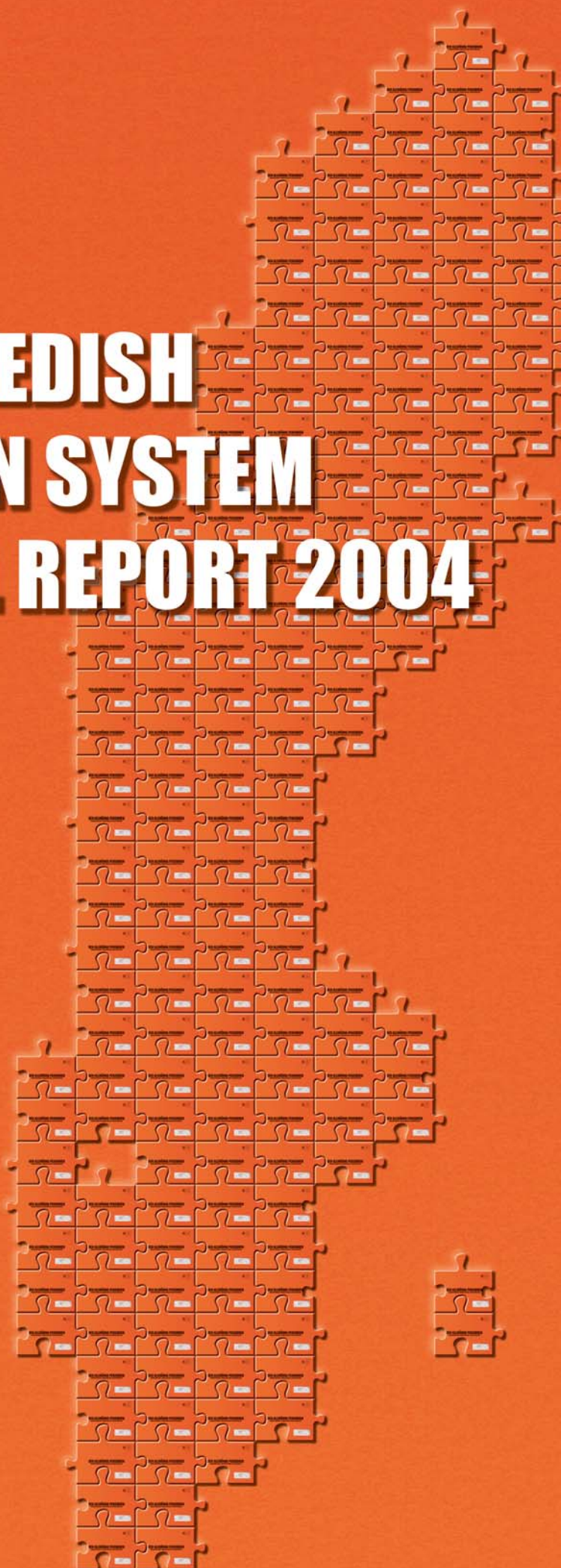


SVERIGE  
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BETALT

B

# THE SWEDISH PENSION SYSTEM ANNUAL REPORT 2004

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## Account Statement: Your National Pension

Changes in your account during 2004	Inkomstpension (SEK)	Premium Pension (SEK)
Opening balance on 31 December 2003	522 735	16 193
Pension credit 2003	+ 24 739	+ 3 845
Inheritance gain	+ 1 414	+ 45
Deduction for costs of administration	- 335	- 57
Indexation	+ 13 025	+ 1 545
Closing balance on 31 December 2004*	554 514	21 518

\* The difference between the closing balance and the sum of the items above is due mostly to changes in taxation and to the fact that some individuals have started to draw a pension during the year; see Table A, page 22.

Total balance of your account on 31 December 2004:

Your national old-age pension balance

Inkomstpension SEK 554 514 + Premium Pension SEK 21 518 =

SEK 576 032

# THE SWEDISH PENSION SYSTEM ANNUAL REPORT 2004



Inkomstpension, millions of SEK	Premium pension, millions of SEK
3 039 442	94 155
143 847	22 355
8 222	259
-1 949	-331
75 732	8 981
3 224 226	125 118

See table A  
page 22

See Premium Pension,  
Income Statement and  
Balance Sheet, page 11

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Special Feature Article: Anna Röstberg

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), and [www.ap4.se](http://www.ap4.se).

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## Preface

As newly appointed Director General of the Swedish Social Insurance Agency it has been my privilege to, for the first time, carefully study the Annual Report of the Swedish Pension System. I was pleased and impressed by the comprehensive and detailed financial representation of the national pension system that it provides.

The Swedish Parliament took the landmark decision on pension reform in June 1994. As state secretary I became involved in the gradual implementation of the reform. Later on, and sometimes for international guests, I have often referred to the pension reform as a central element in the stabilization of Sweden's public finances.

### Pensioners Have Benefited So Far

Unfortunately, many people have come to regard the reform as just another cost-cutting program of the 1990's. That view is mistaken. The purpose of the pension reform was to create a national old-age pension system that would be financially and socially sustainable in the long run. Partly for this reason, the decision was made that the contribution paid to the *inkomstpension*\* and premium pension systems would be fixed, with the value of pensions determined by the development of Sweden's demography and economy. In such a system, pensions increase in real terms if the economy prospers and lose value if the economy is weak. With incomes in Sweden rising quite fast in recent years, the value of earnings-based pensions in constant prices has increased from year to year since 2002, when adjustment indexation was introduced. These pensions are now some three percent higher than they would have been under the old system of price-level indexation. So far, pensioners have thus benefited from the pension reform, though the long-term outcome will depend on the future development of the economy. One thing is certain, however: there will be years when the real value of pensions fall.

\* 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*.

### Pension Forecasts Are Important

Many people would like to know the size of their future pensions. Since 1999, virtually all of the nearly 6 million persons who have earned pension credit in Sweden have been receiving the "orange envelope", a personal forecast of the recipient's national pension. To

my knowledge, Sweden and the United States are the only countries that provide this kind of information to their citizens. The need for a plain view of one's total pension situation, including negotiated pensions as well as national pensions, became evident as soon as the first orange envelope was sent out. Now, more than five years later, this opportunity is available. After only three months of operation, the website [www.minpension.se](http://www.minpension.se) has attracted more than 100 000 requests for forecasts that include both negotiated and national pensions.

This year's Special Feature Article discusses the size of the pensions that the next birth cohorts to retire – people born in the 1940's – can expect to receive.

### **Future Employment Tendency**

The inkomstpension system reported a loss of SEK 49 billion in 2004. That negative result brought the balance ratio even closer to the level where automatic balancing will be activated. The opening surplus of the system this year is only SEK 9 billion, equivalent to 0.14 percent of the system's pension liability – an almost astronomical SEK 6 244 billion. If the balance ratio should drop below one (1) in next year's Annual Report, balancing will be activated. In that case pensions will be indexed at a lower rate than if they were recalculated by the change in income index. Whether balancing is activated or not will depend primarily on the employment tendency. One reason for the slightly negative trend in the balance ratio over the last three years has been that the average income – as measured by the income index – has been rising somewhat faster than the aggregate of all incomes. The rate of increase in aggregate income depends partly on the development of the average income and partly on the trend in the number of persons with pension-qualifying income. This trend, in turn, is strongly linked to the employment tendency. How employment develops is thus critical to the financial strength of the pension system. Consequently, a better-functioning labor market, leading to a higher proportion of the working-age population employed, is very much in the interest not only of the working-age population, but also of current and future pensioners.



## **Pensions as Prescribed by Law, on Time and at Low Cost**

This Annual Report is for 2004, the year when the National Social Insurance Board (Riksförsäkringsverket) and the country's 21 regional social insurance offices ceased to exist as separate organisations. Beginning in 2005 – the current year – the pension system is administered by a new agency, the Swedish Social Insurance Agency together with the Premium Pension Authority. Part of our mission is to provide a national pension as prescribed by law, on time and at minimum expense. However, the costs of administering the pension system have risen sharply, from SEK 1.1 billion in 1999 to SEK 3.0 billion in 2004. Of total costs in 2004, the organizations now included in the Swedish Social Insurance Agency accounted for SEK 0.9 billion. Reducing the cost of providing pensions will be one of the agency's principal tasks in the next few years.

The Annual Report of the Swedish Pension System is a means of spreading information and knowledge about the pension system and its financial development and position. I hope that you will find it interesting and informative.

Stockholm, April 2005

**Curt Malmberg**  
Swedish Social Insurance Agency

## Accounting for the Result of the Pension System in 2004

### The Inkomstpension

The inkomstpension is so designed that the change in the value of the pension liability is closely linked to the change in the value of system assets. The two sides of the balance sheet, however, may change at somewhat different rates. For this reason, the inkomstpension system can record a positive or negative result. Since the total assets and liabilities of the system are so vast – SEK 6 253 billion – the result will often be sizable in monetary terms. If the accumulated surplus becomes a deficit, automatic balancing will be activated. Balancing will then guide the system toward a balanced surplus/deficit of SEK 0 by downwardly adjusting the indexation of pensions and pension balances. Any accumulated surpluses 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 so-called contribution asset and the buffer fund. The contribution asset is the value of the system's claim to 16 percent of all future earnings and pension-qualifying transfer payments and other amounts. 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. In 2004 the contribution asset grew by SEK 142 billion, or almost 2.6 percent. The growth was due solely to a corresponding percentage increase in the inflow of contributions; there was no change in turnover duration.

The buffer fund, i. e. the First–Fourth and Sixth National Pension Funds, constitutes some 10 percent of system assets. The capital of the fund increased by a total of SEK 69 billion, or 12.0 percent, of which the return on the fund accounted for SEK 65 billion. Pension contributions exceeded pension disbursements, which after the deduction for costs of administration added SEK 4 billion to the fund.

The total assets of the system increased by SEK 211 billion, or 3.5 percent. The pension liability grew by SEK 260 billion, or 4.3 percent, of which indexation accounted for SEK 162 billion, or 2.7 percent. The amount of the ATP pension liability to the economically active is calculated on certain assumptions. Compared to 2003, the short-term assumptions for the calculations have changed, increasing the pension liability by SEK 63 billion, which has been charged to the year's result.

The year's result of SEK –49 billion has reduced the surplus of the system to SEK 9 billion. In relation to the pension liability, the surplus is 0.14 percent.

The balance ratio of the system for 2006, which refers to the financial position of the system as of 31 December 2004, is thus calculated at 1.0014.

#### Key Numbers for the Inkomstpension, 2004–2001

Millions of SEK

	2004	2003	2002	2001
First–Fourth + Sixth National Pension Fund assets	646	577	488	565
Contribution asset	5 607	5 465	5 293	5 085
Total assets	6 253	6 042	5 780	5 650
Pension liability	6 244	5 984	5 729	5 432
Surplus	9	58	52	218
Balance ratio	1.0014	1.0097	1.0090	1.0402

## The Premium Pension

The premium pension system is a fund-based system where pension savers themselves select the funds in which their premium pension moneys are invested. Changes in prices of fund shares directly affect the value of the pension saver's holding of system assets by the same amount. For this reason, the result of the premium pension system in principle will always be SEK 0. The premium pension system also includes traditional insurance, the result of which grows at the same rate as pension capital and is specially reported as a portion of equity capital. During the build-up phase and until the end of 2017, the Premium Pension Authority (PPM) will be financed by a combination of contributions assessed and interest-bearing overdrafts for working capital needs, as well as by loans within credit limits at the National Debt Office. The contribution assessment is based on the cost level forecast for 2004 and will mean a temporarily positive result estimated at SEK 48 million for the year.

During the year, funded premium pension assets increased by SEK 31 billion, of which SEK 22 billion consisted of new pension credit and SEK 9 billion of an increase in value.

### Key Numbers for the Premium Pension, 2004–2001

Millions of SEK

	2004	2003	2002	2001
Unit-linked insurance*	125 024	94 124	59 416	65 129
Traditional insurance*	94	31	4	1
Total pension assets	125 118	94 155	59 420	65 130
Unit-linked insurance commitments*	125 026	94 127	59 418	65 130
Provision for life insurance*	94	30	4	1
Total pension liability	125 120	94 157	59 422	65 131

\* Including survivor benefit.

### *Terms Used in Describing the Inkomstpension – Counterparts in Other Forms of Insurance*

The "contribution asset" in the accounts of the inkomstpension system refers to the value of the inflow of contributions. There is no directly 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 most closely correspond to the 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

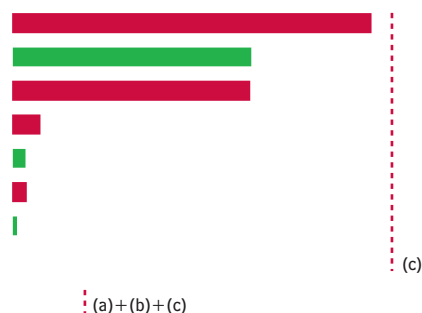
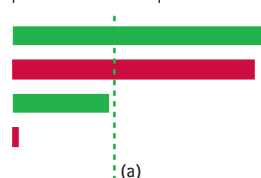
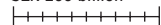
of the contribution asset are shown separately in the income statement.

Turnover duration is the time that an average monetary unit of pension credit can be expected to remain within the system; at present, turnover duration is approximately 32 years.

Other concepts used in the income statement and balance sheet 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; the change in pension liability, to changes in actuarial provisions; opening surplus/deficit, to profit/loss brought forward.

## Inkomstpension, Income Statement and Balance Sheet

SEK 100 billion



Income Statement, millions of SEK

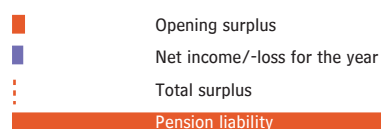
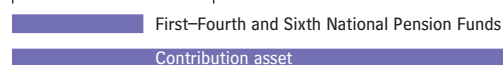
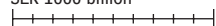
	Note	2004	2003	Change
<b>Change in fund assets</b>				
Pension contributions	1	171 600	165 107	6 493
Pension disbursements	2	-164 762	-155 410	-9 352
Return on funded capital	3	65 162	82 060	-16 898
Costs of administration	4	-2 736	-2 359	-377
Total change in fund assets (a)		69 264	89 398	-20 134
<b>Change in contribution asset</b>				
Value of change in contribution revenue	5	141 518	159 964	-18 446
Value of change in turnover duration	6	0	12 346	-12 346
Total change in contribution asset (b)		141 518	172 310	-30 792
<b>Change in pension liability<sup>1</sup></b>				
New pension credit and ATP credit, etc.	7	-244 879	-172 567	-72 312
Pension disbursements	2	162 783	155 410	7 373
Indexation	8	-161 616	-228 288	66 672
Value of change in average life span	9	-17 614	-11 045	-6 569
Inheritance gains arising	10	7 789	7 090	699
Inheritance gains distributed	10	-8 222	-7 616	-606
Deduction for costs of administration	11	1 949	1 475	474
Total change in pension liability (c)		-259 810	-255 541	-4 269
Net income/-loss (a)+(b)+(c)		-49 028	6 167	-55 195

<sup>1</sup> A negative value (-) means that the pension liability increases, and a positive value ( ) that the pension liability decreases, by the amount shown.

Balance Sheet, millions of SEK

Assets	Note	Dec 31,2004	Dec 31,2003	Change
First-Fourth and Sixth National Pension Funds	12	646 200	576 937	69 263
Contribution asset	13	5 606 592	5 465 074	141 518
Total assets		6 252 792	6 042 011	210 781
<b>Liabilities and Surplus</b>				
Opening surplus		57 812	51 645	6 167
Net income/-loss for the year		-49 028	6 167	-55 195
Total surplus		8 783	57 812	-49 028
Pension liability	14	6 244 009	5 984 199	259 810
Total liabilities and surplus		6 252 792	6 042 011	210 781

SEK 1000 billion

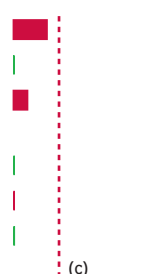
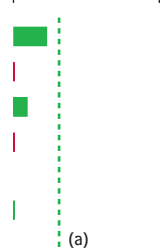
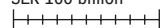


Total assets

Total liabilities and surplus

## Premium Pension, Income Statement and Balance Sheet

SEK 100 billion



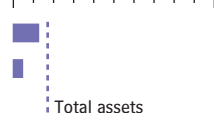
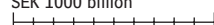
(a)+(c)+(d)

Income Statement, millions of SEK

	Note	2004	2003	Change
<b>Change in fund assets</b>				
Change in fund assets	1	22 355	21 040	1 315
Pension disbursements	15	-42	-11	-31
Return on funded capital	16	8 981	13 948	-4 967
Costs of administration	17	-285	-351	66
Debt-financed costs of administration	24	-	109	-109
Change in assets, traditional insurance		2	-	2
<b>Total change in fund assets (a)</b>		<b>31 011</b>	<b>34 735</b>	<b>-3 724</b>
<b>Change in pension liability<sup>2</sup></b>				
New pension credit	18	-22 355	-21 040	-1 315
Pension disbursements	19	42	11	31
Change in value	20	-8 981	-13 948	4 967
Value of change in average life span	21	-	-	-
Decedents' capital	22	259	213	46
Inheritance gains distributed	23	-259	-213	-46
Deduction for costs of administration	24	331	242	89
<b>Total change in pension liability (c)</b>		<b>-30 963</b>	<b>-34 735</b>	<b>3 772</b>
Debt-financed costs of administration (d)	17, 24	-	-109	109
<b>Net income/-loss (a)+(c)+(d)</b>		<b>48</b>	<b>-109</b>	<b>157</b>

<sup>2</sup> A negative value (-) means that the pension liability increases, and a positive value ( ) that the pension liability decreases, by the amount shown.

SEK 1000 billion

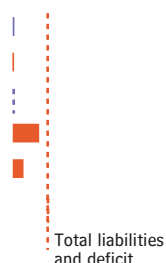


Total assets

Balance Sheet, millions of SEK

Assets	Note	Dec 31, 2004	Dec 31, 2003	Change
Insurance assets	25	125 118	94 155	30 963
Other assets	26	45 378	46 140	-762
<b>Total assets</b>		<b>170 496</b>	<b>140 295</b>	<b>30 201</b>

Liabilities and Deficit	Note	Dec 31, 2004	Dec 31, 2003	Change
Opening deficit		-1 727	-1 618	-109
Net income/-loss for the year		48	-109	157
Total deficit		-1 679	-1 727	48
Pension liability	27	125 120	94 157	30 963
Other liabilities	28	47 055	47 865	-810
<b>Total liabilities</b>		<b>172 175</b>	<b>142 022</b>	<b>30 153</b>
<b>Total liabilities and deficit</b>		<b>170 496</b>	<b>140 295</b>	<b>30 201</b>



Total liabilities and deficit

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

### Inkomstpension and Premium Pension

Income Statement, millions of SEK

Change in fund assets	Note	2004	2003	Change
Pension contributions	1	193 955	186 147	7 808
Pension disbursements	2, 15	-164 804	-155 421	-9 383
Return on funded capital	3, 16	74 143	96 008	-21 865
Costs of administration	4, 17	-3 021	-2 710	-311
Debt-financed costs of administration	24	0	109	-109
Change in assets, traditional insurance		2	-	2
Total change in fund assets (a)		100 275	124 133	-23 862
<b>Change in contribution asset</b>				
Value of change in contribution revenue	5	141 518	159 964	-18 446
Value of change in turnover duration	6	0	12 346	-12 346
Total change in contribution asset (b)		141 518	172 310	-30 792
<b>Change in pension liability<sup>3</sup></b>				
New pension credit and ATP credit	7, 18	-267 234	-193 607	-73 627
Pension disbursements	2, 19	162 825	155 421	7 404
Indexation/change in value	8, 20	-170 597	-242 236	71 639
Value of change in average life span etc.	9, 21	-17 614	-11 045	-6 569
Inheritance gains arising/decedents' capital	10, 22	8 048	7 303	745
Inheritance gains distributed	10, 23	-8 481	-7 829	-652
Deduction for costs of administration	11, 24	2 280	1 717	563
Total change in pension liability (c)		-290 773	-290 276	-497
Debt-financed costs of administration (d)	17, 24	0	-109	109
Net income/-loss (a)+(b)+(c)+(d)		-48 980	6 058	-55 038

<sup>3</sup> A negative value (-) means that the pension liability increases, and a positive value (+) that the pension liability decreases, by the amount shown.

Balance Sheet, millions of SEK

Assets	Note	Dec 31, 2004	Dec 31, 2003	Change
First-Fourth and Sixth National Pension Funds	12	646 200	576 937	69 263
Insurance assets	25	125 118	94 155	30 963
Other assets	26	45 378	46 140	-762
Contribution asset	13	5 606 592	5 465 074	141 518
Total assets		6 423 288	6 182 306	240 982
<b>Liabilities and Surplus</b>				
Opening surplus/-deficit		56 085	50 027	6 058
Net income/-loss for the year		-48 980	6 058	-55 038
Total surplus/-deficit		7 104	56 085	-48 980
Pension liability	14, 27	6 369 129	6 078 356	290 773
Other liabilities	28	47 055	47 865	-810
Total liabilities and surplus		6 423 288	6 182 306	240 982

## Notes and Comments

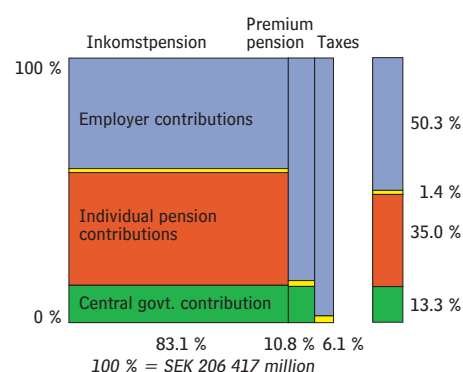
Notes 2–14 relate to the inkomstpension, Notes 15–28 to the premium pension. Note 1 applies to both parts of the earnings-related old-age pension system.

### Note 1 Pension Contributions

**Table A. Pension Contributions and Taxes, Contributions by Type**

Millions of SEK

Contribution etc. in the form of ...	Inkomst-pension	Premium pension	Taxes	Total	of which contri-butions
Employer contributions	72 518	18 800	11 269	102 587	91 318
Self-employment pension contributions	2 021	528	314	2 863	2 549
Individual pension contributions	72 287	–	–	72 287	72 287
Central govt. old-age pension contribution	24 004	3 460	–	27 464	27 464
Final settlement in 2004 for 2002	1 888	–2 767	879	0	–879
Loss in collection, settlement	–308	–	–	–308	–308
Discrepancy between accounting of RFV and of Natl. Pension Funds and PPM, and adjustment	–810	2 334	–	1 524	1 524
<b>Total</b>	<b>171 600</b>	<b>22 355</b>	<b>12 462</b>	<b>206 417</b>	<b>193 955</b>



Loss in collection, settlement, and discrepancy between accounting of RFV, National Pension Funds, and PPM, respectively, and adjustment – all are allocated according to employer contribution. The settlement in 2004 for the year 2002 is allocated according to employer contribution and central government old-age pension contribution.

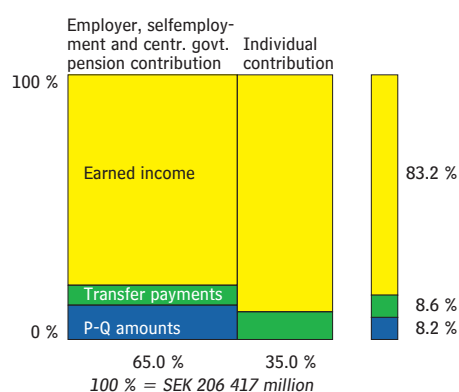
Table A shows pension contributions recorded in 2004. Individual pension contributions are allocated entirely to the National Pension Funds, whereas employer contributions and self-employment pension contributions are allocated among the National Pension Funds, the premium pension system, and the central government budget. The central government old-age pension contribution is allocated between the National Pension Funds and the premium pension system.

The taxes reported are "pension contributions" in the form of employer and self-employment pension contributions on the portion of income above the ceiling on pension-qualifying income. This ceiling is 8.07 income-related base amounts<sup>4</sup> before deduction of the individual pension contribution and 7.5 after this deduction. Since these contributions do not give rise to pension credit, they are taxes and are allocated to the central-government budget rather than the pension system.

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

The discrepancy between the accounting of RFV (the National Social Insurance Board) and that of the National Pension Funds (–810) is due primarily to differences in accounting principles for periodization. The discrepancy between the accounting of RFV and that of PPM (2 334) is due largely to the fact that in PPM reports contribution revenue is for pension credit that was confirmed in 2003 and transferred to premium pension funds in 2004 whereas, RFV accounting is for contribution revenue received in 2004. Con-

<sup>4</sup> The income-related base amount for 2004 is SEK 42 300. One income-related base amount multiplied by 8.07 equals SEK 341 361 and by 7.5 equals SEK 317 250.



<sup>5</sup> Earned income, including sick-pay and self-employment income, excluding transfer payments.

tributions received in 2004 are for pension credit that will be confirmed at the end of 2005 and invested early in 2006.

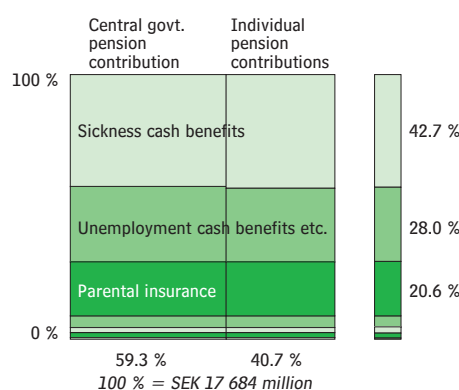
**Table B. Pension Contributions by Type of Contribution Base**

Millions of SEK	Employer, self-employment and centr. govt. pension contributions	Individual pension contributions	Total
Earned income <sup>5</sup>	106 666	65 094	171 760
Transfer payments, see Table C	10 491	7 193	17 684
Pension-qualifying amounts, see Table D	16 973	–	16 973
<b>Total</b>	<b>134 130</b>	<b>72 287</b>	<b>206 417</b>

The allocation of individual pension contributions to the two types of contribution base is estimated; it is not shown by the accounting systems.

The individual pension contribution is 7 percent of the sum of earned income and pension-qualifying transfer payments such as sickness cash benefits, etc., but not including sickness and activity compensation (formerly termed disability pensions). 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	4 481	3 073	7 554
Unemployment cash benefits, etc. (Labor Market Board – AMS)	2 937	2 014	4 951
Parental insurance	2 160	1 481	3 641
Compensation for work-related injuries, etc.	436	298	734
Rehabilitation benefits	226	155	381
Care allowances	200	137	337
Educational allowances	26	18	44
Partial pension	12	8	20
Benefits to immediate relatives	8	5	13
Artists' Board	4	3	7
Allowances to disease carriers	1	1	2
<b>Total</b>	<b>10 491</b>	<b>7 193</b>	<b>17 684</b>

The allocation of individual pension contributions to the different types of transfer payments is estimated; it is not shown by the accounting systems.

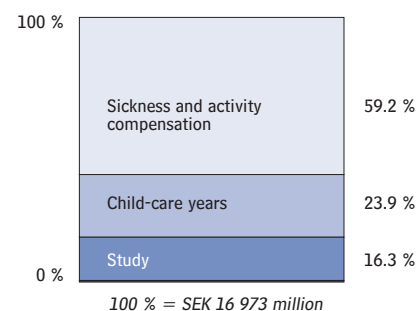


**Table D. Pension Contributions for Sickness/Activity Compensation and Pension Qualifying Amounts**

Millions of SEK	
Sickness and activity compensation	10 050
Amounts credited for child-care years	4 051
Amounts credited for study	2 763
Amounts credited for compulsory national service	109
<b>Total</b>	<b>16 973</b>

Sickness and activity compensation consists both of pension-qualifying benefits paid and of 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

ATP	159 217
Inkomstpension	3 566
Transfers to the European Communities	379
Special settlement	1 600
<b>Total</b>	<b>164 762</b>

It is possible to draw a pension from the age of 61 on. There is no upper limit on the age at which a person may begin drawing a pension.

The ATP pension corresponds to the former ATP and the so-called income-related folkpension. This type of pension is calculated by previous rules, but from the age of 65 on, it is indexed according to the provisions of the inkomstpension for adjustment indexation. ATP pension rights can only be earned by persons born before 1954.

The pension provided by the new pay-as-you-go system is called inkomstpension. For persons born in 1938, four twentieths of their pension is calculated according to the rules of the new system, and the ATP pension provides the remaining 16 twentieths. For persons born in 1939, the respective portions are five and 15 twentieths, etc. Persons born in 1954 or thereafter will receive their entire pension according to the new rules. Those born prior to 1938 receive only ATP pension.

In 2004 aggregate disbursements of ATP pension and inkomstpension were SEK 162 783 million, reducing the pension liability to retirees by that amount.

EU officials can request that their pension credit earned be transferred from the National Pension Funds and the premium pension system to the service pension systems of the European Communities. In 2004 a total of SEK 379 million was thus transferred from the National Pension Funds.

In 2004 the National Pension Funds were charged with SEK 1 600 million in a special settlement for the period 1999–2002. During this period pension disbursements were charged to the National Pension Funds and the central government budget in certain standard proportions owing to then existing limitations in the accounting system of the National Social Insurance Board (RFV). An evaluation has shown that the charge to the National Pension Funds was insufficient during this period.

### Note 3 Return on Funded Capital

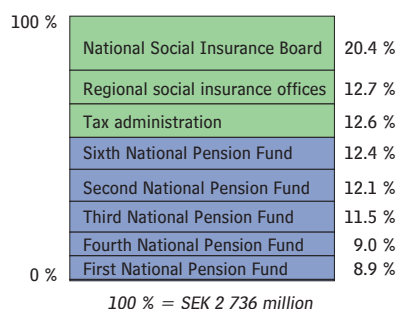
Millions of SEK

National Pension Fund:	First	Second	Third	Fourth	Sixth	*	Total
Stocks and shares	11 722	12 737	12 607	13 033	1 351	23	51 473
of which: direct return	2 026	1 902	2 063	1 667	99	250	8 007
realized & unrealized capital gains	9 696	10 835	10 544	11 366	1 252	-227	43 466
Bonds and other interest-bearing securities	3 972	4 059	5 096	3 100	99	200	16 526
of which: direct return (net interest)	2 221	2 418	2 991	2 109	99	200	10 038
direct return (net interest) capital gains	1 751	1 641	2 105	991	0	0	6 488
Other items	411	-347	-1 322	-1 610	0	31	-2 837
of which: direct return	658	214	0	289	0	31	1 192
realized & unrealized capital gains	1 936	809	116	19	0	0	2 880
net foreign-exchange gain/-loss	-2 183	-1 370	-1 438	-1 918	0	0	-6 909
Total return	16 105	16 449	16 381	14 523	1 450	254	65 162
Costs of administration	-244	-330	-314	-246	-340	-14	-1 488
Total return after costs	15 861	16 119	16 067	14 277	1 110	240	63 674

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

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

”Other items” consist primarily of derivatives. Capital gains/losses on stocks and shares have been charged with brokerage commissions on both purchases and sales. Brokerage commissions in 2004 totaled SEK 420 million.



### Note 4 Costs of Administration

Thousands of SEK

National Social Insurance Board (RFV)	556 965
Regional social insurance offices	346 775
Tax administration (incl. Enforcement Service)	344 129
National Institute of Economic Research	152
Total costs of insurance administration	1 248 021
Sixth National Pension Fund	340 000
Second National Pension Fund	330 000
Third National Pension Fund	314 000
Fourth National Pension Fund	246 000
First National Pension Fund	244 000
First and Fourth National Pension Funds, special administration	14 000
Total costs, fund administration	1 488 000
Total costs of administration	2 736 021

The costs of insurance administration are shared equally by the First through the Fourth National Pension Funds. Each fund finances its own costs of administration by withdrawals from itself. The sum of both forms of administrative costs is financed in principle by a percentage deduction from the pension balances of the insured. As is shown in the Income Statement, however, pension balances were not charged with the full costs of administration. The explanation is provided in Note 11.

### Some Key Numbers for the Administrative Costs of the Inkomstpension

Costs as a ...	Insurance administration	Fund administration	Administration, total
... percentage of total pension liability	0.0200	0.0238	0.0438
... percentage of inkomstpension liability to the economically active*	0.0370	0.0441	0.0811
... SEK per economically active person insured	191	228	419
... SEK per old-age pensioner**	759	905	1 664

\* The term *economically active* refers to insured persons aged 16–64 and with pension balances or ATP credit.

\*\* No deduction is made for costs of administration in regard to current old-age pensions. See Note 11.

### Note 5 Value of Change in Contribution Revenue

Turnover duration in years, contribution revenue in millions of SEK

Smoothed contribution revenue 2004	173 049
Smoothed contribution revenue 2003	-168 681
Change in contribution revenue	= 4 368
(Smoothed turnover duration 2004 + smoothed turnover duration 2003)/2 <sup>6</sup>	x 32.39887
Value of change in contribution revenue	141 518

<sup>6</sup> The value for smoothed turnover duration is the same for 2003 and 2004.

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

Millions of SEK

	2001	2002	2003	2004
Contributions received by National Pension Fund	156 811	160 745	165 107	171 600
Contribution deficit arising from contributions and contribution base not phased-in	0	3 500	2 600	1 500
Accounting adjustment to correct value of contributions	-1 543	0	0	0
Basis for calculating smoothed value of contribution revenue	155 268	164 245	167 707	173 100
Smoothed value of contribution revenue	-	163 998	168 681	173 049
Contribution revenue used	156 811	163 738	168 681	173 049
CPI, June	268,31	273,24	277,74	278,91

During a phase-in period extending through fiscal year 2004, adjustments are to be made so that the contribution amount used in calculating the contribution asset reflects the contribution inflow as if the system were fully functioning. In 1999–2002 disability pensioners born in 1937 or earlier were not included in the base for central-government old-age pension contributions. Nevertheless, preliminary central government old-age pension contributions were paid – erroneously – for these groups in 1999, 2000, and 2001. Consequently, in 2002, 2003, and 2004, the contribution paid by the central government will be less to compensate for the contributions paid by mistake in previous years. In 2004, preliminary central government old-age pension contributions were thus lowered by SEK 1 500 million, a reduction that would not have been made if the system had been fully functioning in 2001. For this reason, the inflow of contribution revenue has been adjusted by a total of SEK 1 500 million. The method of calculating smoothed contribution revenue is shown in the Technical Appendix, Section 1.

## Note 6 Value of Change in Turnover Duration

**Table A. Basis for Calculating a Smoothed Value for Turnover Duration**

	2001	2002	2003	2004
Pay-in duration	21.99799	21.96768	22.09653	21.54817
Pay-out duration	10.32660	10.43119	10.43638	10.56954
Turnover duration, T	32.32459	32.39887	32.53291	32.11771
Smoothed turnover duration	31.86735	32.32459	32.39887	32.39887

The smoothed value of turnover duration is the median of the turnover duration for the latest three years. The smoothed turnover duration being the same in 2003 and 2004, the change in turnover duration is zero. The method of calculating turnover duration is described in the Technical Appendix, Section 3.

Since pay-in duration cannot be calculated until all pension credit has been confirmed, the 2004 estimates are based on the value of pension credit earned in 2003 (and confirmed in 2004). Pay-out duration is calculated from the data as of December 2004.

## Note 7 New Pension Credit and ATP Credit, etc.

Millions of SEK

Inkomstpension credit earned in 2004, estimated value	150 975
ATP credit earned in 2004, estimated value	5 336
Adjustment amount for inkomstpension, see Table A	819
Adjustment amount for ATP, see Table B	87 749
<b>Total</b>	<b>244 879</b>

The items of new pension credit and ATP credit earned have been adjusted by certain other amounts that have affected the size of the pension liability. These adjustment amounts are explained as follows:

**Table A. Adjustment Amount, New Pension Credit, etc.**

Millions of SEK

Confirmed credit earned in 2003	143 847
Estimated* credit earned in 2003	-144 711
Adjustments affecting pension balances, etc.	-616
Change in liability due to change in disbursements, see Note 14, Table C	2 299
<b>Adjustment amount A</b>	<b>819</b>

\* As estimated in The Swedish Pension System – Annual Report 2003.

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 this year can only be estimated. In the Annual Report of the pension system for 2003, the pension credit earned during the year was estimated at SEK 144 711 million. After the tax assessment for 2003 had been completed, the actual value proved to be SEK 143 847 million.

The adjustment amount of SEK -616 million is primarily for tax-assessment changes etc. affecting the size of pension balances; see Note 14, Table A.

The change in the pension liability to retirees in 2004 is shown in Note 14, Table C. The change of SEK 2 299 in the liability is due to changes in pension amounts other than by indexation.

**Table B. Adjustment Amount, New ATP Credit, etc.**

Millions of SEK

Effect of difference between assumed value for 2004 and the estimate for 2003, etc.	70 854
Paid-in pension contributions for ATP excl. value of ATP credit	16 123
Change in liability due to change in disbursements, see Note 14 Table C	772
<b>Adjustment amount B</b>	<b>87 749</b>

The ATP pension 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. In last year's estimate, there was a reduction in estimated ATP pension disbursements in the pension model in order to bring them into line with short-term forecasts of these disbursements. On the basis of the new data, there is no longer a need for such a reduction. With the adjustment now removed, forecast disbursements of ATP pensions are higher, entailing an increase of SEK 63 billion in the pension liability. Further, there has been an adjustment in the estimated ATP pension liability to the economically active in regard to pension contributions paid during the individual's 65th year. Since these contributions in their entirety provide pension credit for the inkomstpension, they do not reduce the ATP pension liability to any extent. With the "loss" of these contributions, the estimated liability increases by about SEK 7 billion.

Of the ATP credit earned in 2004, only a minor portion will have any impact on future pensions.<sup>7</sup> The portion expected to contribute to higher pensions has been reported as the value of ATP credit earned (SEK 5 336 million). By contrast, all pension contributions for ATP contribute to an increase in the estimated pension liability.

## Note 8 Indexation

Millions of SEK

Pension liability to the economically active	104 347
Pension liability to retirees	57 269
<b>Total</b>	<b>161 616</b>

The pension liability increases by the increase in the income index. The amount of indexation refers to the indexation affecting the pension liability as of December 31, 2004. In regard to the ATP liability to the economically active, the pension liability at year-end has been affected by the change in the income index between 2004 and 2005 (2.4 percent). The pension liability to retirees at year-end has been affected by the indexation at the end of the preceding year, i.e. from 2003 to 2004 (3.4 percent).

## Note 9 Value of the Change in Average Life Span

Millions of SEK

ATP pension liability to the economically active	6 434
Inkomstpension liability to the economically active	–
ATP pension liability to retirees	10 819
Inkomstpension liability to retirees	361
<b>Total</b>	<b>17 614</b>

"Life span" as used here refers to the assumed payout duration of an average pension, or so-called economic life expectancy, adjusted for the norm of 1.6 percent. The average economic life expectancy is expressed as an economic

<sup>7</sup> In 2004, contributions for the ATP pension amounted to SEK 21.4 billion, whereas the value of new ATP points that same year was only SEK 5.3 billion. Thus, contributions paid exceeded the value of ATP points earned by SEK 16.1 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 labor supply.

annuity divisor. The method of calculating economic annuity divisors is shown in the Technical Appendix.

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

The effect of changes in average economic life expectancy is calculated by first determining the pension liability with the economic annuity divisors measurable in the system in the year covered by the financial statement. This liability is then reduced by the pension liability calculated with the economic annuity divisors for the preceding year.

## Note 10 Inheritance Gains, Arising and Distributed

Millions of SEK

Year of birth	Year of death	Inheritance gains arising	Inheritance gains distributed
1939–1944	2004	2 405	2 859
1944–	2003	5 384	5 363
Total		7 789	8 222

Inheritance gains arising, i.e., the pension balances of deceased persons, are distributed to the survivors in the same birth cohort. With the aid of an inheritance gains factor, the distribution is made as a percentage increase in the survivors' pension balances.

Until the year when a birth cohort reaches age 60, the inheritance gains distributed are those actually arising. The inheritance gains factor is thus determined by the total pension balances of decedent cohort members. Owing to a certain delay in the information regarding those who have died during the year, there is a one-year time lag in the distribution of inheritance gains.

The inheritance gains from persons dying in 2003 before reaching age 60 (SEK 5 384 million) were distributed to the respective birth cohorts in 2004. The inheritance gains distributed were SEK 5 363 million – the difference is explained by the annual adjustment of pension balances due to changes in tax assessments, among other reasons. Beginning with the year when a birth cohort reaches 60, the inheritance gains distributed are not those actually arising, but those expected to arise. Inheritance-gains factors are estimated on the basis of the mortality observed by Statistics Sweden, 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 2 405 million and 2 859 million in 2004).

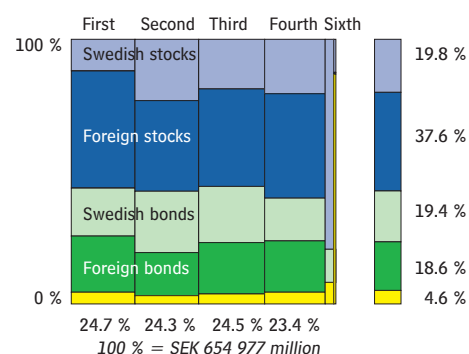
The reason for the change at age 60 to distributing estimated inheritance gains, rather than the gains corresponding to the pension balances of decedents, is that a pension may be withdrawn beginning at age 61. Thus, from that age onward it is no longer possible to apply the procedure for distribution of inheritance gains actually arising that is used for ages up to 60.

## Note 11 Deduction for Costs of Administration

Costs of administration are to be financed by a deduction from pension balances. However, there is no corresponding reduction of pensions. In order to avoid charging a disproportionately high cost to younger birth cohorts during the period when the ATP is being phased out, the deduction for costs of administration is being introduced successively. In 2004, 66 percent of the

costs of administration were financed by deduction from pension balances. The proportion of such costs to be financed by this deduction will increase by two percentage points each year; the deduction will not cover 100 percent of the costs of administration until 2021.

The deduction for costs of administration is taken from pension balances as a percentage according to an administrative-cost factor. The calculation of the administrative-cost factor is based on budgeted costs of administration 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 actually made and the cost established is considered in the calculation of the administrative-cost factor for the following year. For 2004, the administrative-cost factor was 0.0604 percent.



The diagram shows the assets of the National Pension Funds.

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

Millions of SEK

National Pension Fund:	First	Second	Third	Fourth	Sixth	*	Total
Stocks and shares **	90 666	91 111	89 402	92 109	11 570	771	375 629
of which: Swedish stocks and shares	18 738	36 782	29 824	31 904	11 570	733	129 551
foreign stocks and shares	71 928	54 329	59 578	60 205	0	38	246 078
Bonds and other interest-bearing assets	64 016	63 223	65 464	54 689	1 838	0	249 230
of which: Swedish issuers	29 490	37 240	33 907	24 838	1 838	0	127 313
foreign issuers	34 526	25 983	31 557	29 851	0	0	121 917
Other items	6 811	4 863	5 721	6 535	1 201	4 987	30 118
Total assets	161 493	159 197	160 587	153 333	14 609	5 758	654 977
Liabilities	-4 716	-1 077	-333	-1 899	-724	-28	-8 777
Total fund capital	156 777	158 120	160 254	151 434	13 885	5 730	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

Millions of SEK, turnover duration in years

Smoothed contribution revenue, 2004	173 049
Smoothed turnover duration, 2004	x 32.39887
Contribution asset, 2004	5 606 592

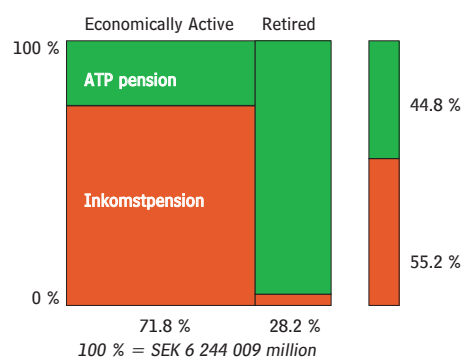
See Notes 5–6 and the Technical Appendix for the values and formulas used in calculating contribution revenue and turnover duration.

## Note 14 Pension Liability

Millions of SEK

	Economically Active	Retired	Total
ATP pension, Dec. 31, 2004	1 110 829	1 686 181	2 797 010
Inkomstpension, Dec. 31, 2004	3 375 201	71 798	3 446 999
Total	4 486 030	1 757 979	6 244 009

The pension liability to retirees is calculated in the same manner for the ATP pension and the inkomstpension. The first step in the calculation is to total the pension disbursements to each birth cohort in December; this total is multiplied by 12 to obtain a theoretical annual amount. The annual amount is then multiplied by the economic average life expectancy for each birth cohort, resulting in the pension liability to that cohort. Economic average life expectancy is expressed as an economic annuity divisor. The pension



liabilities to the various birth cohorts are then summed up. The method of calculating the pension liability and the economic annuity divisor is shown in the Technical Appendix, Section 4.

The inkomstpension liability to the economically active consists of the pension balances of all insured persons in this category as of December 31, 2004, with the addition of the estimated pension credit earned in 2004.

The ATP pension liability to the economically active cannot be calculated directly from the data in the records of pension credit earned. For birth cohorts 1940–1953, i.e. for persons whose pensions will be calculated partly by ATP rules, the liability is estimated in the pension model run by the Swedish Social Insurance Agency. In order to determine the ATP pension liability, an estimate is made of the ATP pension 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 assumed future contributions to the system and discounted by the assumed future increase in the income index. In the calculation it is assumed that the income index will increase at an annual rate of 2 percent.

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

Pension liability, December 31, 2003	3 189 941
of which estimated pension credit for the inkomstpension earned in 2003	-144 711
Pension balance, December 31, 2003	= 3 045 230
Deduction for undistributed Inheritance gains*	-5 384
Adjustments affecting pension balances**	-404
Opening pension balance, 2004	= 3 039 442
Changes in tax assessments etc. affecting pension balances	-227
Confirmed inkomstpension credit, 2003	143 847
Distributed inheritance gains from persons dying in 2004 and born in 1944 or earlier	2 859
Distributed inheritance gains from persons dying in 2003 and born in 1944 or thereafter	5 363
Income indexation by the income index, 2004/2005	75 732
Deduction for costs of administration	-1 949
Pensions drawn, 2004	-38 563
Pensions revoked	127
Inheritance gains arising from persons dying in 2004 and born in 1944 or earlier	-2 405
Pension balances as of December 31, 2004	3 224 226
Estimated inkomstpension credit earned in 2004	150 975
Inkomstpension liability to the economically active as of December 31 2004	3 375 201

\* Inheritance gains from persons born in 1944 and thereafter and dying in 2003; these gains were distributed in 2004.

\*\* Adjustments for deceased persons, sealed cases, changes of civic registration number.



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

Millions of SEK	
Pension liability, December 31, 2003	1 123 765
Effect of difference between assumption for 2004 and estimate in 2003 etc.*	70 854
Opening ATP pension liability, 2004	= 1 194 619
Change in value (change in incomes and prices)	28 615
Value of ATP pension credit earned in 2004	5 336
Pensions drawn, 2004	-140 298
Value of other paid-in contributions regarding the ATP	16 123
Effect of change in average economic life span	6 434
<b>ATP pension liability to the economically active, December 31, 2004</b>	<b>1 110 829</b>

\* See Note 7.

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

Millions of SEK			
	ATP-pension	Inkomst-pension	Total
Pension liability, December 31, 2003	1 637 340	33 153	1 670 493
Additional liability from the economically active	135 368	37 128	172 496
Change in liability, change in amounts disbursed	772	2 299	3 071
Pensions disbursed, net*	-154 287	-2 243	-156 530
Indexation	56 169	1 100	57 269
Increase in liability, increase in average economic life span	10 819	361	11 180
<b>Pension liability to retirees, December 31, 2004</b>	<b>1 686 181</b>	<b>71 798</b>	<b>1 757 979</b>

\* Total pension disbursements from the National Pension Funds (see Note 2), with a deduction for transfers to the European Communities, the special settlement of the National Pension Funds and disbursements to new retirees in 2004. The deduction is made since these disbursements do not change the pension liability to retirees.

The liability to retirees is increased by indexation and a higher life expectancy, and it is decreased by the disbursements made during the year. With new retirees, there is a transfer of liability amounts from the liability to the economically active to the liability to retirees. There is also another change in liability, which is reported as a change in amounts disbursed. The amount of pensions to persons who were retired in December of both 2003 and 2004 can be adjusted for reasons other than indexation, including changes in degree of pension withdrawal, in marital status (applies to the ATP pension), or in tax assessment.

## Notes and Comments Relating to the Premium Pension

### Note 15 Pension Disbursements

Thousands of SEK	
Pension disbursements from unit-linked insurance	39 255
Pension disbursements from traditional insurance	3 190
<b>Total<sup>8</sup></b>	<b>42 445</b>

<sup>8</sup> Including pensions decided but not yet disbursed.

Like the inkomstpension, the premium pension can be drawn from the age of 61. One option for the pension saver at the time of retirement is to retain her/his accumulated balance in unit-linked insurance, which means that the amount of the pension will depend on the change in the value of the funds in which the saver has invested. The other option is to switch to traditional

insurance. A changeover to traditional insurance can be made at the time of retirement or subsequently. With traditional insurance, the pension is disbursed as a nominally guaranteed monthly amount. A guaranteed return is included in this amount; at present this return is 3 percent. If PPM management of conventional-insurance capital achieves a return higher than the guaranteed rate, a bonus can be paid out in the form of a supplement to the pension received. The supplements, which can vary from year to year, totaled SEK 42 310 in 2004.

## Note 16 Return on Funded Capital

Thousands of SEK

	Fund insurance	Conventional insurance	Total
Stocks and shares	9 290 842	3 209	9 294 051
of which: direct return	1 427 309	1 708	1 429 017
realized and unrealized capital gains	7 863 533	1 501	7 865 034
Bonds and other interest-bearing securities	42	6 123	6 165
of which: direct return (net interest)	42	4 351	4 393
realized and unrealized capital gains	–	1 772	1 772
net foreign-exchange gain/-loss	–318 907		–318 907
<b>Total return</b>	<b>8 971 977</b>	<b>9 332</b>	<b>8 981 309</b>

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

## Note 17 Costs of Administration

Thousands of SEK

Operating expenses	220 114
Return on capital, revenue/expense, net	65 049
<b>Total</b>	<b>285 163</b>

Costs of administration include the (net) cost of interest on loans taken for such purposes as financing PPM. Costs of fund management are defrayed directly from insurance assets and thus are not included in PPM costs of administration. Through 2018, PPM costs of interest will be high because the build-up of this authority has been largely debt-financed. See also Note 24.

## Note 18 New Pension Credit

New pension credit is equal to contribution revenue including interest for the period when the contribution moneys are managed by 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 Value of Change in Average Life Expectancy

During the year, PPM has not changed its assumptions on average life expectancy.

## Note 22 Decedents' Capital

What is termed "decedents' capital" in the premium pension system is analogous to "inheritance gains arising" in the inkomstpension system. This item also includes amounts from the reduction in pension capital for the decrease in premium pension credit when a premium pension is transferred between spouses. Transferred capital is currently reduced by 14 percent. This percentage is subject to change, but the change affects only the capital transferred thereafter. The reason why the premium pension decreases when capital is transferred is 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 6 838 persons transferred an aggregate of SEK 35 million to spouses or registered partners.

## Note 23 Inheritance Gains Distributed

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

## Note 24 Deduction for Costs of Administration

The amount of SEK 331 million is for the fee withdrawn by PPM to finance its operating expenses. The fee for 2004 was 0.27 percent of the account balances of pension savers. During the build-up phase and until the end of 2017, the authority will be financed by a combination of fees withdrawn and interest-bearing overdrafts for working capital needs, as well as by loans within credit limits at the National Debt Office. The fee withdrawn is based on the cost level forecast for 2004 and will mean a temporarily positive result. For 2005, the overall result of PPM is expected to be negative. Thereafter, it is estimated that a stable balance between fees and costs will be achieved within three years. 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 persons insured with a disproportionately high fee for the build-up of PPM at a time when their premium pension capital is limited. The percentage of the fee withdrawn will gradually diminish and is expected to be about 0.04 percent in 2020.

## Note 25 Insurance Assets

Thousands of SEK

Unit-linked insurance	125 024 114
Conventional life insurance, PPM management	93 893
<b>Total</b>	<b>125 118 007</b>

As of December 31, 2004, the number of pension savers totaled 5 350 154, of whom 5 336 692 had invested their savings in unit-linked insurance and 13 462 in traditional insurance. The number of retired pension savers was 160 310.

## Not 26 Other Assets

Thousands of SEK

Temporarily managed preliminary contributions	44 684 330
PPM's administrative inventory of fund shares (trading inventory)	26 866
Other assets	666 561
<b>Total</b>	<b>45 377 757</b>

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 PPM. Preliminary contributions are contributions that have been paid in but not yet invested. These moneys are invested by PPM in an account with the National Debt Office, where they are managed for an average of 18 months. The money managed in 2004 were for pension credit earned in 2002–2004. The money for credit earned in 2002 were invested in January 2004.

## Note 27 Pension Liability

Thousands of SEK

Pension liability, unit-linked insurance	125 026 124
Pension liability, conventional life insurance	93 893
<b>Total</b>	<b>125 120 017</b>

## Note 28 Other Liabilities

Thousands of SEK

Liabilities relating to temporary asset management	44 684 082
Other liabilities	2 371 215
<b>Total</b>	<b>47 055 297</b>

## Accounting Principles and Related Matters

*The size of pension benefits depends on factors that include the financial position and development of the pension system. The Annual Report provides information on tendencies that may affect pensions.*

### Reasons for the Report and Its Objectives

The size of pension benefits can be affected by demographic and economic conditions and by developments on the financial markets. In the inkomstpension system, the size of an individual's pension is governed by the sum of paid-in contributions and the return earned on them, together with current average life expectancy and the age of the insured when he/she begins to draw a pension. In the premium pension system, it is determined by the sum of paid-in contributions, the change in value of the funds chosen by the individual, the age at which the individual retires, and the forecast of average remaining life expectancy. The size of the premium pension benefits is also affected by the form in which the individual chooses to withdraw her/his pension – as unit-linked insurance or traditional insurance and with or without a survivor benefit.

Since the size of pensions can be affected by the financial position of the pension system, the Swedish Parliament has decided that annual reports on the system be prepared. The annual report is intended to make it possible to follow and understand the financial development of the pension system, and to explain each of the factors that determine the size of the inkomstpension and of the premium pension.

One objective of the report is thus to provide information on the processes that may affect pensions. This means that the report should seek to present clearly the demographic, economic, and behavioral risks and opportunities that determine the financial position of the system and that directly affect, or may subsequently affect, the value of pensions. A further ambition is that the report should conform as much as possible to generally accepted accounting principles for insurance companies.

### Where Do the Figures Come From?

Providing an annual report on the premium pension system is the responsibility of the Premium Pension Authority (PPM). PPM prepares the Annual Report in accordance with the Law (1995:1560) on Annual Reports of Insurance Companies.

The Annual Report of the Pension System presents a set of consolidated financial statements that include the premium pension system and the First–Fourth and Sixth National Pension Funds. In the consolidated financial statements, the accounting for PPM has largely followed PPM Annual Report; however, certain items have been simplified and aggregated for purposes of clarity.

The information in this report concerning the First–Fourth and Sixth National Pension Funds is taken entirely from the annual reports of each fund. The contribution revenue and pension disbursements of the inkomstpension have also been taken from the reports of these funds. In other respects, the reporting for the inkomstpension system is based on data from Swedish Social Insurance Agency records – within the system there is no accounting in a conventional sense. The amounts reported are based mostly on those taken

from Swedish Social Insurance Agency records on pension credit earned and pension disbursements.

## Principles for Calculating Assets and Liabilities of the Inkomstpension System

The expenditure of the inkomstpension system is financed primarily by current contribution revenue. The flow of contributions may therefore be regarded as the principal asset of the inkomstpension system – in other words, it may be treated as a *contribution asset*.

The method of calculating the assets and liabilities of the inkomstpension is regulated by law. The contribution asset is valued according to the amount of pension liability that can be financed by the inflow of contributions given the conditions prevailing at the time of valuation. This hypothetical pension liability is equal in amount to contribution revenue multiplied by the so-called turnover duration of the system.<sup>9</sup>

The actual pension liability is also valued on the basis of conditions prevailing at the time of valuation.<sup>10</sup> This means that the inkomstpension liability to persons who have not yet begun to withdraw their old-age pensions is reported at its nominal value. This liability is equal to the aggregate of all individual pension balances – the amounts specified in the pension statement in the orange envelope sent annually to each insured person. In addition to this amount, there is estimated inkomstpension credit earned during the year covered by the report. The pension liability to retirees is also presented at its nominal value. This liability is calculated by multiplying pensions granted by the expected number of times that the amount will be disbursed, with the number of disbursements discounted (reduced) by 1.6 percent, equal to the norm in the annuity divisor and in the indexation of the ATP pension and the inkomstpension. The expected number of disbursements is calculated from measurements of the length of time that the pension amounts in Swedish Social Insurance Agency records are paid out, or the so-called economic annuity divisor. See also the Technical Appendix, Section 4.

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

## Calculating Assets and Liabilities Is Easy

The assets and liabilities of the inkomstpension system are valued solely on the basis of the factual information available at the time of valuation. For example, the normal assumption that contribution revenue increases at the rate of economic growth is not explicitly 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. The main reason why it has been deemed reasonable to base the valuation of assets and liabilities solely on current conditions is that the financial position of the system is not dependent on the amount of assets and liabilities taken separately. The financial position of the system is determined exclusively by the *relationship* between assets and liabilities, in other words, by the so-called *balance ratio*.

The inkomstpension is so designed that there is a strong link between the development of system assets and of system liabilities, though in cases where the balance ratio exceeds one (1), liabilities and assets will develop at slightly different rates. When the balance ratio is less than one (1), on the other hand, the provisions for automatic balancing establish in principle an absolute link between the rates of growth in liabilities and assets. This means that valuing the assets and liabilities of the system solely on the basis of conditions

<sup>9</sup> The calculation of turnover duration is shown in the Technical Appendix, Equation 3; see also the List of Terms.

<sup>10</sup> As explained below, this is not fully applicable until ATP credit can no longer be earned, i.e., beginning in 2018.

observable at the time of valuation entails no risk of overestimating assets in relation to liabilities in the long run.<sup>11</sup> Through the provisions for automatic balancing, there is no necessity for assumptions about future economic and demographic developments to ensure the financial stability of the system.

Thus, the method for valuing the assets and liabilities of the inkomstpension system is based on the assumption that assets and liabilities grow at the same rate after each valuation. To put it another way, it is assumed in the method of valuation that the internal rate of return of the system will always be the same as the indexation of 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 can be either greater or less than the indexation of the pension liability.

### ATP an Exception: Not So Easy

One central accounting principle for the inkomstpension requires that the report be based only on events or transactions that have occurred and been recorded. Since pension credit will be earned according to ATP rules through the year 2017, this accounting principle cannot yet be fully applied. The reason is that it is impossible to determine the ATP liability to persons who have not yet begun to receive their pensions without making assumptions about future economic and demographic developments. That liability is to be estimated according to the principles set forth by the Government in its proposed Law (2000/01:70) on Automatic Balancing in the Old Age Pension System. In brief, these principles provide that the ATP liability to the economically active is to be calculated on the assumptions of the same life expectancy that is used in determining the inkomstpension liability and assuming a two-percent annual real growth in the income index.

The ATP liability to the economically active will gradually diminish both because the birth cohorts that have earned ATP credit (those born before 1954) will be retiring and because the proportion of ATP credit earned decreases for each birth cohort. As of December 31, 2004, the ATP liability to the economically active was 18 percent of the total pension liability. This proportion will dwindle rapidly in the future.

### 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. The income statements and balance sheets in the Annual Report of the Pension System are based on the financial statements of the First–Fourth and Sixth National Pension Funds, the financial statements of the Premium Pension Authority (PPM), and the Swedish Social Insurance Agency records on pension credit earned and pension disbursements. To a substantial extent, the Annual Report of the Pension System is prepared according to accounting principles tailored for a pension scheme that is a pay-as-you-go system.

According to the Earnings Related Old Age Pension Act (1998:674), the assets of the inkomstpension system consist of the contribution asset with the addition of the reported market

value of the assets of the First–Fourth and Sixth National Pension Funds.

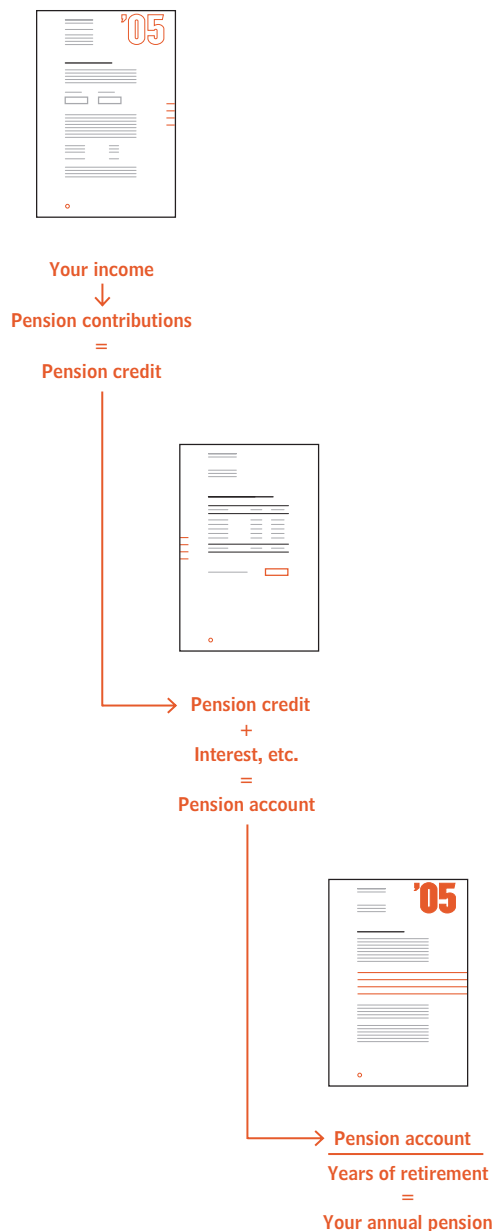
The pension liability refers to the total pension commitment of the earnings-related pay-as-you-go system, that is inkomstpension and ATP pension.

Formulas for calculating the contribution asset and the pension liability are specified in Regulation (2002:780) on the Calculation of the Balance Ratio.

According to Regulation (2002:135) on the Annual Report, the liability of the ATP pension system for the economically active is to be calculated on the basis of certain assumptions. In the Annual Report of the Pension System, the value of these commitments is calculated according to the principles set forth in the government bill (2000/01:70), Automatic Balancing of the Old Age Pension System.

In accordance with Regulation (2002:135), the Annual Report of the Pension System includes a projection of the assumed long-term development of the system.

<sup>11</sup> The manner of calculating turnover duration involves an implicit assumption that the economically active population will remain constant. Thus, turnover duration will be (slightly) overestimated in cases where the working-age population shows a decreasing tendency. This entails a risk that the calculations will (slightly) overestimate the system's assets in relation to its liabilities. However, it is reasonable to assume that the population decline will cease at some point. If so, the deficit will only be temporary.



## How the National Pension System Works

In several respects, the Swedish old-age pension system is an unusual form of social insurance. Fundamentally, the design is quite simple. The outline shown in the margin should enable the reader to understand the basic features. For anyone wishing to understand the system more thoroughly, it should suffice to read this section.

### Almost Like Saving in the Bank ...

The earnings-related pension system works much like ordinary saving in 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. The 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 orange envelope sent out each year contains information that enables the insured to watch their own *inkomstpension* and *premium pension* accounts grow from year to year. On retirement, the stream of payments is reversed, and the *inkomstpension* and *premium pension* are paid out for the remaining lifetime of the insured.

### ... but Entirely 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*. Both are paid for the remaining lifetime of the insured. One purpose of pension insurance is to redistribute assets from individuals with shorter-than-average life spans to those who live longer. The pension balances of persons who have died – so-called *inheritance gains* – are redistributed each year to the surviving insured.

### The Income Index

According to the Earnings Related Old Age Pension Act (ERP), the Swedish Social Insurance Agency is to calculate the income index and the income-related base amount and report the result by October 31 of the year preceding the year to which the base amount applies. The manner in which these calculations are to be performed is described in Chapter 1, Sections 5, 5 a–b, and 6 of the ERP.

The change in the income index shows the growth in average income. In this case, income refers to pension-qualifying income with no ceiling, but after deduction of the individual pension contribution, earned by persons aged 16–64. Average income is obtained through dividing total income as defined here by the number of persons with such income.

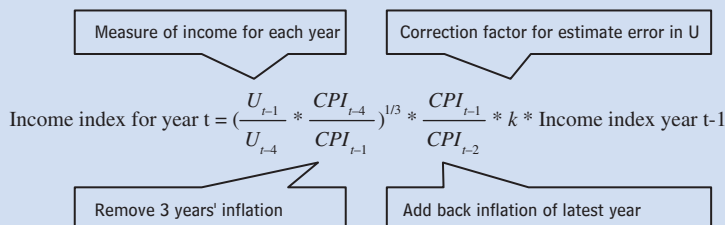
#### Measure of income (U):

$$PQI_{\text{ages 16-64}} + \text{"PQI over 7.5 inc-rel. base amts."}_{\text{ages 16-64}}$$

Number of persons in numerator

The change in the index consists of two components. One is the average annual change in average income during the latest three-year period, excluding inflation; the other is the rate of inflation in the latest 12-month period through June.

Inflation is measured by the June CPI. Because of the final tax settlement, pension-qualifying income is not known until December of the year following the year in which the income was earned. This means that the income of the two most recent years is based on an estimate. The indices of subsequent years are corrected for estimate error.





Also during the time when the pension is drawn, assets are redistributed from those with shorter-than-average life spans to those who live longer. This is done by basing the monthly pension on average life expectancy but paying it as long as the insured lives. Consequently, total pension disbursements to persons who live for only a short time after retirement are less than their pension savings. Those who live longer than average receive more than the value of their pension balances and premium pension capital.

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

During the years of retirement, the premium pension may be withdrawn with a so-called survivor benefit. This means that the premium pension will be paid out to either of two spouses or cohabitants as long as one of them is living. With this survivor benefit, the monthly pension will be lower.

### 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. Pension-qualifying income consists of the insured's earnings as well as social insurance benefits (other than pension benefits). Pension-qualifying amounts are included as 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 and for time spent caring for small children, pursuing studies, and performing compulsory national service. The maximum pension base is 7.5 income-related base amounts (SEK 317 250 in 2004). 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 his/her earnings and any benefits received from the social insurance schemes. The contribution is paid on incomes up to 8.07 income-

The definition of the measure of income was changed somewhat between 2002 and 2003. Previously, disability pensions disbursed (both folkpension and ATP) were included in the measure of income. Effective 2003, disability pensions have been replaced by sickness and activity compensation. Since income-related sickness and activity compensation is treated as pension-qualifying income, it is still included in the measure of income, whereas guaranteed compensation is not. For comparability between years, a special adjustment ratio is used in the calculation of the income index for 2004, 2005, and 2006. The adjustment ratio is equal to the measure of income for 2003 (SEK 214 208) divided by the same measure excluding sickness and activity compensation (SEK 217 390), or 0.9853634.

#### Basis for Calculation of the Income Index

	2004	2005
Measure of income U (t-1)	214 208	221 375
Measure of income U (t-4)	191 315	201 676
Change, real terms $(U_{t-1}/U_{t-4})^{1/3}$	1.0174	1.0183
CPI, June (t-1)	277.74	278.91
CPI, June (t-2)	273.24	277.74
CPI, June (t-4)	261.24	268.31
Ratio CPI(t-1)/CPI(t-2)	1.0165	1.0042
Ratio CPI (t-4)/CPI(t-1)	0.9406	0.9620
Correction of index (k)	1.00027	1.00130
Income index	115.64	118.41
Income-related base amount	42 300	43 300
Adjustment indexation	1.81 %	0.78 %
Nominal change in index	3.44 %	2.40 %
Real change in index	1.80 %	1.97 %

<sup>12</sup> In 2004,  $8.07 \times 42\,300 = \text{SEK } 341\,361$ .

<sup>13</sup> Self-employed persons pay the individual pension contribution of 7 percent and a self-employment contribution of 10.21 percent.

<sup>14</sup> In Note 1 it is shown that this tax amounted to SEK 12.5 billion in 2004.

<sup>15</sup>  $0.1721/0.93 \approx 0.185$

<sup>16</sup> The assets of the inkomstpension system also include the Sixth National Pension Fund, which however receives no contributions and pays no pensions.

related base amounts.<sup>12</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>13</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>14</sup> They are therefore allocated to the central-government budget as tax revenue rather than to the pension system.

For recipients of pension-qualifying social 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 on earnings and transfer payments thus sums up to 17.21 percent, while 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>15</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 was SEK 58 691 in 2004.

### 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>16</sup> Each fund receives one fourth of the contributions and finances one fourth of pension disbursements. The monthly pension disbursements of the inkomstpension system are thus made from the buffer funds. In principle, the same money that was paid in during the month is paid out in pensions to the recipients.

The premium pension contribution, 2.5 percent of the pension base, is invested by the Premium Pension Authority (PPM) in interest-bearing assets until the tax assessment is complete. Only then does PPM know how much premium pension credit has been earned by each insured. When this amount has been determined, PPM purchases shares in the funds selected by the insured. At the end of 2004, the premium pension system included 697 funds, administered by 84 different fund managers. Contributions of insured persons who do not select a premium pension fund are invested in the Pre-

#### Income Index for 2004

The income index for 2004 has been calculated at 115.64, an increase of 3.44 percent in the index for 2003, which was 111.79. This increase affects the inkomstpension liability to retirees in 2004 (see Note 8 and Note 14, Table C) via adjustment indexation of disbursed pensions.

In the income index for 2004, the measures of income for the years 2000 and 2003 are compared. The average real growth in income between 2000 and 2003 has been calculated at 1.74 percent. Price changes from June 2002 to June 2003 were determined to be 1.65 percent. Corrections of previous estimates amount to 0.03 percent. The adjustment indexation for 2004, that is, the recalculation of disbursed pensions by the income index for 2004 reduced by the norm (1.6 percent), is calculated at 1.81 percent.

#### Income Index for 2005

The income index for 2005 has been calculated at 118.41, an increase of 2.40 percent. This increase affects the pension liability to the economically active in 2004 (see Note 8 and Note 14, Table A) via income indexation of pension balances.

The average real growth in income between 2001 and 2004 has been calculated at 1.83 percent. Price changes from June 2003 to June 2004 were determined to be 0.42 percent. Corrections of previous estimates amount to 0.13 percent. The adjustment indexation for 2005, that is, the recalculation of disbursed pensions by the income index for 2005 reduced by the norm (1.6 percent), is calculated at 0.78 percent.

mium Savings Fund of the Seventh National Pension Fund. When a pension is to be disbursed, PPM sells shares in the recipient's funds, and the proceeds are paid out as a pension.

#### Funds in the Premium Pension System as of December 31, 2004

	Number of registered funds, 2004	Managed capital, 2004, SEK billions	Managed capital, 2003, SEK billions
Equity funds	498	60.7	45.8
Mixed funds	48	5.1	4.0
Generation funds	30	15.2	11.6
Interest funds	121	3.7	2.7
Premium Savings Fund	*	40.1	29.8
<b>Total</b>	<b>697</b>	<b>124.8</b>	<b>93.9</b>

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

### Interest on the Contributions That Give Rise to Pension Credit

Savings in a bank account earn interest, and the pension system works in the same way.

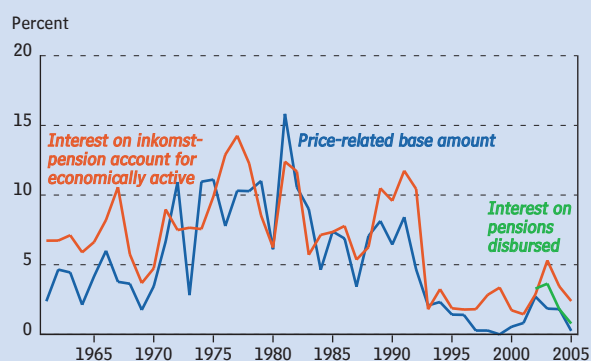
The interest on the inkomstpension account is normally determined by the growth in average income. If the average income in Sweden increases by three percent, for example, the rate of interest will also be three percent. The average income is measured by the *income index*. The equivalent of interest 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 different factors which in turn are affected by the general economy. The inkomstpension account earns interest at the rate of increase in wages and salaries – in the price of labor, to put it another way. The development of the premium pension account follows the tendency on financial markets, which reflects the price of capital, among other things. Neither of these rates of interest is guaranteed; they may even be negative. Through apportioning contributions between separate subsystems where the rate of return depends on somewhat different circumstances, the risk is spread to a certain extent.

#### The Return on the Inkomstpension

Pensions have been adjustment-indexed since 2002. Adjustment indexation has so far resulted in higher annual increases of pension benefits than would have been the case if the previous indexation by the change in price-related base amount would have been retained.

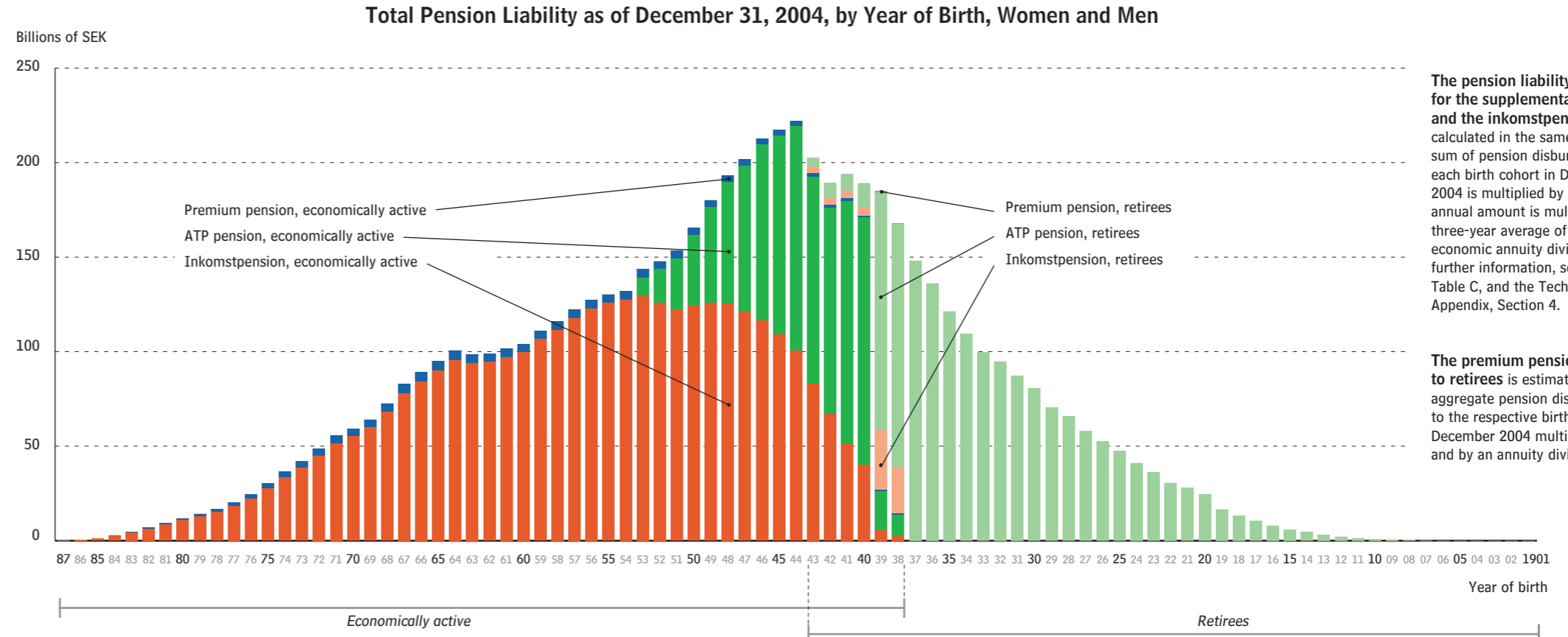
Annual Changes in Income Index, Price Related Base Amount, and Adjustment Indexation



The **inkomstpension liability to the economically active** consists of the sum of each birth cohort's pension balances as of December 31, 2004, adding estimated total pension credit for 2004. For further information, see Note 14, Table A, and the Technical Appendix, Section 4.

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

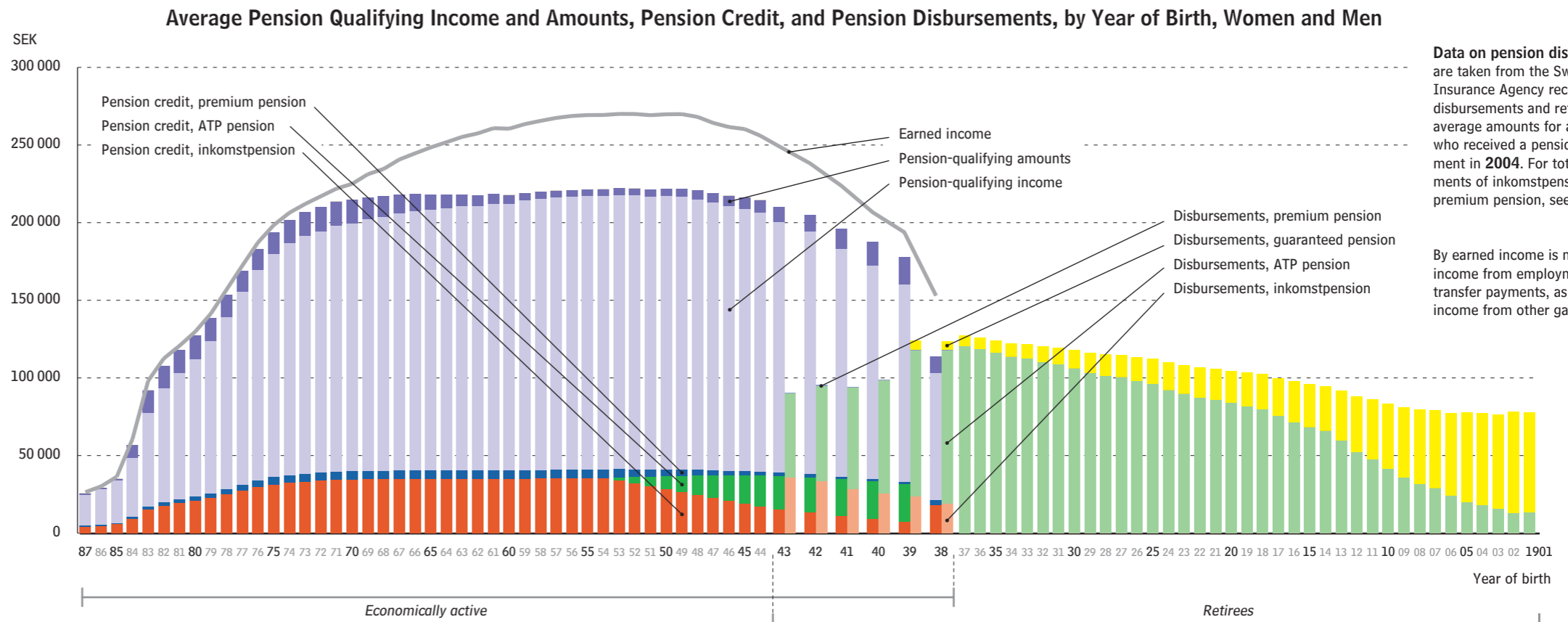
The **premium pension liability to the economically active** consists of the sum of each birth cohort's fund assets as of December 31, 2004.



The **pension liability to retirees for the supplementary pension and the inkomstpension** is calculated in the same way. The sum of pension disbursements to each birth cohort in December 2004 is multiplied by 12, and this annual amount is multiplied by a three-year average of the economic annuity divisor. For further information, see Note 14, Table C, and the Technical Appendix, Section 4.

The **premium pension liability to retirees** is estimated from aggregate pension disbursements to the respective birth cohorts in December 2004 multiplied by 12 and by an annuity divisor.

**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 who earned positive pension credit in 2003. For the total pension credit earned in 2003, see the respective income statement and balance sheets for the inkomstpension and the premium pension.



**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 2004. For total disbursements of inkomstpension and premium pension, see Note 2.

By **earned income** is meant income from employment excl. transfer payments, as well as income from other gainful activity.

Persons born between 1943 and 1938 are between 61 and 66 years of age and may be both economically active and retired during the calculation year.

The inkomstpension liability to the economically active consists of the sum of each birth cohort's pension balances as of December 31, 2004, adding estimated total pension credit for 2004. For further information, see Note 14, Table A, and the Technical Appendix, Section 4.

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

The premium pension liability to the economically active consists of the sum of each birth cohort's fund assets as of December 31, 2004.

### Total Pension Liability as of December 31, 2004, by Year of Birth, Women

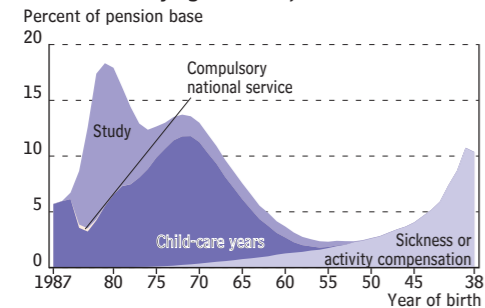


The pension liability to retirees for the supplementary pension and the inkomstpension is calculated in the same way. The sum of pension disbursements to each birth cohort in December 2004 is multiplied by 12, and this annual amount is multiplied by a three-year average of the economic annuity divisor. For further information, see Note 14, Table C, and the Technical Appendix, Section 4.

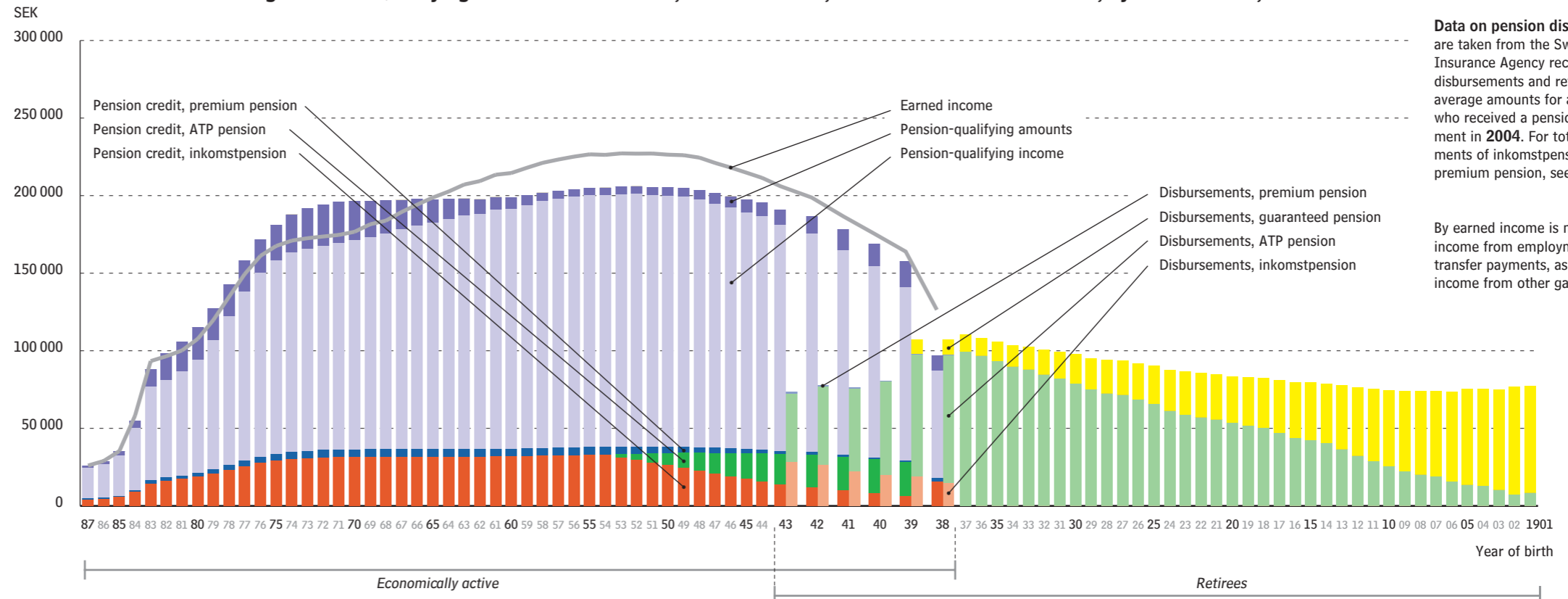
The premium pension liability to retirees is estimated from aggregate pension disbursements to the respective birth cohorts in December 2004 multiplied by 12 and by an annuity divisor.

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 who earned positive pension credit in 2003. For the total pension credit earned in 2003, see the respective income statement and balance sheets for the inkomstpension and the premium pension.

### Pension Qualifying Amounts, Women



### Average Pension Qualifying Income and Amounts, Pension Credit, and Pension Disbursements, by Year of Birth, Women



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 2004. For total disbursements of inkomstpension and premium pension, see Note 2.

By earned income is meant income from employment excl. transfer payments, as well as income from other gainful activity.

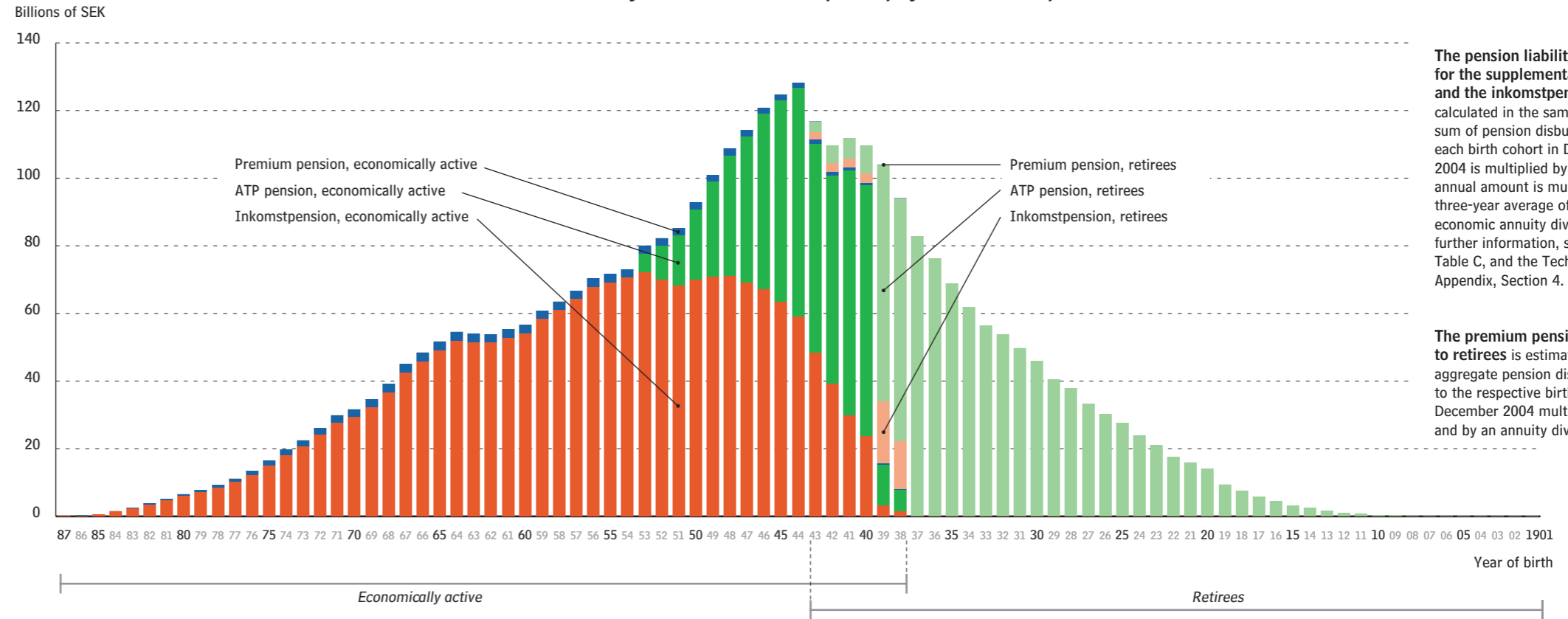
Persons born between 1943 and 1938 are between 61 and 66 years of age and may be both economically active and retired during the calculation year.

The inkomstpension liability to the economically active consists of the sum of each birth cohort's pension balances as of December 31, 2004, adding estimated total pension credit for 2004. For further information, see Note 14, Table A, and the Technical Appendix, Section 4.

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

The premium pension liability to the economically active consists of the sum of each birth cohort's fund assets as of December 31, 2004.

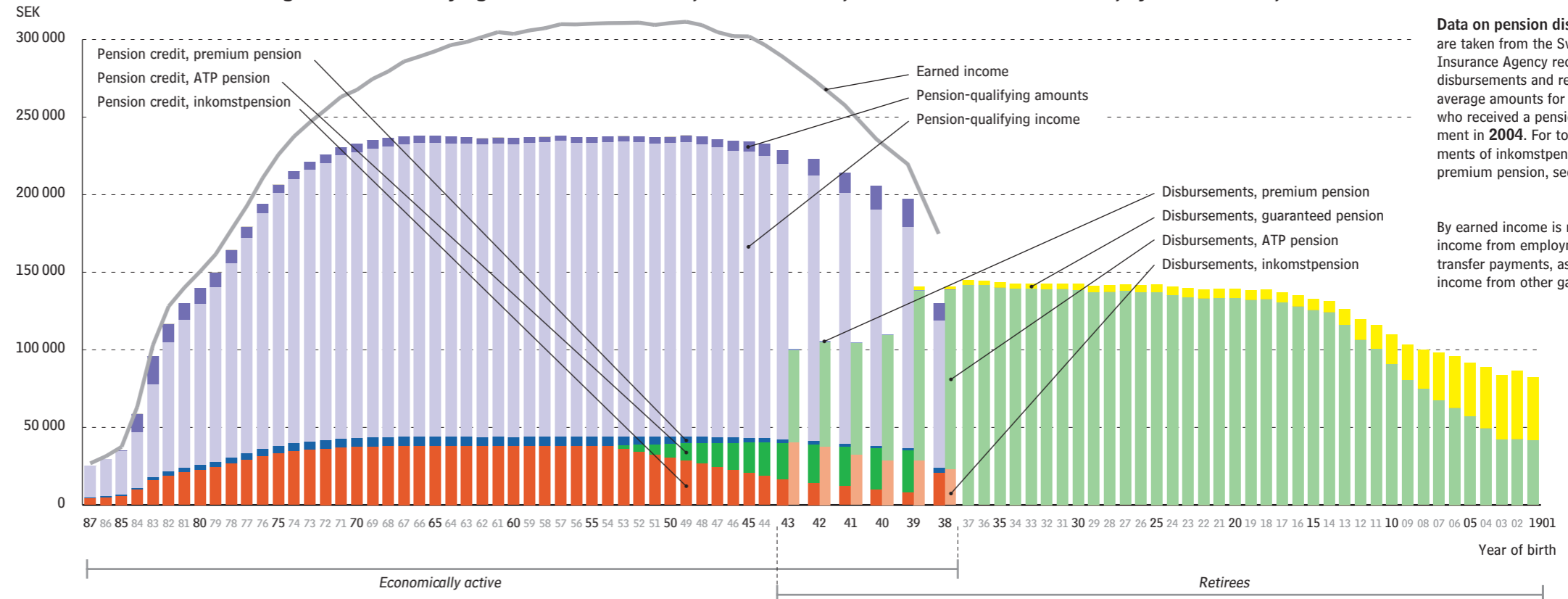
Total Pension Liability as of December 31, 2004, by Year of Birth, Men



The pension liability to retirees for the supplementary pension and the inkomstpension is calculated in the same way. The sum of pension disbursements to each birth cohort in December 2004 is multiplied by 12, and this annual amount is multiplied by a three-year average of the economic annuity divisor. For further information, see Note 14, Table C, and the Technical Appendix, Section 4.

The premium pension liability to retirees is estimated from aggregate pension disbursements to the respective birth cohorts in December 2004 multiplied by 12 and by an annuity divisor.

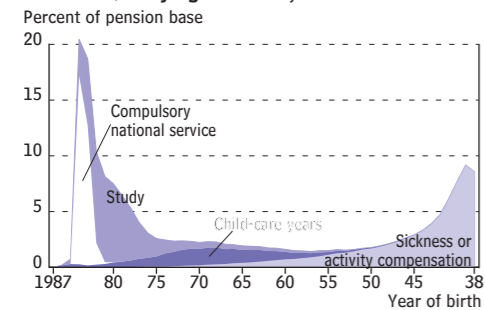
Average Pension Qualifying Income and Amounts, Pension Credit, and Pension Disbursements, by Year of Birth, Men



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 2004. For total disbursements of inkomstpension and premium pension, see Note 2.

By earned income is meant income from employment excl. transfer payments, as well as income from other gainful activity.

Pension Qualifying Amounts, Men



Persons born between 1943 and 1938 are between 61 and 66 years of age and may be both economically active and retired during the calculation year.

## A Rate of Interest Other Than the Income Index – Automatic 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 finance payments of the inkomstpension with a fixed contribution. In order to maintain the contribution at 16 percent, income indexation is suspended in such

a situation. This is done by activation of so-called automatic balancing. Automatic balancing consists of the rules for calculating the assets and liabilities of the system, and for when and how the rate of interest will differ from growth in average income.

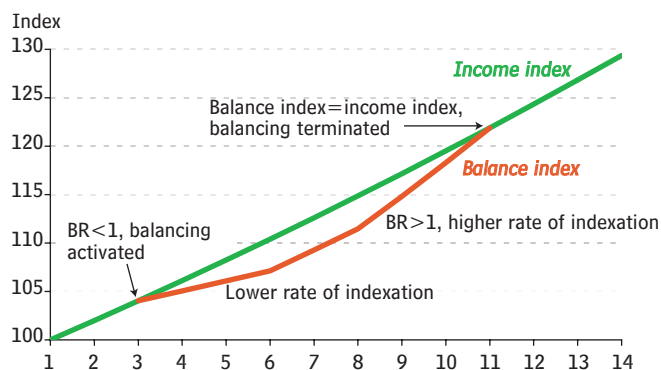
By dividing the assets of the system by the pension liability, we obtain a measure of the financial position of the system, the *balance ratio*. If the balance ratio exceeds one (1), assets are greater than liabilities. If the balance ratio is less than one (1), liabilities exceed assets. Balancing is activated when the balance ratio drops below one (1). 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 function of

the change in the income index and the size of the balance ratio.

An example: If the balance ratio falls below 1 to 0.99 while the income index rises from 100 to 104, the balance index is calculated as the product of the balance ratio (0.99) and the income index (104), for a balance index of 103. The indexation of pension balances will then be at 3 instead of 4 percent, and the indexation of pensions will be 1.4 instead of 2.4 percent.<sup>17</sup>

If the balance ratio exceeds 1.00 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.

Automatic Balancing



<sup>17</sup> The balance index for following year is calculated by multiplying the balance index (103) by the ratio between the new and old income indices, multiplied further by a new balance ratio.

### Annuity divisors: conversion of pension balances to annual pensions

#### Annuity divisor on withdrawal of pension at age $n$ :

Takes account of monthly disbursement

Interest credited (same as norm for adjustment indexation)

$$\frac{1}{12} L_n \sum_{k=n} \sum_{x=0}^{11} \left[ L_k + \frac{L_{k+1} - L_k}{12} x \right] (1.016)^{-(k-n)} (1.016)^{-x/12}$$

Number of survivors at age  $k$  out of 100 000 persons born, according to life-span data of Statistics Sweden for the latest five-year period

$n$  = retirement age (61, 62, 63, etc.)

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

$x$  = months (0, 1, 2, 3, ..., 11)

According to Section 8 of Regulation 1998:1340 on the Earnings Related Old Age Pension, the Swedish Social Insurance Agency is to calculate and establish annuity divisors each year in accordance with Chapter 5, Section 12 of the ERP (1998:674).

#### Established Annuity Divisors

Persons in birth cohort 1939 reached age 65 in 2004. Final annuity divisors were established for these persons in 2003. In 2004, persons in birth cohort 1943 reached age 61 and were thereby entitled to begin withdrawing an inkomstpension. For this birth cohort, preliminary annuity divisors were established in 2003 and will be used for pension disbursements to cohort members who have not yet reached 65.

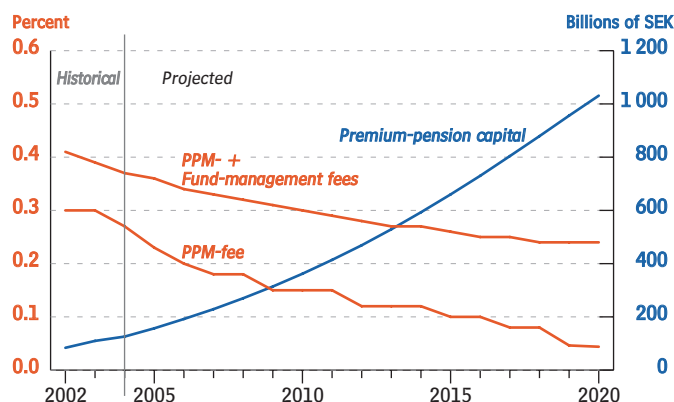
## Pensions Reduced by Costs of Administration

The costs of administering the inkomstpension are deducted annually from pension balances by the same percentage for all insured. In 2004 the deduction for costs of insurance and buffer fund administration was 0.060 percent. The deduction is made only until the insured begins to withdraw a pension. At the current level of costs, the deduction for costs will reduce the inkomstpension by approximately 1 percent compared to what it would be if no deduction were made.<sup>18</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 2004 the deduction for PPM's costs of administration was 0.27 percent. This deduction does not include the costs of fund management, which instead reduce the value of fund shares. The average cost deduction for fund managers in 2004, after discounts, was 0.42 percent. Thus, the total deduction for costs in the premium pension system in 2004 averaged 0.69 percent.

However, the annual percentage deduction for costs will decrease in the years ahead. As fund capital grows, it is expected that PPM's fee for administration will decrease to about 0.04 percent, and that the rebates received by PPM from fund managers and credited to pension savers will become substantially larger. For an insured person born in 1963, it is estimated that the deduction for costs of insurance and fund administration will reduce the premium pension by an average of 11 percent.

The costs of the Premium Pension



<sup>18</sup> On average, a pension balance remains in the system for 21.5 years, i.e., the pay-in duration of the system. Annual administration costs of 0.060 percent trim the inkomstpension to  $(1-0.00060)^{21.5} \approx 99$  percent of what it would have been without the deduction for costs.

## How is The Inkomstpension Calculated?

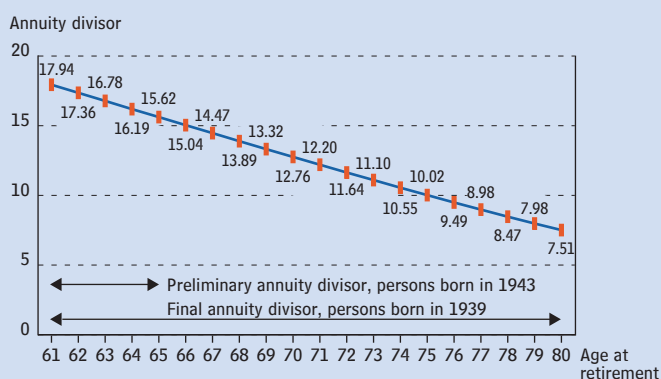
The inkomstpension is calculated by dividing the pension balance by a so-called annuity divisor. There is a specific divisor for each birth cohort.

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

The inkomstpension is revalued annually by the change in the income index less the interest of 1.6 percentage points credited in the annuity divisor.<sup>19</sup> This means that if wages and salaries increase by exactly 1.6 percent *more* than inflation, pensions will just keep pace with the rate of inflation. In other words, pensions will only be unchanged in real terms if wages and salaries

<sup>19</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.

Annuity Divisors for Individuals Born in 1939 and 1943



The calculations are based on the official data of Statistics Sweden, life span tables for men and women in the period 1998–2002.

## Effect on the Pension Liability

Withdrawing an old-age pension entails a transfer of pension liability, whereby liability to the economically active becomes liability to retirees. In itself, recalculation of pension balances as annual disbursements results in a marginal change in the pension liability. The change arises from the difference between annuity divisors and what is here termed economic annuity divisors. For an explanation of economic annuity divisors, see the Technical Appendix, Section 4. Economic annuity divisors are used to convert annual disbursements into pension liability to retirees.

Another effect on the pension liability arises from recalculation of pension disbursements by final annuity divisors for individuals who have withdrawn a pension before reaching age 65. In 2004, pensions were recalculated by the final annuity divisors for individuals born in 1939. This resulted in a marginal change in the inkomstpension liability to retirees.



go up by precisely 1.6 percent *more* than inflation. If, for example, 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.

## How is the Premium Pension Calculated?

The premium pension can be withdrawn as either *unit-linked insurance* or *traditional insurance*.

In both forms of insurance, the value of the pension account is determined from dividing it by an annuity divisor based on average life expectancy. For the premium pension, however, the annuity divisor is based on forecasts of life expectancy. Interest is credited at 3 percent before deduction of PPM costs – after this deduction the interest rate is 2.73 percent.

If the premium pension is withdrawn in the form of traditional insurance, the pension is calculated as a guaranteed life-long annuity payable in nominal monthly amounts. In this case PPM sells the insured's fund shares and assumes the responsibility and the financial risk of investing the proceeds. The pension is calculated with an assumed nominal return that is presently 3 percent. The amounts disbursed may be greater if the conventional life-insurance operation reports a positive result.

Unit-linked insurance means that the savings of the insured remain in freely chosen PPM funds. If unit-linked insurance is elected, the size of the premium pension is revalued 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 the value decreases, more shares are sold. The variations in prices affect the value of the following year's premium pension.

## Guaranteed Pension

The guaranteed pension provides basic social security for persons with little or no income. The guaranteed pension may be paid beginning at age 65 to persons residing in Sweden. To receive a full guaranteed pension, an individual must in principle have resided in Sweden for 40 years after the age of 25. Residence in another EU/EES country can also be credited toward a guaranteed pension.

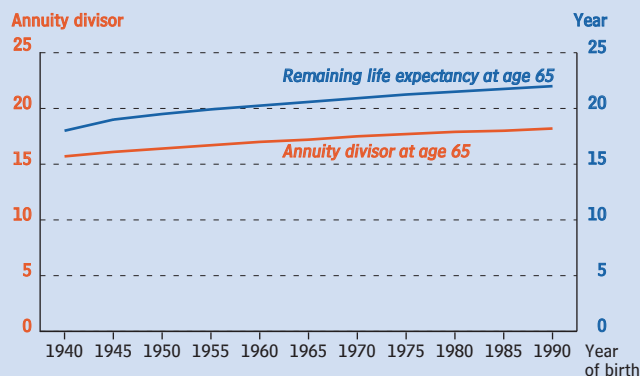
In 2004 the maximum guaranteed pension for single pensioners was SEK 6 976 kronor per month (2.13 price-related base amounts<sup>20</sup>), and for a married

<sup>20</sup> For 2004 the price-related base amount was SEK 39 300.

### Annuity Divisors and the Trend in Average Life Expectancy

Life expectancy differs from one birth cohort to another. Life expectancy is longer for younger birth cohorts, resulting in higher projected annuity divisors. The annuity divisor at the time of retirement is always less than the remaining life expectancy, the reason being the interest credited at 1.6 percent.

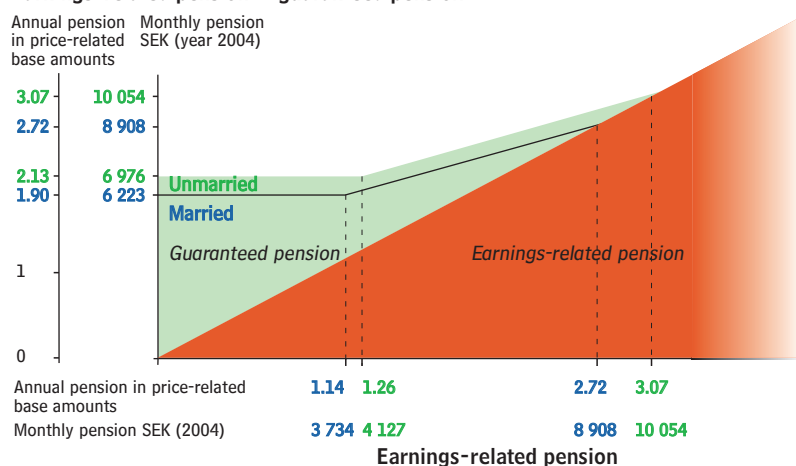
### Projected Annuity Divisors for the Inkomstpension and Remaining Life Expectancy at Age 65



pensioner, SEK 6 223 kronor per month (1.90 price-related base amounts). The guaranteed pension is reduced for persons with an earnings-related pension. The reduction is made in two stages: for low incomes, the guaranteed pension is reduced by the full amount of earned income; for higher incomes, the guaranteed pension is only reduced by 48 percent. This means that in 2004 a single pensioner with a monthly earnings-related pension of SEK 10 054 or more received no guaranteed pension. For a married pensioner the corresponding income limit was SEK 8 908.

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 remaining total of  $(2.13 - 1.26) = 0.87$  price-related base amount is reduced by 48 percent of the income above 1.26 price-related base amounts, or by 0.48 price-related base amount, for a guaranteed pension of 0.39 price-related base amount. 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 not considered. 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 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.

### ATP

Persons born before 1938 have earned neither an inkomstpension nor a premium pension. Instead they receive a ATP pension, which is calculated by older rules. The level of the ATP pension 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 rules. These individuals receive a portion of their earnings-related old-age pension as a ATP pension and the rest as an inkomstpension and a premium pension. The younger the individual, the smaller the percentage of the ATP pension. Persons born in 1938 receive 80 percent of their ATP pension; those born in 1939 receive 75 percent of their ATP pension, etc. Persons born in 1954 or thereafter earn their entire pensions under the new provisions for the inkomstpension and premium pension.

## Three Scenarios for the Future of the Pension System

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

The long-term financial development of the inkomstpension system is described below in three different projections. They are 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 2 percent annually and that the real return on buffer-fund assets will be 3.25 percent. In the other scenarios, assumptions have been made about more and less positive developments, respectively, for the financial position 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 varying assumptions about the return on the buffer fund.

The results of the projections are reported as calculations 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 many years thereafter. Pension disbursements are thus forecast to exceed contribution revenue, but only in the pessimistic scenario does this development ultimately exhaust the buffer fund. The reason is that both the number of persons of working age and the return on the buffer fund are relatively low in this scenario.

### Base Scenario

The demographic trend in the base scenario follows the 2004 population forecast of Statistics Sweden, in which it is assumed that nativity rises from its level of 1.71 children per woman in 2003 to 1.85 in 2010 and then remains at that level. It is further assumed that the mean life expectancy for individuals at age 65 increases by an average of 36 days per year until 2010 and by an average of 23 days per year thereafter. Net immigration, which in the last 20 years has averaged 21 500 per year, is expected to be higher, especially in the initial decades. It is assumed that in the first years until 2010 net immigration will average 31 000 persons per year. It is estimated that beginning in 2010 the annual average will be about 24 000. The proportion of persons aged 16–64 with an annual income exceeding one (1) income-related base amount is assumed to remain at 84 percent, roughly equivalent to an employment rate of 77 percent by the so-called AKU (LFS – Labor Force Surveys)

definition. Real annual growth in average income is assumed to be 2 percent, and the real annual return on the buffer fund, 3.25 percent. The same rate of return, after deduction for costs of administration, has been assumed for the premium pension funds in the calculation of the future premium pension for a person just retiring.

### 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 annual incomes exceeding one income-related base amount is 86 percent, real annual growth in average income is 2.8 percent after the year 2010, and the real annual return on the buffer fund is 5 percent. The real rate of return in the premium pension system is also assumed to be 5 percent, after the deduction for costs of administration. The assumed

## Net Contribution

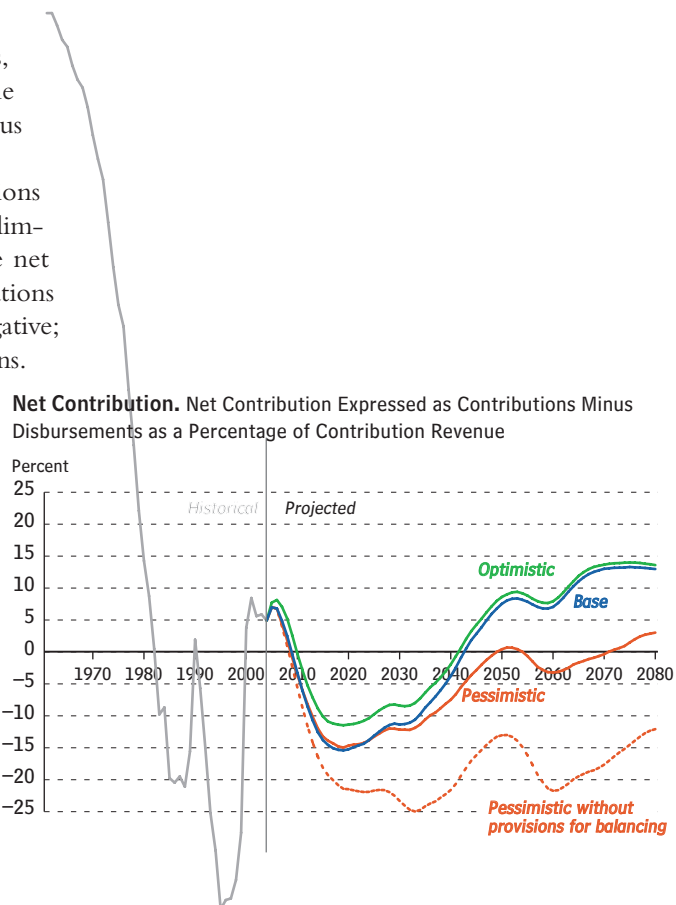
The amount of pension disbursements depends on the rules of the system and their interaction with demographic and economic developments. Since birth cohorts vary in size, and to some extent have worked to different degrees, the contribution revenue and pension disbursements of the system vary over time.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

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

After the ATP system was introduced in 1960, contributions levied exceeded pension disbursements, which were initially limited, resulting in a high net contribution. From 1980 on, the net contribution has varied considerably because of cyclical fluctuations and changes in applicable provisions. The trend has been negative; recoveries have been due primarily to increases in contributions.

The net contribution, at present 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 there is a noticeable improvement, 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 automatic balancing, the deficit is limited to a range of 0 to 5 percent.

The reduction of the pension level due to balancing in this case is described in the section "Development of Pension Levels for Birth Cohorts 1940–1990".



rate of growth is high, or very high, by historical standards. On the other hand, the rate of return is not particularly high, but in line with the historical average.

### *Pessimistic Scenario*

The levels of nativity and net immigration assumed in the pessimistic scenario are lower than in the base alternative. Nativity is assumed to be 1.5 children per woman. Net immigration is assumed to average 22 000 per year for the years until 2010 and 12 000 per year thereafter (the basic assumption of the Statistics Sweden population forecasts in the 1990's). Average life expectancy develops as in the other two scenarios. The assumed rate of labor-force participation is the same as in the base scenario, but here the long-term rate of real growth in average income is 1 percent. The real return on the buffer fund and the premium pension funds, after deducting costs of administration, is also 1 percent. In principle, a return on

the buffer fund equal to the growth in average income will not contribute to the long-term financing of pensions. The buffer fund then becomes a demographically determined repository of pension capital, with a neutral impact on the financing of the system. Under the assumptions of the pessimistic scenario, contribution revenue increases slowly in relation to the desired indexation of average income. The pessimistic scenario illustrates risks managed by balancing and the effects of a prolonged negative tendency on pensions.

<sup>21</sup> One contributing cause is a marginal lag – in principle six months – between the time when the deficit arises and the time when balancing corrects it.

## The Buffer Fund

The size of the buffer fund can be expressed in terms of fund strength, that is 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 a higher return on assets. At the end of 2004, fund strength was 4.0, thus the fund could have financed four years of pension disbursements equal to those in 2004. Compared to the year before, fund strength has increased by the equivalent of pension disbursements for five 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 buffer fund.

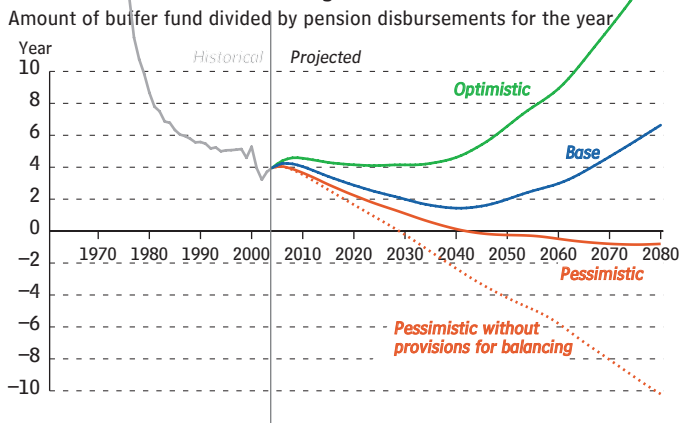
**Historically**, fund strength has been high; the reason is that the introduction of the ATP system in 1960 brought an inflow of contributions while pension disbursements were limited. As ATP pensions have increased, fund strength has decreased. Fund strength has averaged less than five years since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

**In the base scenario**, fund strength increases initially, but it gradually decreases after 2008 because of the negative net contribution. Fund strength reaches its low point around 2040, when it is equivalent to a year and a half 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 seven years of pension disbursements.

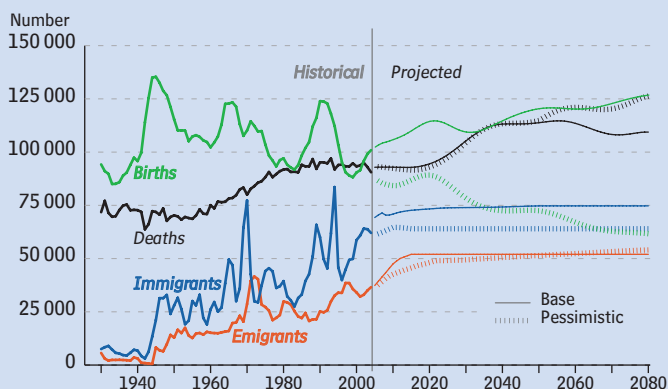
**In the pessimistic scenario**, the buffer fund is exhausted by 2042 and is slightly negative thereafter. This development occurs even though balancing is activated as early as 2008. The principal reason<sup>21</sup> is that in the calculation of turnover duration, the population in the scenario is implicitly assumed to be constant. Actually, because of the declining trend in the working-age population in the scenario, turnover duration is somewhat overestimated. Balancing was deliberately designed not to eliminate the risk of exhausting the buffer fund. This

**Size of Buffer Fund – Fund Strength.**



## Specification of the Assumptions in the Scenarios

**Numbers of Births, Deaths, Immigrants, and Emigrants 1930–2005 and Assumed Numbers Thereafter Until 2080**



The diagram shows the population growth for the last 75 years and the assumed growth for the next 75 years. The large birth cohorts of the 1940's, the 1960's, and the 1990's are evident in the number of births. The number of deaths rises each year, though not because mortality is increasing, but because the population is growing. Immigration peaked in the 1960's and 1970's, when large numbers, above all from Finland, came to work in Sweden. There was another peak in the early 1990's, when Sweden received many refugees from ex-Yugoslavia. The demographic assumptions are the same in the base and optimistic scenarios.

risk has been addressed by 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. 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 reduces pension levels by about 3.2 percentage points – see the section “Development of Pension Levels for Birth Cohorts 1940–1990”.

### 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 2004, the assets of the system are marginally greater than the total pension liability – the balance ratio<sup>22</sup> to four decimal places is calculated at 1.0014. 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 2003–2006.

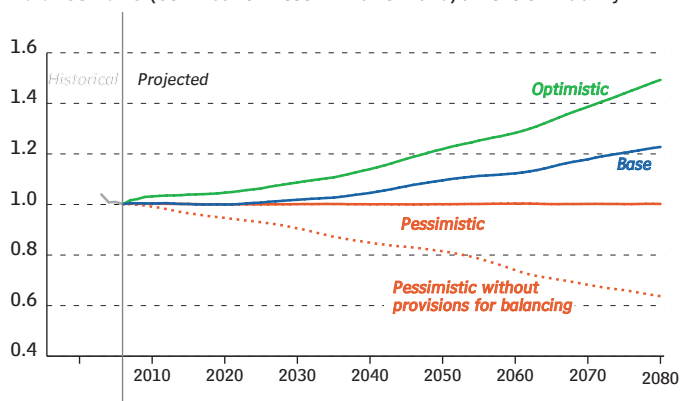
**In the base scenario**, the balance ratio remains very close to 1 for the next 15 years, with balancing activated in a few brief periods. After 2020 the financial position of the system strengthens.

**In the optimistic scenario**, the consolidation ratio of the system increases for almost the entire period. By 2050, assets of the system exceed the pension liability by almost 20 percent.

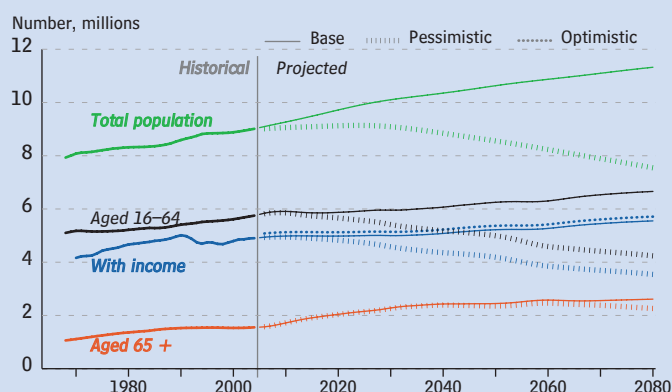
**In the pessimistic scenario**, the balance ratio drops below 1.0 in 2008; consequently, balancing is activated. With balancing, the liability of the system accrues interest at the same rate as the growth of the system’s assets. As a result, the balance ratio stabilizes around 1.0.

<sup>22</sup> The balance ratio for 2006 is based on the financial position of the system as of December 31, 2004.

**Financial Position of the Inkomstpension as Expressed in the Balance Ratio (Contribution Asset + Buffer Fund) / Pension Liability**



**Population Size, Number of Persons Aged 16–64, Number Over 65, and Number With Income 1968–2004 and Assumed Numbers Thereafter Until 2080**



In the scenarios, there is virtually no change in the number of persons over 65 since the assumptions regarding mortality are the same in all scenarios. The number of persons with income refers to individuals with an income exceeding one income-related base amount. The historical data have been estimated on the basis of the current relationship between labor force participation and income exceeding one income-related base amount.

The assumed proportion of persons with income is the same in the base and pessimistic scenarios and is higher in the optimistic scenario.

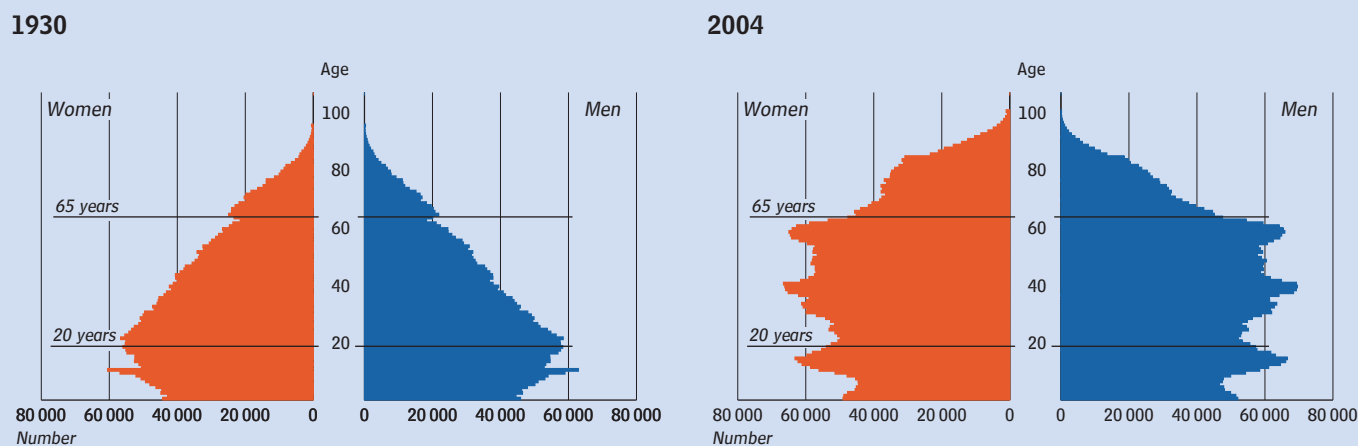
## Development of Pension Levels for Birth Cohorts 1940–1990

The pension level is defined here as the average national pension for new retirees in relation to the average pension-qualifying income of persons aged 16–64. 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 requirement is to be met when 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 pensions to remain constant in relation to incomes, automatic balancing must not be activated.

According to the assumptions of Statistics Sweden used in these scenarios, average life expectancy will increase substantially in the years ahead. As a result, the annuity divisor at age 65 will rise from 15.7 for persons born in 1940 to 18.1 for persons born in 1990. With the higher annuity divisor, the annual pension for the birth cohort of 1990 will be 14 percent less than for the cohort of 1940, provided those born in 1990 begin drawing their pensions at age 65. To compensate for the negative effect of this longer life expectancy on the pension level, those born in 1990 will have to work 26 more months, retiring shortly after their 67th birthday.

The birth cohort of 1911 was one of the first with a retirement age of 65. That cohort turned 65 in 1976 and could look forward to approximately 16 years of retirement.

Sweden's Population Pyramid 75 Years Ago, at Present, and in 75 Years in the Two Demographic Scenarios.



### Average Life Expectancy and Retirement Age

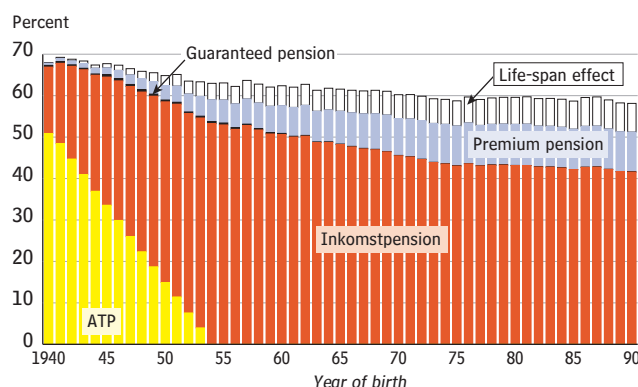
Cohort born in	reaches 65 in	Projected annuity divisor at 65	Effect of life expectancy change on pension at 65	Retirement age to neutralize life-expectancy effect on pension	... implying an expected length of retirement
1940	2005	15.7	–	65 years	18 years, 6 months
1945	2010	16.1	–2 %	65 years, 4 months	18 years, 7 months
1950	2015	16.4	–4 %	65 years, 8 months	18 years, 7 months
1955	2020	16.8	–6 %	65 years, 11 months	18 years, 10 months
1960	2025	17.0	–8 %	66 years, 2 months	19 years, 1 month
1965	2030	17.3	–9 %	66 years, 5 months	19 years, 2 months
1970	2035	17.5	–10 %	66 years, 7 months	19 years, 4 months
1975	2040	17.7	–12 %	66 years, 10 months	19 years, 5 months
1980	2045	17.9	–12 %	67 years	19 years, 6 months
1985	2050	18.1	–13 %	67 years, 1 months	19 years, 8 months
1990	2055	18.1	–14 %	67 years, 2 months	19 years, 10 months

In the scenarios, the average pension at age 65 in percent of the average income is shown in the following bar graphs, one for each scenario.

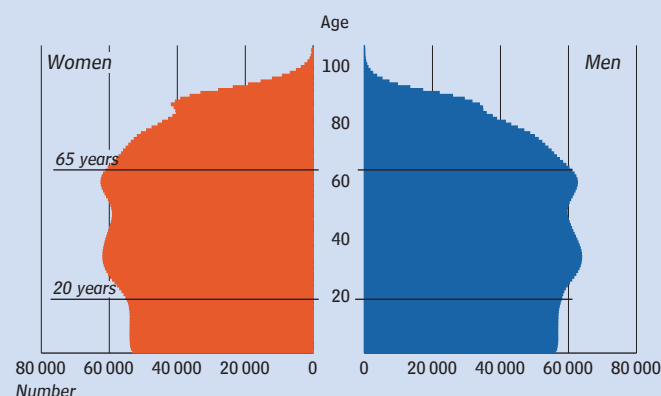
**In the base scenario**, the average pension level at age 65 drops from 68 percent for birth cohort 1940 to 51 percent for birth cohort 1990. Of this decrease, seven percentage points are due to the expected increase in average life span. If the number of working years is increased to neutralize the effect of longer life expectancy on the pension level, the latter stabilizes just below 60 percent of the average income. The remaining decrease is partly due to the fact that the calculations are for persons with 30 or more years of work in Sweden. Compared to the new system, the ATP system is particularly generous toward persons who have worked only 30 years.

In the base scenario, the rate of return in the premium pension system, 3.25 percent, exceeds the assumed growth of 2.0 percent in average income. As the assumed return on the premium pension is higher than the growth in average income

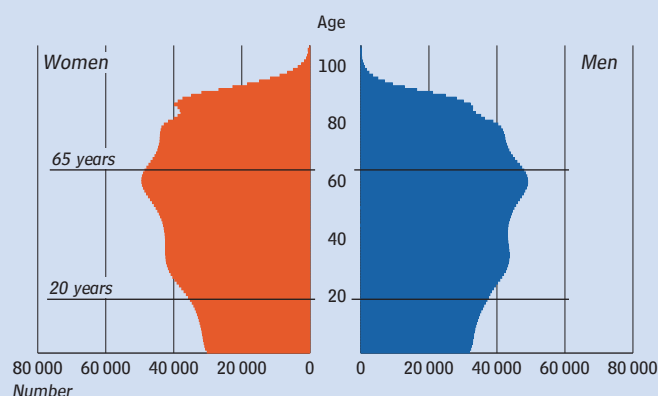
Average Pension at Age 65 as a Percentage of Average Income, Base Scenario



### 2080 Base Demographic Trend



### 2080 Pessimistic Demographic Trend





<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 Public Pension System Works.”

(that is, the rate of interest on the inkomstpension) the size of the premium pension will be larger than its share of total contributions.<sup>23</sup> For the youngest birth cohorts, the premium pension averages nearly 10 percent of the average income, and the inkomstpension, about 42 percent. For persons who have worked for 30 years or more, the guaranteed pension has only a marginal effect on the average pension level in the base scenario. Since the guaranteed pension is assumed to remain unchanged in real terms, its relative importance

decreases each year with the growth in income. The realism of the assumption that the guaranteed pension will remain unchanged in real terms is open to question, however.

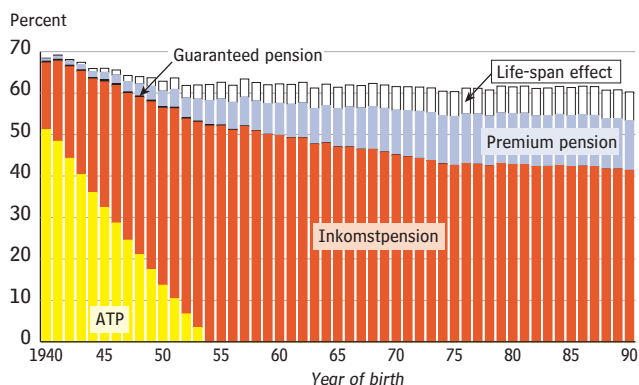
In the other two scenarios, the growth in average income is lower and higher, respectively, than in the base scenario. As long as balancing has not been activated, the inkomstpension balances are attributed a rate of return equal to (are indexed by) the growth in average income and thus the pension levels at age 65 increase at the same rate as the average income. The relationship between inkomstpension and average income is thus not affected by growth; in other words, the level of pensions as a percentage of income is unchanged. On the other hand, the monetary amount of the inkomstpension is of course less with lower growth and greater with higher growth.

The relationship between the return earned in the premium pension system and the growth in average income affects the relative amount of premium pensions. The higher the rate of return in relation to growth, the greater the premium pension in proportion to income and to the inkomstpension.

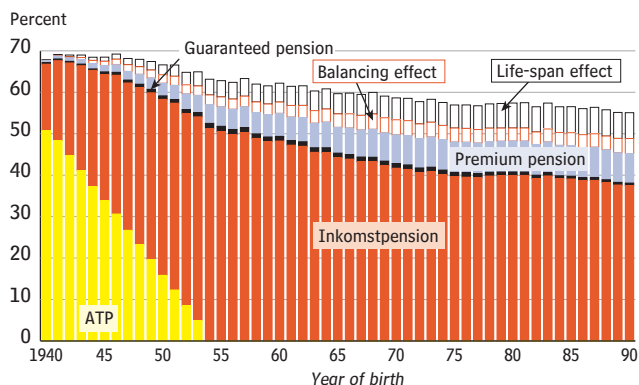
**In the optimistic scenario,** the rate of return for the premium pension is 2.2 percentage points higher than the growth in average income – 5 percent compared to 2.8 percent. The relatively high premium pension partly compensates for the effect of the increase in life expectancy. If the retirement age should rise at the same rate as average life expectancy, the level of pensions would remain constant at about 60 percent.

**In the pessimistic scenario,** the growth in average income is half that in the base scenario. The rate of return is also

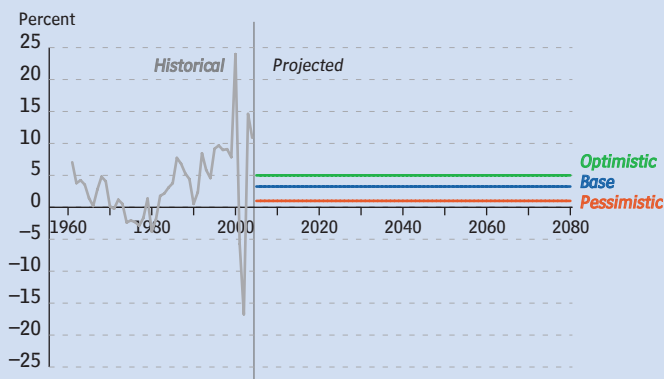
Average Pension at Age 65 as a Percentage of Average Income, Optimistic Scenario



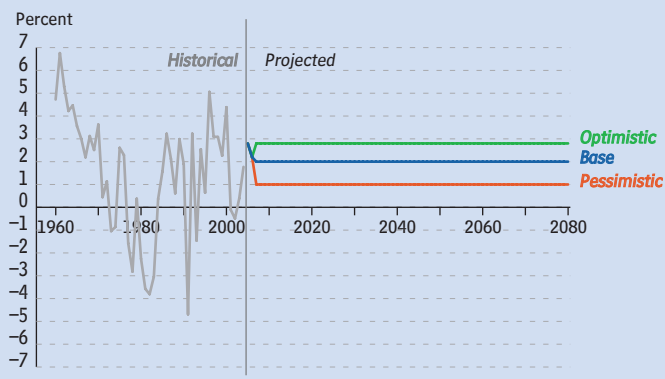
Average Pension at Age 65 as a Percentage of Average Income, Pessimistic Scenario



Return on Buffer Fund 1960–2004 and Projections Until 2080



Growth in Real Earnings 1960–2004 and Projections Until 2080



lower: 1 percent instead of 3.25 percent. With the lower rate of return, the premium pension is less both in monetary terms and in proportion to the total pension. Given the lower earnings-related pensions in comparison to the base scenario, the guaranteed pension assumes a larger role.

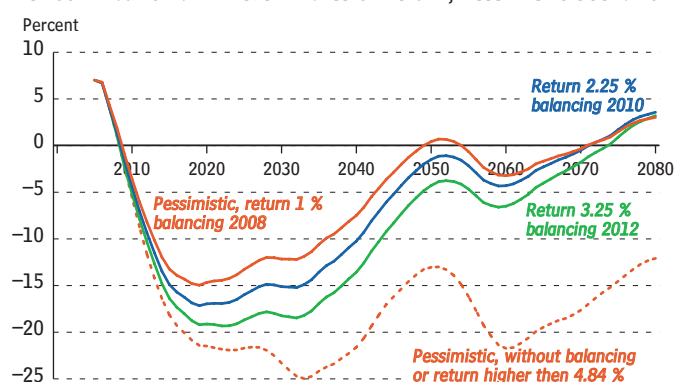
The diagram also shows the effect of balancing on pensions. Balancing is activated in 2008. For persons born in 1954, the first birth cohort not to receive any of their pension in the form of the ATP pension, the pension level at age 65 has been reduced as an effect of balancing by 2.3 percentage points in relation to average income. At the same time, however, the guaranteed pension raises the total level of pensions by an average of 1.2 percentage points in relation to average income. For birth cohort 1990, balancing has resulted in a decrease in pension levels by 3.6 percentage points, whereas the guaranteed pension increases pension levels by 0.6 percentage point relative to average income.

### Balancing, Rate of Return, and Guaranteed Pension

A demographic or economic trend with a negative impact on the pension system can be offset by a higher return on the buffer fund. In the pessimistic scenario, balancing is not activated if the real return on the buffer fund is at least 4.8 percent. With growth of 1 percent in average income, this rate of return will compensate for the strain put on the system by a birth rate of 1.5 children per woman and the rather substantial increase in average life expectancy assumed in all three scenarios. A higher rate of return means that the system can afford larger negative net contributions.

To illustrate the severity of the strain on the system in the pessimistic scenario, the assumed rate of return is varied in this scenario. Instead of 1.00 percent, the real annual rate of return is set at 2.25 and 3.25 percent, respectively. The rate of 2.25 percent means that the contribution of the return to the financing of pension disbursements – which is largely determined by the relationship of the rate of return to the growth in average income – is the same as in the base scenario. The rate of 3.25 percent is the same as the return in the base scenario,

Net Contribution at Different Rates of Return, Pessimistic Scenario



### Calculation of the Pension Level

The calculation of pensions includes only individuals with at least 30 years of pension credit. The purpose of this limitation 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 covered by the national pension system, it is not included in the income to be compared. Income earners pay the individual pension contribution of 7 percent on the income covered, but are compensated by the tax reduction of 75 percent of the contribution paid. The income to be compared has been reduced by 1.75 percent to compensate for the difference between the economically active and retirees in regard to the contribution/tax assessed. The average income for persons aged 64 is somewhat lower than the average income for the category aged 16–64. Consequently, the pension level shown in the bar graph is

somewhat lower than it would have been if the average pension instead had been compared to the incomes of 64-year-olds.

### Other Assumptions in the Calculations

For the year 2005, the economic forecast of the National Institute of Economic Research has been used in the calculations. The assumptions on which the scenarios are based do not apply until 2006 and thereafter, except for the assumptions about the return on the funds, which apply beginning January 1, 2005.

Since the guaranteed pension is price-indexed, the lowest pensions will decrease further in relation to average income, and the tax component of the pension contribution for persons with low incomes will also decrease. The effect over a 75-year period is extremely powerful. If average income increases by 2 percent annually, it will be more than three times as high in 2080 as in 2004. Thus, the guaranteed pension becomes utterly marginal toward the end of the calculation period.

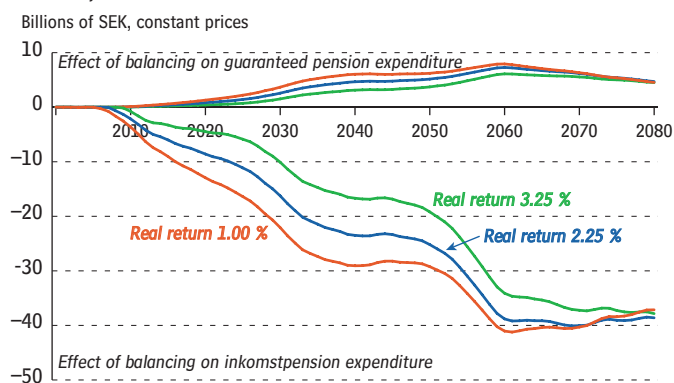
but it provides a larger contribution to financing pensions than in the base scenario since growth in average income is only 1 percent in the pessimistic scenario.

With an annual return of 3.25 percent, balancing is activated in 2012. If the return is 2.25 percent, it is activated in 2010. With a return of 1 percent, it is activated even earlier, in 2008, as previously noted. In all cases, the inkomstpension is lowered by a maximum of about 3.7 percent.

If balancing is activated, indexation is reduced, decreasing the pension level in relation to growth in average income. Through the design of the guaranteed pension, retirees with pensions of 0–1.26 price-related base amounts (0–1.14 for married persons) receive an unchanged disbursement since the guaranteed pension provides full compensation for the reduction in the inkomstpension caused by balancing. Through the guaranteed pension, individuals in the income bracket between 1.26 and 3.07 price-related base amounts (1.14–2.72 for married persons) receive compensation for 48 percent of any reduction in their earnings-related pensions from balancing. Other categories receive no compensation at all. Through the compensation provided by the guaranteed pension, the central government partly finances the reduction in

the inkomstpension resulting from a negative tendency. Thus, developments normally associated with economic contraction increase the element of income redistribution in the national pension system. The higher cost of the guaranteed pension is equivalent to a maximum of 20 percent of the saving by the pension system when balanced.

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



With the pension liability indexed by the growth in average income, it may seem unnecessary to vary the growth in average income in the scenarios, the reason being that the inkomstpension system is designed 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 financial position, that is the balance ratio, of the inkomstpension system will initially be affected by the growth in average income. Moreover, the relationship between the increase in average income and the return on the buffer fund is significant for the financial development of the inkomstpension system. The relationship of the rate of return to growth in average income also affects pension levels via the premium pension. In each of the three scenarios, the buffer

fund contributes to a different extent to financing the inkomstpension. In the base scenario, the return on the buffer fund exceeds growth in average income by 1.25 percentage points (3.25–2.0). In the optimistic scenario, the rate of return is 2.2 percentage points higher than growth in average income. In the pessimistic scenario, the two rates are equal.

## Special Feature Article: Pensions of the Generation Born in the 1940's

### – How great is the need for private retirement saving?

According to surveys, nearly half of the people born in the 1940's respond that they have no idea how large their national and negotiated pensions will be. At the same time, a majority of those interviewed have taken steps to improve their financial security in old age, in the form of private pension insurance, bank savings, or saving in shares and investment funds.<sup>24</sup> This year's special feature article presents a general picture of the total pension wealth of people born in the 1940's – and on this basis estimates their need for private pension saving. The pension situation of the generation born in the 1940's is interesting for several reasons. These individuals are approaching retirement, and they also belong to birth cohorts that are especially large. The consequences of their behavior are thus important to society as a whole.

This discussion begins by analyzing the various forms of pension wealth held by individuals. In the analysis of the situation for individuals after retirement, consideration is given to pension wealth in the national old-age pension system, negotiated pension schemes, and financial and real assets. Estimated saving requirements are then shown; these are based on the assumption that people seek to maintain the same income standard after retirement as before. Finally, several issues for the economy in general are discussed on the basis of the findings presented.

### Summary

According to the survey, only one fifth of those born in the 1940's need to save for their pensions, given the income target in this article. The "Income Target" on which the calculations are based is equivalent to the individual's average earned income during her/his economically active years. The persons who need to save are primarily those with fewer than 30 years of work and those with a relatively high proportion of debt. The need for private saving is estimated to average 5 percent of these individuals annual income.

For the remaining four fifths of the persons studied, projected pension wealth is more than enough to meet the income target. Salaried employees

<sup>24</sup> Skandia's Seniorbarometer/Temo Survey (in Swedish), September–October 2003, Pensionsforum's Pensionsbarometern/Sifo Survey (in Swedish), September–October 2003.

#### *Method of Calculating Future Pension Wealth*

Calculations have been performed for a sample of some 4 600 individuals born in 1940–1949 (0.4 percent of all persons in this age group) who had positive earned income in 1999 and who were not self-employed or receiving sickness and activity compensation. The data for individuals have been provided by the LINDA and HEK databases.

The LINDA (short for Longitudinal Income Database) is based on a simple random sample of 300 000 individuals (approximately 3 %) taken from persons registered in the tax database of the Swedish National Tax Board. The persons in the sample form a panel that is tracked both backwards and forwards in time. The data for the LINDA have been obtained from sources that include the annual records of total income and

taxation statistics, the records of the total population, the population and housing census, university records, and the National Social Insurance Agency. For every individual, the LINDA contains information on earned income, business income, income from capital, taxable/non-taxable transfer payments received, taxes, etc. LINDA records also include a number of derived variables at the individual level, such as disposable income, earned income, factor income, and total labor-market benefits.

The HEK database is a sample-based survey conducted each year. Beginning with the year 2000, it covers 15 000 individuals (households) who at any time during the year under study were included in the national population registry. The Registry of the Total Population (RTB) is used as the sampling frame. Data are obtained through telephone interviews and collection of data

and owners of detached or tenant-owned homes in major urban areas constitute the category with the highest average “oversaving”. These individuals have a financial margin that would allow them to reduce their saving by 5 to 10 percent of annual income, assuming that the income target is consistent with their personal preferences. If home ownership is excluded from the calculations, the “oversaving” disappears, and the estimated saving requirement is then 0 to 2 percent of annual income.

It is difficult, however, to anticipate the current saving needs of future pensioners; these needs depend on the unique life situation of the individual. Factors relevant to saving requirements may include health status, expectations about future medical care and care of the elderly, or a wish to leave assets to the next generation. In addition, the distribution of income over a person’s active years may affect the desired level of pension income. The higher an individual’s income in the final years of work compared to average lifetime income, the higher the pension that he/she will probably want.

The withdrawal of pensions by persons born in the 1940’s – i. e., the realization of their pension wealth – will affect aggregate household consumption and saving in the economy. For people of this generation, a significant proportion of their total pension wealth is in the form of home ownership. If a sizable proportion of them choose to realize these assets, there could be repercussions on prices. And there is a further danger: as persons born in the 1940’s retire, the total number employed may decrease. Such a tendency would limit economic growth and burden the economy, including the public sector. In the pay-as-you-go portion of the national pension system, there would be a heightened risk of automatic balancing that would reduce the indexation of pensions and pension credit. To relieve the strain on the economy when the large birth cohorts of the 1940’s retire, there must be financial incentives for older persons to continue working, and demand for their labor.

### Projection for the National Old Age Pension

The pension wealth of individuals in the national old-age pension system evens out differences in the income of men and women before and after retirement. This effect is primarily a consequence of two factors. One is the ceiling of on pension-qualifying income in the pension system: 7.5 income-related base amounts. The other is the guaranteed pension, which provides a supplement for individuals with little or no earnings-related pension.

One consequence of these equalizing elements is that women receive a higher return on their contributions to the pension system even though their average pension is lower than that of men.<sup>25</sup>

<sup>25</sup> Ståhlberg A.-C., Cohem-Birman M, Kruse A., Sundén A., (2004).

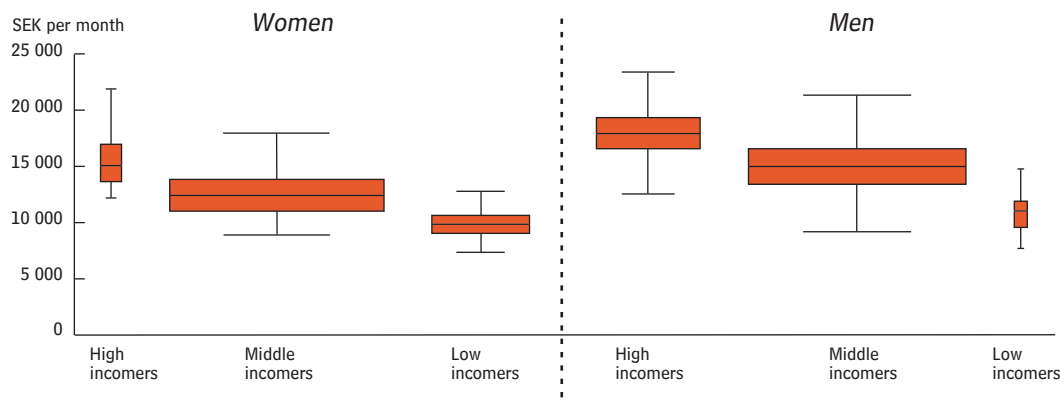
from administrative records. The purpose of the database is to determine the distribution of disposable income among different households and to show the structure of income. Survey data are available for 1975, 1978, and 1980–2000. Beginning with the study in 2000, it has been possible to follow the individuals in the sample and their households over several years.

A microsimulation model is used to estimate future pension wealth in the form of the national old-age pension and any negotiated pensions. It is of course impossible to make accurate predictions of the future development of earnings, labor supply, and rates of return on the different types of pension wealth, particularly at the individual level. However, based on income history and statistical assumptions about the future growth in the value of the different types of pension wealth, a picture of

the financial situation of individuals at age 65 has been generated. Both actual and estimated income data have been used in the projection of future pension benefits. The actual data are for earned income for 1960–1999, while the data for pension-qualifying income from 1999 until retirement have been estimated. The older birth cohorts of the 1940’s will be reaching 65 in the next few years, while the youngest members have 10 years left until retirement. Thus, very few years of future pension credit need be estimated for the oldest individuals. With the aid of a regression model, the future development of earnings is estimated for the period until retirement. Consideration is given to factors like individual earnings history, education, gender, age, and certain socio-economic parameters. The earnings curve, for instance, shows a declining tendency as

### Projection of Monthly National Old Age Pension

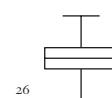
Distribution Statistics for Women and Men with 30 or More ATP Years. 2004 price levels



Sources: Data from HEK and LINDA and own calculations

The figure<sup>26</sup> above presents the pension projection for men and women with 30 or more ATP years<sup>27</sup> in three different income groups.

The width of the boxes reflects the proportion of persons in the category shown in relation to the total number of persons in all categories. It is apparent that many more men than women are found in the group with high incomes. Approximately 30 percent of the men and 6 percent of the women in the analysis belonged to the category with an average of 6.5 pension points (the maximum annual pension credit in the ATP system). Forecast monthly disbursements from the old-age pension system to these individuals were SEK 14 000 to 17 000 for women and SEK 17 000 to 19 000 for men. The disparity between men and women in this group is due to the differences between them in the proportion of pensions based on the new system, and in the amount of pension credit earned through 1994. Among persons with the maximum number of ATP points, there are more younger women born in the 1940's; this can mean lower monthly income replacement for individuals whose average income for their 15 best years is not representative of their overall lifetime income. For persons born in the 1940's, between 25 and 70 percent of their old-age pensions will be calculated according to the ATP rules. There is also a special guarantee (the G94 Rule) of an earnings-related pension at least as great as the folkpension plus ATP pension that the individual would have received under the old rules on the basis of pension credit earned through 1994. The G94 Rule primarily benefits individuals who have had their best income years and worked for 30 years prior to 1994. Persons born in the first half of the 1940's were 50 years of



<sup>26</sup>

In the distribution diagram, the minimum value is marked by the lowest horizontal line, the maximum value by the uppermost line. The line across the box marks the median, and the box itself the 25th and 75th percentiles, respectively (50 percent of the observations in each group lie within these percentiles).

<sup>27</sup> Approximately 2 percent of the men and 9 percent of the women in the sample have fewer than 30 years of ATP points. For these individuals, the ATP and folkpension are reduced according to the proportion by which the number of economically active years is less than 30. The average monthly pension of these individuals is between SEK 7 000 and 11 000 for women and between SEK 7 000 and 13 000 for men.

retirement approaches. From the earnings profiles created, total pension capital is projected for the national old-age pension and any occupational pension. First the annual pensions of individuals are calculated. The next step is to transform the annual pension into total pension capital with the aid of longevity forecasts (with assumptions about mortality based on the population forecasts of Statistics Sweden) for men and women, respectively, in each birth cohort. In other words, in the calculation of total pension capital, consideration is given to the expectation that pensions will be disbursed over a longer period to women than to men. Note that in the reformed pension system, a gender-neutral annuity divisor is used in computing the amount of the annual pension, resulting in a "redistribution" of pension wealth from men to women.

Individual assets (both financial and real) are projected until the time of retirement, starting with the individual's position in 1997. For purposes of this projection, several assumptions are made. Beginning with 1998 and until 2004, actual average levels are used for the development of asset prices, inflation, and other factors. From 2004 to the year of retirement, the (real) income index is assumed to increase by 1.6 percent per year, inflation to be 2 percent per year, the average real return on stock-market investments to be 3.25 percent per year, and the real rate of interest and the return on real assets (owned and tenant-owned homes) to be 2 percent per year. Future repayment of debt principal is based on average levels of principal repayment for individuals in each wealth decile.

age or older in 1994; many of them were at the peak of their earnings career. The pension amounts calculated by the G94 Rule are of interest primarily to men in the highest deciles. Women born in the 1940's have postponed their working years to a higher degree than men – for example, because of years spent caring for children – and are therefore less likely to have had their best income years before 1994. It is also less common for women to have accumulated 30 years of gainful employment by then.

Average income earners are defined as persons with an average income between 3.5 and 6.4 pension points for their 15 best years. Approximately 60 percent of the individuals in the analysis fall into this category. On average, men have higher earned incomes per month, a difference that is reflected in their monthly pensions. The monthly disbursement to income earners in this group is SEK 12 000–14 000 for women and SEK 14 000–17 000 for men.

Low-income earners are defined as individuals with average earnings below 3.5 base amounts for their 15 best years. Approximately 5 percent of the men and 33 percent of the women in the study belong to this group. The average monthly pension for this group is about SEK 10 000, of which a relatively high proportion is provided by the guaranteed pension. Note that neither the housing supplement to pensioners nor the income-support allowance for the elderly is included in the calculations; as a result, the monthly income of those with the lowest old-age pensions has been underestimated.

### Projection for Occupational Pensions

In addition to the national old-age pension, most economically active persons in Sweden are also entitled to a negotiated pension. Employees in the private sector (separate pension plans for white-collar workers and blue-collar workers) and employees of the central, municipal, and county governments are covered by provisions for negotiated pensions.

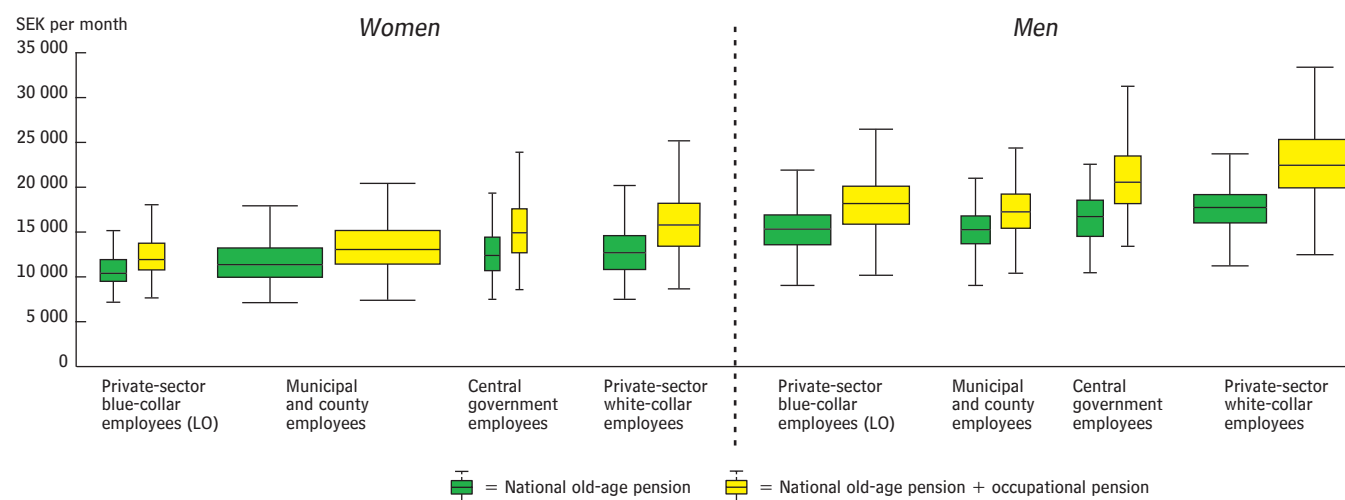
For the persons included in the analysis, there are data on union membership for 74 percent; this information, together with data on occupation, is used to determine the collective-bargaining sector to which the individual belongs. The national old-age pensions and the total of the national and occupational pensions for this group are presented on the following page. From this presentation it is apparent, for instance, that both the level of benefits and their distribution between men and women differ from one collective-bargaining sector to another. In most sectors, employees receive credit toward a negotiated pension for incomes up to 30 base amounts, a level considerably higher than the ceiling of 7.5 income-related base amounts in the national pension system. Thus, gender-related differences in income result in higher average negotiated pensions for men than for women.

The width of the boxes shows that the occupational pension for municipal and county employees is by far the most common form for women. Under the old rules, the negotiated pension for municipal employees was co-ordinated with the national old-age pension. A new agreement effective in 1998 provides for successive transition to a defined-contribution old-age pension, with a premium of about 1.1 percent of earnings up to 30 base amounts.<sup>28</sup> Most men in the study are blue-collar workers (members of the Swedish Trade Union Confederation (LO)) or are white-collar workers in the private sector. LO members are covered by the agreement between LO and the Swedish Employers' Confederation (SAF), where the rules have also been changed to provide for defined-contribution pensions. As with the national old-age pension system, the new rules are being phased in; under transitional provisions, individuals are entitled to a negotiated defined-benefit pension under the old system (STP) based on earnings through 1995.

<sup>28</sup> From 2000 on, municipal and county council employees have been covered by a new agreement on negotiated pensions. The full premium is 4.5 percent for municipal employees and 3.5 percent for county council employees. Of this premium, employees may invest 1.1 percent themselves. This group also has a negotiated pension in the form of a benefit-defined pension supplement for employees earning more than 7.5 base amounts; the benefit is equivalent to some 65 percent of income above the ceiling on pension-qualifying earnings.

## National Old Age Pension and Occupational Pensions

2004 price levels



Sources: Data from HEK and LINDA as well as own calculations

The disparity in old-age pensions between men and women, as well as between different collective-bargaining sectors, is due to differences in the number of working years, in income, and in the design of the transitional provisions. For women, the median old-age pension is about the same in all collective-bargaining sectors, or roughly SEK 11 000 – somewhat higher for central government employees and salaried employees in the private sector. For men, there are greater differences between collective-bargaining sectors, mainly because the guaranteed pension constitutes a smaller proportion of their total pension.

Negotiated pensions add 10–15 percent to estimated monthly pensions, the largest increase being for white collar workers. The span between pensions is greatest for private-sector white-collar employees, for whom negotiated pensions can reach SEK 35 000 per month. The reason is that the pension benefits of this collective-bargaining group depend on final earnings, with earnings capped at 30 base amounts, or about SEK 100 000 per month.<sup>29</sup> The same applies to central government employees, with the difference that the pension benefit is based on the average earnings of the final five years. However, the system was reformed in 2003 to provide for successive transition to a defined-contribution system with a contribution premium of 2.3 percent of earnings below the ceiling on pension-qualifying income. On the other hand, the current rules for a defined-benefit pension still apply in principle to income above the ceiling. There are also provisions for supplementary defined-contribution pensions – the ITPK (Supplementary Pension for Employees in Industry and Commerce) for private-sector white-collar employees and Kåpan (Supplementary Old Age Pension) for central government employees. For these pensions, contributions are 2 percent of earnings and are invested as the insured sees fit.

<sup>29</sup> The negotiated pension scheme provides a pension benefit of about 10 percent of final earnings up to 7.5 base amounts. On the portion of income between 7.5 and 20 base amounts, the pension benefit is 65 percent, and on the portion between 20 and 30 base amounts, the benefit is 32.5 percent.



## Projections of Financial and Real Assets

In this section, the value of any financial and real net assets is added to total pension wealth after retirement. By financial net assets is meant the sum of bank savings, investments in funds, listed shares, etc., less total debt aside from mortgage debt. Real net assets consist of the tax-assessment value of owner-occupied and tenant-owned homes less mortgage debt.

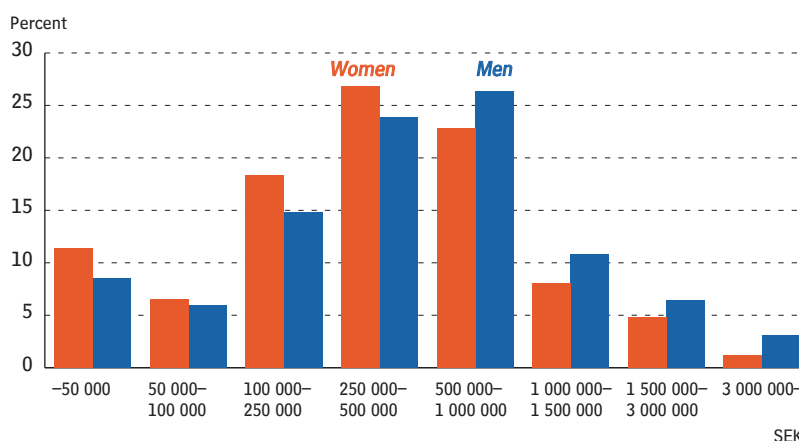
Financial net assets are owned by 65 percent of the women and 62 of the men in the survey. Some 89 percent of the men and 72 percent of the women have real net assets. For the majority of individuals, the projected value of their real assets is greater than SEK 500 000 at 2004 price levels, and that of their financial assets is roughly SEK 250 000. In the 1970's, when the birth cohorts of the 1940's were forming families, with many investing in detached houses, high inflation led to a relative decrease in residential loans. Generous tax provisions for deducting interest were another factor that made it attractive to invest in single-family homes. The deregulation of financial markets in the 1980's is probably one reason why the financial assets of the generation born in the 1940's are greater than those of older birth cohorts.

The wealthiest individuals are those owning real assets in major urban areas. Wealth per capita is almost SEK 500 000 higher for homeowners in Stockholm than for persons who have invested in real assets elsewhere in the country.<sup>30</sup>

<sup>30</sup> Andersson B., Berg L., Klevmarken A., (2001) – "Senior 2005".

### Value of Projected Financial Net Assets

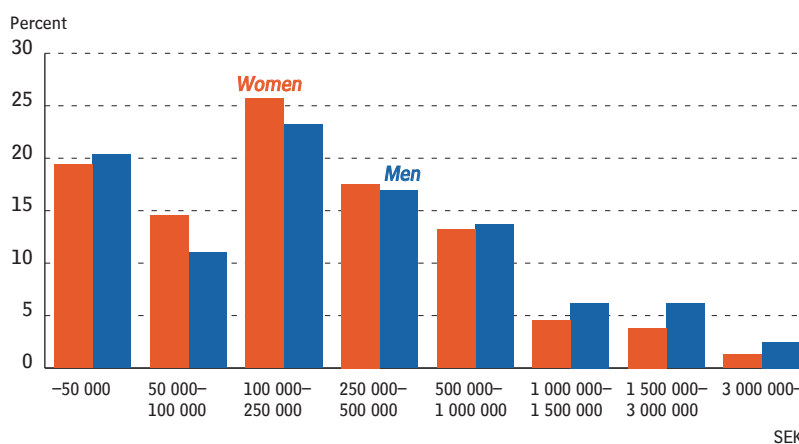
Different intervals for amount of financial net assets



Sources: Data from HEK and own calculations

### Value of Projected Real Net Assets

Different intervals for amount of real net assets



Sources: Data from HEK and own calculations

## Projections of Total Pension Wealth on Retirement

Total pension wealth after retirement is not evenly distributed between men and women; for the majority of women born in the 1940's, total pension wealth is between SEK 2 million and 3.5 million, equivalent to a lifetime monthly annuity<sup>31</sup> of about SEK 11 000–14 000. Pension capital in the national old-age pension system is the principal asset of most women; for the least wealthy, such assets account for 80–100 percent of total pension wealth after retirement.

For the majority of men, total pension wealth is between SEK 3 million and SEK 5 million, equivalent to a lifetime monthly annuity of SEK 15 000–25 000. Pension capital in the national old-age pension system is also by far the largest asset of most men. For men in the upper deciles, however, occupational pensions account for a larger proportion of total pension wealth than for women. The reasons are the differences in earnings between men and women and the fact that occupational pensions cover earnings above the ceiling in the national pension system.

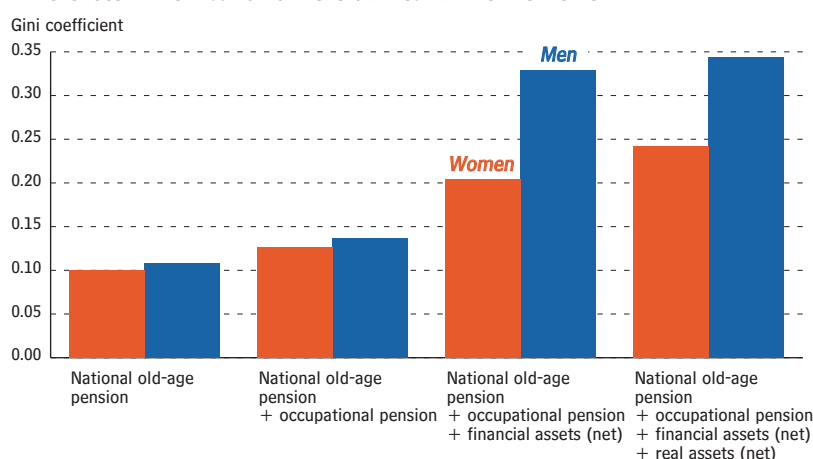
The Gini coefficient<sup>32</sup> is often used to express differences in the distribution of income and wealth. The co-efficient may assume a value between 0 and 1. It is zero when all individuals have equal incomes and one when the distribution of income is totally uneven, i. e. when a single individual receives all the income.

The Gini coefficient for income from the national old-age pension is 0.100 for women and 0.108 for men, reflecting a much more even distribution of income between genders than is the case with earned income prior to retirement. The more even distribution is due primarily to the ceiling on pension-qualifying income and to the guaranteed pension. One purpose of negotiated pensions is to compensate employees for the loss of income above the ceiling of 7.5 income-related base amounts. Occupational pensions thus contribute to a less even distribution of income. The variation in pension wealth increases dramatically when financial and real assets are included in the calculation of total pension wealth. The Gini coefficient rises to 0.242 for women and 0.344 for men when all forms of wealth are included in the calculations.

<sup>31</sup> The theoretical lifetime annuity is projected from total pension wealth; the level of the annuity is determined by the total value of pension wealth at the time of retirement, the gender-specific forecast of life expectancy, and the discounting rate. (equivalent to the "norm" of 1.6 percent in the pension system).

<sup>32</sup>  $Gini = \left( \frac{1}{2n^2 \bar{y}} \right) \sum_{i=1}^n \sum_{j=1}^n |y_i - y_j|$  where  $\bar{y} = \frac{1}{n} \sum_{i=1}^n y_i$  and  $y_i$  and  $y_j$  designates the income of the  $i$ th individual.

### Differences in Distribution of Pension Wealth After Retirement



Sources: Data from HEK and LINDA as well as own calculations

<sup>33</sup> This saving need is calculated as:

$$W^{req} - W^{p-proj} = sy_c \sum_{t=c}^{R-1} (1+g)^t (1+r)^{R-1-t}$$

where  $W^{req}$  is the required total pension wealth after retirement (based on the income norm less taxes and on assumed life expectancy after retirement);  $W^{p-proj}$  is the value of net assets projected to the time of retirement (assets in the form of the national old-age pension, any occupational pension, and net financial and real assets);  $s$  is the saving ratio, i. e., the proportion of income from and including the year of calculation (year  $c$ ) to the year of retirement (year  $R$ ) that must be saved to provide the income required after retirement;  $y_c$  is the individual's current income;  $g$  is the growth in the individual's earnings, and  $r$  is the discounting rate. For further information on calculations of saving and replacement ratios, see Andersson B., Lindh T., Röstberg A., (2005), *Simulating the Future Pension Wealth and Retirement Saving in Sweden*.

## Saving Needs and Replacement Rates

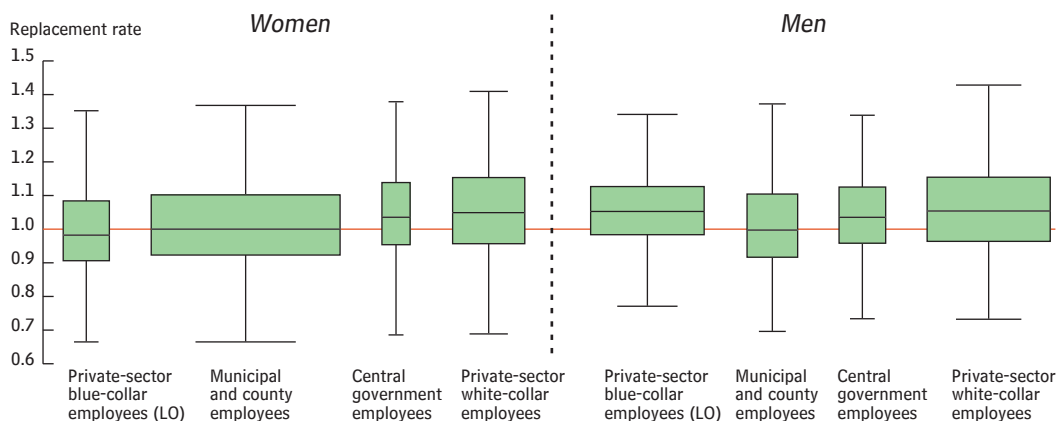
The need for saving from now until retirement can be calculated from an assumed target income after retirement based on the individual's average earned income during working life.<sup>33</sup> Individual decisions on consumption and saving from now until retirement are assumed to depend on the present value of expected future income, both earned income and income from capital.

The figure below shows replacement rates for men and women in different collective-bargaining sectors. The replacement rate is the ratio between a lifetime annuity calculated from the projected total pension wealth at retirement and the individual's average earnings during his/her working life.

A need for saving means that projected total pension wealth at retirement is less than the total pension wealth needed to provide the stipulated income required. A negative need for saving may be taken to indicate that the individual is overinsured in terms of the stipulated income requirement.

### Replacement Rates: Ratio of Projected Pension Wealth and the Income Requirement

Level of income after retirement (income requirement) equivalent to average earnings during working life

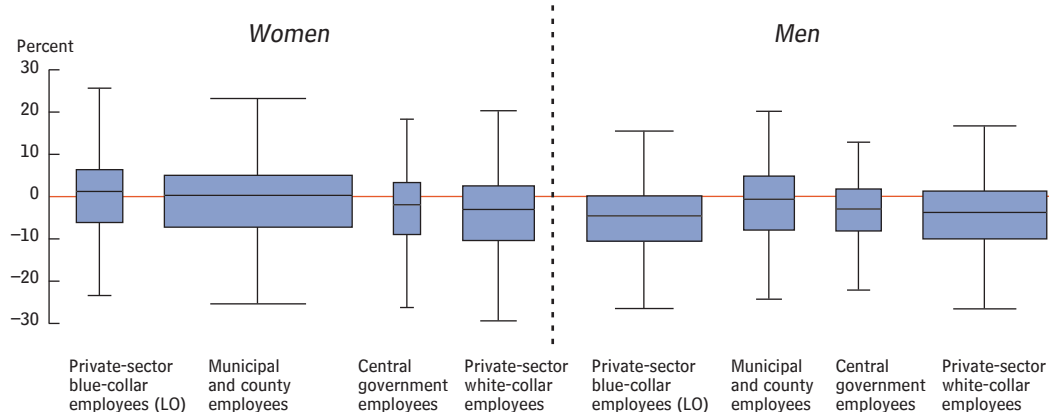


Sources: Data from HEK and LINDA as well as own calculations

For the majority of individuals in the study, the replacement rate was 100 percent or more of average earnings. Only one fifth of the individuals studied needed to save, given the income target used; for this group the average saving rate required is estimated at 5 percent of annual income. For the other four fifths, projected pension wealth is more than enough to meet the stipulated income target. The need for saving is estimated to be greatest for men and women in occupations with low pay, and above all for individuals with less than 30 years of working life. Since the calculations are for the pension wealth of individuals, not the aggregate pension wealth of households, individual home-makers may be found among those with the greatest need to save when household assets, such as owned homes, are registered with the individual's spouse. As a result, the need to save may be overestimated. Another group with a substantial need to save consists of persons with a relatively high proportion of financial and real debt.

### Estimated Need for Saving Given the Stipulated Income Requirement

Income required after retirement equal to average earnings during working life



Sources: Data from HEK and LINDA as well as own calculations

More men than women are estimated to need to save. The principal reason is that men on average earn more than women and therefore require higher incomes after retirement, whereas women usually have a higher rate of income replacement from the national old-age pension. Another factor is the lower degree of replacement for higher levels of income (20-30 base amounts) from occupational pensions, which are received by many more men than women. Individuals born in the early 1940's have the lowest estimated need to save, primarily because of their relatively higher defined-benefit pensions, both national and negotiated pension, and also because of their greater accumulated real and financial assets.

### Importance of Different Types of Pension Wealth

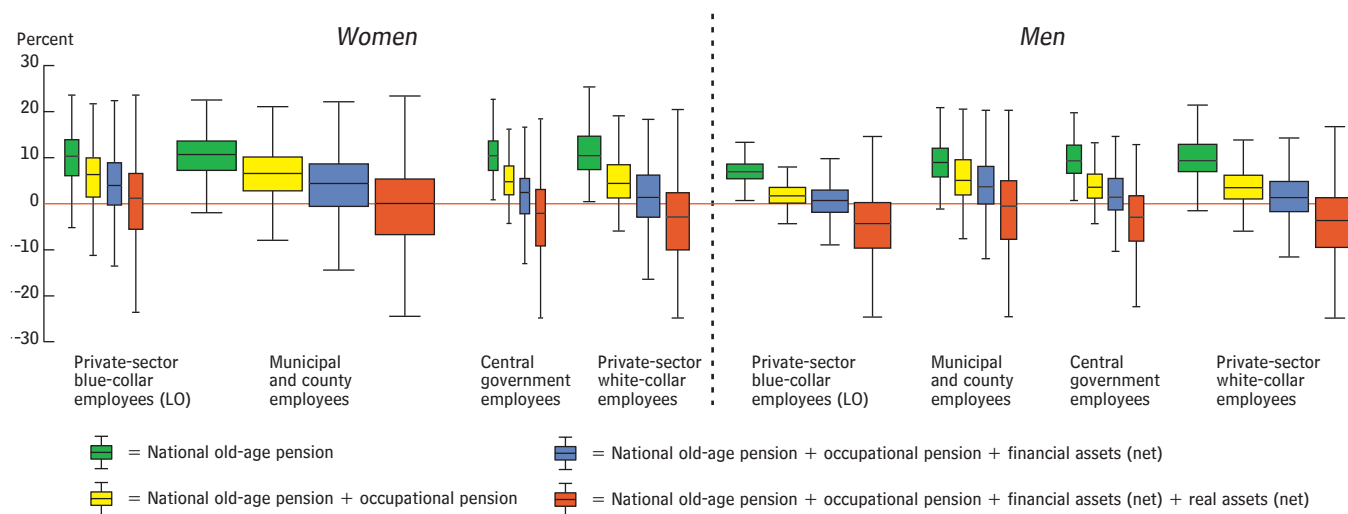
As previously noted, pension wealth varies considerably among individuals, and the differences are even greater when financial and real assets are considered. This situation is reflected in estimated saving and replacement rates.

The usual reason why projected total pension wealth after retirement exceeds 100 percent of asset needs is that financial and real assets are included in pension wealth. For individuals in all collective-bargaining sectors, the replacement rate decreases by about 10 percentage points when real assets are excluded from the calculations, and by a further 5 percentage points when financial assets are also omitted.

The figure on the following page shows the importance of different types of pension wealth in determining the estimated saving needs of men and women in different collective-bargaining sectors. According to the figure, real assets are the reason why estimated saving needs in most cases are either around zero or negative. If home ownership is excluded from the calculations, saving needs increase by about 3-4 percentage points for individuals in all collective-bargaining sectors.

White-collar employees and owners of detached or tenant-owned homes in major urban areas constitute the category with the highest average over-saving in relation to the income target. When home ownership is excluded from the calculations, the replacement rate decreases; the need for saving is then estimated at 0-2 percent of annual income.

## Importance of Different Types of Pension Wealth in Determining Estimated Saving Needs



Sources: Data from HEK and LINDA as well as own calculations

Average earned income, of course, is just an arbitrarily chosen measure of consumption needs after retirement, with no consideration given to factors like changes in consumption patterns after retirement, the state of a specific individual's health, uncertainty about one's future financial situation, or risk aversion. In addition, the distribution of income over an individual's working life may affect the desired level of income after retirement. Average earned income, however, is relevant for more individuals than final earnings, for example, since many choose to reduce their work hours in their final years of economic activity.

On the other hand, if the measure of required retirement income is the average of the individual's three best annual incomes in the ten years immediately preceding retirement, the replacement rate in most cases is 80–100 percent of the income used for comparison, or some 10 percentage points lower than in the previous calculations. For the majority of individuals, the estimated need for saving will then be 0–10 percent, with a median of 5 percent, for an increase of some 5 percentage points, relative to average earned income, in the required level of income after retirement.

### Economic Impact of the Retirement of the Cohorts of the 1940's

The distribution of pension wealth in Sweden shows certain clear patterns. The birth cohorts of the 1940's have more pension wealth than both older and younger cohorts.<sup>34</sup> This generation has benefited from the high growth and employment of the 1960's, as well as from economic conditions in more recent decades, with high inflation as well as interest subsidies for investment in home ownership and deregulation of financial markets. The disbursement of pensions to the cohorts of the 1940's – i. e., the realization of their pension capital – will have repercussions on household consumption and saving in the economy. What these effects will be, however, is hard to predict since the actions taken by future pensioners will depend on the unique life situation of each of them. Investment in home ownership is a form of retirement saving that is often overlooked. According to a study, more than one out of every four interviewed persons born in the 1940's intends to move to a smaller home after retiring. This aim was expressed particularly often by individuals living in major urban areas. Approximately six percent of all persons interviewed stated that they could consider moving permanently to their vacation homes.<sup>35</sup> In

<sup>34</sup> See, for example, Andersson B., Berg L., Klevmarken A. (2001).

<sup>35</sup> Skandia's Seniorbarometer/Temo Survey (in Swedish), September–October 2003.

other words, some real assets will probably be converted into liquidity that can be used for consumption after retirement.

Of the total pension wealth of the generation born in the 1940's, a considerable portion consists of real and financial assets. If these assets are realized, relative prices can be directly affected, thus impacting the distribution of wealth among retired members of these cohorts.

Aggregate household saving (net lending) and consumption are of importance for economic growth. Growth in turn affects the rate of indexation of pension capital in the reformed pension system. In times of low economic growth, the distribution of pension wealth among different generations becomes more skewed. In these circumstances, owing to defined-benefit elements of the national pension system during the period when transitional provisions are in effect, persons born in the 1940's will receive a relatively higher pension than those whose pensions are provided to a larger extent by the reformed system, where pension levels are linked to growth. Through automatic balancing, on the other hand, a decrease in the contribution asset, in combination with a relative increase in the pension liability, will have a direct negative impact on the pension wealth of all insured persons.

The design of the national old-age pension system will significantly affect the income distribution of future pensioners. In the ATP system the 15-30 year rule led to systematic redistribution of income from persons with many years of work and modest growth in real earnings over time to persons with a relatively short work careers and an uneven lifetime distribution of pension-qualifying income.<sup>36</sup> During a transitional period, the pension system to some degree will continue to overcompensate persons who have had high and sharply rising incomes, with few income years, at the expense of persons with low incomes.

Differences in benefit levels among various collective-bargaining sectors are reflected in the distribution of income between men and women. The majority of those receiving municipal service pensions are women in low-wage occupations, whereas the majority of salaried employees in the private sector are men. Moreover, the rules governing negotiated pensions permit employers to go beyond the limits of the normal pension agreements and offer individual employees pension packages with higher benefits and an earlier retirement age than in the basic agreement. This will in turn affect the contribution of seniors to labor supply.

According to the population forecasts of Statistics Sweden, the proportion of economically active persons is expected to decrease and the proportion of elderly persons to increase in coming decades. Consequently, as the birth cohorts of the 1940's retire, there is a danger that the number of persons employed will decrease, thus holding back economic growth. Such a tendency would be a burden on the economy, including the public sector. In the pay-as-you-go portion of the national pension system, there would be a greater risk that automatic balancing would reduce the indexation of pensions and pension credit.

The generation born in the 1940's represents a significant reserve of skilled and experienced labor. It is therefore important that there be financial incentives for older persons to continue working, as well as a demand for their services.

<sup>36</sup> SOU (Swedish Official Government Reports) 1994:22.

## List of Terms

in Swedish

### adjustment indexation

följsamhetsindexering

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

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

### annuity divisor\*

delningstal

a number that reflects the estimated remaining life span at retirement, taking into account an imputed “interest” rate on the pension to be paid. The divisors are the same for men and women. There are three kinds of divisors: divisors for the inkomstpension, divisors for the premium pension, and economic annuity divisors. The latter is used only for the inkomstpension.

In the calculation of the first annual inkomstpension, the individual’s pension balance is divided at the time of retirement by the annuity divisor for the inkomstpension. Because of the interest credited at 1.6 percent, the annuity divisor at the time of retirement is always less than the remaining average life span.

The annuity divisor for the premium pension is based on mortality forecasts and an imputed interest rate, which is currently 2.73 percent.

Economic annuity divisors are used in calculating the inkomstpension liability and are determined from pension-disbursement records. The formula for calculating economic annuity divisors is found in the Technical Appendix.

### ATP

tilläggs pension

the name of the pension benefit and system being phased out and replaced by the inkomstpension and premium pension. Persons born between 1938 and 1953 receive a certain number of twentieths of the earnings-related pension in the form of ATP- pension and the remaining twentieths in the form of inkomstpension and premium pension. The percentage allocation between the respective numbers of twentieths is determined by year of birth. The ATP portion of an individual’s ATP pension 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\* for unmarried pensioners and 78.5 percent for married pensioners. If a person has fewer than 30 years of pension points, the ATP pension is reduced accordingly.

### ATP credit

pensionspoäng

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

$$ATP \text{ credit} = \frac{PQI - HPBA}{HPBA}$$

where

PQI = pension-qualifying income

HPBA = higher price-related base amount\*

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

**automatic balancing**

automatisk balansering

method of ensuring via indexation of the pension liability for the inkomstpension (notional pension capital and current pensions) that the disbursements of the insurance system will not exceed its revenue in the long run. Balancing is activated if the balance ratio drops below 1, 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.

**average income**

snittinkomst

in this report, income as measured by the income index.

**balance index**

balansindex

when balancing is activated, pension capital and pensions are indexed according to the change in a balance index instead of the income index. Changes in the balance index are dependent on the change in the income index\* and the amount 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 can be considered equivalent to the consolidation ratio of 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.

**buffer fund**

buffertfond

absorbs interperiod discrepancies between pension contributions and pension expenditure in a pay-as-you-go system. The primary purpose of a buffer fund is to stabilize pension levels and/or pension contributions against economic and demographic fluctuations. 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

contributions to the national pension system paid by the central government for pension-qualifying social-insurance benefits (contribution rate 10.21 %) and pension qualifying amounts (contribution rate 18.5 %).

**compounding**

förräntning

in this report, synonymous with indexation.

**contribution asset**

avgiftstillgång

the value of the contributions to the inkomstpension. It is calculated by multiplying smoothed annual contribution revenue by smoothed turnover duration.

**contribution base**

avgiftsunderlag

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

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



**cost-of-administration factor**

förvaltningskostnadsfaktor

pension balances for the inkomstpension are reduced by costs of administration for the inkomstpension and ATP. This is done by deducting a percentage, a cost-of-administration factor,\* from pension balances.

**defined-benefit pension system**

förmånsfinansierat pensionssystem

pension system in which the insurer bears the financial risk of variations over time in mortality 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 size of a pension is specified in advance in terms of a certain amount or level, such as the level of final earnings or average earnings.

**defined-contribution pension system**

avgiftsfinansierat pensionssystem

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 of variations over time in mortality and the rate of return on the assets of the system. This means that the value of a pension can vary.

**earnings-related old-age pension**

inkomstgrundad ålderspension

inkomstpension, premium pension and ATP.

**fund strength**

fondstyrka

the monetary amount of the buffer fund at the end of a given year divided by the pension disbursements of 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 financing system in which premiums are set aside and saved in funds 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.

**guaranteed pension**

garantipension

provides basic retirement security for individuals with little or no earned income. The guaranteed pension is calculated as a supplement to the public earnings-related pension.

**guarantee rule/guaranteed supplement**

garantiregel/garantitillägg

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

**income index**

inkomstindex

the change in the income index shows the increase or decrease in the average income. For purposes of the income index, income consists of aggregate pension-qualifying income, including income in excess of the ceiling on pension-qualifying income, less 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 a supplement for inflation in the latest 12-month period until June. The incomes used are based partly on

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

an estimate. Adjustment for error in the estimate is made in the indices for subsequent years.

### 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 through 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 base amounts\*.

### inheritance gains

arvsvinst

the survivors' bonus, i.e. the pension balances or premium-pension capital of deceased persons, which is "inherited" by all insured survivors and distributed to them. 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\*. For the premium pension, inheritance gains are similarly allocated. The inheritance gain arising in the premium-pension system is termed "decedents' capital".

### 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 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 in the return on the buffer fund, in addition to the cost (gain) due to changes in average life span. 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.

### National Pension Funds

AP-fonderna

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 – the buffer fund.

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

**old-age pension contribution**

ålderspensionsavgift

paid by employers and by self-employed persons. The old-age pension contribution rate is 10.21 percent of total earnings. It should be noted that 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 system**

fördelningssystem

a pension system which does not require that the pension liability be backed 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 accurate in the case of a pay-as-you-go system with a buffer fund.

**pension balance**

pensionsbehållning

the total 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, up to a maximum of 7.5 income-related base amounts per year.

**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, equal to 18.5 percent of 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.

**pension liability**

pensionsskuld

in this report, the financial commitment of the pension system at the end of each year. The pension liability to economically active persons is calculated as the sum of the pension balances of all individuals. The pension liability to retired persons is calculated by multiplying the amount of the annual pension of each birth cohort by the economic annuity divisor for that cohort, which reflects the average remaining (economic) life expectancy of the cohort. Through 2017 a pension liability will also be calculated for the ATP credit earned by the economically active.

**pension-qualifying amount**

pensionsgrundande belopp

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

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

**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\*.

**premium pension**

premiepension

the portion of the income-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 according to the choice of the individual. The premium pension can be withdrawn as fund insurance or as a guaranteed monthly benefit from a conventional life-insurance policy.

**price-related base amount\***

prisbasbelopp

an amount used in the national pension system for purposes that include calculating the guaranteed pension as well as determining the pension-qualifying income equivalent to at least 42.3 percent of the price-related base amount\* for the year when pension credit is 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 change in asset value of the buffer fund and the premium-pension funds.

**the national public old-age pension**

den allmänna pensionen

the Swedish public old-age pension system. The national public old-age pension consists of the inkomstpension, the premium pension, and the guaranteed pension. In some cases, the inkomstpension also includes the ATP.

**turnover duration**

omsättningstid

the money-weighted expected time from the earning of pension credit until the disbursement of the inkomstpension. The average is weighted by pension credit and pension amounts. Turnover duration is calculated annually and is used for valuation of the contribution flow. The calculation of turnover duration is performed according to the same principle and method as the calculation of average life expectancy. Turnover duration depends on the provisions for earning pension credit and disbursement of pensions and on the age-patterns of labor-force participation and mortality in each age group.

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

# Technical Appendix: 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 National Social Insurance Board 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, $R$ , is calculated as

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

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, $ID$ ,

$$ID(t) = \frac{\sum_{i=16}^{\bar{R}(t)-1} \bar{E}_i(t) \times L_i(t) \times (\bar{R}(t) - i - 0.5)}{\sum_{i=16}^{\bar{R}(t)-1} \bar{E}_i(t) \times L_i(t)} \quad (3.1.1)$$

$$\bar{E}_i(t) = \frac{E_i(t)}{N_i(t)} + \frac{E_{i+1}(t)}{N_{i+1}(t)} \quad \text{for } i = 16, 17, \dots, \bar{R}(t) - 2 \quad (3.1.2)$$

$$\bar{E}_{\bar{R}(t)-1}(t) = \frac{E_{\bar{R}(t)-1}(t)}{N_{\bar{R}(t)-1}(t)} \quad (3.1.3)$$

$$L_i(t) = L_{i-1}(t) \times h_i(t) \quad \text{for } i = 17, 18, \dots, \bar{R}(t) - 1 \quad \text{where } L_{16}(t) = 1 \quad (3.1.4)$$

$$h_i(t) = \frac{N_i(t)}{N_{i-1}(t-1)} \quad \text{for } i = 17, 18, \dots, \bar{R}(t) - 1 \quad (3.1.5)$$

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  $i$

$N_i(t)$  = 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

$L_i(t)$  = 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,**

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

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

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

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,**

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

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

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

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

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  
12 December 2004

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## Your Pension Credit for 2003

For each year that you work, you earn more credit for your national old-age pension. Based on your pension-qualifying income (your annual earned income up to SEK 306 750 after deduction of your individual pension contribution) and any pension-qualifying amounts, the Swedish Social Insurance Agency has made the following determination:

New credit for the  
Inkomstpension in 2003

SEK 28 196

New credit for the  
Premium Pension in 2003

SEK 4 406

Your new pension credit is added to the credit that you have previously earned. For the current value of your previously earned pension credit, see page 2.

The Tax Authority has determined that your *pension-qualifying income* for 2003 are as follows:

Income from employment	SEK	162 974
Other earned income	SEK	4 618

The Swedish Social Insurance Agency has determined that your *pension-qualifying amounts* for 2003 are as follows:

Sickness and activity compensation	SEK	2 864
Compulsory national service	SEK	186
Studies	SEK	2 071
Child-care years	SEK	3 511

Your pension base (the total of your pension-qualifying income and pension-qualifying amounts) is: SEK 176 224

### Further information on our decision regarding your pension credit

On page 4 we explain our method of calculating your pension credit. There you will also find more information in case you have questions or wish to appeal this decision.



## The Swedish Pension System Annual Report 2004

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 2004 the total financial commitment of the pension system was SEK 6 244 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.