Funds. For employer contributions and self-employment pension contributions, there is a preliminary allocation by set percentages among the National Pension Funds, the premium pension system, and the central government budget. The central government old-age pension contribution is allocated between the National Pension Funds and the premium pension system.

The portion of the old-age pension contribution allocated to the central government budget is for portions of income that exceed the ceiling for pension-qualifying income. This ceiling is 8.07 income-related base amounts<sup>1</sup> before deduction of the individual pension contribution and 7.5 after this deduction. Since these contributions do not represent pension credit, they are to be considered taxes.

To ensure that the premium pension system for a particular year has received contributions corresponding to the pension credit earned and that the central government budget has received contributions for the portion of incomes above the ceiling, the discrepancies are reconciled two years later. Thereafter, a settlement is made among the central government budget, the premium pension system, and the National Pension Funds.

The discrepancy between the accounting of the Swedish Social Insurance Agency and that of the National Pension Funds (SEK 884 million) is due primarily to differences in regard to periodization. The discrepancy between the accounting of the Swedish Social Insurance Agency and that of the PPM (SEK -181 million) is due largely to the fact that the PPM accounts report contribution revenue for pension credit confirmed in 2004 and transferred to the premium pension funds in 2005, whereas the Swedish Social Insurance Agency accounts report contribution revenue received in 2005. Contributions received in 2005 are for pension credit to be confirmed at the end of 2006 and invested early in 2007.

**Table B Pension Contributions by Type of Contribution Base**

Millions of SEK

	Employer, self-employment and centr. govt. pension contributions	Individ. pension contributions	Total
Earned income*	109 675	67 215	176 890
Transfer payments, see Table C	10 910	7 547	18 457
Pension-qualifying amounts, see Table D	19 181	–	19 181
<b>Total</b>	<b>139 766</b>	<b>74 762</b>	<b>214 528</b>

The allocation of individual pension contributions among the different types of contribution base is estimated and is not shown in the accounting systems.

\* Earned income, incl. sick-pay and self-employment income, excl. transfer payments.

The individual pension contribution is 7 percent of the sum of earned income and pension-qualifying transfer payments such as sickness cash benefits, but not including sickness and activity compensation. The individual pension contribution is assessed only on the portion of such income below the ceiling of 8.07 income-related base amounts.

The pension contribution paid by employers and self-employed persons on earned income, and by the central government on the above-mentioned transfer payments, is 10.21 percent. The central-government pension contribution on sickness and activity compensation and on so-called pension-qualifying amounts, which are not subject to the individual pension contribution, is 18.5 percent.

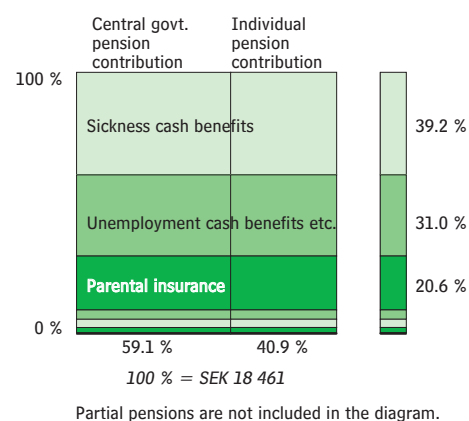


**Table C Pension Contributions for Transfer Payments**

Millions of SEK

	Central govt. pension contributions	Individual pension contributions	Total
Sickness cash benefits	3 388	2 343	5 731
Rehabilitation benefits	343	237	580
Benefits to immediate relatives	7	5	12
Compensation for work-related injuries, etc.	390	269	659
Partial pension	-4	0	-4
Parental insurance	2 250	1 556	3 806
Care allowances	222	153	375
Unemployment cash benefits, etc. (Labor Market Board – AMS)	4 282	2 961	7 243
Educational allowances	27	19	46
Artists' Board	4	3	7
Allowances to disease carriers	1	1	2
<b>Total</b>	<b>10 910</b>	<b>7 547</b>	<b>18 457</b>

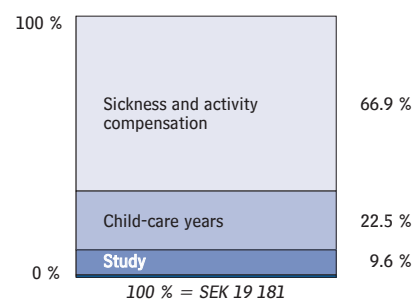
The allocation of individual pension contributions among the different types of transfer payments is estimated and is not shown in the accounting systems.

**Table D Pension Contributions for Sickness/Activity Compensation and Pension Qualifying Amounts**

Millions of SEK

Sickness and activity compensation	12 840
Amounts credited for child-care years	4 319
Amounts credited for study	1 850
Amounts credited for compulsory national service	172
<b>Total</b>	<b>19 181</b>

Sickness and activity compensation consist of both pension-qualifying benefits paid and pension-qualifying amounts. The amount shown for sickness and activity compensation refers to both pension-qualifying benefits disbursed and pension-qualifying amounts. In each case the contribution is 18.5 percent. A minor portion of amounts credited for study and for compulsory national service consists of pension-qualifying income.



## Note 2 Pension Disbursements

Millions of SEK

	2005	2004
ATP	162 563	159 217
Inkomstpension	6 507	3 566
<b>Total pension disbursements</b>	<b>169 071</b>	<b>162 783</b>
Transfers to the European Communities	57	379
Special adjustment	-	1 600 <sup>2</sup>
<b>Total</b>	<b>169 127</b>	<b>164 762</b>

In 2005 a total of SEK 169 071 million in pensions was disbursed from the National Pension Funds, reducing the pension liability to retired persons by the same amount.

By law (2002:125), the value of the pension credit for officials of the European Communities may be transferred from the National Pension Funds and the premium pension system to the service pension systems of the European Communities. In 2005 a total of almost SEK 57 million was thus transferred from the National Pension Funds, reducing the pension liability to the economically active by this amount. In total, the National Pension Funds were charged with SEK 169 127 million as a result of pension disbursements or transfer of pension credit.

<sup>2</sup> In 2004, the National Pension Funds were charged with SEK 1 600 million as a special adjustment for the period 1999–2002. During this period, pension disbursements were divided between the National Pension Funds and the central government budget in certain standard proportions because of shortcomings in the accounting system of the National Social Insurance Board (RFV). A review has shown that the National Pension Funds were charged too little during this period.

### Note 3 Return on Funded Capital

Millions of SEK

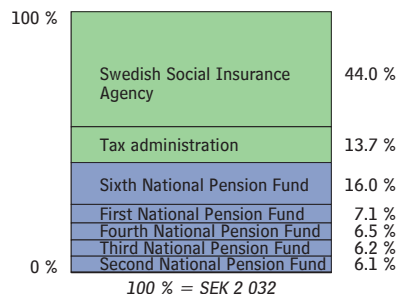
National Pension Fund:	First	Second	Third	Fourth	Sixth	*	2005 Total	2004 Total
Stocks and shares	18 541	26 366	23 137	20 464	1 432	588	90 528	51 473
of which: direct return	2 705	2 696	2 730	2 131	125	113	10 500	8 007
realized & unrealized capital gains	15 836	23 670	20 407	18 333	1 307	475	80 028	43 466
Bonds and other interest-bearing securities	3 084	3 018	3 007	2 538	135	197	11 979	16 526
of which: direct return (net interest)	2 461	2 486	2 988	2 358	135	197	10 625	10 038
realized & unrealized capital gains	623	532	19	180	0	0	1 354	6 488
Other items	6 221	467	2 923	2 977	0	24	12 612	-2 837
of which: direct return	365	-790	-462	-1 095	0	23	-1 959	1 192
realized & unrealized capital gains	2 942	-565	744	351	0	-1	3 471	2 880
net foreign-exchange gain/-loss	2 914	1 822	2 641	3 721	0	2	11 100	-6 909
Costs of commissions	-120	-160	-149	-87	0	-5	-521	- **
<b>Total</b>	<b>27 726</b>	<b>29 691</b>	<b>28 918</b>	<b>25 892</b>	<b>1 567</b>	<b>804</b>	<b>114 598</b>	<b>65 162</b>

\* Special administration of the First and Fourth National Pension Funds.

\*\* Data unavailable. For further information, see Note 4.

Sources: Annual Reports of the First, Second, Third, Fourth, and Sixth National Pension Funds for 2004 and 2005.

”Other items” consist primarily of derivatives. Capital gains/losses on stocks and shares have been charged with brokerage commissions on both purchases and sales.



### Note 4 Costs of Administration

Millions of SEK

	2005	2004
National Social Insurance Board (RFV)	- *	557
Swedish Social Insurance Agency	895	347
Tax administration (incl. Enforcement Service)	279	344
National Institute of Economic Research	0	0
<b>Total costs of insurance administration</b>	<b>1 174</b>	<b>1 248</b>
First National Pension Fund	145	244
Second National Pension Fund	123	330
Third National Pension Fund	127	314
Fourth National Pension Fund	133	246
Sixth National Pension Fund	326	340
First and Fourth National Pension Funds, special administration	4	14
<b>Total costs, fund administration</b>	<b>858</b>	<b>1 488</b>
<b>Total</b>	<b>2 032</b>	<b>2 736</b>

\* Included in costs of administration for the Swedish Social Insurance Agency as from 2005.

As from 2005, the First–Fourth National Pension Funds have changed their accounting for costs of administration. From that point on, only internal costs are reported as administrative costs. External costs of administration and custodial fees are referred to as costs of commissions and are reported as negative revenue (see Note 3). In addition, costs of commissions are divided into fixed fees and performance-based fees. The latter are reported net in the result rather than in “costs of commissions” in the income statement. The change means that the costs of fund administration for this year are not comparable to the costs for last year. A presentation of the respective gross and net reported costs of the pension system is found on page 34.

Because of phase-in provisions applicable until 2020, only a portion of administrative costs (68 percent for 2005; see Note 11) are charged to the pension balances of the insured. The remainder of these costs is to be financed by the First–Fourth National Pension Funds, in equal amounts from each fund. In addition, each fund finances its own administrative costs by withdrawals from itself.

## Note 5 Value of Change in Contribution Revenue

Turnover duration in years, contribution revenue in millions of SEK

Smoothed contribution revenue 2005	178 116
Smoothed contribution revenue 2004	-173 049
Change in smoothed contribution revenue	5 067
(Smoothed turnover duration 2005 + smoothed turnover duration 2004)/2 *	x 32.25829
Value of change in contribution revenue	163 453

\*  $(32.11771 + 32.39887)/2 = 32.25829$

### Table A Basis for Calculating Smoothed Value of Contribution Revenue

Millions of SEK

	2002	2003	2004	2005
Contributions received by National Pension Funds	160 745	165 107	171 600	179 552
Contribution deficit attributable to contributions and contribution base not phased-in	3 500	2 600	1 500	–
Basis for calculating smoothed contribution revenue	164 245	167 707	173 100	179 552
Smoothed contribution revenue	163 998	168 681	173 049	178 116
Contribution revenue used	163 738	168 681	173 049	178 116
CPI, June	273.24	277.74	278.91	280.45

During a phase-in period extending through fiscal year 2004, adjustments were made so that the contribution used in calculating the contribution asset would reflect the contribution inflow when the system is fully functioning. The method of calculating smoothed contribution revenue is described in Appendix B, Section 1.

## Note 6 Value of Change in Turnover Duration

Turnover duration for the year, contribution revenue in millions of SEK

Smoothed turnover duration 2005	32.11771
Smoothed turnover duration 2004	-32.39887
Change in smoothed turnover duration	-0.28116
(Smoothed contribution revenue 2005 + smoothed contribution revenue 2004)/2 *	x 175 582
Value of change in turnover duration	-49 367

\*  $(178 116 + 173 049)/2 = 175 582$

### Table A Basis for Calculating Smoothed Value of Turnover Duration

	2002	2003	2004	2005
Pay-in duration	21.96768	22.09653	21.54817	21.46187
Pay-out duration	10.43119	10.43638	10.56954	10.58625
Turnover duration, TD	32.39887	32.53291	32.11771	32.04812
Smoothed turnover duration	32.32459	32.39887	32.39887	32.11771

Smoothed turnover duration is the median of the turnover duration for the latest three years. The method of calculating turnover duration is described in Appendix B, Section 3.

Since pay-in duration cannot be calculated until all pension credit has been confirmed, the estimates for 2005 are based on the value of pension credit earned in 2004 (and confirmed in 2005). Pay-out duration is calculated from the data as of December 2005.

## Note 7 New Pension Credit and ATP Points

Millions of SEK

	2005	2004
Estimated inkomstpension credit earned	157 547	150 975
ATP points earned, estimated value	6 182	5 336
Adjustment amount, new pension credit, see Table A	355	819
Adjustment amount, new ATP points, see Table B	25 472	87 749
<b>Total</b>	<b>189 556</b>	<b>244 879</b>

The items of new pension credit and ATP points have been adjusted upward by certain other amounts that have affected the size of the pension liability. These adjustment amounts are explained in the tables below.

### Table A Adjustment Amount, New Pension Credit

Millions of SEK

Confirmed inkomstpension credit earned in 2004	150 482
Estimated inkomstpension credit earned in 2004	-150 975
Adjustments affecting pension balances, etc.	-1 118
Change in disbursements	1 966
<b>Adjustment amount A</b>	<b>355</b>

Since the tax assessment for the year of the financial statements has not been completed when the statements are prepared, the amount of pension credit earned during the year can only be estimated. In the Annual Report of the pension system for 2004, the pension credit earned during the year was estimated at SEK 150 975 million. After the tax assessment for 2004 had been finalized, the actual value proved to be 150 482 million.

The adjustment amount of SEK -1 118 million represents primarily tax-assessment changes and other adjustments affecting the size of pension balances; see Note 14, Table A. The pension liability to retirees has been adjusted by SEK 1 966 million because of changes in pension amounts due to factors other than indexation (see Note 14, Table C).

### Table B Adjustment Amount, New ATP Points

Millions of SEK

Effect of difference between assumed value for 2005 and estimate for 2004, etc.	4 472
Paid-in pension contributions for ATP excl. value of ATP points	13 103
Change in amounts disbursed	7 896
<b>Adjustment amount B</b>	<b>25 472 *</b>

\* Adjusted by SEK 1 million in rounding off.

The ATP liability to the economically active – that is, to persons who have not yet begun drawing a pension – is estimated in the pension model of the Swedish Social Insurance Agency. The procedure is described in Note 14.

The ATP liability to retirees has been adjusted by SEK 7 896 million because of changes in pension amounts due to factors beside indexation (see Note 14, Table C).

Of the ATP points earned in 2005, only a minor portion will have any impact on future pensions. The portion expected to contribute to higher pensions has been reported as the value of ATP points earned (SEK 6 182 million). However, all pension contributions for the ATP contribute to an increase in the estimated pension liability. The last year for which ATP points may be earned is 2017. This means that pension contributions, except for administrative discrepancies, will not equal pension credit earned until 2018.<sup>3</sup>

## Note 8 Indexation

Millions of SEK

	2005	2004
Pension liability, economically active	121 804	104 347
Pension liability, retirees	40 005	57 269
<b>Total</b>	<b>161 809</b>	<b>161 616</b>

The pension liability grows by the increase in the income index.<sup>4</sup> The amount of indexation refers to the indexation affecting the pension liability as of December 31, 2005. The ATP liability to the economically active has been affected by the change in the income index between 2005 and 2006 (2.7 percent). The pension liability to retirees as of December 31, 2005, has been affected by the indexation at the end of the previous year, i.e. December 31, 2004 (2.4 percent).

## Note 9 Value of the Change in Life Expectancy

Millions of SEK

	2005	2004
ATP liability, economically active	11 861	6 434
Inkomstpension liability, economically active	–	–
ATP liability, retirees	23 442	10 819
Inkomstpension liability, retirees	1 216	361
<b>Total</b>	<b>36 519</b>	<b>17 614</b>

As used here, the term "life expectancy" refers to the expected payout period of an average pension, or so-called economic life expectancy, adjusted for the norm of 1.6 percent. Economic life expectancy is expressed as an economic annuity divisor. The method of calculating economic annuity divisors is shown in Appendix B, Section 4.

A higher economic life expectancy will increase the liability for the ATP, both to the economically active and to retirees. In the inkomstpension system, only the liability to retirees will increase if life expectancy goes up.

The effect of changes in economic life expectancy is calculated by first determining the pension liability with the economic annuity divisors used in the system for the year covered by the financial statements. This liability is then reduced by the pension liability calculated with the economic annuity divisors for the preceding year. The increase in the economic annuity divisor between 2004 and 2005 corresponds to an increase of 45 days of the expected pay-out period.

<sup>3</sup> In 2005, contributions for the ATP amounted to SEK 19.3 billion, whereas the value of new ATP points that same year was only SEK 6.2 billion. Thus, contributions paid exceeded the value of ATP points earned by SEK 13.1 billion. The reason for this difference is that in the ATP system pension credit often accumulates relatively early in working life. An individual aged 55, who is already past her/his 15 years of maximum earnings (and has worked for at least 30 years), cannot increase her/his ATP pension at all, despite continuing to work and to pay contributions until age 65. The situation illustrates one of the ATP system's negative incentives for older members of the labor force to continue contributing to the labor supply.

<sup>4</sup> For individuals born no later than 1953 and drawing an ATP pension before age 65, the pension liability is indexed by the change in the price-related base amount until they turn 65.

## Note 10 Inheritance Gains, Arising and Distributed

Millions of SEK

Year of birth	Year of death	Inheritance gains arising	Inheritance gains distributed
1938–1945	2005	2 898	3 537
1945–	2004	5 956	5 710
Total		8 854	9 246 *

\* Adjusted by SEK 1 million in rounding off.

The pension balances of deceased persons (*inheritance gains arising*) are distributed to the survivors of the same age. By means of an inheritance gain factor, the distribution is made as a percentage increase in pension balances.

Until the year when a birth cohort *reaches age 60*, the inheritance gains distributed are those actually arising. The inheritance gain factor is thus determined by the total pension balances of decedent persons of the same age. The inheritance gains from persons dying in 2004 *before reaching age 60* (SEK 5 956 million) were distributed to the respective birth cohorts in 2005. The inheritance gains distributed were SEK 5 710 million; the difference is explainable by the annual adjustment of pension balances for changes in tax assessments, among other reasons.

Beginning with the year when a birth cohort *reaches age 60*, the inheritance gains distributed are not those actually arising, but those expected to arise. Inheritance gain factors are estimated on the basis of the mortality observed by Statistics Sweden, the Swedish Central Office of Statistics, for an earlier period. Since this mortality will not be exactly the same as actual mortality in the year concerned, and since mortality may also vary with the income levels of the persons insured, there is a discrepancy between inheritance gains arising and gains distributed for ages 60 and above (SEK 2 898 million and 3 537 million in 2005).

## Note 11 Deduction for Costs of Administration

Costs of administration, also referred to as administrative costs, are financed by a percentage deduction from the pension balances of the insured. In order to avoid charging a disproportionately high cost to younger birth cohorts during the period when the ATP is being phased out, this administrative-cost deduction is being introduced step by step. In 2005, 68 percent of administrative costs were financed by deduction from pension balances. This deduction will increase by two percentage points each year and thus will not cover 100 percent of administrative costs until 2021.

The calculation of the administrative-cost factor is based on budgeted costs of administration, including the costs of the National Pension Funds, for the year concerned and an estimate of the pension balances among which the cost is to be allocated. The difference between the monetary value of the deduction made and the cost subsequently confirmed is considered in the calculation of the administrative-cost factor for the following year.

The administrative-cost deduction is calculated as pension balances multiplied by the administrative-cost factor. The deduction for administrative costs totals SEK 1 738 million and is reported in Note 14, Table A.

## Note 12 First–Fourth and Sixth National Pension Funds

Millions of SEK

National Pension Fund:	First	Second	Third	Fourth	Sixth	*	2005 Total	2004 Total
Stocks and shares**	112 092	124 603	108 769	114 536	13 803	438	474 241	375 629
of which: Swedish stocks and shares	25 001	46 973	32 529	40 317	13 803	438	159 061	129 551
foreign stocks and shares	87 091	77 630	76 240	74 219	0	0	315 180	246 078
Bonds and other interest-bearing assets	75 544	62 230	78 811	64 611	2 055	3 422	286 673	249 230
of which: Swedish issuers	32 179	37 345	30 270	29 612	2 055	3 422	134 883	127 313
foreign issuers	43 365	24 885	48 541	34 999	0	0	151 790	121 917
Other items	3 385	5 046	5 732	4 586	56	301	19 106	30 118
Total assets	191 021	191 879	193 312	183 733	15 914	4 161	780 020	654 977
Liabilities	-3 758	-1 286	-1 362	-3 635	-788	-1	-10 830	-8 777
Total fund capital	187 263	190 593	191 950	180 098	15 126	4 160	769 190	646 200

\* Special administration of the First and Fourth National Pension Funds.

\*\* Stocks and shares are reported by marketplace of acquisition.

## Note 13 Contribution Asset

Contribution revenue in millions of SEK, turnover duration in years

	2005	2004
Smoothed contribution revenue	178 116	173 049
Smoothed turnover duration	x 32.11771	x 32.39887
Contribution asset	5 720 678	5 606 592

See Notes 5–6 and Appendix B for the values and formulas used in calculating contribution revenue and turnover duration.

## Note 14 Pension Liability

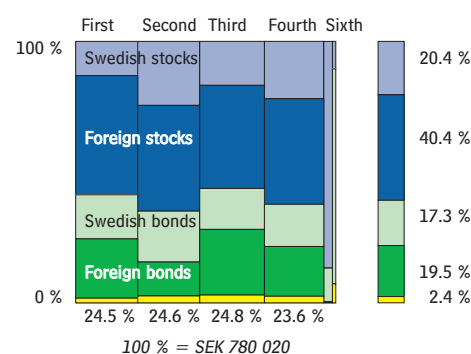
Millions of SEK

	Economically Active	Retired	2005 Total	2004 Total
ATP	1 042 121	1 728 147	2 770 268	2 797 010
Inkomstpension	3 570 838	120 370	3 691 208	3 446 999
Total	4 612 959	1 848 517	6 461 476	6 244 009

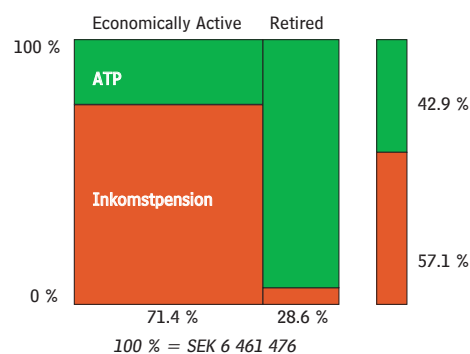
The pension liability to retirees is calculated in the same manner for the ATP and the inkomstpension. The first step is to total the pension disbursements to each birth cohort in December and to multiply this total by 12 to obtain a theoretical annual amount. The annual amount is thereafter multiplied by the economic life expectancy for each birth cohort, resulting in the pension liability to that cohort, with economic life expectancy expressed as an economic annuity divisor. The pension liabilities to all birth cohorts are then summed up.

The inkomstpension liability to the economically active consists of the total pension balances of all insured persons in this category as of December 31, 2005, with the addition of the estimated pension credit earned for 2005. The method of calculating the pension liability to the economically active and the economic annuity divisor is shown in Appendix B, Section 4.

The ATP liability to the economically active cannot be calculated directly from the data in the records of pension credit earned. That liability is estimated in the Swedish Social Insurance Agency pension model. The calculation is made for the birth cohorts whose pensions will be calculated partly by ATP rules (those born no later than 1953) and who have not reached age 65.



The diagram shows the assets of the National Pension Funds.



In order to determine the ATP liability, an estimate is made of the ATP of the respective birth cohorts in the year when they reach 65. The estimated annual amount for each cohort is multiplied by the economic annuity divisor for that cohort. To obtain the present value of the estimated pension liability, the liability is reduced by the cohort's expected future contributions to the system and discounted by the expected future increase in the income index. In the calculation it is assumed that the income index will increase by 2 per cent annually.

The year 2018 is the final one in the calculation since the cohort born in 1953 will reach age 65 that year.

**Table A Analysis of the Change in Inkomstpension Liability to the Economically Active**

Millions of SEK

Inkomstpension liability to the economically active, December 31, 2004	3 375 201
of which estimated inkomstpension credit earned in 2004	-150 975
Pension balance, December 31, 2004	3 224 226
Deduction for undistributed Inheritance gains *	-5 956
Adjustments affecting pension balances **	-446
<b>A</b> Opening pension balance, 2005	3 217 824
Changes in tax assessments etc. affecting pension balances	-672
<b>B</b> Confirmed inkomstpension credit earned in 2004	150 482
<b>C</b> Distributed inheritance gains from persons dying in 2005 and born in 1945 or earlier	3 537
Distributed inheritance gains from persons dying in 2004 and born in 1945 or thereafter	5 710
<b>E</b> Indexation	91 285
<b>D</b> Deduction for administrative costs	-1 738
Reduction in pension liability due to pensions drawn in 2005	-50 469
Pensions revoked	231
Inheritance gains arising from persons dying in 2005 and born in 1945 or earlier	-2 898
<b>F</b> Pension balances as of December 31, 2005	3 413 291
Estimated inkomstpension credit earned in 2005	157 547
Inkomstpension liability to the economically active as of December 31, 2005	3 570 838

\* Inheritance gains from persons born in 1945 and thereafter and dying in 2004; these gains were distributed in 2005.

\*\* Transfers to the European Communities (see Note 2), adjustments for deceased persons, sealed cases, etc.

**Table B Analysis of Change in ATP Liability to the Economically Active**

Millions of SEK

ATP liability, December 31, 2004	1 110 829
Effect of difference between assumption for 2005 and estimate in 2004 etc.	4 472
Opening ATP liability, 2005	1 115 301
Indexation	30 519
Estimated value of ATP points earned in 2005	6 182
Reduction in pension liability due to pensions drawn in 2005	-134 845
Value of other paid-in contributions for the ATP	13 103
Effect of change in average economic life expectancy	11 861
ATP liability to the economically active, December 31, 2005	1 042 121



**Table C Analysis of Change in Pension Liability to Retirees, ATP and Inkomstpension**

Millions of SEK

	ATP	Inkomst- pension	Total
Pension liability to retirees, December 31, 2004	1 686 181	71 798	1 757 979
Additional liability to the economically active	134 845	50 238 *	185 083
Change in amounts disbursed	7 896	1 966	9 862
Pensions disbursed, net**	-162 563	-6 507	-169 070
Indexation	38 346	1 659	40 005
Effect of change in life expectancy	23 442	1 216	24 658
Pension liability to retirees, December 31, 2005	1 728 147	120 370	1 848 517

\* Of which additional liability from the economically active, SEK 50 469 million, and pensions returned, SEK -231 million. See Note 14, Table A.

\*\* Total pension disbursements from the National Pension Funds (see Note 2), with deduction for transfers to the European Communities.

The liability to retirees is increased by indexation and a higher life expectancy, and it is decreased by the disbursements made during the year. The reduction in the pension liability due to pension withdrawals (see Note 14, Tables A and B) is reported here as additional liability to the economically active.

There are also further changes in liability, which are reported as changes in amounts disbursed. Pension amounts can change because of new pension credit earned, changes in the extent of pension withdrawals, revocations, changes in marital status (applies to the ATP), changes in assessment, etc.

## Notes and Comments Relating to the Premium Pension

NB: all amounts in Notes 15–27 are expressed in thousands of SEK.

### Note 15 Pension Disbursements

Thousands of SEK

	2005	2004
Pension disbursements from fund insurance	93 761	39 255
Pension disbursements from conventional insurance	9 941	3 190
Subtotal*	103 702	42 445
Transferred to the European Communities	1 355	–
Total	105 057	42 445

\* Including pensions granted but not yet disbursed.

Like the inkomstpension, the premium pension can be drawn from the age of 61. One option for a pension saver at the time of retirement is to retain her/his accumulated balance in fund insurance, which means that the amount of the pension will depend on the change in the value of the funds chosen by the saver. The other option is to switch to conventional insurance, either at the time of retirement or later. With conventional insurance, the pension is disbursed as a nominal guaranteed monthly amount. A guaranteed return, presently 2.75 percent, is included in this amount. If PPM management of conventional insurance capital achieves a return higher than the guaranteed rate, a rebate can be granted in the form of a supplement to the pension disbursed. Such supplements, which can vary from year to year, totaled SEK 180 000 in 2005.

## Note 16 Return on Funded Capital

Thousands of SEK

	Fund insurance	Conventional insurance	2005 Total	2004 Total
Stocks and shares	43 870 159	24 389	43 894 548	9 294 051
of which: direct return	1 929 146	8 331	1 937 477	1 429 017
<i>realized and unrealized capital gains</i>	41 941 013	16 058	41 957 071	7 865 034
Bonds and other interest-bearing securities	50 447	-3 590	46 857	6 165
of which: direct return (net interest)	5 080	-293	4 787	4 393
<i>realized and unrealized capital gains</i>	45 367	-3 297	42 070	1 772
Net foreign-exchange gain/-loss	834 234		834 234	-318 907
Subtotal return	44 754 840	20 799	44 775 639	8 981 309
Change, conventional insurance		9 290	9 290	2 089
Total return	44 754 840	30 089	44 784 929	8 983 398

The return earned includes realized and unrealized foreign-exchange gains and losses. The average fund management charge after rebates is 0.42 percent of average capital.

## Note 17 Costs of Administration

Thousands of SEK

	2005	2004
Operating expenses	250 339	220 114
Return on capital, revenue/expense, net	36 667	65 049
Total	287 006	285 163

Costs of administration, also referred to as administrative costs, include the (net) financial revenue or expense from borrowings to finance the PPM. Costs of fund management are paid directly from insurance assets and thus are not included in PPM costs of administration.

## Note 18 New Pension Credit

In the premium pension system, the equivalent of contribution revenue is new pension credit, including interest for the period when contribution moneys are managed by the PPM before being invested in the funds chosen by the insured. The amount also includes positive changes in pension credit earned in previous years and distributed rebates of fund management fees.

## Note 19 Pension Disbursements

Pension disbursements reduce the pension liability; see Note 15.

## Note 20 Change in Value

The pension liability changes with the return on premium pension funds; see Note 16.

## Note 21 Inheritance Gains Arising

Inheritance gains arising are analogous to decedents' capital. This item also includes amounts by which pension credit is reduced by the transfer of premium pension capital from one spouse to the other. Transferred capital is currently reduced by 14 percent. This percentage is subject to change, but the change affects only the pension capital transferred thereafter. The reason

why the premium pension decreases when capital is transferred is the PPM's assumption that more transfers will be made to women than to men. Since women live longer than men on average, the premium pension transferred will probably be disbursed for a longer period than if it had been retained by the person who had earned it. According to the Earnings Related Old Age Pension Act (1998:674), the cost is to be covered by those receiving the transfer rather than shared by all pension savers. During 2004, a total of 6 987 persons transferred aggregate pension capital of SEK 37 451 000 to spouses or registered partners

## Note 22 Inheritance Gains Distributed

Inheritance gains are set aside for pension savers and are distributed once a year.

## Note 23 Deduction for Costs of Administration

The amount of SEK 334 683 000 (330 515 000) is for fees withdrawn by the PPM to finance its operating expenses. The fee for 2005 was 0.22 percent of the account balances of pension savers. During the build-up phase and until 2018, the authority will be financed by a combination of fees withdrawn and interest-bearing overdrafts for working capital needs as well as by borrowing within authorized limits from the National Debt Office. The fee withdrawn was based on the cost level forecast for 2005 and entailed a positive result. The authority is permitted to withdraw annual fees equivalent to a maximum of 0.3 percent of the aggregate account balances of pension savers. This is done to avoid charging those currently insured with disproportionately high fees for the build-up of the PPM at a time when their premium pension capital is limited.

## Note 24 Insurance Assets

Thousands of SEK

	2005	2004
Fund insurance	192 769 385	124 024 114
Conventional life insurance, PPM management	307 225	93 893
<b>Total</b>	<b>193 076 610</b>	<b>125 118 007</b>

As of December 31, 2005, the number of pension savers totaled 5 456 306, of whom 5 430 468 had invested their savings in fund insurance and 25 838 in conventional insurance. The number of retired pension savers was 249 747.

## Note 25 Other Assets

Thousands of SEK

	2005	2004
Temporarily managed preliminary contributions	46 481 981	44 684 330
PPM's administrative inventory of fund shares (trading inventory)	39 965	26 866
Other assets	887 978	666 561
<b>Total</b>	<b>47 409 924</b>	<b>45 377 757</b>

The PPM is responsible for temporarily managing the preliminary contributions transferred monthly by the Swedish Social Insurance Agency until pension credit has been confirmed and the moneys have been invested in the insurance alternatives of the PPM. Preliminary contributions are contributions that have been paid in but not yet invested. These moneys are deposited by the PPM to an account with the National Debt Office, where they are

managed for an average of 18 months. The moneys managed in 2005 were for pension credit earned in 2003–2005. The moneys for credit earned in 2003 were invested in January 2005.

## Note 26 Pension Liability

Thousands of SEK

	<b>2005</b>	<b>2004</b>
Pension liability, fund insurance	192 769 440	125 026 124
Pension liability, conventional life insurance	307 224	93 893
<b>Total</b>	<b>193 076 664</b>	<b>125 120 017</b>

## Note 27 Other Liabilities

Thousands of SEK

	<b>2005</b>	<b>2004</b>
Liability relating to preliminary contributions	46 481 660	44 684 082
Other liabilities	2 550 397	2 371 215
<b>Total</b>	<b>49 032 057</b>	<b>47 055 297</b>

## Accounting Principles

*In the calculation of the so-called contribution asset, the accounting for the inkomstpension is governed by principles especially developed for a primarily unfunded pension system. Therefore, this section is more descriptive and comprehensive than is normally the case with the corresponding sections in the annual reports of other entities.*

### Regulations and Guidelines

The Annual Report of the Pension System has been prepared in accordance with Chapter 15, § 20 of the Earnings Related Old Age Pension Act (1998:674), which provides that each year the authority designated by the Government is to prepare a report on the financial position and development of the earnings-related old-age pension system.

This system consists of the inkomstpension, the ATP, and the premium pension. The guaranteed pension, which is part of the national public pension system, is not based on earnings and is therefore not included in the accounts.<sup>5</sup>

The inkomstpension and the ATP are examples of benefits in a pay-as-you-go pension system. In such systems, contributions are not funded, but in principle are used directly to finance pension disbursements. The National Pension Funds are buffer funds that absorb differences between the inflow of contributions and the outflow of pensions. As elsewhere in the accounts, the term "inkomstpension" refers to the entire pay-as-you-go system; in other words, it often applies to the ATP as well. According to the Earnings Related Old Age Pension Act (1998:674), the reported assets of the pay-as-you-go system consist of the contribution asset and the value of the assets of the First–Fourth and Sixth National Pension Funds. Formulas for calculating the contribution asset and the pension liability of the inkomstpension system are provided in the Regulations for Calculation of the Balance Ratio (2002:780). These formulas are also found in Appendix B of the Annual Report; see page 72.

The premium pension system is a fully funded pension system in which contributions are invested and pensions are paid as the accumulated capital is sold.

According to the Regulations for the Annual Report (2002:135), the Report is to include a projection of the assumed long-term development of the pension system. See the section "Three Scenarios for the Future of the Pension System," page 43.

The annual reports of the National Pension Funds set forth the accounting principles used. Therefore, these principles are not described in this Report. The annual report of each national pension fund is available on the home pages of the respective funds: [www.ap1.se](http://www.ap1.se), [www.ap2.se](http://www.ap2.se), [www.ap3.se](http://www.ap3.se), [www.ap4.se](http://www.ap4.se), and [www.ap6.se](http://www.ap6.se). As the annual report of the PPM describes the principles used there, these are only presented in summary form in this Report. For further information, see [www.ppm.nu](http://www.ppm.nu).

### Where Do the Figures Come From?

The accounting for the inkomstpension system is based on data from the administrative records of the Swedish Social Insurance Agency. The amounts reported are based primarily on Swedish Social Insurance Agency records of pension credit earned and pension disbursements.

<sup>5</sup> However, the pension forecasts received annually by virtually every insured in the "orange envelope" include a guaranteed pension for those persons who according to the forecast will be entitled to one.

In the accounting for the pension system, the data for the First–Fourth and Sixth National Pension Funds have been taken entirely from the annual reports of each fund. The buffer funds prepare their own reports according to the Law on National Pension Funds (2000:192). On the basis of current provisions for comparable financial companies, the funds have also developed common principles for accounting and valuation.

In the accounting for the pension system, the data on the premium pension are presented largely in accordance with the PPM Annual Report, which has been prepared according to the Law on Annual Reports of Insurance Companies (1995:1560), as well as other governing criteria. Certain items have been simplified and aggregated for purposes of clarity.

## Principles for Valuation of Assets and Liabilities

The assets and liabilities of the inkomstpension system are valued principally on the basis of events and transactions that are verifiable at the time of valuation. Thus, the assumption that contribution revenue is normally assumed to increase with economic growth, for example, is not considered in the calculation of the contribution asset. Nor does the valuation of the pension liability take into account the assumption that pension disbursements, because of factors like indexation, will increase in the future. One of the main reasons why it has been considered reasonable to value assets and liabilities without looking into the future is that the financial position of the system is not dependent on the amounts of assets and liabilities taken separately. The financial position of the system is determined solely by the relationship of assets to liabilities, or the so-called balance ratio.

In the design of the inkomstpension, there is a strong link between the development of system assets and the development of system liabilities, although in cases where the balance ratio exceeds one (1.0000), assets and liabilities will develop at slightly different rates over time. When the balance ratio is less than one (1.000), the provisions for balancing establish in principle an absolute link between the rates of change in liabilities and assets.<sup>6</sup>

In the valuation of the assets and liabilities of the inkomstpension system, it is assumed that these will change at the same rate after each valuation. To put it another way, it is assumed in the method of valuation that the future internal rate of return of the system will be the same as the future change in the pension liability, even though this outcome is certain only if balancing has been activated. When balancing has not been activated, the internal rate of return may be either greater or less than the change in the value of the pension liability.

The valuation of the contribution flow and the pension liability are based almost exclusively on the relationships prevailing at the time of valuation. This does not reflect a belief that all these factors will remain totally constant; rather, the accounting is so designed that it will not include changed conditions until these are reflected in the events and transactions on which the accounts are based.

## Valuation of Inkomstpension Assets

In a pay-as-you-go system, there is no requirement that assets be maintained at a certain percentage of the pension liability. Thus, contributions in such a system can be used directly to pay pensions. In the inkomstpension system, the inflow of contributions is an asset, referred to as the contribution asset.

The basis for valuation of the contribution asset is the size of the pension liability that the contribution flow for the accounting year could finance if the conditions prevailing at the time of valuation remained constant. The relevant determinants, aside from the rules of the pension system, are economic and

<sup>6</sup> In the method for calculating turnover duration, there is an implicit assumption that the economically active population will remain constant. If the population decreases, there is thus a risk that the accounts will (slightly) overstate the system's assets in relation to its liabilities. It is reasonable, however, to assume that the population will cease declining at some point. If so, the overstatement, and the possible deficit in the buffer fund that may result, will be temporary. The buffer fund will in time return to a level of at least SEK zero. For a description of the buffer fund, see the definition in the List of Terms on page 61.

demographic. The economic determinants are the average pension-qualifying income of each annual birth cohort and the sum of these incomes. The demographic determinants relate to mortality at different ages. The relevant rules for the pension system are those that govern the calculation and the indexation of the inkomstpension, define the contribution and pension base, and determine the contribution in percent. The contribution asset is calculated by multiplication of the contribution revenue for the accounting year by the turnover duration for the same year.<sup>7</sup> Turnover duration expresses the expected average length of time between the payment of a monetary unit of contribution into the system and the disbursement of the corresponding pension credit in the form of a pension. Thus, turnover duration reflects the difference in age between the average contributor and the average pensioner that would result if economic, demographic, and legal conditions were constant.

To say that the valuation of the contribution inflow is derived through multiplication of the year's inflow by turnover duration is same as saying that this value is based on a supposedly permanent inflow of contributions, with the inflow each year equal to the contributions of the preceding year, discounted at a rate equal to one ( $r$ ) divided by turnover duration. If turnover duration goes up, the rate of discount decreases and the value of the contribution flow increases. If turnover duration goes down, the rate of discount increases and the value of the contribution flow decreases.

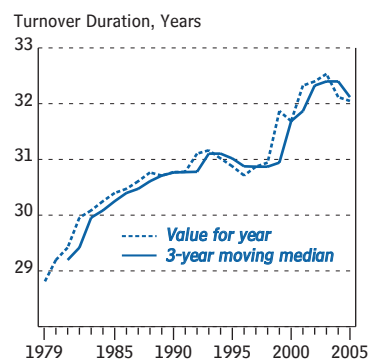
To limit variation in the balance ratio – meaning to reduce fluctuation in the annual result of the pension system – the contribution flow used in the calculation of the contribution asset is smoothed. The method of smoothing is the same as in the calculation of the income index. Since the latter has a substantial impact on the development of the pension liability and thus on the denominator of the balance ratio, it is important that the contribution flow in the numerator of the balance ratio also follow the smoothing of the income index. To achieve this smoothing, the average contribution of the past three years is calculated, then indexed by the annual percentage change in the contribution flow for the last three years, after eliminating the change in consumer prices during the same period, while the change in consumer prices the last year is added. Moreover, also, to reduce the variation in the balance ratio, the median turnover duration for the last three years is used in the calculation of the contribution asset.

The assets of the National Pension Funds are assessed at their so-called true value. This means that assets are valued at their latest price paid, if any, on the last trading day of the year, otherwise at the latest price bid.

## Valuation of Inkomstpension Liabilities

As with the valuation of the contribution asset and the buffer funds, the valuation of the pension liability is based on conditions prevailing at the time of valuation, without regard to the future course of events.<sup>8</sup> This means that the inkomstpension liability to persons who have not yet begun to draw an old-age pension is valued as the sum of the pension balances of all insured persons, that is, indexed pension credit and inheritance gains minus the deduction for administrative costs. Income earned in the year covered by the accounts has not yet been confirmed at the time of the report. For this reason, an estimate of the inkomstpension credit earned in the year of the report is added to the sum of the pension balances of the insured. This added amount equals only about three percent of the total pension liability and is estimated with high accuracy. The difference between estimated and confirmed pension credit is deducted in the annual report for the following year.<sup>9</sup>

<sup>7</sup> The method of calculating turnover duration is described in Equation 3, Appendix B; see also the List of Terms.



Stem – and – leaf diagram of annual change in turn over duration

change measured	3-year moving median
3   0	
2   0	4
1   148	148
0   02222244455568	0000022223445668
-0   225556	0359
-1   3	

1 | 148 to be read as three annual changes of 1.1, 1.4, and 1.8 percent, respectively

<sup>8</sup> As discussed below, this is not fully applicable until ATP points can no longer be earned, i.e. from 2018 on.

<sup>9</sup> See Note 14, Table A.

<sup>10</sup> See Formula 4.3 in Appendix B.

The pension liability to retirees is calculated through multiplication of pensions granted by the expected number of times that the pension amount will be disbursed. The pay-out period is discounted (reduced) in order to reflect the indexation of disbursed amounts by the increase in the income index less 1.6 percentage points. For this purpose, the expected number of disbursements is calculated from measurements of the pay-out period of pension amounts according to Swedish Social Insurance Agency records, or so-called economic annuity divisors.<sup>10</sup> In the economic annuity divisors, consideration is given to any correlation between pension levels and pay-out period.

One accounting principle is that the report be based only on events or transactions that have occurred and have been recorded. Since pension credit will be earned under the provisions of the ATP and the folkpension through 2017, this accounting principle cannot yet be fully applied. The reason is that the ATP liability to persons who have not yet begun to receive their pensions cannot be determined without making assumptions about future economic and demographic developments. According to the Regulations for the Annual Report (2002:135), the ATP liability for the economically active is therefore to be calculated on the basis of certain assumptions about future developments. In the Annual Report of the Pension System, that liability is to be estimated according to the principles set forth by the Government in its proposal for the Law (2000/01:70) on Automatic Balancing in the Old Age Pension System. These principles provide that the ATP liability to the economically active is to be calculated on the assumptions of the same life expectancy used in determining the inkomstpension liability and of two-percent annual growth in the income index.

On these conditions, the ATP liability as of December 31, 2005, is calculated by estimating the ATP to be received at age 65 by each annual cohort born in the years 1941–1953. This amount is multiplied by the established annuity divisor of the accounting year for persons aged 65. The resulting amount is then discounted, both by the assumed annual change of two percent in the income index, from the end of the accounting period until the birth cohort concerned reaches age 65, and by the similarly discounted value of that birth cohort's expected contribution inflow until its members reach age 64. Pension credit for income earned after that age is calculated entirely according to the provisions for the inkomstpension.

The ATP liability to the economically active is gradually diminishing, both because the birth cohorts that have earned ATP credit are retiring and because the proportion of ATP credit earned is decreasing with each birth cohort in this age group. As of December 31, 2005, the ATP liability to the economically active was 16 percent of the total pension liability. This proportion will dwindle rapidly in the future and in principle will have reached zero by 2018.

### Valuation of Premium Pension Assets and Liabilities

Premium pension assets are reported at their true value, or accrued acquisition cost according to the regulations and general guidelines of the Swedish Financial Supervisory Authority (FFFS 2003:13). Assets reported at their true value as of the balance sheet date are valued at their price on the last trading day of the year. In the valuation of assets reported at accrued acquisition cost, the difference between acquisition cost and redemption price is periodized as interest revenue for the remaining time to maturity.

Fund insurance assets consist of the investments of pension savers in funds and are valued at the redemption price for fund shares. The amount set aside for the pension liability in fund insurance consists of the redemption value



of shares in current insurance funds and of moneys not yet invested in fund shares.

The pension liability for conventional insurance is determined for each insurance policy as the capital value of the remaining guaranteed disbursements. The value is calculated on assumptions about future returns, life expectancy, and operating expenses. The return represents a conservative assessment of the nominal rate of return for the period covered and has been set at 2.75 percent. Assumptions about life expectancy are based on the population forecasts of Statistics Sweden from 2003 in the low-mortality alternative. Management expenses are estimated in a forecast for the portion of PPM management expenses applicable to its conventional insurance operations.

BDO Nordic Stockholm AB  
Authorized Public Accountants

## AUDIT REPORT

### On the Annual Report of the Swedish Pension System

#### To the Swedish Social Insurance Agency

We have audited the Annual Report of the Swedish Pension System for 2005. In accordance with the Regulations on Annual Reporting of the Financial Position and Development of the Earnings Related Old Age Pension System (2001:135), the Swedish Social Insurance Agency is obligated to prepare the Annual Report of the Swedish Pension System. The Director General of the Swedish Social Insurance Agency is responsible for preparing the Annual Report and for its conformity with the Earnings Related Old Age Pension Act (1998:674). Our responsibility is to express an opinion on the Annual Report based on our audit.

We conducted our audit in accordance with generally accepted auditing standards in Sweden. Those standards require that we plan and perform the audit so as to establish with substantial, though not absolute, certainty that the Annual Report is free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the Annual Report. An audit also includes assessing the accounting principles used and their application by the Director General and significant estimates made by the Director General when preparing the Annual Report as well as evaluating the overall presentation of the Annual Report.

Our audit covers the income statements and balance sheets of the income pension, premium pension, and earnings-related old-age pension systems, including notes and comments, accounting principles used, and other explanatory information. Our audit has not involved reviewing the principles of the national public pension or reviewing projections or other information outside the scope of our audit.

We believe that our audit provides a reasonable basis for our opinion set out below.

The Annual Report has been prepared in accordance With the Earnings Related Old Age Pension Act (1998:674), the Regulations on Annual Reporting of the Financial Position and Development of the Earnings Related Old Age Pension System (2002:135), and otherwise in accordance with what is described in the Annual Report under the heading of Accounting Principles. The balance ratio shown in the Annual Report has been calculated in accordance with the Regulations for Calculation of the Balance Ratio (2002:780).

Stockholm 18<sup>th</sup> April 2006

Ulf H Davéus  
Authorized Public Accountant

Ove Olsson  
Authorized Public Accountant

# How the National Pension System Works

The Swedish pension system is based on straightforward principles. The outline shown in the margin should enable the reader to understand its basic features. For anyone wishing to understand the system more thoroughly, it should suffice to read this section.

## Almost Like Saving at the Bank ...

The earnings-related pension system works much like ordinary saving at the bank. The comparison applies to both earnings-related parts of the system, the inkomstpension and the premium pension. Each year pension contributions are paid by the insured, their employers, and in certain cases the central government. Contributions are recorded in the “bankbook” of the insured – i.e., the respective accounts for the inkomstpension and the premium pension. Savings accumulate over the years with the inflow of contributions and at the applicable rate of “interest”. The annual statement sent out each year in the “orange envelope” contains information that enables the insured to watch their own inkomstpension and premium pension accounts grow from year to year. At retirement, the stream of payments is reversed, and the inkomstpension and premium pension are disbursed for the remaining lifetime of the insured.

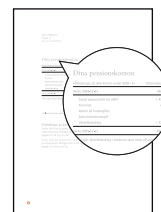
## ... but Entirely a Form of Pension Insurance

One feature of pension insurance is that savings are blocked; it is impossible to withdraw all or any part of them before the minimum age for receiving a pension. That age is 61 years for both the inkomstpension and the premium pension.

Pension insurance is intended to redistribute assets from individuals with shorter-than-average life spans to those who live longer. The pension balances of deceased persons – so-called *inheritance gains* (see Appendix A) – are redistributed each year to the surviving insured in the same birth cohort. Also after pension withdrawal begins, assets are redistributed from those with



$$\begin{aligned} &\text{Your income} \\ &\downarrow \\ &\text{Pension contributions} \\ &= \\ &\text{Pension credit} \end{aligned}$$



$$\begin{aligned} &\text{Pension credit} \\ &+ \\ &\text{Interest, etc.} \\ &= \\ &\text{Pension account} \end{aligned}$$



$$\begin{aligned} &\text{Pension account} \\ &\div \\ &\text{Years of retirement} \\ &= \\ &\text{Your annual pension} \end{aligned}$$

## Costs of Administration in the Old-Age Pension System

Notes 4 and 17 to the Income Statement report the administrative costs that have reduced the buffer fund in the inkomstpension system and fund assets in the premium pension system. In principle, these costs are deducted from pension balances and premium pension accounts, thus also reducing the pension liability. Notes 11 and 23 explain why the deduction for costs does not agree in amount with the costs reported.

The corresponding costs are shown in the following table as the total, pension administration and in the case of the National Pension Funds, as costs of capital management reported gross. In the table, the costs of capital management reported net are not treated as costs in the annual reports of the National Pension Funds and the PPM. Instead, they are reported as negative revenue or reductions in revenue or in the return on assets. The items of performance-based fees and brokerage, etc. are

thus amounts that have reduced the return on funded capital reported in Note 3. As for the premium pension system, the item of fees not based on performance refers to costs deducted by the funds before rebates. At present, roughly half of the fee is returned to pension savers as a rebate.

The total cost of administration for the pension system and capital management thus exceeds SEK 4.6 billion, of which SEK 2.3 billion are reported as administrative costs in the income statement of the pension system.

To provide an additional perspective on costs, all cost items are also reported in relation to the number of pension savers, including pensioners, and to the pension liability of the system at year-end. In a third table, costs of capital management are shown as a percentage of the average capital managed during the year.

shorter-than-average life spans to those who live longer. This is done by basing monthly pensions on life expectancy but paying them out as long as the insured lives. Consequently, total pension disbursements to persons who live for a relatively short time after retirement are less than their pension savings, and those who live longer than average receive more than the value of their pension balances and premium pension capital.

The balance of an insured's pension account consists of the sum of her pension credit (contributions), accumulated interest, and inheritance gains. The account is charged each year with a fee for administrative costs. The balance of the inkomstpension account is called the pension balance, while the balance of the premium pension account is called premium pension capital.

### One Krona of Pension Credit for Each Krona Contributed

The pension contribution is 18.5 percent of the pension base. The pension base consists of pension-qualifying income and pension-qualifying amounts. In addition to earnings, benefits from the social insurance and unemployment insurance systems are treated as income. Pension-qualifying amounts are a basis for calculating pension credit but are not income, properly speaking. Pension credit is granted for pension-qualifying amounts for sickness and activity compensation, child-care years, studies, and compulsory national service. The maximum pension base is 7.5 income-related base amounts (SEK 324 750 in 2005). Pension credit accrues at 16 percent of the pension base for the inkomstpension and 2.5 percent for the premium pension.

### Who Pays the Contribution?

The insured pays an individual pension contribution to the pension system of 7 percent of her/his earnings and any benefits received from the social insurance and/or unemployment insurance schemes. The contribution is paid on incomes up to 8.07 income-related base amounts.<sup>11</sup> The individual pension contribution of 7 percent is not included in the pension base.

For each employee, employers pay a pension contribution to the pension system of 10.21 percent of that individual's earnings.<sup>12</sup> This contribution is also paid on earnings exceeding 8.07 income-related base amounts. Since there is no pension credit for earnings above 8.07 income-related base amounts, these contributions are in fact a tax.<sup>13</sup> They are therefore allocated to the

<sup>11</sup> In 2005,  $8.07 \times 43\,300 = \text{SEK } 349\,431$ .

<sup>12</sup> Self-employed persons pay the individual pension contribution of 7 percent and a self-employment contribution of 10.21 percent.

<sup>13</sup> In Note 1 it is shown that this tax amounted to roughly SEK 11.4 billion in 2005.

### Costs of Administration, Old-Age Pension System, Millions of SEK

	Inkomst- pension	Premium pension	Total
Collection of contributions, calculation of pension-qualifying income	279	58	337
Insurance administration	895	229	1 124
<b>Total, pension administration</b>	<b>1 174</b>	<b>287</b>	<b>1 461</b>
Costs of capital management reported gross <sup>1</sup>	858	0	858
Costs of capital management reported net <sup>2</sup>	1 143	1 200	2 343
of which:			
fees not based on performance	521 *	1 420	1 941
performance-based fees	248 *	–	248
rebates of fund management fees	–	–723	–723
brokerage, etc.**	374 *	503 ***	877
<b>Total, capital management</b>	<b>2 001</b>	<b>1 201</b>	<b>3 202</b>
<b>Total costs</b>	<b>3 175</b>	<b>1 487</b>	<b>4 662</b>

<sup>1</sup> Pension-system costs reported as gross amounts in the income statements of the PPM or the National Pension Funds.

<sup>2</sup> Pension-system costs that have reduced the return on capital in the income statements of the PPM or the National Pension Funds. Note that here costs are not expressed in relation to the revenue that they may have generated.

\*

\*\* These costs are not borne by pension savers through the deduction for administrative costs. Brokerage refers primarily to transaction costs on the stock market. Transaction costs on the markets for interest-bearing securities and foreign exchange arise from the difference between bidding and asking prices. Such costs are not reported in this table.

\*\*\* Costs reported here are only those of the funds that report their so-called total-cost share (TKA) to the PPM. These funds account for 98.4 percent of the capital in the premium pension system. Also included in the funds are costs of interest and dividend taxes.

central-government budget as tax revenue rather than to the pension system as contributions.

For recipients of pension-qualifying social insurance or unemployment insurance benefits, the central government pays a contribution of 10.21 percent of these benefits to the pension system. For persons credited with pension-qualifying amounts, the central government pays a contribution of 18.5 percent of the pension-qualifying amount to the pension system. These central government contributions to the old-age pension system are financed by general tax revenue.

The total pension contribution is thus 17.21 percent, whereas the pension credit and the pension contribution are 18.5 percent of the pension base. The difference is due to the fact that the pension base is reduced by the individual pension contribution of 7 percent when pension credit is calculated.<sup>14</sup> This means that the maximum pension base is 93 percent of 8.07, or 7.5 income-related base amounts. The maximum pension credit in 2005 was SEK 60 079.

$$^{14} 0.1721/0.93 = 0.185$$

## Where Does the Contribution Go?

Of the pension contribution of 18.5 percent, 16 percentage points are deposited in the four buffer funds of the inkomstpension system: the First, Second, Third, and Fourth National Pension Funds.<sup>15</sup> Each fund receives one fourth of the contributions and finances one fourth of pension disbursements. The monthly pension disbursements of the inkomstpension system thus come from the buffer funds. In principle, the same moneys that were paid in during the month are paid out in pensions to the recipients.

<sup>15</sup> In addition, there is the Sixth National Pension Fund, which is an asset in the inkomstpension system, but provides no contributions and pays no pensions.

The premium pension contribution, 2.5 percent of the pension base, is invested by the PPM in interest-bearing assets until the final tax assessment is complete. Only then does the PPM know how much premium pension credit has been earned by each insured. When this amount has been determined, the PPM purchases shares in the funds selected by the insured. Contributions of insured persons who have not selected a premium pension fund are invested in the Premium Savings Fund. At the end of 2005, the premium pension system included 725 funds and 83 different fund managers. When an insured person retires, the PPM sells shares in the retiree's funds, and the proceeds are paid out as a pension.

## Costs per Insured in SEK and in Percent of Pension Liability at Year-End

	Inkomstpension		Premium pension		Total	
	SEK per insured <sup>1</sup>	percent of pension liability <sup>2</sup>	SEK per insured <sup>1</sup>	percent of pension liability <sup>2</sup>	SEK per insured <sup>1</sup>	percent of pension liability <sup>2</sup>
Collection of contributions, calculation of pension-qualifying income	38	0.00	11	0.03	46	0.01
Insurance administration	122	0.01	42	0.12	153	0.02
<b>Total, pension administration</b>	<b>160</b>	<b>0.02</b>	<b>53</b>	<b>0.15</b>	<b>199</b>	<b>0.02</b>
Costs of capital management reported gross	117	0.01			117	0.01
Costs of capital management reported net	155	0.02	220	0.62	319	0.04
of which:						
fees not based on performance	71	0.01	260	0.74	264	0.03
performance-based fees	34	0.00			34	0.00
rebates of fund management fees			-132	-0.37	-98	-0.01
brokerage, etc.	51	0.01	92	0.26	119	0.01
<b>Total, capital management</b>	<b>272</b>	<b>0.03</b>	<b>220</b>	<b>0.62</b>	<b>435</b>	<b>0.05</b>
<b>Total costs</b>	<b>432</b>	<b>0.05</b>	<b>273</b>	<b>0.77</b>	<b>634</b>	<b>0.07</b>

<sup>1</sup> The total number of persons insured was 7 353 480 for the inkomstpension and 5 456 306 for the premium pension.

<sup>2</sup> The pension liability, in millions of SEK, was 6 461 476 for the inkomstpension and 193 077 for the premium pension.

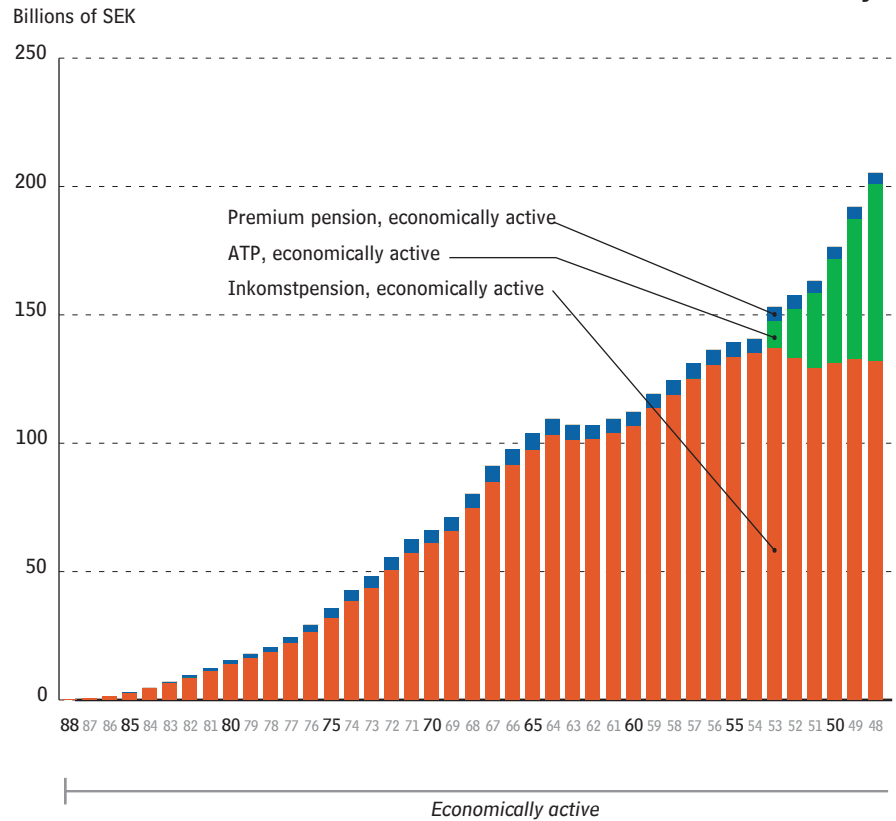
## Pension Liability to Asset of the Economically Active

The **inkomstpension liability/asset to the economically active** consists of the sum of each birth cohort's pension balances as of December 31, 2005, with the addition of total estimated pension credit for 2005. For further information, see Note 14, Table A, and Appendix B, Section 4.

The **ATP liability to asset of the economically active** is calculated with the pension model of the Swedish Social Insurance Agency. The ATP of each birth cohort is calculated in the year when the cohort reaches age 65. That estimated annual pension is multiplied by the economic annuity divisor for the birth cohort, and the present value of the product is determined. For further information, see Note 14, Table B, and Appendix B, Section 4.

The **premium-pension liability to asset of the economically active** consists of the aggregate fund assets of the respective birth cohorts as of December 31, 2005.

## Total Pension Liability

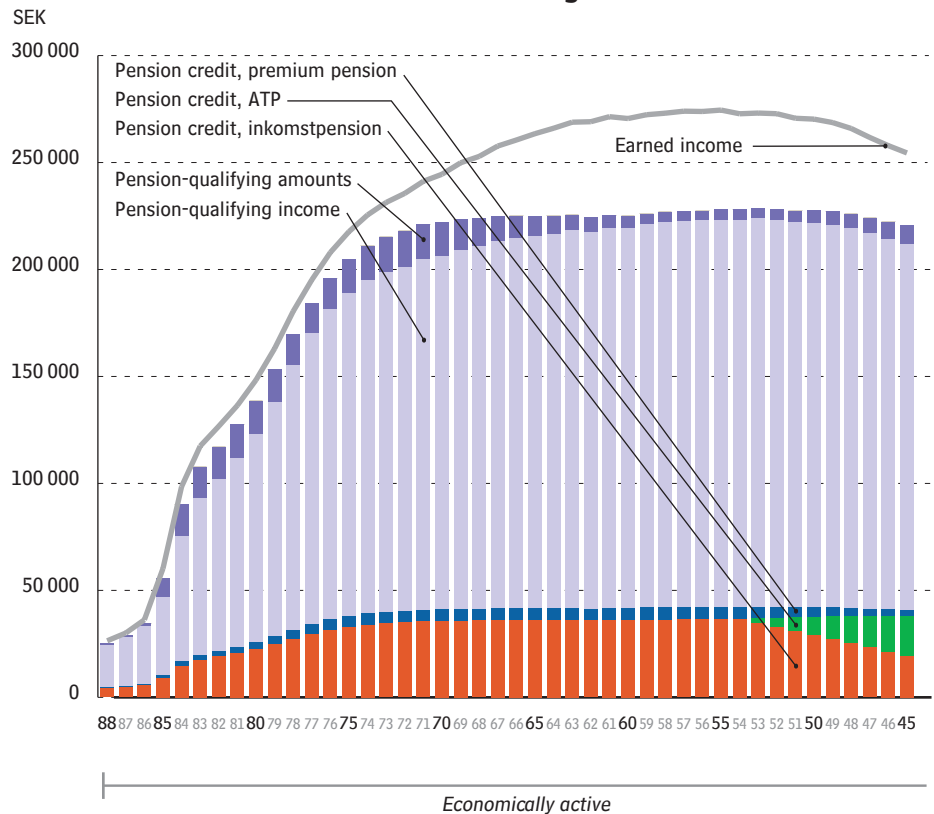


## Pension Credit Earned

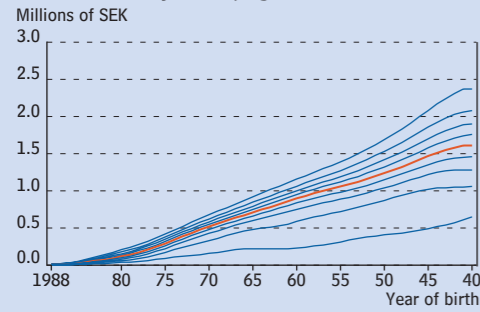
**Data on income and pension credit** are taken from the Swedish Social Insurance Agency records of earnings and refer to average amounts for all insured persons whose pension credit earned in 2004 was positive.

Income refers to income from employment and other earned income, as well as transfer payments. Income is shown before deduction of the individual social security contribution and for persons with incomes exceeding the threshold for pension credit (42.3 percent of one price-related base amount).

## Average Pension Credit Earned



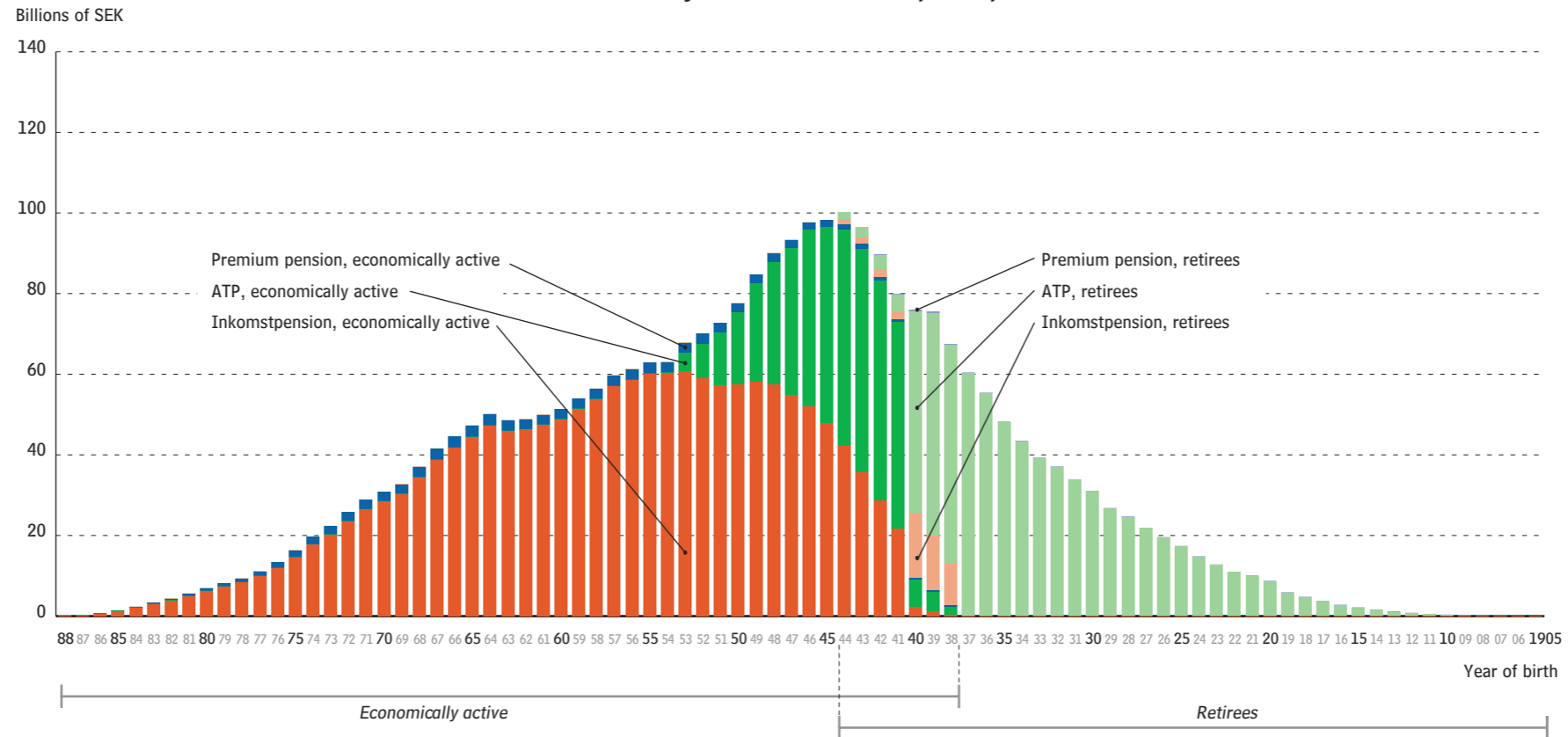
### Pension Liability/Asset, Ages 17-65



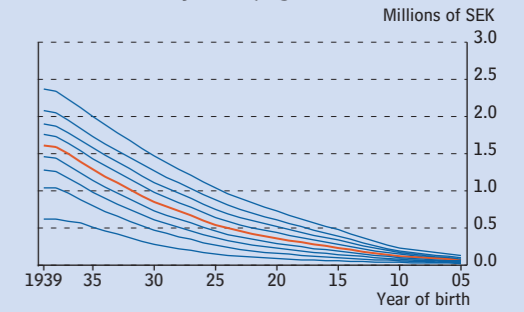
The red curve represents the median, which is the central value in the scale of values arranged from lowest to highest. The other curves indicate the values for the 10<sup>th</sup>-90<sup>th</sup> percentiles; i.e. the upper curve represents the value of the pension liability/asset exceeded by 10 percent of the insured, and the lower curve represents the opposite.

The median pension liability to asset of a female earner of pension credit aged 43.4 years is approximately SEK 840 000. At that age, the pension liability/asset exceeds SEK 1 080 000 for 10 percent of women and is less than SEK 220 000 for 10 percent of them.

### Total Pension Liability as of December 31, 2005, Women

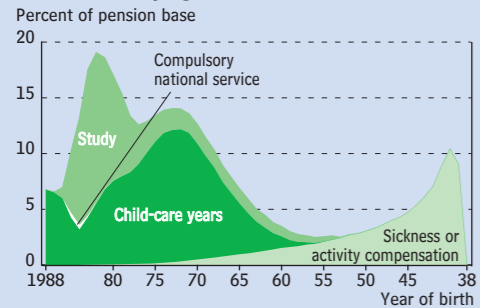


### Pension Liability/Asset, Ages 66 and Above



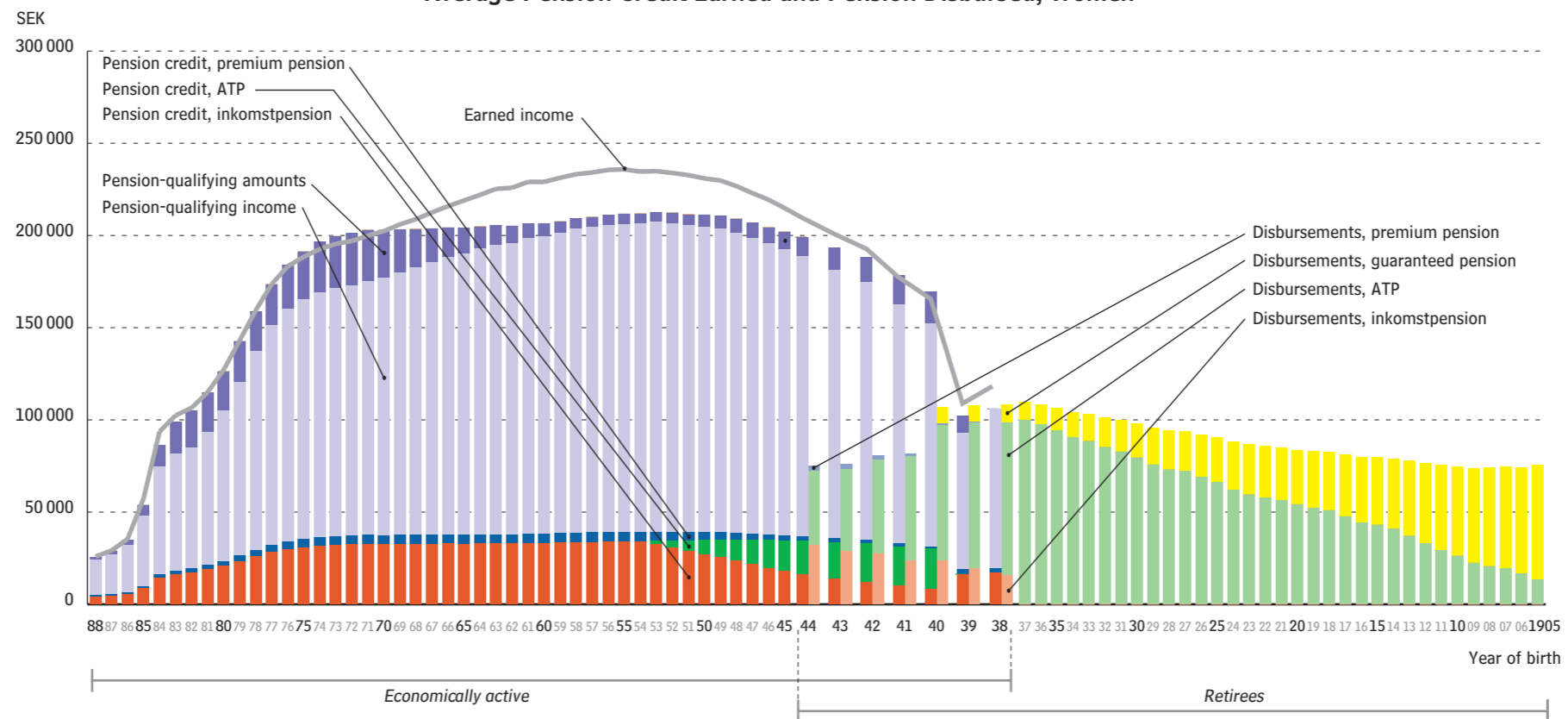
For 10 percent of retired women, the pension liability/asset exceeds SEK 2 370 000 at age 66. The median at that age is about SEK 1 610 000, and for 10 percent the pension liability/asset is less than SEK 620 000. For a pensioner aged 75.5, the corresponding amounts are SEK 1 420 000, 820 000, and 270 000.

### Pension Qualifying Amounts

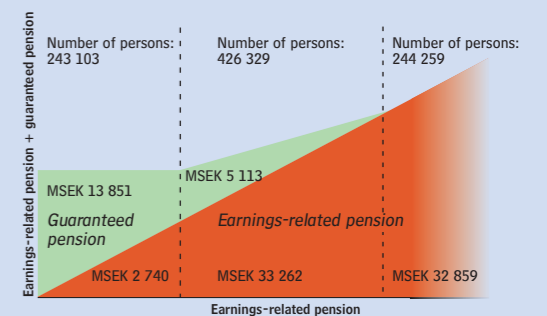


Pension credit is granted for pension-qualifying amounts in particular phases of individuals' lives, such as the time devoted to caring for small children and to compulsory national service. In 2004, pension-qualifying amounts constituted 7.5 percent of the pension base for women. The largest portion of this share, 3.7 percentage points, consisted of amounts for child-care years.

### Average Pension Credit Earned and Pension Disbursed, Women

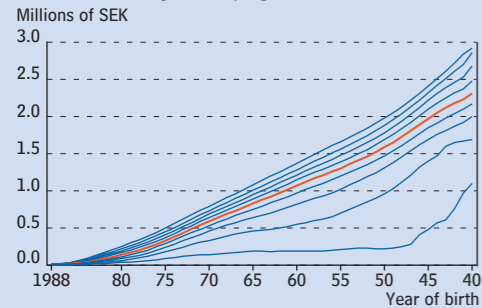


### Guaranteed Pension



See the section "Guaranteed Pension," page 41, for an explanation of the diagram. In 2005 the guaranteed pension accounted for 22 percent (SEK 18 964 million) of pension disbursements to women. Some 73 percent of female pensioners receive a guaranteed pension, and about 27 percent have a guaranteed pension above SEK 2 856 and 2 495, (the boundary between the reductions of 100% and 48% in the guaranteed pension for single and married, persons, respectively, born in 1938 or thereafter). For younger female pensioners, the proportion with a guaranteed pension is barely above 50 percent, primarily because of greater labor force participation and higher earnings for women in this age group. The statistics cover persons born in 1940 or earlier, and the total amounts show the December disbursements of the guaranteed pension, the inkomstpension, and the ATP in 2005, multiplied by 12.

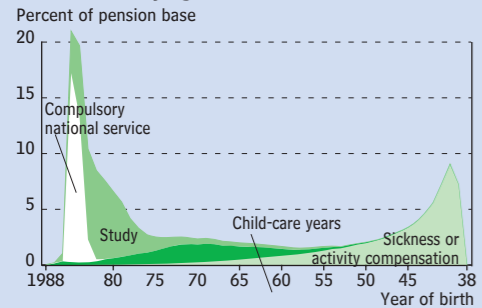
### Pension Liability/Asset, Ages 17-65



The red curve represents the median, which is the central value in the scale of values arranged from lowest to highest. The other curves indicate the values for the 10<sup>th</sup>-90<sup>th</sup> percentiles; i.e. the upper curve represents the value of the pension liability/asset exceeded by 10 percent of the insured, and the lower curve represents the opposite.

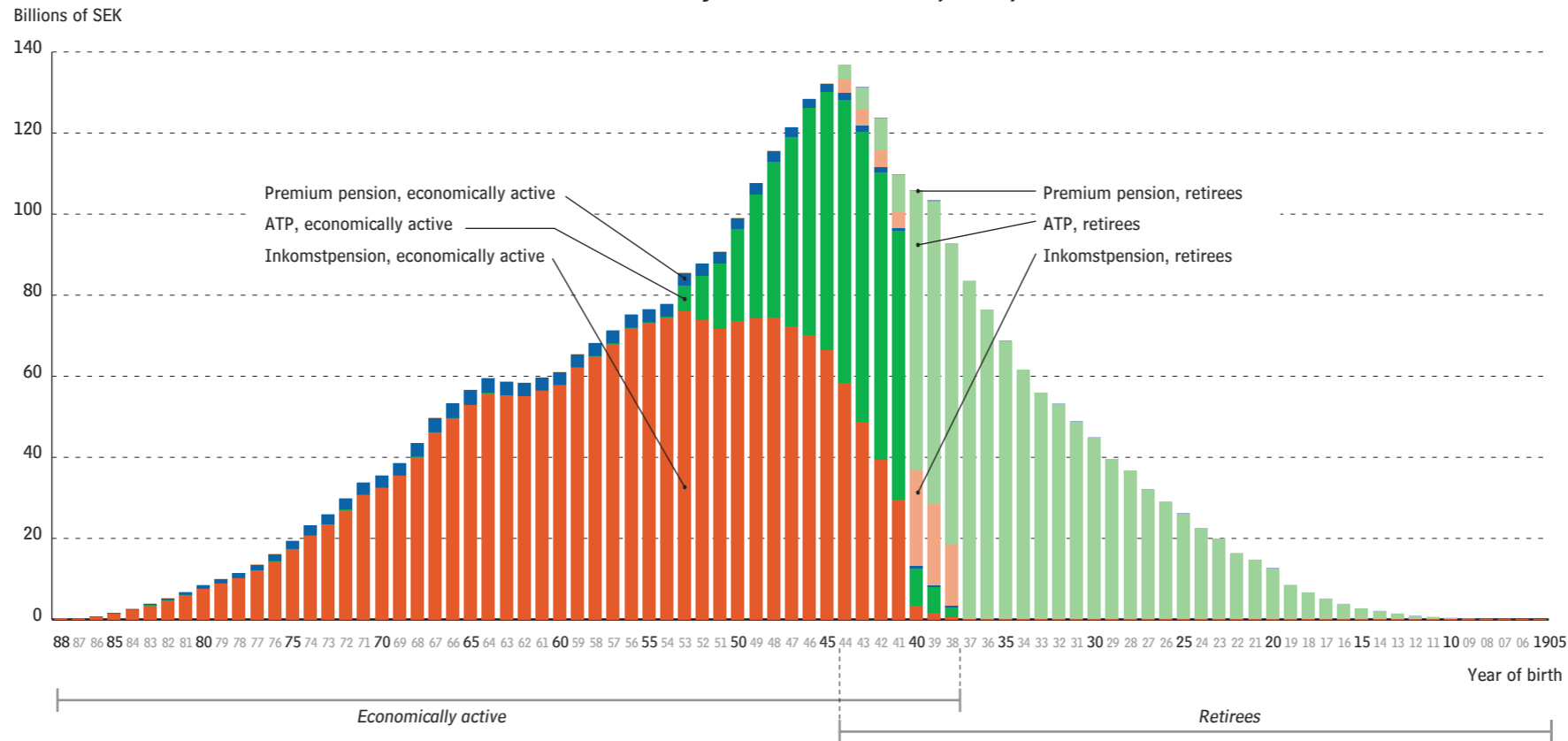
The median pension liability to asset of a male earner of pension credit aged 43.4 years is approximately SEK 990 000. At that age, the pension liability/asset exceeds SEK 1 280 000 for 10 percent of men and is less than SEK 190 000 kronor for 10 percent of them.

### Pension Qualifying Amounts

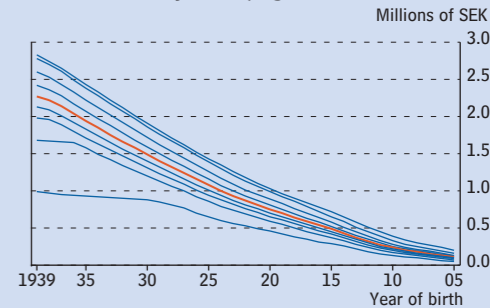


Pension credit is granted for pension-qualifying amounts in particular phases of individuals' lives, such as time devoted to caring for small children and to compulsory national service. In 2004, pension-qualifying amounts constituted 3.1 percent of the pension base for men. The largest portion of this share, 1.4 percentage points, consisted of amounts for sickness or activity compensation.

### Total Pension Liability as of December 31, 2005, Men

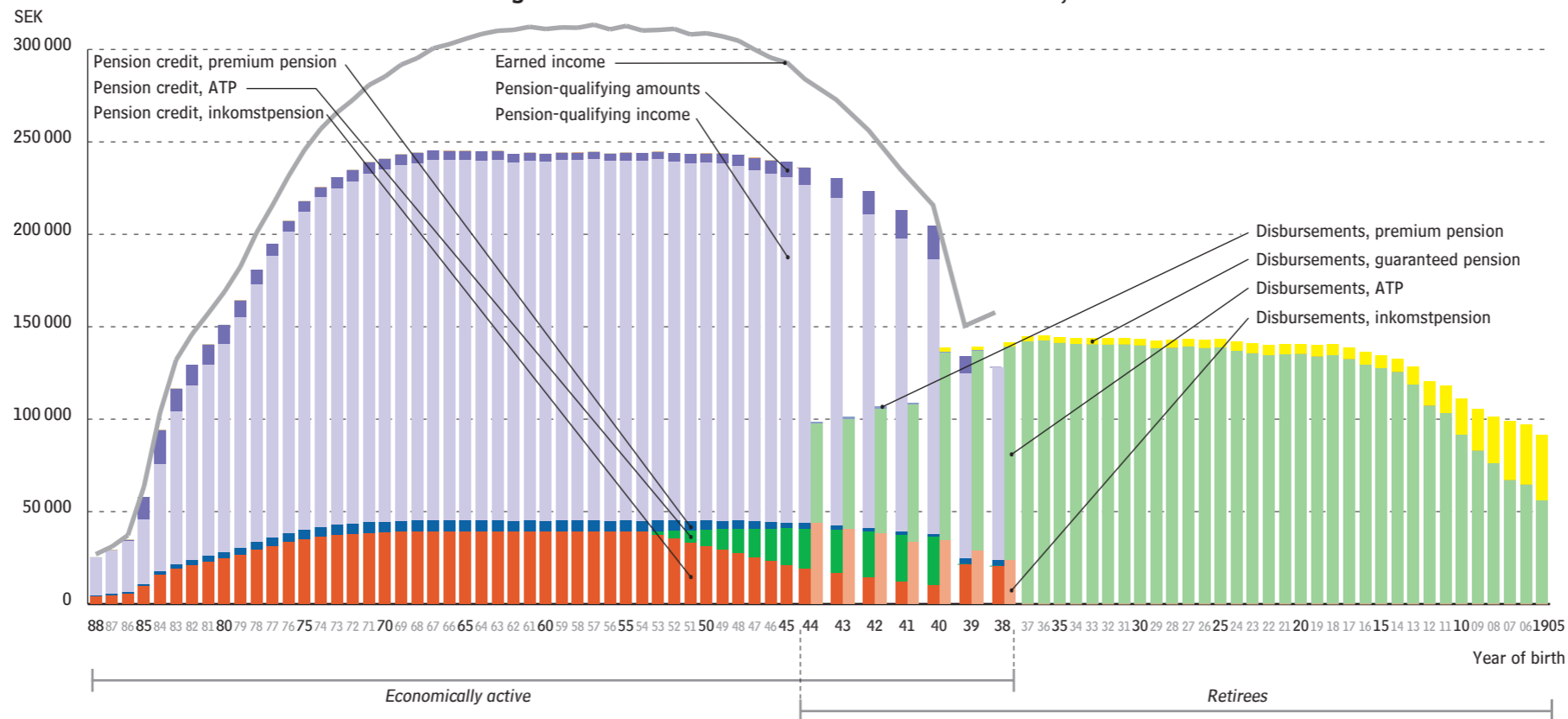


### Pension Liability/Asset, Ages 66 and Above

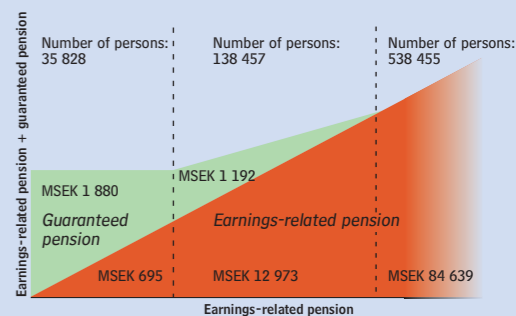


For 10 percent of retired men, the pension liability/asset is exceeds SEK 2 830 000 at age 66. The median at that age is about SEK 2 270 000, and for 10 percent the pension liability/asset is less than SEK 990 000. For a pensioner aged 75.5, the corresponding amounts have decreased to SEK 1 860 000, 1 440 000, and 870 000.

### Average Pension Credit Earned and Pension Disbursed, Men



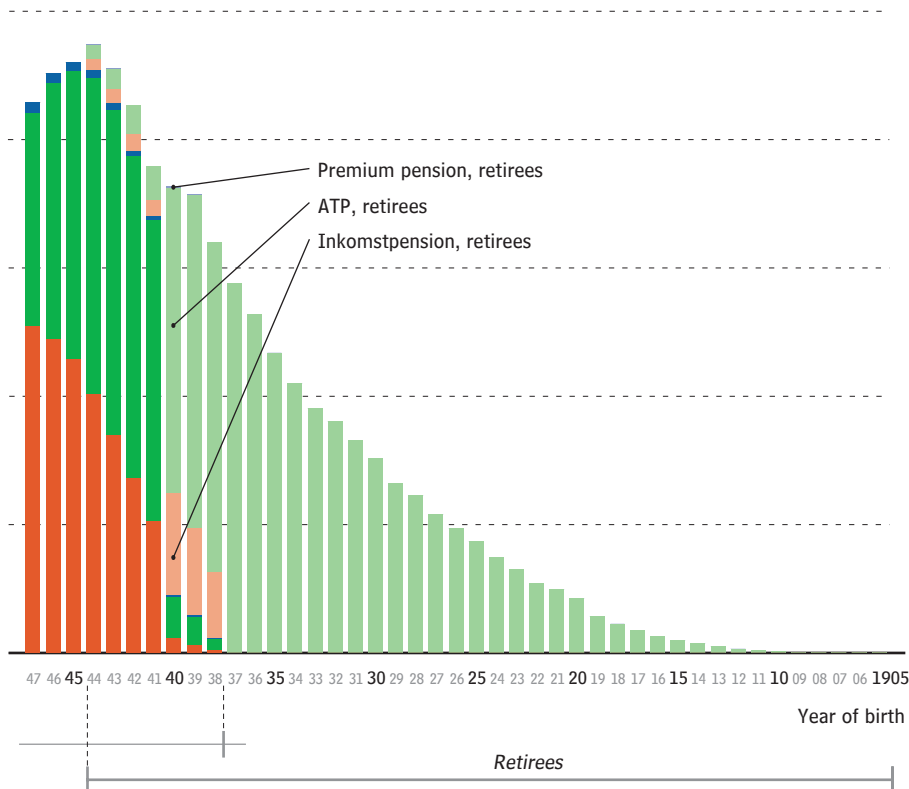
### Guaranteed Pension



See the section "Guaranteed Pension", page 41, for an explanation of the diagram. In 2005 the guaranteed pension accounted for 3 percent (SEK 3 072 million) of pension disbursements to men. Some 24 percent of male pensioners receive a guaranteed pension, and about 5 percent have a guaranteed pension above SEK 2 856 and 2 495 (the boundary between the reductions of 100% and 48% in the guaranteed pension for single and married persons, respectively, born in 1938 or thereafter). For younger pensioners, the proportion with a guaranteed pension is approximately 15 percent. The statistics cover persons born 1940 or earlier, and the total amounts show the December disbursements of the guaranteed pension, the inkomstpension, and the ATP in 2005, multiplied by 12.



as of December 31, 2005

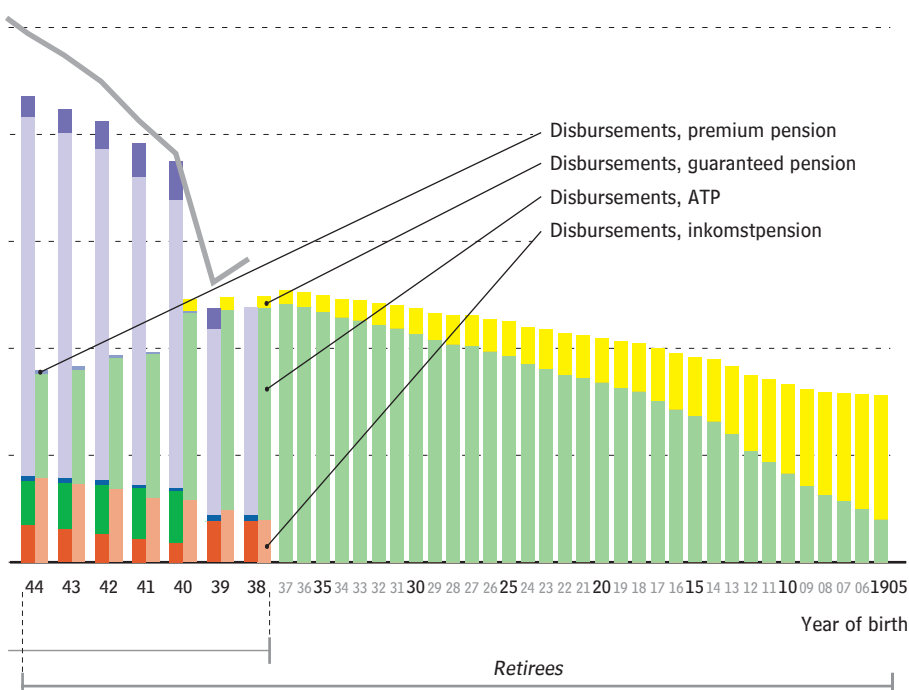


## Pension Liability to Asset of Retirees

The pension liability to asset of retirees is calculated in the same way for the ATP and the inkomstpension. The sum of pension disbursements to each birth cohort in December 2005 is multiplied by 12, and that annual amount is multiplied by a three-year average of the economic annuity divisor. For further information, see Note 14, Table C, and the Appendix B, Section 4.

The premium pension liability to asset of retirees is estimated from aggregate pension disbursements to the respective birth cohorts in December 2005, multiplied by 12 and by an annuity divisor for the premium pension.

## and Pension Disbursed



## Pension Disbursed

Data on pension disbursements are taken from the Swedish Social Insurance Agency records of disbursements and refer to average amounts for all retirees who received a pension disbursement in 2005. For total disbursements of inkomstpension and premium pension, see Note 2.

## Funds in the Premium Pension System, 2005

	Number of registered funds, 2005	Managed capital, Dec. 31, 2005 billions of SEK	Managed capital Dec. 31, 2004 billions of SEK	Managed capital Dec. 31, 2003 billions of SEK
Equity funds	524	99	61	46
Mixed funds	53	7	5	4
Generation funds	30	23	15	12
Interest funds	118	5	4	3
Premium Savings Fund	*	58	40	30
<b>Total</b>	<b>725</b>	<b>192</b>	<b>125</b>	<b>94</b>

\* The Premium Savings Fund is included in the number of equity funds.

### Interest on Contributions That Gave Rise to Pension Credit

Savings in a bank account earn interest, and the pension system works in the same way. The interest on the inkomstpension account is normally determined by the growth in average income. Average income is measured by the *income index* (see Appendix A). The equivalent of interest on the premium pension account is determined by the change in the value of the premium pension funds chosen by the insured.

Thus, the interest earned on pension credit depends on the development of different variables in the general economy. The inkomstpension account earns interest at the rate of increase in earnings – in the price of labor, to put it another way. The development of the premium pension account follows the tendency on financial markets, which among other things reflects the price of capital. Neither of these rates of interest is guaranteed; they may even be negative. Through apportionment of contributions to separate subsystems where the rate of return depends on somewhat different circumstances, risks are spread to some extent.

### A Rate of Interest Other Than the Income Index – Balancing

Under certain demographic and economic conditions, it is not possible to earn interest on the inkomstpension account and the inkomstpension at a rate equal to the growth in average income and at the same time to finance payments of the inkomstpension with a fixed contribution. In order to maintain the contribution rate at 16 percent, income indexation is suspended in such a situation. This is done by activation of so-called balancing. Balancing is governed by rules for calculating the assets and liabilities of the system,

#### Costs of Average Managed Capital, in Percent

	Inkomst- pension	Premium pension	Total
Costs of capital management reported gross	0.12	–	0.10
Costs of capital management reported net	0.16	0.72	0.27
of which:			
fees not based on performance, after rebate <sup>1</sup>	0.07	0.42	0.14
performance-based fees	0.04	–	0.03
brokerage, etc. <sup>2</sup>	0.05	0.30	0.10
<b>Total, capital management</b>	<b>0.28</b>	<b>0.72</b>	<b>0.37</b>

<sup>1</sup> Refers to rebates of fund fees in the premium pension system.

<sup>2</sup> Brokerage refers primarily to transaction costs on the stock market. Transaction costs on the markets for interest-bearing securities and foreign exchange arise from the difference between bidding and asking prices. Such costs are not reported in this table.

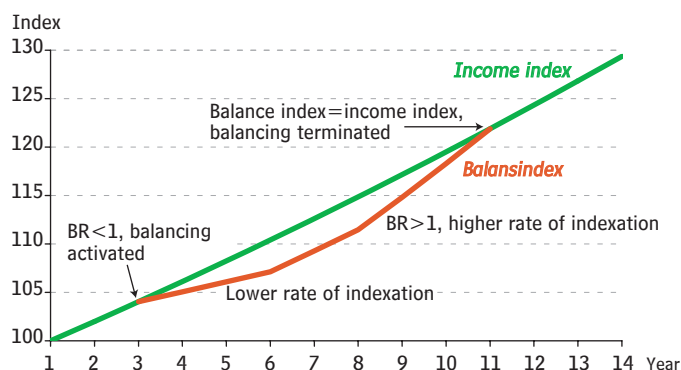
and for when and how the rate of interest will deviate from growth in average income.

Dividing the assets of the system by the pension liability, we obtain a measure of the financial position of the system, the *balance ratio*. If the balance ratio exceeds 1.0000, assets are greater than liabilities. If the balance ratio is less than 1.0000, liabilities exceed assets. Balancing is activated when the balance ratio drops below 1.0000. When balancing is activated, pension balances and pensions will be indexed by the change in a *balance index* instead of the change in the income index. The balance index changes as a result of the change in the income index and in the balance ratio.

An example: If the balance ratio falls below 1.0000 while the income index rises from 100 to 104, the balance index is calculated as the product of the balance ratio (0.9900) and the income index (104), for a balance index of 103. The indexation of pension balances is then 3 percent instead of 4 percent.<sup>16</sup> Indexation of pensions is reduced to the same extent.

If the balance ratio exceeds 1.0000 during a period when balancing is activated, pension balances and pensions will be indexed at a rate higher than the increase in the income index. This will continue until pensions regain the value that they would have had if they had been adjusted solely by the income index. When the balance index reaches the level of the income index, balancing is deactivated, and the system returns to one in which adjustment is made only by the change in the income index.

### Balancing



<sup>16</sup> The balance ratio for next year is calculated by multiplying the balance ratio (103) by the ratio between the new and the old income index, multiplied in turn by the new balance ratio.

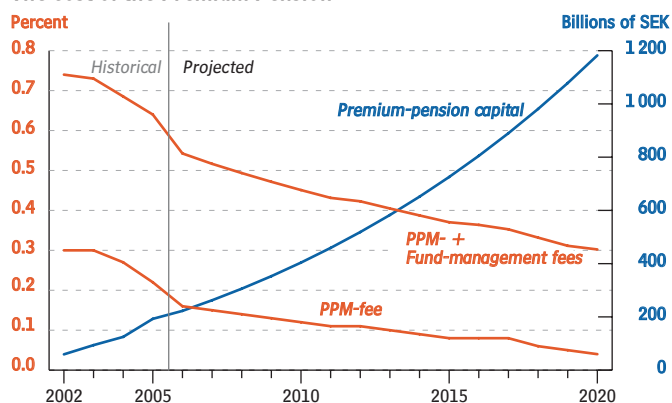
### Pensions Reduced by Costs of Administration

The costs of administering the inkomstpension are deducted annually from pension balances by the same percentage for all insured (see Appendix A). In 2005 the deduction for administrative costs was 0.051 percent. This deduction is made only until the insured begins to withdraw a pension. At the current level of costs, the deduction will reduce the inkomstpension by approximately 1 percent compared to what it would be without the deduction.<sup>17</sup>

In a similar manner, the costs of administering the premium pension are deducted each year from premium pension capital. In this case, however, the deduction continues to be made after the insured begins to draw a pension. In 2005 the deduction for the PPM's administrative costs was 0.22 percent and was based on the capital managed by the premium pension system as of May 1, 2005. The administrative expenses of the premium pension system in 2005 were SEK 287 million. Of this amount, operating expenses accounted for SEK 252 million, equivalent to 0.17 percent of the average capital in the premium pension system. The deduction for administrative costs does not include the expenses of fund management, which instead reduce the value of fund shares. The average cost deduction for fund managers in 2005, after discounts, was 0.42 percent. Thus, the total cost deduction for the premium pension system in 2005 averaged 0.64 percent. However, the annual percentage deduction for costs will decrease in the years ahead. As fund capital grows, it is expected that the PPM's fee for administrative costs will drop to about 0.04 percent, and that the rebates received from fund managers and credited to pension savers will become substantially larger. For an insured individual born in 1963, it is estimated that the deduction for administrative costs will reduce the premium pension by an average of 11 percent.

<sup>17</sup> On average, a pension balance remains in the system for 21.5 years, which is thus the pay-in duration for the system. With costs of administration equal to 0.051 percent per year, they reduce the inkomstpension to  $(1 - 0.00051)^{21.5} \approx 99$  percent of what it would have been without the deduction for administrative costs.

### The cost of the Premium Pension



<sup>18</sup> It is somewhat misleading to write “minus”; the inkomstpension is recalculated by the ratio between the new and the old income index, divided in turn by 1.016.

## How is the Inkomstpension Calculated?

The inkomstpension is calculated through dividing the pension balance by an annuity divisor (see Appendix A). There is a specific divisor for each birth cohort. The annuity divisor reflects the remaining life expectancy when a pension is first withdrawn as well as an interest rate of 1.6 percent. The remaining life expectancy is an average for men and women and is based on observed mortality for the five-year period preceding the year when the birth cohort reaches age 65 – age 61 if the individual starts withdrawing a pension before reaching 65. Owing to the interest of 1.6 percent, the annuity divisor is less than life expectancy, and the initial pension is higher than it would have been otherwise.

As an example, suppose that Mr. Average Svensson, at age 65, has a pension balance of SEK 2 million and that the annuity divisor is 16. His annual pension will then be SEK 125 000, or about SEK 10 400 per month.

The inkomstpension is recalculated annually by the change in the income index less the interest of 1.6 percentage points credited in the annuity divisor.<sup>18</sup> This means that if wages and salaries increase by exactly 1.6 percent *more* than inflation, as measured by the Consumer Price Index, pensions will rise at exactly the rate of inflation. In other words, pensions will only be unchanged in real terms if wages and salaries go up by precisely 1.6 percent *more* than inflation. For example, if wages and salaries rise by 2 percent more than inflation, pensions will increase by 0.4 percent in real terms. If wages and salaries increase by 1 percent more than inflation, pensions will decrease by 0.6 percent in real terms. When balancing has been activated, the balance index replaces the income index in the indexation of pensions.

## How is the Premium Pension Calculated?

The premium pension can be withdrawn as either *fund insurance* or *conventional insurance*.

In both forms of insurance, the value of the pension account is determined through dividing it by an annuity divisor. For the premium pension, unlike the inkomstpension, the annuity divisor is based on forecasts of future life expectancy. Interest is credited at 3 percent before deduction of PPM costs – after this deduction the interest rate is 2.69 percent.

If the premium pension is withdrawn in the form of conventional insurance, the pension is calculated as a guaranteed life-long annuity payable in nominal monthly installments. In this case the PPM sells the insured’s fund shares and assumes the responsibility and the financial risk of investing the proceeds. The pension is calculated to provide an assumed nominal return that is presently 2.44 percent. The amounts disbursed may be greater if the conventional life-insurance operation reports a positive result.

Fund insurance means that the pension savings remain in the PPM funds chosen by the insured. The amount of the premium pension is recalculated once each year based on the value of fund shares in December. In each month of the following year, a sufficient number of fund shares are sold to finance payment of the premium pension. If the value of the fund shares increases, fewer shares are sold; if it decreases, more shares are sold. Variations in prices of fund shares affect the value of the following year’s premium pension.

The premium pension may include a survivor benefit for the period of withdrawal. This means that the premium pension will be paid to either of two spouses or cohabitants as long as one of them survives. If the survivor benefit is elected, the monthly pension will be lower.

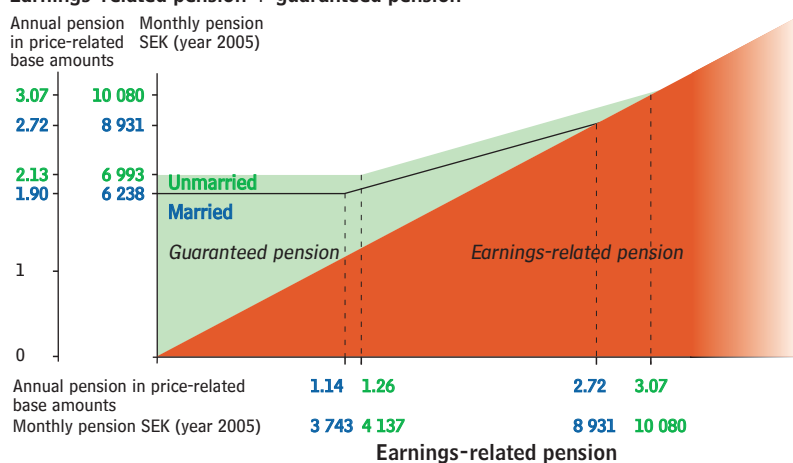
## Guaranteed Pension<sup>19</sup>

The guaranteed pension provides basic social security for individuals with little or no income.<sup>19</sup> Residents of Sweden are eligible for a guaranteed pension beginning at age 65. To receive a full guaranteed pension, an individual must in principle have resided in Sweden for 40 years after age 25. Residence in another EU/EES country is also credited toward a guaranteed pension.

In 2005 the maximum guaranteed pension for a single pensioner was SEK 6 993 per month (2.13 price-related base amounts<sup>20</sup>), and for a married pensioner, SEK 6 238 per month (1.90 price-related base amounts). The guaranteed pension is reduced for persons with an earnings-related pension. The reduction is taken in two steps: for an income up to a certain level, the guaranteed pension is lowered by the full amount of earnings-related pensions; for any portion of income above that level, the guaranteed pension is decreased by only 48 percent of the pension. Under these provisions, a single pensioner with a monthly earnings-related pension of SEK 10 080 or more received no guaranteed pension in 2005. For a married pensioner the corresponding income limit was SEK 8 931 kronor.

An example: A pensioner living alone has an annual earnings-related pension equivalent to 2.26 price-related base amounts. The guaranteed pension is reduced by the full amount of income up to 1.26 price-related base amounts. The remainder of (2.13–1.26 =) 0.87 price-related base amounts is reduced by 48 percent of the income above 1.26 price-related base amounts, or by 0.48 price-related base amounts, for a guaranteed pension of 0.39 price-related base amounts. The total annual pension will then be 2.65 price-related base amounts.

### Earnings-related pension + guaranteed pension



When the guaranteed pension is calculated, the premium pension is disregarded. Instead, the inkomstpension is calculated as if it had been earned at 18.5 percent of the pension base, rather than 16 percent. One reason for these provisions is that they are considered to simplify administration of the guaranteed pension. When the premium pension has become more substantial, the rules may be reviewed.

The guaranteed pension is financed directly by the tax revenue of the central-government budget and is therefore not included in the income statement and balance sheet of the pension system.

<sup>19</sup> These provisions concern the guaranteed pension for persons born in 1938 or later. For older individuals, other rules apply.

<sup>20</sup> In 2005 the price-related base amount was SEK 39 400.

## ATP

Persons born before 1938 have earned neither an inkomstpension nor a premium pension. Instead they receive the ATP, another earnings-related pension, which is calculated by pre-existing rules. The level of the ATP is based on an individual's income for the 15 years of highest income, and 30 years with income are required for a full pension.

For persons born in 1938–1953, there are transitional provisions. These individuals receive a portion of their earnings-related old-age pension as ATP and the rest as an inkomstpension and a premium pension. The younger the individual, the smaller the proportion of the ATP. Persons born in 1938 receive 80 percent of their ATP; those born in 1939 receive 75 percent of their ATP, etc. Persons born in 1954 or thereafter earn their entire pensions under the provisions for the inkomstpension and the premium pension.

## Three Scenarios for the Future of the Pension System

*To show how different developments can affect the financial position of the inkomstpension system and the size of pensions, three projections are presented for the evolution of the system over the next 75 years.*

The long-term financial development of the inkomstpension system is described below in three different projections, referred to as the *base*, *optimistic*, and *pessimistic* scenarios. In the base scenario, which starts with the latest population forecast by Statistics Sweden, it is assumed that incomes will grow by 1.8 percent annually and that the return on buffer-fund assets will be 3.25 percent. In the two other scenarios, assumptions have been made about more and less positive paths of development for the finances of the inkomstpension system.

A high rate of return on the buffer fund can soften the impact of an otherwise negative tendency on the pension system. In the pessimistic scenario, therefore, the future development of the system has been calculated on various assumptions about the return on the buffer fund

The results of the projections are reported as estimates of net contribution, size of buffer fund, balance ratio, and average pension level for new pensioners. In brief, net contributions will be negative in all three scenarios beginning around 2010 and for quite a few years thereafter. Pension disbursements are thus forecast to exceed contribution revenue, but only in the pessimistic scenario does this trend ultimately exhaust the buffer fund. The reason is that both the working-age population and the return on the buffer fund are relatively low in this scenario. Only in the pessimistic scenario is balancing activated. In last year's projection, balancing was activated in the base scenario. The main reason why this no longer happens is the high rate of return on the buffer fund in 2005.

### **Base Scenario**

The demographic tendency in the base scenario follows the 2005 population forecast of Statistics Sweden. There it is assumed that the birth rate will rise from 1.76 children per woman in 2004 to 1.85 in 2019 and thereafter remain at that level. Life expectancy for individuals who have reached 65 is forecast to increase by an average of 36 days per year until 2015 and an average of 23 days per year thereafter. Net immigration, which has averaged 24 400 per year in the last 20 years, is expected to remain unchanged in the next decade. Net migration is anticipated to average 27 000 persons in the initial years until 2015 and some 23 000 per year from then on. The proportion of persons aged 16–64 with an annual income over one (1) income-related base amount is assumed to remain at the current level of about 84 percent, equivalent to an employment rate of 77 percent, as defined by the Labor Force Surveys (AKU). Real growth in average income is assumed to average 1.8 percent per year; in last year's projection the growth rate was assumed to be 2.0 percent. The real rate of return on the buffer fund is

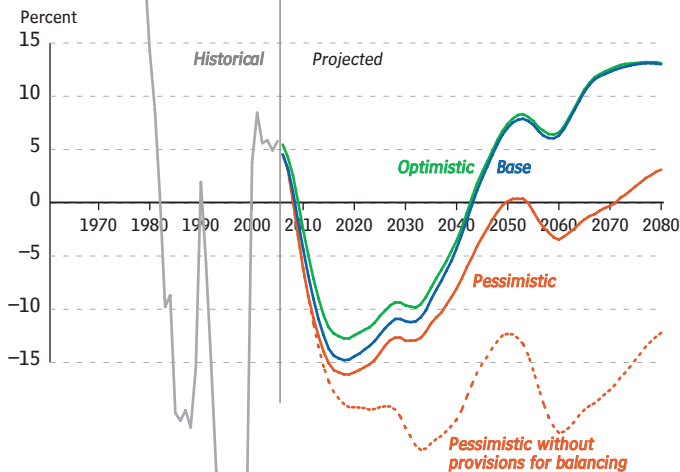
assumed to remain unchanged at 3.25 percent per year. The same return, after costs of administration, has been assumed for the premium pension funds in the calculation of the future premium pension for an individual who has just retired.

### **Optimistic Scenario**

The demographic assumptions are the same as in the base scenario; the two scenarios differ only in respect to economic factors. In the optimistic scenario, the proportion of persons aged 16–64 with an annual income exceeding one income-related base amount is 86 percent; real annual growth in average income is 2.0 percent after 2010; and the real return on the buffer fund is 5.5 percent. The real return in the premium pension system, after costs of administration, is also assumed to be 5.5 percent. The assumed growth rate is slightly high by historical standards, whereas the assumed rate of return is not particularly high, but in line with the historical average.

### Net Contribution

Contributions minus disbursements as a percentage of contribution revenue



#### Pessimistic Scenario

The assumptions in the pessimistic scenario are for a lower birth rate and lower net immigration than in the base alternative. The birth rate is 1.5 children per woman. Net immigration averages 22 000 per year until 2010 and 12 000 per year thereafter (the base assumption in the population forecasts of Statistics Sweden during the 1990's). Life expectancy develops as in the other two scenarios. Labor force participation is the same as in the base scenario, but in the pessimistic scenario the real long-term growth rate for average income is 1 percent. The real rate of return on the buffer fund and the premium pension funds, after costs of administration, is also 1 percent. With a return equal to the increase in average income, the buffer fund provides no contribution, in principle, to the long-term financing of pensions. The buffer fund is then a demographically determined repository of pension capital with a neutral impact on the financing of the system. On the assumptions in

### Net Contribution

The amount of pension disbursements depends on the rules of the system and their interaction with demographic and economic developments. Since birth cohorts vary in size, and to some extent have worked to different degrees, the contribution revenue and pension disbursements of the system vary over time. During certain periods, contributions exceed disbursements; at other times, the opposite is true. Surpluses and deficits are managed through the buffer fund of the system.

To permit comparison of net contributions, that is contribution revenue minus pension disbursements, in the three scenarios, the net contribution in each scenario has been divided by the contribution revenue in that scenario. The volume effect of different growth rates on the monetary value of the net contribution is thus eliminated.

When the ATP system was introduced in 1960, contributions exceeded pension disbursements, which were initially limited; as a percentage of contributions, there was a large surplus. From 1980 on, net contributions have varied considerably. The principal explanation has been changes in the contribution percentage, which have affected revenue, and the calculation of the base amount, which have affected expenditure. To a lesser degree, the variations

in net contribution have been due to changes in the number of pensioners and the number of persons gainfully employed.

The net contribution, which is currently positive, turns negative around 2010, when the large birth cohorts of the 1940's leave the labor force and begin to draw pensions. Around 2020 the weakening trend begins to slacken, and the net contribution deficit gradually diminishes. After 2040, contribution revenue exceeds expenditure in the base and optimistic scenarios. In the pessimistic scenario, on the other hand, the net contribution remains negative for about 30 more years. Thanks to balancing after 2045, the deficit is limited to a range between 0 and 5 percent of contribution revenue.

Thus, balancing is activated only in the pessimistic scenario. The reduction in pension levels due to balancing in this case is described in the section "Development of Pension Levels for Different Birth Cohorts".

the pessimistic scenario, contribution revenue rises slowly in relation to the desired indexation of average income. The pessimistic scenario describes the risks managed through balancing and the manner in which pensions are affected by a protracted negative trend.



## The Buffer Fund

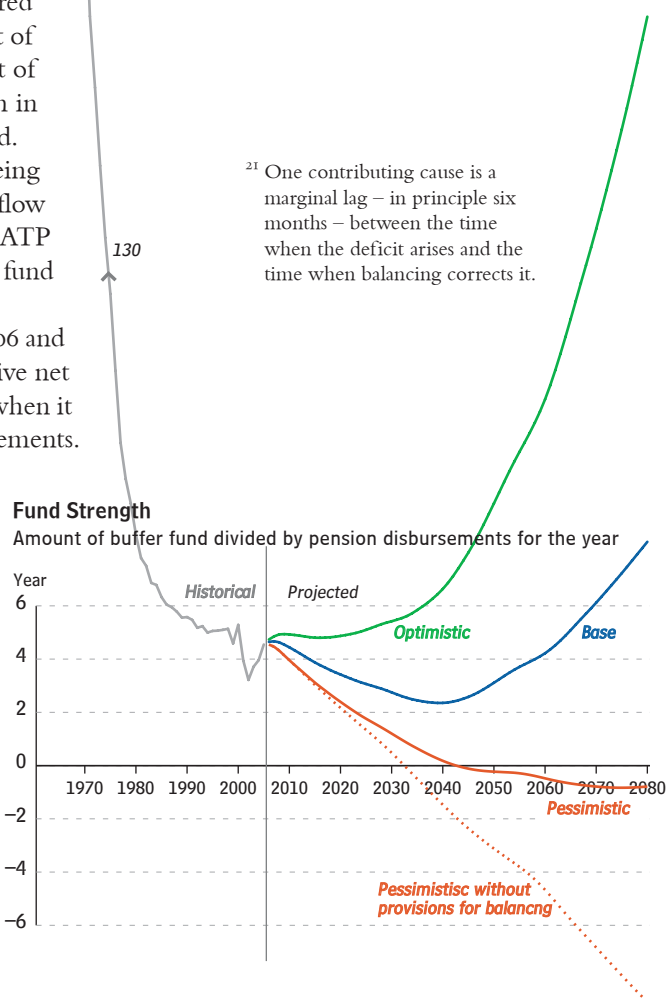
The size of the buffer fund can be expressed in terms of fund strength, i.e. fund capital divided by pension disbursements for the year. Fund strength shows how many years of pension disbursements can be financed by the fund without additional contributions or return on assets. At the end of 2005, fund strength was 4.5; in other words, the fund could have financed four and a half years of pension disbursements equal to those in 2005. Compared to the year before, fund strength has increased by the equivalent of pension disbursements for six months. The varied development of the buffer fund in the three scenarios is due to differences both in net contributions and in the assumed return on the buffer fund.

**Historically**, fund strength has been high, the reason being that the introduction of the ATP system in 1960 brought an inflow of contributions while pension disbursements were limited. As ATP pensions have increased, fund strength has decreased. Since 1990, fund strength has averaged less than five years.

**In the base scenario**, fund strength increases slightly, in 2006 and 2007, but it gradually decreases after 2007 because of the negative net contribution. Fund strength reaches a low point around 2040, when it is equivalent to barely more than two years of pension disbursements.

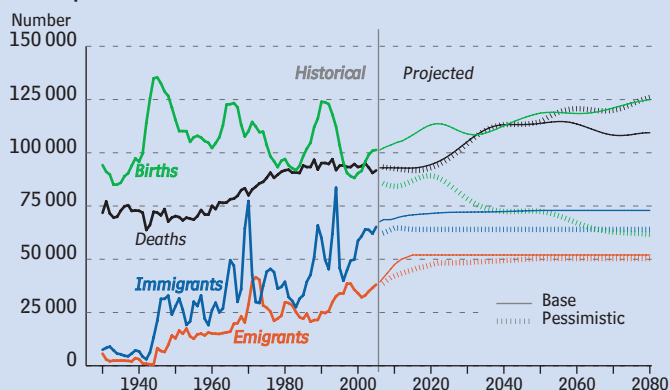
**In the optimistic scenario**, there is a substantial increase in fund strength. The explanation is the limited contribution deficit and the high rate of return on the fund in relation to the growth in average income. In 2050, fund strength is equivalent to nearly ten years of pension disbursements.

**In the pessimistic scenario**, the buffer fund is exhausted by 2043 and is slightly negative thereafter. This development occurs even though balancing is activated as early as 2011. The principal reason<sup>21</sup> is that in the calculation of turnover duration, the population is implicitly assumed to be constant. With a declining trend in the working-age population, this assumption means that turnover duration is somewhat overestimated. Balancing was deliberately designed not to eliminate the risk of exhausting the buffer fund. This risk has been addressed by



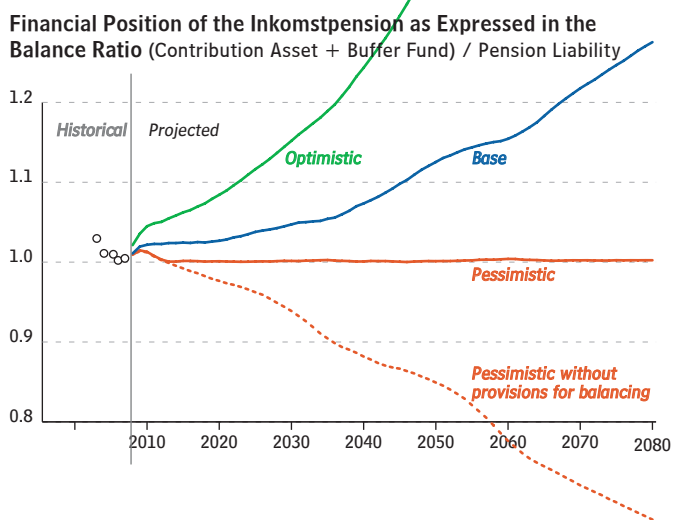
## Comments on the Assumptions in the Scenarios

### Births, Deaths, Immigration, and Emigration – 1930–2005 and Assumptions Until 2080



The diagram shows population growth over the past 75 years and the assumptions about it for the next 75 years. The large birth cohorts of the 1940's, 1960's, and 1990's stand out. The number of deaths increases each year, not because mortality is on the rise, but because the population is growing. The peak years for immigration are the 1960's and 1970's, when there was substantial immigration of labor, primarily from Finland, and the early 1990's, with numerous refugees from ex-Yugoslavia. The demographic conditions are the same in the base and optimistic scenarios.

<sup>22</sup> The balance ratio for 2007 shows the financial position of the system as of December 31, 2005.



authorizing the funds to borrow money. Any borrowing is to take place via the National Debt Office.

When the population stops decreasing, the buffer fund is guided toward fund strength of at least zero. During the years when the fund is negative, interest is paid on the loans taken to finance the deficit. In the diagram it has been assumed that the rate of interest on these loans is the same as the assumed rate of return in the scenario, i.e., 1 percent.

With balancing initiated so early, the annual reduction in pension levels relative to growth in average income is very modest at first, but it increases somewhat as time passes. For younger birth cohorts, the balancing effect is about 3 percentage points – see the section “Development of Pension Levels for Different Birth Cohorts”.

### Financial Position of the Inkomstpension System

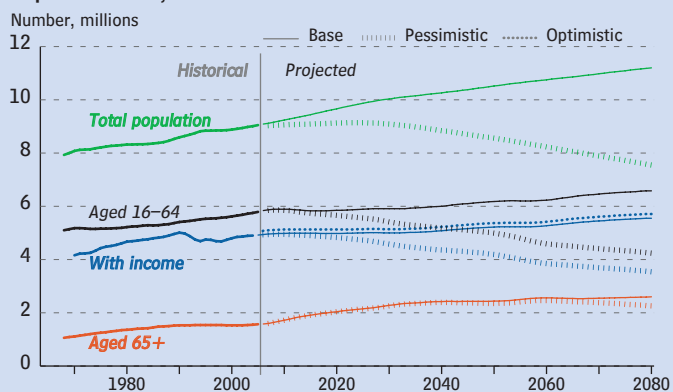
The financial position of the inkomstpension system is expressed in terms of the balance ratio. At the outset, in 2005, system assets are slightly greater than the total pension liability – the balance ratio<sup>22</sup> to four decimal places is calculated at 1.0044. When the balance ratio drops below one, liabilities exceed assets, and balancing is activated. In principle, a balance ratio of 2.0, i.e., when assets are twice as great as liabilities, means that the system is fully funded. The balance ratio has been established for the years 2003–2007.

**In the base scenario**, the balance ratio is never less than one, and the financial position of the system strengthens each year. After 2044, the balance ratio consistently exceeds 1.1.

**In the optimistic scenario**, the “consolidation” ratio of the system increases for almost the entire period. By 2050, system assets exceed the pension liability by almost 30 percent.

**In the pessimistic scenario**, the balance ratio falls below 1.0 in 2011; consequently, balancing is activated. With balancing, the liability of the system accrues interest at the same rate as the growth in system assets. As a result, the balance ratio stabilizes around 1.0.

### Population Size, etc.



In the scenarios, there is no significant change in the number of persons over 65, as the assumptions regarding mortality are the same in all scenarios. The number of persons with income refers to those with earnings exceeding one income-related base amount. The historical data are estimates.

The assumptions regarding the proportion with income are the same in the base and pessimistic scenarios and higher in the optimistic scenario.

## Development of Pension Levels for Different Birth Cohorts

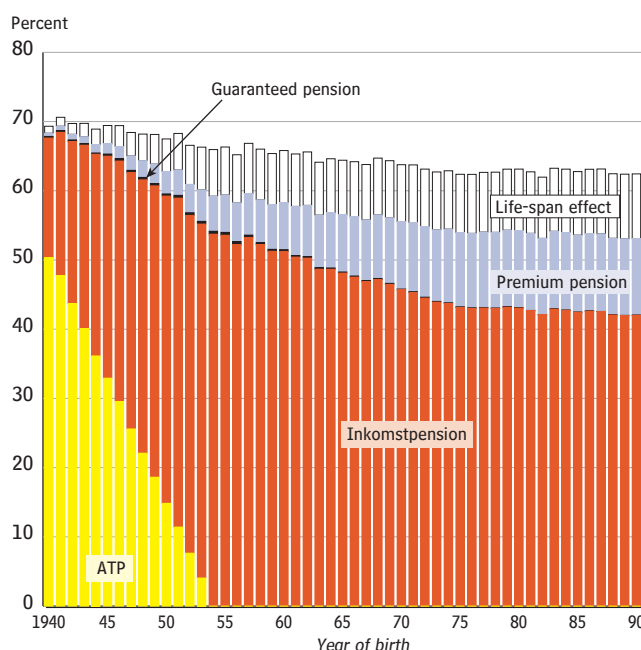
The pension level is defined here as the average national pension at age 65 in relation to the average pension-qualifying income for persons aged 16–64 with such income. For this level to be constant, one requirement is an unchanged relationship between the number of economically active years and years of retirement. If this condition is to be satisfied at the same time as average life expectancy is increasing, either the retirement age must be raised, or the age of entry into working life must be lowered. Moreover, for the value of pensions to remain constant in relation to incomes, balancing must not be activated.

In the scenarios, the average national pension at age 65 as a percentage of the average income for ages 16–64 is shown in the following bar graphs, one for each scenario.

**In the base scenario**, the average pension level for the year when the individual turns 65 drops from 70 percent for birth cohort 1940 to 54 percent for birth cohort 1990. Of this decrease, 8.5 percentage points are due to the anticipated increase in life expectancy. One explanation for the remainder of the decrease is that the calculations are for persons with 30 years or more of working life in Sweden. In relation to the new system, the ATP system was especially generous to persons who worked only 30 years. If working life is prolonged to neutralize the effect of the increase in life expectancy, the pension level stabilizes at just above 60 of average income. A longer working life also increases the degree of compensation from inheritance gains and the pension credit earned during the additional years. This consequence is not included in the life-expectancy effect, which is shown in the diagram by a white rectangle, but it is included in the table on page 50.

In the base scenario, the return of 3.25 percent for the premium pension system exceeds the assumed rate of growth in average income, which is 1.8 percent. As a result, the premium pension accounts for a larger share of the national pension than its share of contributions.<sup>23</sup> For the youngest birth cohorts, the premium pension is more than 11 percent of the average income, and the inkomstpension about 43 percent. In the base scenario, the guaranteed pension for persons who have worked at least 30 years is only marginal from the very beginning.

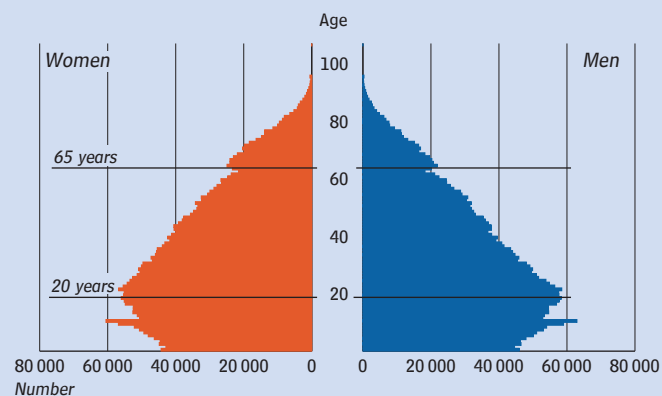
**Average Pension at Age 65 as a Percentage of Average Income, Base Scenario**



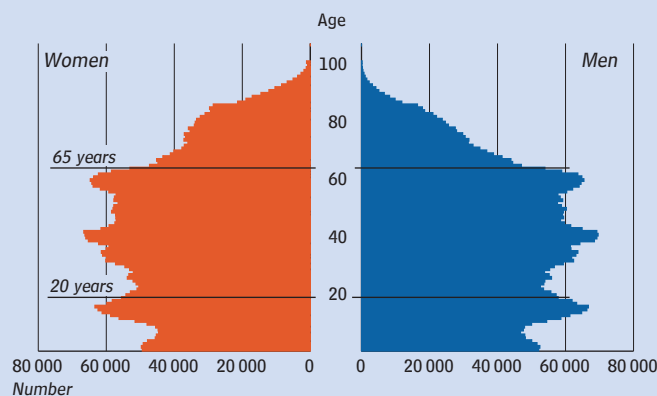
<sup>23</sup> Another reason why the premium pension is relatively larger is that the interest credited in the annuity divisor is higher for the premium pension than for the inkomstpension; see the section “How the National Pension System Works” and Appendix A, Calculation Factors.

Population 75 years ago, at present, and in 75 years in the two demographic scenarios:

1930



2005



### Average Income and Average Pension, Base Scenario\*

SEK

Year of birth	Pension at age 65	Average income	Compensation rate, %
1940	10 100	15 000	66
1965	13 200	23 300	57
1990	19 300	36 300	53

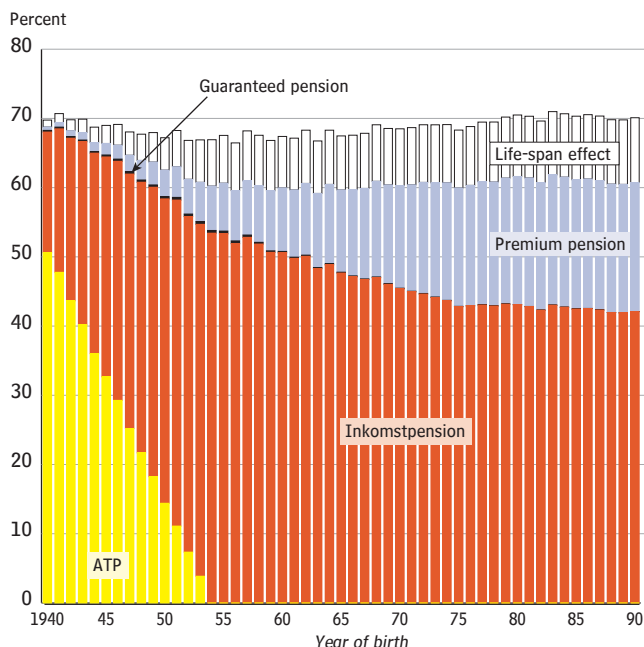
\* The average monthly earnings of a full-time employee are approximately SEK 24 000. The reason why average income is less than this amount is that the calculation of average income includes all persons aged 16–64, whether they have any income or not in the year concerned. The only requirement for inclusion in the calculations is having at least 30 years of pension-qualifying income at age 65. Part-time and seasonal employment reduce both average income and pensions. The exclusion of incomes above the ceiling from the calculation of average income lowers the latter by about 10 percent..

Since the guaranteed pension is assumed to remain constant in real terms, its significance decreases each year with the growth in incomes. The realism of this assumption is open to question, however.

In the two other scenarios, growth in average income is lower and higher, respectively, than in the base scenario. As long as balancing has not been activated, the inkomstpension earns a return (is indexed) by the growth in average income, thus increasing at the same rate as the latter. The relationship between pensions and average income is then unaffected by growth; in other words, pensions remain constant in proportion to income, though the monetary amount of the inkomstpension will of course be lower if growth is lower and higher if growth is higher.

The relationship between the return of the premium pension system and growth in average income affects the relative size of the premium pension. The greater the positive difference between return and growth, the larger the share of the premium pension.

### Average Pension at Age 65 as a Percentage of Average Income, Optimistic Scenario

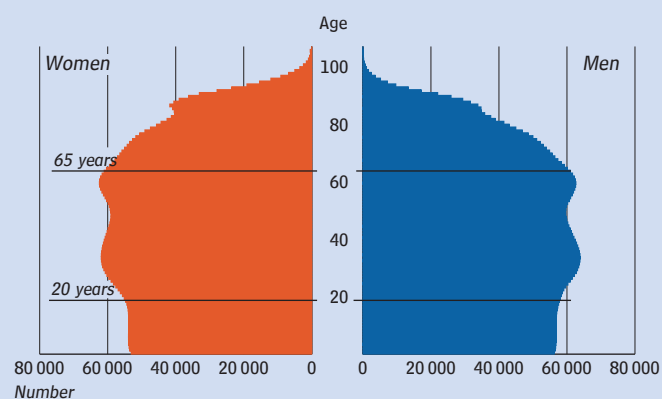


**In the optimistic scenario,** the return on the premium pension is 3.5 percentage points more than the growth in average income, or 5.5 percent compared to 2 percent. The relatively large premium pension resulting from the high return fully compensates for the effect of longer life expectancy. If the retirement age were to be raised by roughly two-thirds of the rate of increase in life expectancy, the pension level would remain constant at about 70 percent.

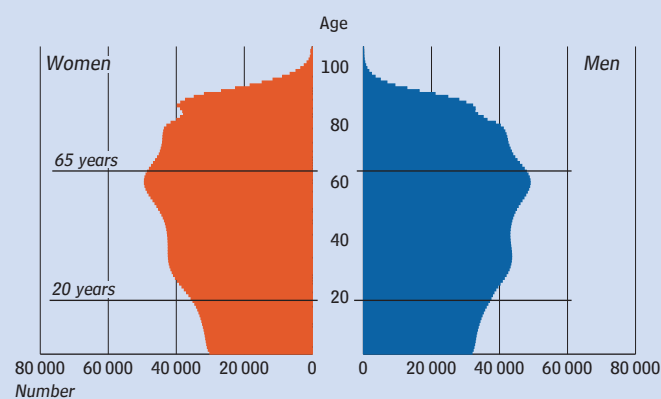
**In the pessimistic scenario,** growth in average income is 0.8 percentage points less than in the base scenario. The rate of return is also lower, 1 percent instead of 3.5 percent. The lower rate of return means that the premium pension will be less both in monetary terms and as a share of the total pension. With earnings-related pensions relatively lower than in the base scenario, the guaranteed pension becomes more important.

The diagram also shows how balancing affects pensions. Balancing is activated in 2011. For persons born in 1954, the first birth cohort not to receive any portion of their pensions as ATP, the pension level at age 65 is 1.3 percentage points lower in proportion to average income as a result of balancing. However, the guaranteed pension will raise the total level of pensions by an average of about 0.8 percentage points relative

### 2080 Base Demography



### 2080 Pessimistic Demography



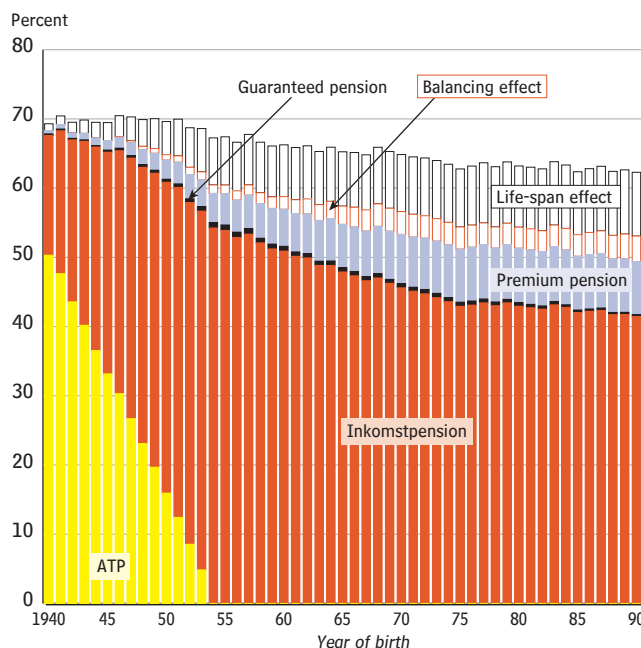
to average income. For birth cohort 1990, balancing will lower the pension level by 3.7 percentage points, whereas the guaranteed pension will raise the pension level by 0.3 percentage points relative to average income.

### Life Expectancy Effect and Retirement Age Required

In previous annual reports, the so-called life-expectancy effect for younger birth cohorts has been described in relation to the oldest birth cohort for which the Swedish Social Insurance Agency has made a forecast. This procedure has been replaced by a comparison with life expectancy at the time when the pension reform was decided. In the proposed government bill<sup>24</sup> that laid the foundation for the reform of the national pension system, it was stipulated that the national pension, given life expectancy at that time, would be at approximately the same level as in the ATP system. In the present calculation of the so-called life-expectancy effect, therefore, life expectancy for persons born in 1930, which was 65 years at the time of the fundamental decision on the pension reform, is used for comparison. According to Statistics Sweden, life expectancy is assumed to increase rather substantially in the years ahead. As a consequence, the annuity divisor at age 65 will rise from 14.8 for persons born in 1930<sup>25</sup> to 18.1 for birth cohort 1990. With the larger divisor, monthly pensions will decrease by 18 percent for birth cohort 1990 relative to the demographic conditions prevailing when the principles of the pension reform were established, provided that persons born in the 1990's begin withdrawing their pensions at age 65. To compensate for the negative effect of the longer life expectancy on pension levels, birth cohort 1990 must work for 36 more months, i.e. retire at age 68. Even with this higher retirement age, it is forecast that persons born in 1990 will live longer as pensioners than those born in 1930 – 19 years and 6 months compared to 17 years and 5 months.

One of the first birth cohorts with a retirement age of 65 was the cohort born in 1911. When they turned 65 in 1976, their remaining life expectancy as retirees was approximately 16 years.

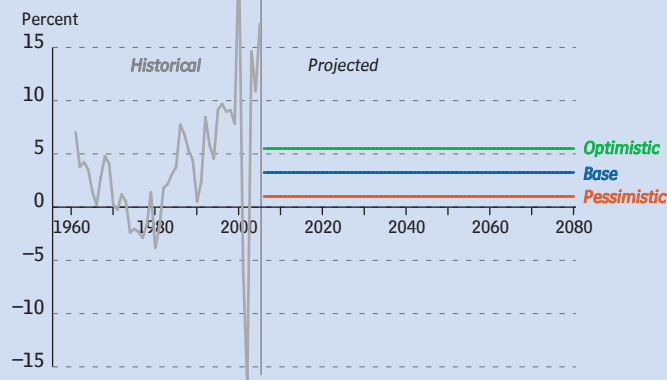
**Average Pension at Age 65 as a Percentage of Average Income, Pessimistic Scenario**



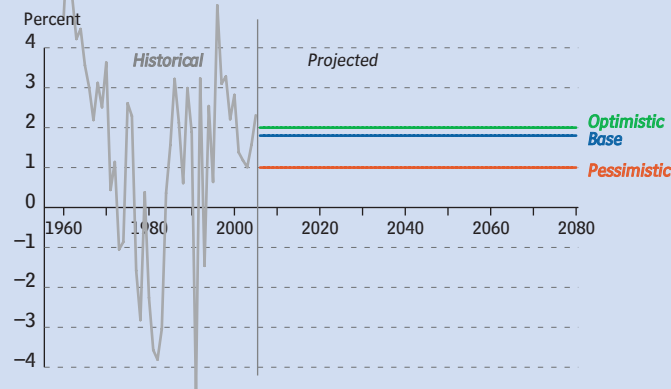
<sup>24</sup> Government Bill 1993/94:250 Reforming the National Pension System.

<sup>25</sup> No annuity divisors have been established for birth cohort 1930, whose initial pensions were calculated entirely according to the provisions of the ATP system.

**Return on the Buffer Fund – 1960–2005, and Assumed Until 2080**



**Growth in Real Earnings – 1960–2005 and Assumed Until 2080**



### Life Expectancy and Retirement Age

Cohort born in	reaches 65 in	Forecast annuity divisor at 65	Effect of life-expectancy change on pension at 65	Retirement age to neutralize life-expectancy effect on pension	Remaining life expectancy at retirement*
1930	1995	14.84	0 %	65 yrs	17 yrs 5 months
1938	2003	15.55	-5 %	65 yrs 7 months	17 yrs 11 months
1940	2005	15.69	-5 %	65 yrs 9 months	18 yrs
1945	2010	16.06	-8 %	66 yrs 1 months	18 yrs 3 months
1950	2015	16.42	-10 %	66 yrs 5 months	18 yrs 6 months
1955	2020	16.76	-11 %	66 yrs 9 months	18 yrs 8 months
1960	2025	17.02	-13 %	67 yrs	18 yrs 10 months
1965	2030	17.27	-14 %	67 yrs 2 months	19 yrs
1970	2035	17.52	-15 %	67 yrs 5 months	19 yrs 1 months
1975	2040	17.74	-16 %	67 yrs 8 months	19 yrs 2 months
1980	2045	17.90	-17 %	67 yrs 10 months	19 yrs 3 months
1985	2050	18.05	-18 %	67 yrs 11 months	19 yrs 4 months
1990	2055	18.14	-18 %	68 yrs	19 yrs 6 months

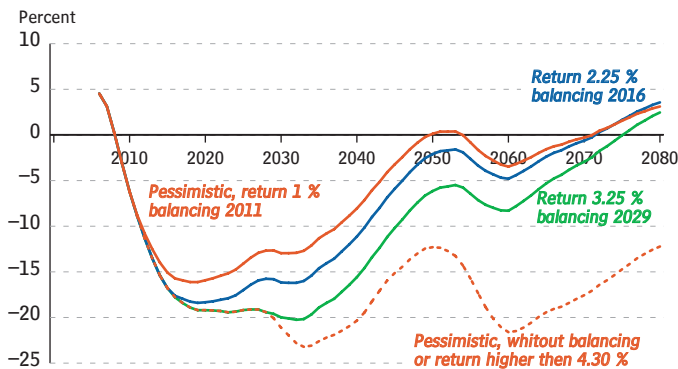
\* Given retirement at the age which neutralizes the effect on the pension level from the increase in life-expectancy. The cohort born in 1990 have 5 years and one month higher life-expectancy than born in 1930 (68-65, plus 19 years and 6 months minus 17 years and 5 months).

### Balancing, Rate of Return and Guaranteed Pension

A high return on the buffer fund can compensate for a demographic and/or economic trend that negatively affects the pension system. In the pessimistic scenario, balancing is not activated if the return on the buffer fund is at least 4.3 percent. If growth in average income is 1 percent, this return will compensate for the strain on the system posed by nativity of 1.5 children per woman and the rather substantial increase in life expectancy assumed in all three scenarios. A higher return means that the system can afford larger negative net contributions.

To provide an indication of the severity of the strain arising in the pessimistic scenario, the assumed rate of return is varied in this scenario, with real annual rates of return set at 2.25 and

Net Contribution at Different Rates of Return, Pessimistic Scenario



### Calculation of Pension Levels

The calculation of pension levels includes only individuals who have earned pension credit for 30 years or more. The purpose is to correct for the effects of immigration and emigration on the calculation of the average pension. Since the portion of income above 8.07 income-related base amounts is not insured in the public pension system, it is not included in the earnings to be compared. Gainfully employed persons pay the individual social security contribution of 7 percent of insured income, which is offset by a tax reduction equal to 100 percent of the contribution paid. The tax reduction has lowered the compensation rate compared to the projections in previous annual reports of the pension system, where the tax reduction either did not exist or was less than 75 percent. Currently the average income of 64-year-olds is slightly lower than the average in-

come in age group 16-64. The pension levels shown in the bar graphs are therefore a few percentage points less than would have been shown if the average pension had instead been related to the incomes of 64-year-olds.

### Other Assumptions in the Calculations

For 2006 the forecast of the National Institute of Economic Research (Konjunkturinstitutet) has been used in the calculations. The assumptions for the scenarios apply from 2007 on, except for the assumed return on the fund, which applies from January 1, 2006.

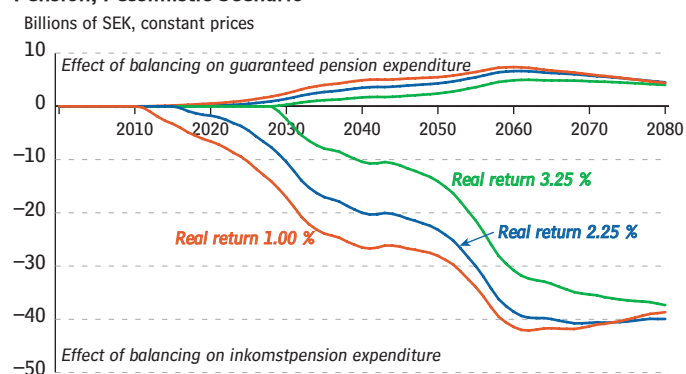
The guaranteed pension is price-indexed. Consequently, the lowest pensions will be even smaller in relation to average income, and the tax component of the pension contribution for individuals with modest incomes will decrease. The effect over

3.25 percent instead of 1.00 percent. A return of 2.25 percent means that the contribution of the rate of return to the financing of pension disbursements – which on the whole is determined by the relationship between rate of return and growth in average income – is approximately the same as in the base scenario. A return of 3.25 percent is the same as in the base scenario but provides a larger contribution to the financing of pensions than in that scenario, as growth in average income is only 1 percent in the pessimistic scenario.

With a return of 3.25 percent, balancing is activated in 2029, whereas with a return of 2.25 percent it is activated as early as 2016. As noted, balancing is activated in 2011 if the return is only 1 percent. In all cases the maximum decrease in the inkomstpension is about 15 percent.

If balancing is activated, indexation is reduced, lowering pension levels in relation to growth in average income. The guaranteed pension is so designed that retirees with a pension of 0–1.26 price-related base amounts (0–1.14 for married persons) receive an unchanged pension, as the guaranteed pension provides full compensation for the decrease in the inkomstpension resulting from balancing. Individuals with a pension of 1.26–3.07 price-related base amounts (1.14–2.72 for married persons) receive compensation of 48 percent from the guaranteed pension if balancing reduces their earnings-related pensions. Other pensioners receive no compensation at all. Compensation via the guaranteed pension means that the central government finances a portion of the reduction in the inkomstpension resulting from developments with a negative impact on the pension system. In the case of developments that normally entail contraction in the general economy, there will be a greater element of income redistribution in the national pension system. The higher cost of the guaranteed pension will be equivalent at most to just above 20 percent of the saving that balancing provides to the pension system.

#### Effect of Balancing on the Inkomstpension and the Guaranteed Pension, Pessimistic Scenario



a period of 75 years is very powerful. If annual income grows by 1.8 percent per year, it will be almost four times as large in 2080 as in 2005. Thus, the guaranteed pension will be negligible by the end of the calculation period.

With the pension liability indexed to growth in average income, it may appear unnecessary to vary the rate of growth in income in the scenarios, for the inkomstpension system is designed specifically to adjust the value of pensions according to growth in average income. However, since the ATP liability to the economically active is indexed by the rate of increase in prices, the inkomstpension system is initially unstable in relation to growth in average income. Moreover, the relationship between the increase in average income and the return on the buffer fund impacts the financial development of the inkomstpension. This relationship also affects pension levels via the

premium pension. The contribution of the buffer fund to the financing of the inkomstpension differs among the three scenarios. In the base scenario, the return on the buffer fund exceeds growth in average income by 1.45 percentage points (3.25–1.8). In the optimistic scenario, the return exceeds growth in average income by 3.5 percentage points. In the pessimistic scenario, the return is equal to growth in average income.

## Special Feature Article: What Affects the Balance Ratio?

An annual report for the pension system has now been published for five years. The report's key figure is the balance ratio of the pay-as-you-go system. The balance ratio shows the assets of the system in relation to the commitment of the system – the pension liability. There was a declining trend in the balance ratio until 2004, when the trend turned, and the balance ratio for the past year is 1.0044. This ratio shows the financial position of the system as of December 31, 2005, and will affect the indexation of pension balances at the end of 2006.

### Development of the Balance Ratio

Year	Balance Ratio
2003	1.03*
2004	1.0105*
2005	1.0097
2006	1.0014
2007	1.0044

\* The Swedish Social Insurance Agency, formerly the National Social Insurance Board (RFV), calculates the balance ratio, which is confirmed by the Government. Because of accounting deficiencies in the first two years, the balance ratios published in the annual reports of the pension system were revised in the autumn by the RFV. In the future, there are to be no discrepancies between the balance ratio published in the annual report of the pension system and the ratio that is confirmed.

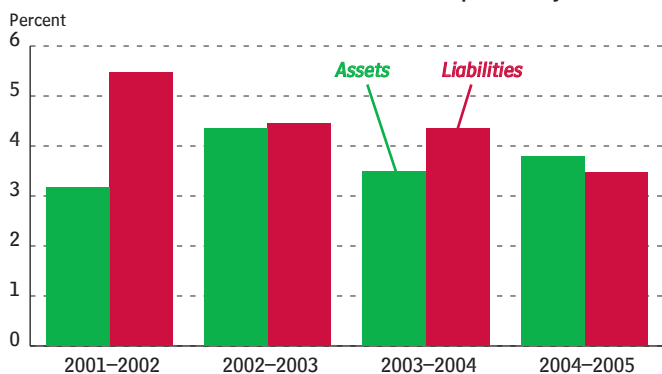
Balancing is an element of the indexation mechanism of the system and ensures that the system will never disburse more interest than it can afford. The fact that the ratio is so close to one (1) may be taken to indicate that the system has basically paid all the interest it can afford. The possible effect of the balance ratio on pensions via indexation cannot be estimated with any certainty in advance. In the base scenario of the Swedish Social Insurance Agency, the effect will be zero, according to the deterministic projection in this year's report. In the corresponding projection last year, balancing was activated in a few isolated years, but with an insignificant overall effect on the size of pensions. However, in a more realistic projection that considers annual variations from the assumed average tendency, balancing will be activated. In the section "Checkpoint in 2004" in the Annual Report of the Pension System for 2003, the average effect of balancing was described in a relatively simple stochastic adaptation of the projection for the year. It was estimated that on average balancing would lower pensions by 0.3 percent. With the current assumptions for future population structure, labor force participation, etc., the development of pensions will depend on factors other than the balance ratio. The individual's pension balance, i.e. lifetime pension credit earned, and the annuity divisor in the year of retirement, will have a much greater impact on the size of her/his pension than will the development of the balance ratio.

The inkomstpension is still a recent creation, and a number of phase-in processes have affected the result of the system and thus the development of the balance ratio during the years. Moreover, the result of the system has been impacted by certain changes in rules. Some of these changes relate to the pension reform; some do not, but have influenced the result nonetheless. This special feature article shows how the result has been affected, both by the phase-in process and by changes in rules.

As previously noted, the balance ratio is the ratio between the assets and the liabilities of the system. If system liabilities increase more than system assets, the financial position of the pension system weakens, and *vice versa*. Both liabilities and assets have increased each year, a natural development since Sweden's economy has been growing in both nominal and real terms during this period. Until 2004, the rate of growth in the pension liability has exceeded the rate of growth in assets; only in the past year have assets increased faster than the pension liability. This positive outcome is attributable entirely to the high rate of return on the National Pension Funds in 2005. The tendency in the pension system since 2001 has been such that its surplus dwindled from SEK 218 billion in 2001 to SEK 28 billion in 2005.

The result in each accounting year has been negatively affected by several mutually unrelated conditions. Thus, it cannot be said that the development of the balance ratio has been caused by any one of them alone. In the calculation of the

Rate of increase in assets and liabilities of the pension system





system's contribution asset and pension liability, the constituent factors are smoothed over several years in order to prevent isolated years of an "abnormal" result from fully impacting the financial position of the system. Although this smoothing in itself is justifiable, it has the negative effect of complicating the analysis and description of the development of the system.

## Is the Low Balance Ratio Surprising?

The low balance ratio is a consequence of the design of the ATP system and the reformed pension system, the economic and demographic developments during the years when the system has been in operation, certain changes in rules, and the chosen size of the buffer fund. The initial size of the buffer fund was set by the Swedish Parliament in its decision on the amount to be transferred from the fund to provide (partial) compensation for the anticipated burden of the reform on the central government budget. The amount to be transferred was determined through analyzing, in a projection for the system through 2050, how much could be transferred from the fund without the balance ratio's dropping below one in any year during that time. As an effect of these calculations, the central government budget has still not been fully compensated for the estimated cost.<sup>26</sup> Nor has the amount to be transferred included any margin; the specified amount of the transfer has been almost exactly that which provided a balance ratio no less than 1.0000 in the forecast.

In these circumstances, it is not surprising that the balance ratio is close to one. What is surprising, though, is that the outcome has been so close to the estimates in the forecasts.<sup>27</sup>

## What Has Affected the Balance Ratio?

The table below summarizes the items included in the income statement of the pension system.

### Summary of the Income Statement for the Pension System, 2001–2005

Billions of SEK

		2001	2002	2003	2004	2005
Fund assets	Net contribution	14	9	10	7	10
	Return	-25	-85	82	65	114
	Administration	-2	-2	-2	-3	-2
Contribution asset	Value of change in contribution revenue	406	224	160	142	163
	Value of change in turnover duration	16	-17	12	0	-49
Pension liability	New pension credit	-139	-163	-169	-175	-186
	Adjustments in forecasts, pension credit	0	0.2	0.8	-0.8	0.4
	Adjustments in forecasts, ATP	0	-5	-4	-71	-4
	Pension disbursements	144	152	155	163	169
	Indexation	-116	-276	-228	-162	-162
	Effect of average life span	-19	-6	-11	-18	-37
	Costs of administration	1	1	1	2	2
Other (inheritance gains, etc)	-0.3	-0.2	-0.5	-0.4	1.6	
Net income/-loss		279	-167	6	-49	20

One factor affecting the size of the buffer fund is the development of equity markets, where share prices, as we know, vary considerably from year to year. In 2002, the decrease in the value of the *buffer fund* had a negative effect on growth in system assets. That year the return on the buffer fund was minus 14 percent, weakening the finances of the pension system by SEK 85 billion.

<sup>26</sup>The maximum final total transfer is equivalent to a single transfer of SEK 350 billion. Thus far, transfers have totaled SEK 257 billion. The Swedish Parliament has not yet decided how to manage the difference. For more information on this question, see Annual Report of the Pension System for 2003, pp. 50–53.

<sup>27</sup>No analysis has yet been made concerning the extent to which this is due to consistency of the calculation assumptions and specifications of the model with the outcomes and the complicated system of rules, respectively, or to offsetting deviations from the assumptions.

<sup>28</sup> To tie in with the smoothing of the income index, which affects the denominator of the balance ratio, smoothed contribution revenue is calculated as follows: first inflation for the three-year period is excluded, and then inflation for the final year is restored. The purpose of this procedure for the income index is to let pensioners benefit from more rapid adjustment of their pensions to changes in the inflation rate than they would have had with a conventional three-year moving average for growth in income.

But in the three accounting years that followed, the result of the buffer fund strengthened system finances by SEK 82, 65, and 114 billion, respectively. When the surplus of the pension system decreases, the buffer fund becomes relatively more important in the calculation of the balance ratio. In 2005, the buffer fund accounted for 12 percent of system assets, two percentage points more than in the preceding year.

The *contribution asset* consists of smoothed contribution revenue multiplied by turnover duration and constitutes the bulk, almost 90 percent, of the aggregate value of system assets. Variations in the development of contribution revenue and changes in turnover duration are thus the factors with the greatest impact on growth in pension system assets. The rate of increase in the *contribution asset* has decreased each year between 2001 and 2005.

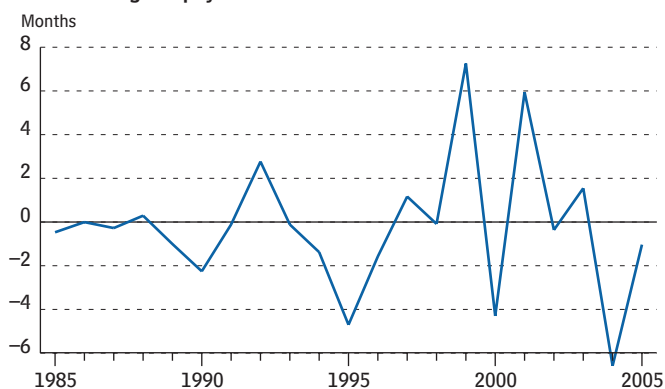
*Contribution revenue* increases with the contributions paid into the system, that is, with the contributions for income and pension-qualifying amounts up to the ceiling on pension-qualifying income. In the calculation of the contribution asset, so-called *smoothed contribution revenue* is used. Smoothed contribution revenue is the mean of the contribution revenue for the latest three years.<sup>28</sup> In 2005 the rate of growth in contribution revenue increased compared to previous years. This increase will be reflected in the calculation of smoothed contribution revenue in the next few years.

*Turnover duration* is the sum of pay-in duration and pay-out duration and can be viewed as the average number of years that a monetary unit is expected to remain in the system from the time when it is earned as pension credit until the time when it is disbursed as a pension. In the calculation of *turnover duration*, the median turnover duration for the latest three years is used. In this case, the median is considered to provide more effective smoothing of turnover duration than would a conventional mean value. Owing to the use of the median turnover duration for the latest three years, the same turnover duration was used for 2003 and 2004; thus, the entire increase in the contribution asset in 2004 was due to higher contribution revenue.

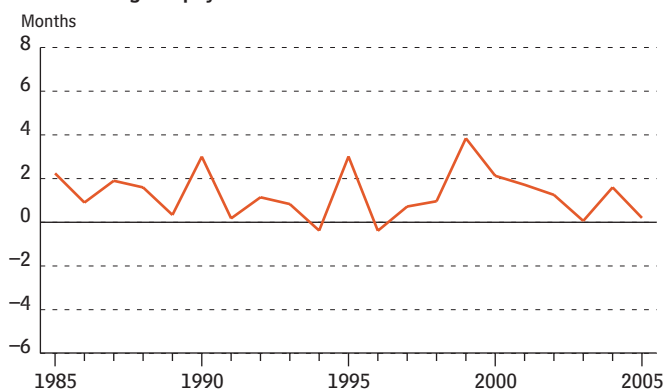
There is a rising trend in pay-out duration due to an increasing average life span – 1.4 months per year on average during the past 20 years. Pay-in duration varies more than pay-out duration and shows no clear trend. In the past 20 years, pay-in duration has shown a marginal decrease averaging 0.1 month per year. The development of pay-in duration is dependent partly on the distribution of the average pension credit of birth cohorts, and partly on the number of persons earning pension credit for the first time. In 2004, pay-in duration fell by a full 6.5 months. The main reason was that the minimum annual earnings required for pension credit were raised in 2003 from 0.293 to 0.423 price-related base amounts. A further explanation for the decrease is that the cohorts born in the 1960's have higher average pension credit than other age groups. For each year that these cohorts grow older, the average age of persons earning pension credit increases, and pay-in duration decreases. The Annual Report of the Pension System for 2005 showed the impact of shorter pay-in duration for 2004, with a negative effect of SEK 49 billion on the result.

Since the final tax assessment for the accounting year was not complete at the time of the Annual Report, the value of pension credit earned that year can only be estimated. The

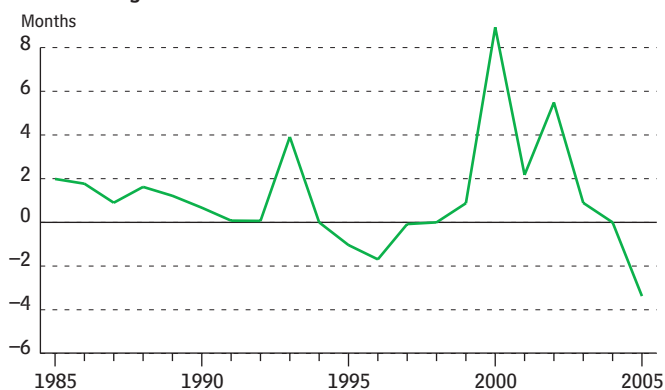
**Annual change in pay-in duration**



**Annual change in pay-out duration**



**Annual change in turnover duration**



Pay-in and pay-out duration for 1985–1997 have not been used in any annual report.

item "Forecast adjustments, pension credit," shows the discrepancy between the estimate and the outcome for last year. It is evident from the table that this discrepancy has no significant effect on the result for the year.

The *ATP liability to the economically active* cannot be calculated solely from historical data; a forecast, or projection, is required as well. The high rate of growth in the pension liability in 2004, as well as the resulting loss, was due largely to adjustment of the forecast for pension disbursements. In the Annual Report of the Pension System for 2003, the ATP disbursements estimated by the model were reduced to match the short-term forecasts for the corresponding disbursements. A quality review proved the reduction to be erroneous. With that adjustment eliminated, forecast ATP disbursements were higher, increasing the pension liability to the economically active by SEK 70 billion.

The rate of growth in the pension liability is due primarily to *new pension credit, pension disbursements, and indexation of pensions and pension balances*. This indexation was relatively high in the initial years of the Annual Report, thus explaining the strong growth of the pension liability in 2002 and 2003. The high indexation in the annual reports of the pension system for those years was due partly to the relatively substantial underestimate of income for 2001 by the National Institute of Economic Research, affecting subsequent years via the so-called adjustment factors.

The adjustment for forecasting discrepancies accounts for approximately SEK 23 billion of the cost of indexation in the Annual Report of the Pension System for 2002 and roughly SEK 4 billion in the Annual Report for 2003. For the most part, the adjustments affect only the year in which the change is reported, not the cost in itself.

In the reformed pension system, a set of so-called fixed annuity divisors is used; these are calculated from the mortality risks based on observations over the latest five-year period. This means that no adjustment of amounts disbursed is made when the average life span increases. It also means that the increase in the pension liability of the system due to the increase in *life expectancy* is charged to the financial position of the system. This economic burden on the system will be addressed through balancing if that step becomes financially necessary. During the phase-out of the ATP, increases in life expectancy will put more strain on the pension system than would otherwise be the case in the reformed system.

The table below shows the estimated effects of rules changes and phasing-in on the result in each accounting year. These amounts are a subset of the figures reported in the preceding table.

#### Estimated Effects of Phasing-In and Rules Changes on the Result of the Pension System

Billions of SEK

Phase-In Effect/Rules Changes	2002	2003	2004	2005
Increase in basic tax deduction:				
via indexation	-16	-29	-32	-30
via pay-in duration	0	4	0	-42
Nonrecurring adjustment of norm	-24	0	0	0
Pension contribution of intermediate generation	-6	-6	-7	-7
Phase-in of administrative costs	-0.6	-0.9	-0.8	-0.3
<b>Total</b>	<b>-34</b>	<b>-36</b>	<b>-23</b>	<b>-79</b>

## Higher Basic Tax Deduction = Higher Income Threshold for Pension Credit

The minimum income to be included in the calculation of income for the income index is determined by the basic deduction provided for in the tax rules, i.e. the minimum income that must be declared. The basic deduction has been gradually raised in recent years. It was 0.24 price-related base amounts for income year 2000, 0.27 price-related base amounts for 2001, and 0.293 price-related base amounts for 2002. For 2003, the limit for the basic deduction was raised to its current level of 0.423 price-related base amounts.

A higher basic deduction means that more annual incomes below the basic deduction are excluded from the measure of income. Thus, as the basic deduction is raised from one year to the next, fewer persons are included in the calculation of average income, everything else being equal. Since the persons no longer included have low incomes, the income index rises, with a negative effect on the result of the pension system. The reason is that the higher interest on the pension liability resulting from the greater increase in the income index is not matched by a larger inflow of contributions. Thus, the interest on the pension liability will slightly exceed the growth in the contribution asset. The negative impact on the pension system has been SEK 16, 29, 32, and 30 billion, respectively, in the years 2002–2005.

Most individuals with low incomes are young people. With a higher threshold for earnings, the average income will be higher for these age groups. This means that both the age distribution of income and the inflow of new individuals with pension credit are changed. Both changes have affected pay-in duration.

In the table on the previous page, it was assumed in the calculations that the threshold had not changed during these years; in other words, that it had been the same since 2000 (0.24 price-related base amounts). Maintaining a constant basic deduction results in different pay-in duration than that used in the accounts<sup>29</sup> and thus in different turnover duration. All other things being equal, if the basic deduction were maintained at the level prevailing in 2000, the result would be SEK 4 billion lower for 2004 and SEK 42 billion higher for 2005 than was reported for these years. The reason why the result is affected in opposite directions is that the median turnover duration is used in the calculations.

The conclusion is that the change in the threshold for earned income has had an aggregate negative net effect on the result for 2002–2005 of SEK 16, 25, 32, and 72 billion, respectively. For 2006, the higher basic deduction will also have a negative impact on the result. The explanation is the smoothing in the calculation of the income index; only the indexation of the liability to retirees will be affected. After 2006, the effect of the increase in the basic deduction will have subsided.

The effects described here illustrate how important the rules of the pension system are for the financial position of the system. A change in these rules that affects the number of persons included, their age, and the amount of pension credit earned will also impact the financial position of the pension system. These effects are natural, but it has not been easy in all respects to determine their magnitude. The Swedish Social Insurance Agency has not previously been aware of the impact of the increases in the basic deduction on pay-in duration.

## Nonrecurring Adjustment of the Norm

From 1999 on, the individual social security contribution has been excluded from the pension base. Because of this change, the income index has been decreased by the amount of the individual social security contribution of seven percent, distributed over a three-year period. Since the change had no

<sup>29</sup> There is also an effect on contribution revenue, but it is so marginal that we have not included it in the calculations.

effect on income for the economically active, the legislator considered that the change should have no negative effect on living standards of retirees at that time. In order to avoid a negative effect on pensions via a lower income index, the norm in the first year of adjustment indexation – 2001 – was not 1.016 but 0.996. That meant that instead of deducting 1.6 percentage points from the change in the income index, 0.4 percentage points were added to the change. As a result, the pension liability increased by SEK 24 billion, or 1.6 percent, in 2002.

### Higher Pension Contribution to the Pay-as-You-Go System for the Intermediate Generation

The development of contribution revenue is affected by transitional rules for the intermediate generation. For birth cohorts 1938–1953, their contribution to the premium pension system is less than 2.5 percent through their 64th year. This means that their contribution to the pay-as-you-go system is higher than 16 percent. The average contribution was 16.4 percent for 2001, decreasing by about 0.02 percentage point each year until 2018. If the contribution had been the same in the accounting year as the year before, the amount of the change in contribution revenue would have been SEK 6 billion better for 2002 and 2003, respectively, and SEK 7 billion better for 2004. This phase-in effect on the result will diminish each year until 2018, when it will have ceased entirely. Another description of this situation is that the rules for calculation, in combination with the phasing-in of the contribution, lead to a certain overstatement of the contribution asset, and that the overstatement decreases each year, with the decrease charged to that year's result.

### Phasing-In the Cost of Administration

A marginal contribution to a negative tendency in the balance ratio results from charging the entire cost of administration to the buffer fund while deducting less than the entire cost from pension balances (i.e. decreasing the pension liability). In order to avoid charging younger birth cohorts with a disproportionately high cost during the phase-out of the ATP, the deduction for costs is being introduced successively. In 2005, 68 percent of the cost of administration was financed by deductions from pension balances. The proportion of costs to be financed by an administrative-cost deduction will increase by two percentage points each year. Not until 2021 will the deduction match 100 percent of the cost of administration. If the cost of administration had not been phased in, the result would have been almost SEK 1 billion higher for each accounting year so far. The impact on the result is diminishing each year.

### Pension Credit for Persons Younger Than 16

From pension-credit year 2004 on, individuals under age 16 can earn pension credit. This change is marginally negative for the system, which previously received their contributions without granting them equivalent pension credit.

The following table shows the result of the pension system, both as presented in the annual reports of the pension system and as it would have been without the phase-in effects/rules changes described above.

## Compilation of the Results

Billions of SEK

		2002	2003	2004	2005
In the annual report	Surplus/deficit brought forward	218	52	58	9
	Result for the year	-167	6	-49	20
	Total surplus/deficit	52	58	9	28
Without phase-in effects/ changes in rules	Surplus/deficit brought forward	218	85	127	101
	Result for the year	-133	42	-26	99
	Total surplus/deficit	85	127	101	200

In all years, the result of the pension system would have improved without these phase-in effects and changes in rules. In the calculations above, several simplifications have been made. Among these, no consideration has been given to the fact that the pension liability and assets are also altered by such effects and changes. As a consequence, it has been impossible to calculate a balance ratio that disregards phase-in effects and changes in rules.

### How Is the Balance Ratio Affected?

The balance ratio is calculated as the relationship between the assets and the liabilities of the pension system. The assets are the buffer fund and the contribution asset. The liabilities are the pension liability to the economically active and to retirees.

The developments that determine the items in the income statement affect both the assets and the liabilities of the system. The return on the buffer fund is the only factor with an unambiguous effect on the system – a positive return strengthens the system; a negative return weakens it.

The amounts and times used for calculation of the balance ratio are smoothed; for example, contribution revenue is calculated as the mean for the latest three years. Thus, a substantial change in a particular factor over several years fully impacts the balance ratio only after several years, and a temporary change will have less effect over three years. Since turnover duration is calculated as the median of the turnover duration for three years, a temporary change will never be reflected in the calculation of turnover duration. Moreover, the effect may be different in the short term than in the longer term. For example, members of an isolated birth cohort with higher average pension credit than other cohorts will provide increased contribution revenue in the early years, when they are young and have recently entered working life, through larger incomes as well as longer pay-in duration. As the cohort grows older, pay-in duration will gradually decrease, with a consequent decrease in the contribution asset. Finally, the cohort will no longer bolster the asset side of the balance sheet by virtue of an unusually large contribution in relation to other cohorts, but will only increase the liability side through an abnormally large pension liability. The latter will be offset buffer fund assets to which the large birth cohort has contributed.

If more people begin working and those who enter working life have the same average income as those already employed, the buffer fund and contribution revenue will increase; the pension liability to the economically active will also increase by the pension credit earned. Since contribution revenue is multiplied by turnover duration, the asset side of the balance sheet will increase faster than the liability side, and the balance ratio will strengthen; an increase of 1 percent in revenue strengthens the balance ratio by about 0.9 percent. If those who enter working life are primarily younger individuals,

pay-in duration will increase, and the balance ratio will strengthen slightly more.

If older individuals work rather than draw their pensions, turnover duration will remain largely unchanged since pay-in duration in principle increases as much as pay-out duration decreases. If more people choose to work after reaching age 64, the income index will not be affected, but contributions to the system will increase. Since contributions are multiplied by turnover duration, which is about 32 years, assets will increase much more than the additional pension liability/asset resulting from a longer working life. Thus, the balance ratio will be strengthened.

As incomes increase while the number of persons with a pension base remains the same – for example, if those who are unemployed or receiving sickness compensation today go back to work and earn a higher income than before – both the asset side and the liability side will increase. On the asset side, both the buffer fund and the contribution asset will increase by the new contribution revenue. On the liability side, the pension liability to the economically active will increase by the new pension credit earned; at the same time, the entire liability will increase with the income index. How much the asset side increases in relation to the liability side depends on the increase in contribution revenue in relation to the income index. If the entire increase is in income below the ceiling, the income index and contribution revenue will be raised at the same rate. In current circumstances, with 12 percent of assets consisting of the buffer fund, the result will be a marginal deterioration in the balance ratio. If the entire income increase is in incomes above the ceiling, there will be no change on the asset side, whereas the income index will increase and the balance ratio will weaken. An increase of 1 percent in the income index that is wholly attributable to incomes about the ceiling will weaken the balance ratio by about 1 percent.

A third factor impacting the result is the return on the buffer fund; this factor affects only the asset side. A return that increases the size of the fund by 1 percent will increase the balance ratio by about 0.1 percent.

The size of a monthly pension is determined by demographic annuity divisors, which vary with life expectancy. For the inkomstpension, however, the annuity divisor is fixed for each birth cohort; thus, pension disbursements are not recalculated after age 65. Moreover, the annuity divisors are gender-neutral. The pension liability to retirees, on the other hand, is calculated with economic annuity divisors, which change with the development of life expectancy as well as the size of pension disbursements.

In each cohort currently retiring, women have a higher rate of labor force participation than in the preceding cohort, with the consequence that they receive a higher average pension. As gender-based differences in earnings diminish, the average woman's pension will approach the average man's. When women receive higher pensions, the economic annuity divisors are affected. If women's pensions catch up with men's, the economic annuity divisors will in time increase by an annual average of nearly one year, resulting in a higher pension liability to retirees.

Up to now, men have had a shorter average life span than women, but that difference is decreasing. If life expectancy were the same for men as for women, the average economic annuity divisor would increase by more than a half-year.

The negative effect on the balance ratio, a consequence of the larger pension liability resulting from longer life expectancy, is lessened by an increase in the contribution asset, as longer life expectancy would also increase turnover duration.

## List of Terms

in Swedish

### adjustment indexation

följsamhetsindexering

recalculation of pensions by the change in the income index,<sup>\*</sup> reduced by interest of 1.6 percent credited in the annuity divisor<sup>\*</sup>. Note that there is no adjustment index, only adjustment indexation<sup>\*</sup>. If the income index for year  $t$  is designated by  $I(t)$ , the adjustment indexation year  $t$  is calculated as:

$$[I(t)/I(t-1)] / 1.016$$

### annuity divisor

delningstal

a number that reflects remaining life expectancy at retirement, taking into account an imputed “interest” rate on the pension to be paid. There are three kinds of divisors<sup>\*</sup>: divisors for the *inkomstpension*, divisors for the *premium pension*, and economic annuity divisors.

In the calculation of the annual *inkomstpension* and the *premium pension*, the individual’s *pension balance* and premium pension capital, respectively, are divided by an annuity divisor at the time of retirement.

Economic annuity divisors are used in the calculation of the *pension liability*.

### ATP

tilläggs pension

corresponds to the former ATP and folkpension and is paid to all persons born before 1938. Persons born between 1938 and 1953 receive between 4/20 and 19/20 of their *earnings-related pension* from ATP and the remaining share from the *inkomstpension* and *premium pension*. The ratio depends on the year of birth. The ATP portion is equivalent to 60 percent of the average *pension points* for the 15 years with the most pension points; the *folkpension* portion is equal to 96 percent of one *price-related base amount*<sup>\*</sup> for single pensioners and 78.5 percent for married pensioners. For individuals with fewer than 30 years of pension points, the ATP is reduced accordingly.

### balance index

balansindex

when *balancing* is activated, *pension balances* and pensions are indexed following the change in a balance index instead of the *income index*<sup>\*</sup>. Changes in the balance index are dependent on the change in the income index<sup>\*</sup> and on the size of the *balance ratio*.

### balance ratio

balanstal

the assets of the *pay-as-you-go system*, i.e. the *contribution asset* and the *buffer fund*, divided by the *pension liability* of the system. The balance ratio in a *pay-as-you-go system* can be considered equivalent to the consolidation ratio in a *funded system*. Unlike the consolidation ratio, however, the balance ratio provides no information on the amount of funded assets in relation to the pension liability.

<sup>\*</sup> For amounts and values, see, at [www.forsakringskassan.se/Press/Aktuella\\_belopp](http://www.forsakringskassan.se/Press/Aktuella_belopp)



**balancing**

balansering

a method of ensuring via *indexation* of the *pension liability*, that is, *pension balances* and current pensions, that the disbursements of the insurance system will not exceed the revenue of the system in the long run. Balancing is activated if the *balance ratio* drops below 1,0000, that is, if the pension liability exceeds the assets of the system. In that case, the *pension liability* increases at a compounding rate approximately equal to the system's *internal rate of return*.

**buffer fund**

buffertfond

absorbs interperiod discrepancies between *pension contributions* and pension expenditure in a *pay-as-you-go system*. The primary purpose of the buffer fund is to stabilize pension levels and/or pension contributions in relation to economic and demographic variations. The buffer fund of the *national public pension system* consists of five different funds: the First–Fourth, and Sixth *National Pension Funds*.

**ceiling on pension-qualifying income**

intjänandetak

see pension-qualifying income.

**central government old-age pension contribution**

statlig ålderspensionsavgift

a pension contribution paid by the central government. The contribution is 10.21 percent of pension-qualifying social-insurance benefits, except for sickness and activity compensation. For sickness and activity compensation and so-called *pension qualifying amounts*, the contribution rate is 18.5 percent.

**compounding**

förräntning

in this report, synonymous with *indexation*.

**contribution asset**

avgiftstillgång

the value of the inflow of contributions to the *inkomstpension*. It is calculated through multiplication of annual contribution revenue by *turnover duration*.

**contribution base**

avgiftsunderlag

the income and other amounts on which *pension contributions* are paid. The contribution base consists primarily of earned income, but also of social-insurance benefits such as sickness cash benefits and unemployment cash benefits, as well as *pension-qualifying amounts* for sickness or activity compensation, child-care years, study, and compulsory national service.

**cost-of-administration factor**

förvaltningskostnadsfaktor

*pension balances* are reduced by the costs of administration. This is done by multiplying pension balances with the cost-of-administration factor\*.

**defined-benefit pension system**

förmånsbestämt pensionssystem

a pension system in which the insurer bears the financial risk derived from the uncertainty in mortality rate and in the *rate of return* on the assets of the system. In a public pension system, the insurer is the taxpayers, which means that contributions to the system may vary. The amount of the pension benefit is determined in advance in terms of a certain amount or level, such as final earnings or average income.

\* For amounts and values, see, at [www.forsakringskassan.se/Press/Aktuella\\_belopp](http://www.forsakringskassan.se/Press/Aktuella_belopp)

**defined-contribution pension system**

avgiftsbestämt pensionssystem

a pension system in which *pension credit* in monetary terms accrues by the same amount as the *pension contribution* paid by or for the individual. In a defined-contribution pension system, the insured bears the financial risk derived from the uncertainty in mortality rate and in the *rate of return* on the assets of the system. This means that the value of a pension may vary.

**earnings-related old-age pension**

inkomstgrundad ålderspension

*ATP, inkomstpension* and *premium pension*.

**fund strength**

fondstyrka

the monetary amount of the *buffer fund* at the end of a given year divided by the pension disbursements for the same year. It is a measure of the size of the buffer fund in relation to the flow of pension payments.

**funded system**

fonderat system

a pension system in which premiums are set aside and invested until the time of pension withdrawal. The premium-pension system is an example of a funded system.

**growth**

tillväxt

in this report, the annual percentage change in average income as measured by the *income index*.

**guarantee rule/guaranteed supplement**

garantiregel/garantitillägg

a provision guaranteeing that individuals born between 1938 and 1953 will receive a pension at least equivalent to that which they had earned in the *ATP system* through 1994.

**guaranteed pension**

garantipension

provides basic retirement income security for individuals who have had little or no previous income. The guaranteed pension is calculated as a supplement to the *earnings-related pension*.

**income index**

inkomstindex

the change in the income index<sup>★</sup> shows the increase or decrease in average income. The measure of income used in the calculation of the income index include aggregate *pension-qualifying income*, including income in excess of the ceiling on pension-qualifying income,<sup>★</sup> minus *individual pension contributions* for persons aged 16–64. When the number of persons who have earned such income is divided by this net amount, the result is the average income.

The change in the index is calculated as the average change in real income for the latest three-year period, with the addition of inflation in the latest 12-month period until June. The measure of income used is based partly on a forecast. Adjustment for forecasting error is made in the indices for subsequent years.

★ For amounts and values, see, at [www.forsakringskassan.se/Press/Aktuella\\_belopp](http://www.forsakringskassan.se/Press/Aktuella_belopp)

**income-related base amount**

inkomstbasbelopp

the base amount which is recalculated each year according to the change in the *income index*\*. The income-related base amount\* is used primarily to calculate the ceiling on *pension-qualifying income*. Before deduction of the *individual pension contribution*, the ceiling on this income is 8.07 income-related base amounts; after deduction of the individual pension contribution, it is 7.5 income-related base amounts.

**indexation**

indexering

recalculation of *pension balances* by the change in the *income index*\* (or *balance index*) and the recalculation of pensions by *adjustment indexation*\*.

**individual pension contribution**

allmän pensionsavgift

the portion of the *pension contribution*, 7 percent of earned income, paid by the insured. The individual pension contribution is withdrawn together with the preliminary income tax and is paid on incomes up to 8.07 *income-related base amounts*\*.

**inheritance gain**

arvsvinst

the *pension balance*, or premium-pension capital, of a deceased person, which is “inherited” by all insured survivors. For the *inkomstpension*, inheritance gains are allocated by increasing the pension balances of all insured survivors in each birth cohort by the same percentage, the so-called inheritance gain factor\*. Inheritance gains for the *premium pension* are allocated in a similar manner.

**inkomstpension**

inkomstpension

the portion of the *earnings-related old-age pension* linked to 16 percent of the *pension base*. The term *inkomstpension* sometimes includes the *ATP*.

Here the term is also used to designate the *inkomstpension* subsystem of the *national public pension* system.

**internal rate of return**

internränta

in this report, *compounding* of the *pension liability* so that it increases at the same rate as the assets of the system. The internal rate of return is determined by the change in the contribution revenue of the system and the change in the extent to which these contributions can finance the pension liability – in other words, the change in *turnover duration* – and by the *return on the buffer fund*, as well as the cost (gain) due to changes in life expectancy. If *balancing* is activated, the pension liability is compounded at a rate approximating the internal rate of return of the pay-as-you-go system.

\* For amounts and values, see, at [www.forsakringskassan.se/Press/Aktuella\\_belopp](http://www.forsakringskassan.se/Press/Aktuella_belopp)

## National Pension Funds, the National Pension Fund

AP-fonderna,  
Allmänna Pensionsfonden

legally and administratively, the *buffer fund* of Sweden's *pay-as-you-go pension system* consists of five different funds: the First, Second, Third, Fourth, and Sixth National Pension Funds. *Pension contributions* are apportioned equally to the First-Fourth National Pension Funds, which also contribute equally to the payment of pensions. The Sixth National Pension Fund receives no pension contributions and pays no pensions. From the standpoint of the *pay-as-you-go system*, the five *buffer funds* may be viewed in some respects as a single fund.

## national public pension

den allmänna pensionen

Sweden's national pension system. The system comprises the *ATP*, *inkomstpension*, the *premium pension*, and the *guaranteed pension*.

## old-age pension contribution

ålderspensionsavgift

paid by employers as an employer contribution and by self-employed persons as an individual pension contribution. The contribution rate for the old-age pension is 10.21 percent of total earnings; however, the contribution on the portion of earnings exceeding 8.07 *income-related base amounts*\* is not paid to the pension system, but to the central government.

## pay-as-you-go pension systems

fördelningssystem

systems which do not require that the *pension liability* be matched by a certain amount of funded assets. A pay-as-you-go system is often described as a system where contribution revenue is used directly to finance pension disbursements. However, this description is not totally accurate in the case of a pay-as-you-go system with a *buffer fund*.

## pay-in duration

intjänandetid

the difference in number of years between the expected money-weighted average age of earning pension credit and the expected money-weighted average retirement age.

## pay-out duration

utbetalningstid

the difference in number of years between the expected money-weighted average retirement age and the expected expected money-weighted average age of pension recipients.

## pension balance

pensionsbehållning

the total confirmed *pension credit* for the *inkomstpension*, recalculated annually in accordance with the *income index*\* (or the *balance index*), *inheritance gains*, and the *cost-of-administration factor*\*.

## pension base

pensionsunderlag

the total of an individual's *pension-qualifying income* and *pension-qualifying amounts*, but only up to a maximum of 7.5 *income-related base amounts*\* per year.

\* For amounts and values, see, at [www.forsakringskassan.se/Press/Aktuella\\_belopp](http://www.forsakringskassan.se/Press/Aktuella_belopp)

**pension contribution**

pensionsavgift

see individual pension contribution, old-age pension contribution and central-government old-age pension contribution.

**pension credit**

pensionsrätt

an individual's pension credit is 18.5 percent of her/his total *pension base* and equal to her/his total *pension contribution*. Individuals born in 1954 or thereafter are credited with 16 percent of their pension base for the *inkomstpension* and with 2.5 percent of their pension base for the *premium pension*. Pension credit increases the individual's *pension balance* and premium-pension capital.

**pension level**

pensionsnivå

in this report, the average pension in relation to the average *pension-qualifying income* for persons aged 16–64.

**pension liability**

pensionsskuld

in this report, the financial commitment of the pension system at the end of each year. The pension liability to the economically active is calculated as the sum of the *pension balances* of all individuals. The pension liability to retirees is calculated by multiplying the annual pension amount of each birth cohort by the economic *annuity divisor* for that cohort. Through 2017 the pension liability will also be calculated for the *ATP* credit earned by the economically active.

**pension points**

pensionspoäng

the measure of pension credit used in calculating the *ATP*. Pension points may be earned by persons aged 64 or less and born before 1954. Pension points are calculated as follows:

$$\text{Pension points} = \frac{PQI - HPBA}{HPBA}$$

where

*PQI* = pension-qualifying income

*HPBA* = the higher price-related base amount\*

**pension-qualifying amounts**

pensionsgrundande belopp

a basis for *pension credit* not related to actual earned income. Pension-qualifying amounts may be credited for sickness and activity compensation, care of small children (child-care years), study, and compulsory national service.

**pension-qualifying income**

pensionsgrundande inkomst

the income which together with *pension-qualifying amounts* is used to calculate the *pension credit* of the insured. In principle, pension-qualifying income consists of annual income (earnings, sickness cash benefits, parental cash benefits, unemployment cash benefits, etc.) reduced by the *individual pension contribution*. Beginning in 2003, annual income must exceed 42.3 percent of one *price-related base amount*\* to qualify for pension credit\*. The maximum pension-qualifying income, or so-called ceiling on pension-qualifying income, is 7.5 *income-related base amounts*\*.

\* For amounts and values, see, at [www.forsakringskassan.se/Press/Aktuella\\_belopp](http://www.forsakringskassan.se/Press/Aktuella_belopp)

**premium pension**

premiepension

the portion of the *earnings-related old-age pension* designed as a *funded system*. The *pension credit* earned for the premium pension is 2.5 percent of the *pension base* and is invested in securities funds chosen by the insured individual. The premium pension may be withdrawn as fund insurance or as a guaranteed monthly benefit from a conventional insurance policy.

**price-related base amount**

prisbasbelopp

an amount used in the *national pension system* for purposes that include calculating the *guaranteed pension* and in the tax system for determining the basic deduction, currently equivalent to 42.3 percent of *price-related base amount*\* for the year in which the income reported was earned. The *price-related base amount* is adjusted each year by the change in the Consumer Price Index (for June). There is also a higher price-related based amount\*. It is used to calculate *pension points* and also follows changes in the Consumer Price Index.

**return**

avkastning

in this report, the concept refers to the direct return plus the increase in value of the *buffer fund* and the premium-pension funds.

**turnover duration**

omsättningstid

the money-weighted expected time from the earning of *inkomstpension credit* until the disbursement of *inkomstpension*. Turnover duration is the sum of *pay-in duration* and *pay-out duration*. Turnover duration is calculated annually and is used for valuation of the contribution inflow. The calculation of turnover duration is performed according to the same principle and method as the calculation of life expectancy; in other words, it is assumed in the calculation that the relevant age-dependent conditions at the time will remain unchanged in the future. Turnover duration depends on the rules governing the earning of pension credit and the disbursement of pensions and on the patterns of labor-force participation and mortality in each age group.

\* For amounts and values, see, at [www.forsakringskassan.se/Press/Aktuella\\_belopp](http://www.forsakringskassan.se/Press/Aktuella_belopp)

## Appendix A. Calculation Factors<sup>30</sup>

<sup>30</sup> For amounts and values, see, at [www.forsakringskassan.se/Press/Aktuella belopp](http://www.forsakringskassan.se/Press/Aktuella%20belopp).

The Earnings Related Old Age Pension Act, or LIP, (1998:674), requires the Swedish Social Insurance Agency to calculate the income index. In addition, the Swedish Social Insurance Agency is to calculate the income-related base amount and to report the result by October 31 preceding the year for which the base amount will be in effect. The manner in which these calculations are to be performed is set forth in Chapter 1, §§ 5 and 6 of the LIP. By §§ 6–8 of the Regulations for the Earnings Related Old Age Pension (1998:1340), the Swedish Social Insurance Agency is also required to calculate for each year the inheritance gain factors, the administrative cost factor, and annuity divisors in accordance with Chapter 5, §§ 5, 8, and 12, respectively, of the LIP.

According to Chapter 7 § 2 of the LIP, the PPM is to operate on the same principles as insurance businesses. These principles, as interpreted by the PPM, govern the calculation of the rebate rate, inheritance gains, and annuity divisors for the premium pension. According to § 11 of the Regulations governing the Instructions for the Premium Pension Authority (2000:585), PPM operations are to be financed through fees paid by each pension saver.

### Income Index

The development of average income is shown by the change in the income index. In this context, income refers to pension-qualifying income without limitation by the ceiling, but after deduction of the individual social security contribution.

$$\text{Income Index}(t) = \left( \frac{u(t-1)}{u(t-4)} \times \frac{\text{CPI}(t-4)}{\text{CPI}(t-1)} \right)^{\frac{1}{3}} \times \frac{\text{CPI}(t-1)}{\text{CPI}(t-2)} \times k \times \text{Income Index}(t-1)$$

$$u(t) = \frac{I(t)}{N(t)}$$

where

$t$  = calendar year

$\text{CPI}(t)$  = consumer price index for June of year  $t$

$k$  = adjustment factor for error in estimation of  $u(t-2)$  and  $u(t-3)$

$I(t)$  = total pension-qualifying income without limitation by the ceiling, persons aged 16–64 in year  $t$ , after deduction of the individual social security contribution

$N(t)$  = number of persons aged 16–64 with pension-qualifying income in year  $t$

The change in the index consists of two parts. One is the average annual change in average income during the latest three-year period, excluding inflation; the other is inflation during the latest 12-month period ending in June. Inflation is measured by the CPI for June. Pension-qualifying income is not known until after the final tax assessment, i.e. in December of the year following the income year. This means that the income for the two most recent years is based on an estimate. Errors in estimates are corrected in the indices for subsequent years. The purpose of excluding the inflation for the three-year period and restoring the inflation for the most recent year is to ensure rapid adjustment of pensions to changes in the inflation rate.

From 2003 on, disability pensions have been replaced by sickness and activity compensation, which is pension-qualifying income. As a result, the measure of income,  $u$ , was given a different definition. To provide comparability between years, a special adjustment ratio has been used in the calculation of the income index for the years 2004–2006. The adjustment ratio, which is the measure of income in 2003 (SEK 214 208) divided by the measure of income that same year but excluding sickness and activity compensation (SEK 217 390), has been calculated at 0.9853634.

The change in the income index between year  $t-1$  and year  $t$  affects the pension liability to retirees in year  $t$  via adjustment indexation of inkomstpension and ATP disbursements (see Note 8 and Note 14, Table C). The change in the income index between years  $t$  and  $t+1$  affects the inkomstpension liability to the economically active in year  $t$  via income indexation of pension balances (see Note 8 and Note 14, Table A).

### Rate of Rebate

If an individual chooses to draw her/his premium pension in the form of conventional insurance, a life-long guaranteed nominal monthly amount is calculated. The amount disbursed is recalculated each year and may be higher than the guaranteed amount if the conventional life insurance operation achieves a better result than was forecast when the nominal amount was calculated. The result of the conventional insurance operation is reflected in the rate of rebate used to increase the value of conventional insurance.

The rate of rebate does not affect the pension liability, as the latter is calculated on the basis of the guaranteed amount.

### Inheritance Gain Factor for the Inkomstpension

The pension balances of deceased persons are credited to the survivors in the same age group in the form of inheritance gains. For the economically active, this is done through multiplying the pension balances of the survivors by an inheritance gain factor for the inkomstpension.

$$\text{Inheritance Gain Factor}_i(t) = 1 + \frac{\sum_{i=2}^{i=17} PBd_{i-1}(t-1)}{\sum_{i=2}^{i=17} PB_{i-1}(t-1)} \quad \text{for } i = 2, 3, \dots, 17$$

$$\text{Inheritance Gain Factor}_i(t) = 1 + \frac{PBd_{i-1}(t-1)}{PB_{i-1}(t-1)} \quad \text{for } i = 18, 19, \dots, 60$$

$$\text{Inheritance Gain Factor}_i(t) = \frac{L_i^*(t)}{L_i(t)} \quad \text{for } i = 60, 61, \dots, r$$

where

$i$  = age at end of year  $t$

$PBd_{i-1}(t-1)$  = total pension balances in year  $t-1$  for persons dying in year  $t-1$  in age group  $i-1$

$PB_{i-1}(t-1)$  = total pension balances in year  $t-1$  for survivors in year  $t-1$  in age group  $i-1$

$r$  = oldest age group in which  $L_i > 0$

$L_i(t)$  = number of survivors out of 100 000 born in age group  $i$  at the end of year  $t$  according to the life span data of Statistics Sweden for the five-year period immediately preceding the year when the insured reaches age 60 for  $i = 60-64$  and age 64 for  $i = 65$  or older

$L_i^*(t)$  = number of survivors out of 100 000 born in age group  $i$  at the start of year  $t$  according to the life span data of Statistics Sweden for the five-year period immediately preceding the year when the insured reaches age 60 for  $i = 60-64$  and age 64 for  $i = 65$  or older

For age group 2-17, a common inheritance gain factor is calculated. Because there is some delay in the information on persons dying during the year, the distribution of inheritance gains



to persons aged 60 or less is made with a time lag of one year. The distribution of inheritance gains to persons aged 60 or above is made in the year of death.

Inheritance gains arising after retirement are taken into account in the annuity divisor. For the purpose of distributing inheritance gains by the same principle for both the economically active and retirees in the same birth cohort, the method of allocation is changed from age 60 on. The change of method is made in the year when the individual turns 60 in order to avoid delay in the allocation of inheritance gains for the year prior to retirement for persons who begin drawing their pensions at age 61. In the year when an insured turns 60, he or she is credited with double inheritance gains because of the two different procedures.

The impact of inheritance gains on the pension liability is limited, for it means that the pension balances of deceased persons are redistributed to the survivors. There is an effect on the inkomstpension liability to the economically active, however, because of the difference between inheritance gains arising and inheritance gains distributed; this effect is reported in Note 10. For the group dying before their 60th year, the difference is due to changes in taxation between the time when inheritance gain factors are calculated and the time when the gains are distributed, and to late information on persons dying. For the group dying in their 60th year or thereafter, the reasons are differences between estimated and actual mortality, and possible variations in mortality depending on the insured's level of income.

### Inheritance Gain factors for the Premium Pension

In the premium pension system, inheritance gains are calculated as a percentage of the premium pension capital of the survivors. The percentage corresponds to the one-year risk of death, i.e. the risk of dying within one year. The inheritance gain for the premium pension is currently distributed once a year. If the insured elects a survivor benefit, the inheritance gain will be much smaller, as it is then based on the probability than both the primary insured and the co-insured will die within one year.

The risk of death in year  $t$  is calculated by Makeham's formula, which is determined by the relationship between the capital of pension savers dying in year  $t-1$  and the capital of the surviving pension savers in the same year, calculated for each age group. The pension capital used to determine the inheritance gain in year  $t$  corresponds to the balance of the premium pension account as of December 31 in year  $t-1$ . The amounts of the inheritance gains are adjusted by a factor that equalizes the total amount distributed in year  $t$  and the capital of pension savers dying in year  $t-1$ .

The inheritance gains for the premium pension do not affect the pension liability over time, as accumulated death capital is offset by inheritance gains distributed.

### Administrative-cost factor for the Inkomstpension

The costs of administering the inkomstpension system reduce the pension balances of the economically active. The amount of the deduction from pension balances is calculated through multiplication by an administrative-cost factor for the inkomstpension.

$$\text{Administrative-cost factor}(t) = 1 - [(B(t) \times A(t) - C(t-1) + F(t-1) \times A(t-1)) / PB(t-1)]$$

where

- $B(t)$  = budgeted costs of administration, year  $t$
- $A(t)$  = proportion charged to pension balances, year  $t$
- $C(t-1)$  = reduction in pension balances, year  $t-1$
- $F(t-1)$  = actual costs of administration, year  $t-1$
- $PB(t-1)$  = total pension balances, year  $t-1$

Until the year 2021, the proportion of administrative costs charged to pension balances,  $A$ , will be less than 100 percent (see Note 11). In the calculation of the administrative-cost factor for year  $t$ , there is an adjustment for the costs of year  $t-1$ . The amount of the adjustment is the difference between actual administrative costs in  $t-1$  and the deduction from pension balances the same year. The deduction was determined with the aid of the administrative-cost factor for year  $t-1$ , calculated from budgeted costs for year  $t-1$  and total pension balances in year  $t-2$ .

The administrative-cost factor affects the inkomstpension liability to the economically active via the deduction from pension balances (see Note 14, Table A). The difference between total costs of administration (see Note 4) and the deduction from pension balances puts a strain on the balance ratio.

### Deduction for Costs of Administration, Premium Pension

The costs of administration for the premium pension system are not to exceed 0.3 percent of the aggregate balances of the premium pension accounts of pension savers. The fee for administrative costs, which is deducted from the premium pension accounts of pension savers, is to cover the total operating costs of the PPM, including interest and other financial expenses.

Administrative costs affect the capital of the premium pension system; through the deduction from pension balances, they also affect the premium pension liability by the same amount (see Notes 17 and 23).

### Annuity Divisors for the Inkomstpension

The annuity divisors for the inkomstpension are used for recalculation of pension balances as annual disbursements and are a measure of life expectancy at retirement, with interest of 1.6 percent (the norm) taken into account.

$$Annuity\ Divisors_i = \frac{1}{12L_i} \sum_{k=i}^r \sum_{X=0}^{11} \left( L_k + (L_{k+1} - L_k) \frac{X}{12} \right) (1.016)^{-(k-i)} (1.016)^{-X/12} \text{ for } i = 61, 62, \dots, r$$

where

$k-i$  = number of years of retirement ( $k=i, i+1, i+2$  etc.)

$X$  = months (0, 1, ...11)

$L_i$  = number of survivors in age group  $i$  per 100 000 born, according to the life span statistics of Statistics Sweden. These statistics are for the five-year period immediately preceding the year when the insured reached age 60 in the case of pension withdrawal before age 65, and age 64 in the case of withdrawal later on.

For persons who have begun drawing their old-age pensions before age 65, the amount disbursed is recalculated, in accordance with recalculated annuity divisors, at the start of the year when the individual turns 65. The reason for the recalculation is the change in the statistical basis for the latest life span statistics available in the individual's 65th year. With the continuing increase in life expectancy, the recalculated annuity divisors are usually higher than before, leading to lower monthly pensions. The resulting marginal reduction in the inkomstpension liability to retirees is a component of the "Change in Amounts Disbursed" in Note 14, Table C.

After age 65, there is no further recalculation of annuity divisors. The increase in the pension liability of the system resulting from the fixed annuity divisors puts strain on the balance ratio when life expectancy is increasing.

Withdrawal of an old-age pension involves a transfer of pension liability from the economically active to retirees. The actual recalculation of pension balances as annual disbursements results in a marginal change in the pension liability. The change arises because of the difference between annuity divisors and so-designated “economic annuity divisors” in this report. For a description of economic annuity divisors, see Appendix B, Section 4. The economic annuity divisors are used to calculate the pension liability to retirees.

### Annuity Divisors for the Premium Pension

To calculate the annual premium pension, the value of the premium pension account is divided by an annuity divisor for the premium pension. Unlike the inkomstpension, the annuity divisor for the premium pension is based on forecasts of life expectancy.

$$\text{Annuity Divisors}_x = \int_0^{\infty} e^{-\delta t} \frac{l(x+t)}{l(x)} dt$$

$$l(x) = e^{-\int_0^x \mu(t) dt}$$

$$\mu(x) = a + be^{cx}$$

where

$x$  = exact age at time of retirement

The annuity divisors are calculated continually and according to the exact age at retirement, but in principle they are consistent with the formula for the annuity divisor for the inkomstpension.<sup>31</sup> The survival function,  $l(x)$ , can be considered equivalent to the number  $L$  used in the calculation of the inkomstpension. The mortality function,  $\mu(x)$ , is the so-called Makeham’s formula used for calculating the risk of death within one year. The values of  $a$ ,  $b$ , and  $c$  correspond to Statistics Sweden’s forecast of remaining life expectancy in the years 2003–2050 for individuals born in 1940, according to the low-mortality alternative.<sup>32</sup>

The interest credited,  $\delta$ , is currently 3 percent before the deduction for costs and 2.69 percent after that deduction. The costs to be covered by the deduction are those of the PPM. If the premium pension is drawn in the form of conventional insurance, a life-long guaranteed nominal monthly amount is also calculated. The guaranteed amount is calculated with an assumed nominal return that is currently 2.44 percent after the deduction for costs (equivalent to 2.75 percent before the deduction). The assumptions above regarding interest have also been used in the calculation of actuarial provisions.

For the premium pension in the form of fund insurance, the pension liability is by definition equal to the value of the assets, which in turn corresponds to the aggregate value of all fund shares. For fund insurance, therefore, a change in annuity divisors has no effect on the pension liability. In the case of conventional insurance, the pension liability is equal to the actuarial provisions. The liability is calculated by multiplying every guaranteed amount by an annuity divisor. The annuity divisor is calculated in the same manner as in the determination of pension amounts. In the calculation of actuarial provisions, however, separate mortality assumptions are used for women and men, respectively. A reduction in assumed mortality or in interest will increase the actuarial provisions.

<sup>31</sup> The formula applies in cases where one life is insured, i.e. where there is no survivor coverage.

<sup>32</sup> Persons born in 1940 constitute the birth cohort closest to age 65 at the time of the latest determination of the forecast interest rate. Current values:  $a=0.0025$ ,  $b=0.0000075$ ,  $c=0.105$ ,  $\delta=2.6559$  percent, equivalent to an annual interest rate of 2.6915 percent. For  $x>97$ ,  $\mu(x)$  merges with a straight line with a slope of 0.001.

## Appendix B. Mathematical Description of the Balance Ratio

\* Some editing has been done to simplify the presentation.

### Excerpts from Regulation 2002:780 on the Calculation of the Balance Ratio\*

For each year the Swedish Social Insurance Agency is to calculate the balance ratio according to Chapter 1, §§ 5 a and 5 b of the National Income Replacement Pension Act (1998:674) in accordance with the following formula:

#### 1. Balance ratio, $BR$ ,

$$BR(t+2) = \frac{CA(t) + F(t)}{D(t)} \quad (1.0)$$

$$CA(t) = \bar{C}(t) \times \bar{T}(t) \quad (1.1)$$

$$\bar{C}(t) = \frac{C(t) + C(t-1) + C(t-2)}{3} \times \left( \frac{C(t)}{C(t-3)} \times \frac{CPI(t-3)}{CPI(t)} \right)^{\frac{1}{3}} \times \left( \frac{CPI(t)}{CPI(t-1)} \right) \quad (1.2)$$

$$\bar{T}(t) = \text{median} [T(t), T(t-1), T(t-2)] \quad (1.3)$$

where

- $t$  = calendar year if the variable refers to flows, end of calendar year if the variable refers to stocks  
 $CA(t)$  = contribution asset, year  $t$   
 $F(t)$  = buffer fund, the aggregate market value of the assets of the First–Fourth and Sixth National Pension Funds year  $t$ . By market value is meant the value which in accordance with Ch. 6, § 3 of the National Pension Funds Act (2000:192) and Ch. 4, § 2 of the Sixth National Pension Fund Act (200:193) is to be shown in the annual reports of these funds.  
 $D(t)$  = pension liability, year  $t$   
 $\bar{C}(t)$  = smoothed value for the contribution to the pay-as-you-go system, year  $t$   
 $\bar{T}(t)$  = smoothed value for turnover duration, year  $t$   
 $C(t)$  = contributions to the pay-as-you-go system, year  $t$   
 $T(t)$  = turnover duration, year  $t$   
 $CPI(t)$  = consumer-price index for June, year  $t$

#### 2. The average retirement age, $\bar{R}$ , is calculated as

$$\bar{R}(t) = \frac{\sum_{i=61}^{R^*(t)} P_i^*(t) \times G_i(t) \times i}{\sum_{i=61}^{R^*(t)} P_i^*(t) \times G_i(t)}, \bar{R} \text{ rounded off to nearest whole number} \quad (2.0)$$

where

- $i$  = age at end of year  $t$   
 $R^*(t)$  = the oldest age group for which pensions have been granted in year  $t$   
 $P_i^*(t)$  = total of pensions granted monthly in year  $t$  to persons in age group  $i$   
 $G_i(t)$  = annuitization divisor in year  $t$  for age group  $i$

### 3. Turnover duration, $T$ ,

$$T(t) = ID(t) + OD(t) \quad (3.0)$$

#### 3.1 Pay-in duration, $ID$ ,

$$ID(t) = \frac{\sum_{i=17}^{\bar{R}(t)} \bar{E}_i(t) \times L_i(t) \times (\bar{R}(t) - i - 0.5)}{\sum_{i=17}^{\bar{R}(t)} \bar{E}_i(t) \times L_i(t)} \quad (3.1.1)$$

$$\bar{E}_i(t) = \frac{\frac{E_i(t)}{N_i(t)} + \frac{E_{i+1}(t)}{N_{i+1}(t)}}{2} \quad \text{for } i = 17, 18, \dots, \bar{R}(t)-1 \quad (3.1.2)$$

$$\bar{E}_{\bar{R}(t)}(t) = \frac{E_{\bar{R}(t)}(t)}{N_{\bar{R}(t)}(t)} \quad (3.1.3)$$

$$L_i(t) = L_{i-1}(t) \times h_i(t) \quad \text{for } i = 18, 19, \dots, \bar{R}(t) \quad \text{where } L_{17}(t) = 1 \quad (3.1.4)$$

$$h_i(t) = \frac{N_i(t)}{N_{i-1}(t-1)} \quad \text{for } i = 18, 19, \dots, \bar{R}(t) \quad (3.1.5)$$

where

$E_i(t)$  = the sum of 16 % of pension-qualifying income calculated in accordance with Ch. 2 of the National Income Replacement Pension Act (1998:674) and 16 % of imputed pension-qualifying income calculated in accordance with Ch. 3 of said act in pay-in year  $t-1$ , i.e. year of determination  $t$ , for age group  $i$  for individuals who have not been registered as deceased  $t-1$

$N_i(t)$  = number of individuals in age group  $i$  who at any time up until pay-in year  $t-1$ , i.e. year of determination  $t$ , have been credited with pension-qualifying income or imputed pension-qualifying income and who have not been registered as deceased  $t-1$

$L_i(t)$  = proportion of persons in age group  $i$  surviving in year  $t$

$h_i(t)$  = change in proportion of persons in age group  $i$  surviving in year  $t$

### 3.2 Pay-out duration, $OD$ ,

$$OD(t) = \frac{\sum_{i=\bar{R}(t)}^{R(t)} 1.016^{-(i-\bar{R}(t)+0.5)} \times L_i^*(t) \times (i-\bar{R}(t) + 0.5)}{\sum_{i=\bar{R}(t)}^{R(t)} 1.016^{-(i-\bar{R}(t)+0.5)} \times L_i^*(t)} \quad (3.2.1)$$

$$L_i^*(t) = L_{i-1}^*(t) \times he_i(t), L_{60}^*(t) = 1 \quad (3.2.2)$$

$$he_i(t) = \frac{P_i(t)}{P_i(t) + Pd_i(t) + 2 \times Pd_i^*(t)} \quad \text{for } i = 61, 62, \dots, R(t) \quad (3.2.3)$$

where

$R(t)$  = the oldest age group receiving a pension in year  $t$

$P_i(t)$  = total pension disbursements in December of year  $t$  to age group  $i$

$Pd_i(t)$  = total of the last monthly pension disbursements to persons in age group  $i$  who received a pension disbursement in December of year  $t-1$  but not in December of year  $t$

$Pd_i^*(t)$  = total of the last monthly pension disbursements to persons in age group  $i$  with pensions granted in year  $t$  and not receiving a pension in December of year  $t$

$L_i^*(t)$  = proportion of remaining disbursements to age group  $i$  in year  $t$

$he_i(t)$  = change in pension disbursements due to deaths in year  $t$ , age group  $i$

### 4. The pension liability, $D$ ,

$$D(t) = AD(t) + DD(t) \quad (4.0)$$

$$AD(t) = K(t) + E(t) + ATP(t) \quad (4.1)$$

$$DD(t) = \sum_{i=61}^{R(t)} P_i(t) \times 12 \times \left( \frac{Ge_i(t) + Ge_i(t-1) + Ge_i(t-2)}{3} \right) \quad (4.2)$$

$$Ge_i(t) = \frac{\sum_{j=i}^{R(t)} \frac{1}{2} \times (L_j^*(t) + L_{j-1}^*(t)) \times 1.016^{i-j-1}}{L_i^*(t)} \quad \text{for } i = 61, 62, \dots, R(t) \quad (4.3)$$

where

$AD(t)$  = pension liability in year  $t$  in regard to pension commitment for which disbursement has not commenced (pension liability to the "economically active")

$DD(t)$  = pension liability in year  $t$  in regard to pensions currently being disbursed to retired persons in the pay-as-you-go system

$K(t)$  = total of pension balances in year  $t$  according to Ch. 5, § 2 of the National Income Replacement Pension Act (1998:674)

$E(t)$  = estimated pension credit in year  $t$  for the inkomstpension according to Ch. 4, §§ 2–6 of said act

$ATP(t)$  = estimated value in year  $t$  of the ATP pension for persons who have not yet begun to receive this pension.

$Ge_i(t)$  = economic annuitization divisor for age group  $i$  in year  $t$ .

## DECISION

5 December 2005

Average Svensson  
Street 1  
123 45 Sweden

### Your Pension Credit for 2004

Your pension credit corresponds to the contributions paid into the pension system by you, and on your behalf by your employer and in certain cases the central government. On the basis of your pension-qualifying income (your annual earnings up to SEK 317 250 after deduction of your individual pension contribution), the Swedish Social Insurance Agency has determined as follows:

New credit for the  
Inkomstpension in 2004

SEK 28 900

New credit for the  
Premium Pension in 2004

SEK 4 516

Your new pension credit is added to the credit you have previously earned and is reported in your pension accounts. For the current balances of your accounts, see page 2.

The Tax Authority has determined that your *pension-qualifying income* for 2004 are as follows:

Income from employment	SEK	166 705
Other earned income	SEK	4 775

The Swedish Social Insurance Agency has determined that your *pension-qualifying amounts* for 2004 are as follows:

Sickness and activity compensation	SEK	3 124
Compulsory national service	SEK	191
Studies	SEK	2 110
Child-care years	SEK	3 717

Your pension base (the total of your pension-qualifying income and pension-qualifying amounts) is:

	SEK	180 622
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The legal provisions for this decision are found in chapters 2-4 of the act on Earnings Related Old Age Pension (1998:674).

If you wish to appeal any determination, write to the Swedish Social Insurance Agency (Försäkringskassan). Indicate which determination you wish to appeal, how you would like it to be changed, and why. Include your name, personal identification number, address, and telephone number. Be sure to sign your appeal. If you have appointed an agent to act on your behalf, the agent may sign for you. In that case, you need to include a written power of attorney with your appeal. The Swedish Social Insurance Agency must receive your appeal by 31 December 2006, or if you have not been notified of the Agency's decision by 1 November 2006, within two months from the date when you received such notification.

The postal address of the Swedish Social Insurance Agency is as follows: Försäkringskassan, Box 9999, SE-123 45 Landsorten, Sweden.

## **The Swedish Pension System Annual Report 2005**

In Sweden, the national old-age pension system represents the largest single financial commitment of the central government. In addition to the one and a half million Swedes already receiving pensions, some six million persons of working age have earned pension credit in the system. At age 65, the average insured individual has accumulated pension credit of about SEK two million. In 2005 the total financial commitment of the pension system was SEK 6 730 billion – equivalent in value to Sweden's total production for two and a half years.

In the Annual Report of the Swedish Pension System, the assets and liabilities of the system are presented according to the principles of double-entry bookkeeping. This new application of conventional accounting clearly reflects the economic and demographic relationships and processes that determine society's capacity to provide a financially and socially sustainable system of pension insurance. For this reason, the Annual Report should be interesting reading for everyone concerned with social or economic policy.