

ORANGE REPORT

Annual Report of the Swedish Pension System 2019

Swedish Pensions Agency

Stockholm 2020

Further information on the Swedish national public pension system is available at the Swedish Pensions Agency's website:
www.pensionsmyndigheten.se.

For information on the National Pension Funds, please see the websites of the respective funds:
www.ap1.se, www.ap2.se, www.ap3.se, www.ap4.se, www.ap6.se and www.ap7.se (premium pension).

We at the Swedish Pensions Agency thank our readers for their questions and views, which have helped enhance the quality of the Orange report.

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The graph on the cover shows the level of compensation for some typical cases: the size of the national income-based pension as a proportion of final salary for the birth cohorts of 1954-2020. Each column shows the result for a single year. The yellow and orange columns indicate the level of compensation for premium pension and inkomstpension respectively when pension is claimed at the expected target retirement age for each birth cohort. When the target retirement age is raised, the graph shows a higher level of compensation for inkomstpension and premium pension. After each increase, compensation for younger cohorts drops, because the target retirement age does not follow exactly the increase in average life expectancy. The grey columns show the degree of compensation at the alternative retirement age, the age giving the same level of compensation as for those born in 1930. The pension level for this birth cohort was 60 percent and corresponds to the first column in the graph (back cover). The compensation level decreases for younger birth cohorts even though the alternative retirement age follows exactly the increase in life expectancy. This is because return on premium pension has been higher than what is forecast for the future, giving older cohorts an advantage. Pension amounts are calculated using the Swedish Pension Authority's typical case model available at: www.pensionsmyndigheten.se/statistik-och-rapporter/pensionsmodellen/typfallsmodellen.

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New Challenges for the Swedish Pension System



Since the outbreak of Covid-19 we live in a different world. The economy and financial markets have been adversely affected and uncertainty about future economic growth is running high.

The Orange Report shows that the inkomstpension system at year-end had good margins and financial strength. Assets exceeded liabilities by about eight percent, or SEK 758 billion, at the end of 2019. The severe economic slowdown in Sweden and the world is likely, among other things, to mean lower employment, which will reduce the surplus in the Swedish pension system. Whether the impact will be so great that it turns the system surplus into a deficit and thus activates balancing ('putting on the brake') is hard to predict. Regardless of how the crisis affects the inkomstpension system, it is likely to adversely affect indexation of pensions at the turn of the year. The recalculation of inkomstpension is mainly

governed by growth in average income in Sweden, and this will certainly be weaker this year than previously forecast. If the Swedish stock market continues to decline, premium pension will be adjusted downward for most pensioners at year-end.

Early in the year, the Pension Group concluded a new agreement on a pension supplement of maximum SEK 600 for those with incomes between SEK 9,000 and SEK 17,000. The plan is to introduce the supplement in 2021.

New statutory and fund agreement requirements in the premium pension system have been introduced during the year, reducing the number of funds in the fund market. We have developed sustainability tools and indicators that make it easier for savers to select sustainable funds. A new investigation has recommended further changes to fund market procurement and suggested that the Seventh AP Fund should be given the assignment to procure funds and manage the fund market.

We face major changes in the national pension system in coming years which will require substantial investments in development and technology. Changes in occupational pension agreements are also under way. In the Orange Report we provide a picture of the national pension system today and tomorrow.

Daniel Barr
Director General, Swedish Pensions Agency

1 Results of the Pension System in Brief

Inkomstpension net income in 2019 was SEK 296 billion and the balance ratio was 1,0802, that is, assets exceeded liabilities by 8.02 percent or SEK 758 billion. The positive result was mainly due to an increase in AP Fund assets and to contribution assets increasing more than liabilities.

The value of pension savers' and pensioners' premium pension assets on December 31, 2019 amounted to SEK 1,462 billion, while the value in temporary administration was SEK 41 billion. The increase in value for fund insurance was 29.5 percent in 2019.

The two parts of the national income-based pension system

The national income-based pension system in Sweden consists of inkomstpension and premium pension. The inkomstpension and premium pension are defined-contribution, financially stable pension systems. Given this design, liabilities and assets normally change in equal measure; in other words, each year net income is more or less equal to zero. In principle, this is always true of the premium pension system, while inkomstpension allows substantial differences between liability and asset development from year to year, providing that accumulated deficits are not allowed to remain in the system. In this report, inkomstpension also includes ATP pension, which is a defined benefit scheme.

Inkomstpension

The inkomstpension system is a pay-as-you-go system, and pension contributions paid in are used to pay retirees in the same year. The surpluses or deficits that arise when pension contributions are greater or less than pension disbursements are absorbed by the buffer fund, i.e. First ½ Fourth National Pension Fund.

The assets of the system are the value of future pension contributions, referred to as the contribution asset, and the buffer fund. The contribution asset is calculated as follows: contribution revenues are multiplied by the expected average time that one krona will remain in the pension system, referred to as turnover duration.

The pension liability consists partly of a liability to the economically active and partly of a liability to retirees. The liability to the economically active is mainly the sum of the pension balances of everyone (the last row in the account statement of everyone's Orange Envelope). The pension liability to retirees is the expected total of all pensions paid to today's pensioners for the rest of their lives. The pension liability changes primarily with the annual indexation of pensions and pension account balances. Indexation is determined by the change in the average income in Sweden, in combination with the balance ratio in years when balancing is activated.

The result of the inkomstpension system is affected by numerous key economic and demographic factors. In the short run the development of employment is the most important factor, but the effect of the stock and bond markets on the buffer fund is also of significance, particularly in case of major changes. In the long run demographic factors are most important.

The result for 2019 was SEK 296 billion. Together with a capital surplus of SEK 463 billion from 2018, this yields a capital surplus of almost SEK 758 billion at the end of 2019. The result for the year is by definition due to assets increasing more than liabilities in 2019. Assets exceed liabilities by just over 8 percent. The system's balance ratio for the financial and calculation year 2019 is calculated at 1.0802. The system is not in a balancing period, and therefore the balance ratio will not affect the indexation of pensions and pension balance for the (balancing) year 2021.

Assets in 2019 increased over the year by 6.1 percent. Contribution assets increased by SEK 372 billion, or 4.5 percent. The turnover duration value changed by SEK 40 billion and the contribution revenue value by SEK 332 billion. The buffer fund, that is, the return on funded capital from the Firstâ€Fourth and Sixth AP Funds, increased by SEK 240 billion, or 17.4 percent . The return of SEK 240 billion was in relation to the initial fund value. The year 2019, like 2018, was a year when pension disbursements, fund expenses and administrative costs exceeded pension contributions in the inkomstpension system. The difference, primarily financial saving, produced a negative contribution of SEK 27 billion. Inkomstpension assets increased in total by SEK 585 billion.

Pension liability in 2019 increased by almost SEK 290 billion, or 3.2 percent. Liability recalculation, indexation, increased liability to the gainfully employed by SEK 269 billion, of which recalculation of liability to pensioners made up SEK 100 billion. Liability to pensioners is affected by changes in average life expectancy. Compared to 2018, the average expected payout duration (economic life expectancy) for a 65-year-old increased from 16.65 to 16.76 years, or by just over 42 days. The increased expected payout duration in itself meant that liability increased by SEK 32 billion.

Assets and Liabilities of the Inkomstpension System, Financial Years 2014–2019

billions of SEK

Calculation year	2014	2015	2016	2017	2018	2019
Balancing year	2016	2017	2018	2019	2020	2021
Buffer fund, mean value ¹	1,067					
Buffer fund	1,185	1,230	1,321	1,412	1,383	1,596
Contribution asset	7,380	7,457	7,737	7,984	8,244	8,616
Total assets	8,565	8,688	9,058	9,396	9,627	10,213
Pension liability	8,141	8,517	8,714	9,080	9,165	9,454
Surplus/Deficit	423	171	344	315	463	758
Balance ratio ²	1.0375					
Balance ratio ³	1.052	1.0201	1.0395	1.0347	1.0505	1.0802
Damped balance ratio		1.0067	1.0132	1.0116	1.0168	1.0267

1 Mean value of the fund as of December 31 for the past three years.

2 Previous definition of balance ratio (based on three-year average of the buffer fund's market value as of December 31 of each year)

3 Balance ratio (based solely on the buffer fund's market value as of December 31 each year, formerly called financial position)

Premium Pension

The premium pension system is a funded system where pension savers and pensioners themselves choose the funds in which to invest their premium pension moneys. The pension is disbursed from the proceeds of selling off accumulated capital. The assets consist of the investments in funds by pension savers and pensioners. The pension liability to the economically active and to retirees is related primarily to fund shares. Changes in the value of fund shares affect the assets of pension savers and pensioners in the system, directly and to an equal degree. With traditional insurance, the pension liability is the value of the remaining guaranteed disbursements. That value is calculated with assumptions about future return, life expectancy and operating costs. In the premium pension system all payments in and out of the system and all changes in value have in principle the same effect on system assets and liabilities. The positive result of the system belongs to pension savers and pensioners, and is invested in the consolidation fund as owner equity. The moneys in the consolidation fund for traditional insurance

with profit annuity are disbursed as a bonus rate in connection with pension disbursements. Moneys in the consolidation fund for fund insurance are deducted from the following year's contributions to cover operational costs.

The value of the premium pension assets of pension savers and pensioners on December 31, 2019 amounted to SEK 1,462 billion, while the value in temporary administration was SEK 41 billion. The increase in value for fund insurance was 29.5 percent.

Profit for the year 2019 amounted to SEK 5,556 million. The result for the entire insurance business improved by SEK 4,216 million. This is mainly explained by the positive return on capital in traditional insurance this year amounting to SEK 4,335 million, compared to 2018 when the return was SEK 37 million. The increase in value of other investment assets amounted to 1,351 million, which is an increase of SEK 1,351 million. Insurance benefit payments increased by SEK 232 million and amounted to SEK 1,432 million (1,200).

Fee charges in fund insurance decreased by SEK 298 million compared to the previous year because the initial premium pension amortization loan was fully paid off during 2018. A provision of approximately 30 million was made to pay the other party's legal costs in the Allra case. This provision burdened fund insurance in the form of increased operating costs.

Assets in 2019 increased by SEK 368 billion during the year. The change in insurance assets refers in principle to newly earned pension credit, positive change in value, allocated management fees and payment of pensions as mentioned above.

The pension liability in 2019 increased by SEK 368 billion. The change in pension liability refers principally to the same newly earned pension credit, positive change in value, allocated management fees and payment of pensions as mentioned above.

Assets and Liabilities of the Premium Pension System, 2014–2019

millions of SEK

	2014	2015	2016	2017	2018	2019
Fund insurance	761,156	841,332	962,304	1,113,510	1,105,809	1,461,732
Traditional insurance	18,091	20,784	26,029	30,745	35,240	46,431
In temporary management	32,899	34,260	36,034	37,478	39,120	40,886
Insurance assets	812,146	896,376	1,024,367	1,181,733	1,180,169	1,549,049
Pension liability	805,187	889,386	1,015,464	1,170,466	1,177,423	1,539,635
Net income/loss for the year	2,491	1,003	2,686	3,213	1,339	5,556

2 Income Statement and Balance Sheet

Inkomstpension, Income Statement and Balance Sheet

Income Statement

millions of SEK

	Note	2018	2019	Change
Change in fund assets		-28 777	213 223	242 000
Pension contributions	1	278 217	289 386	11 169
Pension disbursements	2	-304 444	-314 724	-10 280
Return on funded capital	3	-729	240 318	241 047
Costs of administration	4	-1 821	-1 757	64
Change in contribution asset		260 183	371 998	111 815
Value of change in contribution revenue	5	321 541	331 755	10 214
Value of change in turnover duration	6	-61 358	40 243	101 601
Change in pension liability ¹		-84 198	-289 576	-205 378
New pension credit	7	-275 472	-302 495	-27 023
Pension disbursements	2	304 439	314 724	10 285
Indexation	8	-131 520	-268 855	-137 335
Value of change in life expectancy	9	19 274	-31 559	-50 833
Inheritance gains arising	10	12 793	12 633	-160
Inheritance gains distributed	10	-15 446	-15 697	-251
Deduction for costs of administration	11	1 734	1 673	-61
Net income/-loss for the year		147 208	295 645	148 437

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

Balance sheet

millions of SEK

	Note	2018	2019	Change
Assets				
Fund assets	12	1,383,119	1,596,342	213,223
Contribution assets	13	8,244,218	8,616,216	371,998
Total Assets		9,627,337	10,212,558	585,221
Liabilities and results brought forward				
Closing results brought forward		462,685	758,330	295,645
Opening results brought forward		315,477	462,685	147,208
Net income/-loss for the year		147,208	295,645	148,437
Pension liability	14	9,164,652	9,454,228	289,576
Total Liabilities and results brought forward		9,627,337	10,212,558	585,221

Premium Pension, Income Statement and Balance Sheet

Income Statement

millions of SEK

	Note	2018	2019	Change
Change in fund assets		1,262	375,512	374,250
Pension contributions	1	44,584	45,140	556
Pension disbursements	15	-9,537	-10,942	-1,405
Return on funded capital	16	-33,275	341,911	375,186
Costs of administration	17	-510	-597	-87
Change in pension liability ¹		77	-369,956	-370,033
New pension credit	18	-44,584	-45,140	-556
Pension disbursements	15	9,537	10,942	1,405
Change in value	16	34,352	-336,233	-370,585
Inheritance gains arising	19	3,197	3,700	503
Inheritance gains distributed	19	-3,197	-3,700	-503
Deduction for costs of administration	20	772	474	-298
Net income/-loss for the year		1,339	5,556	4,217

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

Balance sheet

millions of SEK

	Note	2018	2019	Change
Assets				
Insurance assets	21	1,180,168	1,549,049	368,881
Fund insurance		1,105,809	1,461,732	355,923
Traditional insurance		35,240	46,431	11,191
Temporary management		39,120	40,886	1,767
Other assets	22	8,969	7,348	-1,621
Total Assets		1,189,138	1,556,397	367,260
Liabilities and results brought forward				
Closing results brought forward	23	11,715	16,762	5,047
Opening results brought forward ¹		10,376	11,206	835
Net income/-loss for the year		1,339	5,556	4,217
Liabilities		1,177,422	1,539,635	362,213
Pension liability	24	1,168,516	1,532,161	363,645
Other liabilities	25	8,906	7,474	-1,432
Total Liabilities and results brought forward		1,189,138	1,556,397	367,260

1 Opening results brought forward differs from Closing results brought forward last year, see Note 23.

Inkomstpension and Premium Pension, Income Statement and Balance Sheet

Income Statement

millions of SEK

	2018	2019	Change
Change in fund assets	-27,516	588,735	616,251
Pension contributions	322,801	334,526	11,725
Pension disbursements	-313,981	-325,666	-11,685
Return on funded capital	-34,005	582,229	616,234
Costs of administration	-2,331	-2,354	-23
Change in contribution asset	260,183	371,998	111,815
Value of the change in contribution revenue	321,541	331,755	10,214
Value of change in turnover duration	-61,358	40,243	101,601
Change in pension liability ¹	-84,121	-659,533	-575,412
New pension credit	-320,056	-347,635	-27,579
Pension disbursements	313,976	325,666	11,690
Indexation	-97,168	-605,088	-507,920
Value of the change in life expectancy	19,274	-31,559	-50,833
Inheritance gains arising	15,990	16,333	343
Inheritance gains distributed	-18,643	-19,397	-754
Deduction for costs of administration	2,506	2,147	-359
Net income/-loss for the year	148,546	301,200	152,654

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

Balance sheet

millions of SEK

	2018	2019	Change
Assets			
Fund assets	1,383,119	1,596,342	213,223
Insurance assets	1,180,168	1,549,049	368,881
Other assets	8,969	7,348	-1,621
Contribution assets	8,244,218	8,616,216	371,998
Total Assets	10,816,474	11,768,955	952,481
Liabilities and results brought forward			
Closing results brought forward	474,400	775,092	300,692
Opening results brought forward	325,853	473,891	148,043
Net income/-loss for the year	148,547	301,201	152,649
Liabilities	10,341,774	10,993,863	652,089
Pension liability	10,333,168	10,986,389	653,221
Other liabilities	8,606	7,474	-1,132
Total liabilities and results brought forward	10,816,474	11,768,955	952,481

3 Accounting Principles

The data on the financial position of the inkomstpension have been presented previously in the annual report of the Swedish Pensions Agency. Information concerning the premium pension has also been presented previously in the annual report of the Pensions Agency. The audit of the information in the balance sheet and income statement is performed in connection with the confirmation of the Pensions Agency's annual report. The Annual Report of the Swedish Pension System - the Orange Report - provides essentially the same information concerning income statement, balance sheet and notes as that published in the Swedish Pensions Agency's Annual Report. However, certain adjustments and simplifications of the information on the premium pension have been made to facilitate comparisons between the two systems.

Regulations and Guidelines

The Annual Report of the Pension System has been prepared in accordance with Chapter 55 § 4 of the Social Insurance Code (2010:110) on the Earnings Related Old Age Pension (SFB) and Regulation (2002:135) Annual Reporting of the Financial Position and Development of the Old-Age Pension System.

The income-related old-age pension system includes the benefits provided by the inkomstpension, the ATP and the premium pension.¹

The inkomstpension and the ATP are examples of benefits in a pay-as-you-go pension system. In such systems, contributions are not funded, but in principle are used directly to finance pension disbursements. The National Pension Funds are buffer funds that absorb differences between the inflow of contributions and the outflow of pensions. As elsewhere in the accounts, the term "inkomstpension" is used here in reference to the entire pay-as-you-go system; in other words, it often applies to the ATP as well. According to Chapter 58 § 14 SFB, the reported assets of the pay-as-you-go system consist of the contribution asset and the value of the assets of the First-Fourth and Sixth National Pension Funds. Formulas for calculating the contribution asset and the pension liability of the inkomstpension system are provided in the Regulations for Calculation of the Balance Ratio (2002:780). These formulas are also found in Appendix B.

The premium pension system is a fully funded pension system where contributions are invested and the proceeds of selling accumulated capital are used to pay pensions.

According to the Regulations for the Annual Report (2002:135), the Orange Report is to include a projection of the assumed long-term development of the pension system. See chapter 7 Three Scenarios for the Future of the Pension System.

The accounting principles of the National Pension Funds are set forth in their annual reports and are therefore not described in this report. The annual report of each national pension fund is available on the home page of the respective fund: www.ap1.se, www.ap2.se, www.ap3.se, www.ap4.se and www.ap6.se. As the annual report of the Swedish Pensions Agency describes the accounting principles used for the premium pension, these are only presented in summary form in this report.

¹The guaranteed pension, which is part of the national pension system, is not based on earnings and is therefore not included in the accounts.

Where Do the Figures Come From?

The accounting for the inkomstpension system is based on data from the records of the Swedish Pensions Agency on pension credit earned and pension disbursements, respectively.

In the Annual Report of the Swedish Pension System, information on the operations of the First-Fourth and Sixth National Pension Funds has been taken primarily from the annual reports of the respective funds.² The buffer funds prepare their annual reports according to the Law on National Pension Funds (2000:192). Furthermore, on the basis of applicable provisions for comparable financial companies, the funds have developed common principles for accounting and valuation.

In the Annual Report of the Swedish Pension System, information on the premium pension has been taken from the annual report of the Swedish Pensions Agency, which was prepared as provided in Regulation (2000:605) on Annual Reports and Supporting Documentation for Budgeting. Invested assets (and the corresponding liabilities) of the premium pension system have been valued according to the provisions of the Law (1995:1560) on Annual Reports of Insurance Companies and according to the regulations and general guidelines of the Swedish Financial Supervisory Authority for Annual Reports of Insurance Companies. The assets and liabilities of the premium pension systems are included in the consolidated balance sheet of the Swedish Pensions Agency, and the operations of the premium pension system are reported in a separate section of the income statement. Certain revisions, simplifications and consolidations have been made to facilitate comparison between the presentation and that of the inkomstpension.

Assets and liabilities included in the temporary management of pension contributions are reported in the annual report of the Swedish pension system as an insurance asset and pension liability. This is a deviation compared to the Swedish Pensions Agency annual report.

Reporting premium pension assets, liabilities and results has been simplified by reporting a net amount that is included in order to balance the balance sheet.

Principles for Valuation of Assets and Liabilities

The assets and liabilities are valued mainly on the basis of events and transactions that are verifiable at the time of valuation. For example, the fact that contribution revenue normally changes at the rate of economic growth is not considered in the calculation of the contribution asset. Nor is consideration given in the valuation of the pension liability to the fact that pension disbursements, through indexation and other factors, will change in the future.

Through the design of the inkomstpension, there is a strong link between the development of the system's assets and liabilities, respectively. When balancing is activated, there is basically an absolute link between the respective rates of change in liabilities and in assets.³

The way in which the assets and liabilities of the inkomstpension system are valued is based on the assumption that these will change at the same rate after each valuation. To put it another way, the method of valuation is based on the assumption that the system's future internal rate of return will be the same as the future change in the value of the pension liability, even though this is certain only if balancing is activated. When balancing is not activated, the internal rate of return may be either greater or less than the change in the value of the pension liability.

²The accounting of the inkomstpension system in the annual report of the Swedish Pensions Agency for 2019 is based on preliminary information in regard to the operations of the National Pension Funds.

³With the method for calculating turnover duration, there is an implied assumption that the size of the economically active population will remain constant. If the population decreases, there is consequently a risk that the accounts will (somewhat) overestimate the system's assets in relation to its liabilities. It is reasonable to take for granted, however, that the population decrease will end at some point. If events take this course, the underestimation, and the possible resulting deficit in the buffer fund, will be temporary. The buffer fund will in time return to a level of at least SEK zero.

The valuation of the contribution flow and the pension liability is based almost exclusively on conditions prevailing at the time of valuation. This is not due to any belief that all these factors will remain totally constant. Rather, the accounting is designed not to include changed conditions until the changes are reflected in the events and transactions on which the accounting is based.

Valuation of Inkomstpension Assets

The basis for valuation of the contribution asset is the size of the pension liability that the contribution revenue for the accounting year – i.e. paid-in pension contributions – could finance if the conditions prevailing at the time of valuation remained constant. The relevant determinants here, in addition to the rules of the pension system, are economic and demographic. The economic conditions consist of the average pension-qualifying income of each annual birth cohort and the sum of these incomes. The demographic factors relate to mortality at different ages. The relevant rules for the pension system are those that govern the calculation and the indexation of the inkomstpension, define the contribution and pension base and determine the contribution in percent. The contribution asset is calculated by multiplying the financial year's contribution revenue by the previous year's turnover duration.⁴ Turnover duration expresses how long it takes, on average, from the payment of SEK 1 in revenue into the system to the disbursement of a pension based on the pension credit arising at the time the pension credit was earned. Thus, turnover duration reflects the age difference between the average pension contributor and the average pensioner that would result if the economic, demographic and legal conditions were constant. If turnover duration increases it means the value of contribution flow increases and vice versa.

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

Valuation of Inkomstpension Liabilities

The liability of the inkomstpension to persons who have not begun to draw an old-age pension is valued as the sum of the pension balances of all insured persons. Income earned in the year covered by the accounts has not yet been confirmed at the time of the report. For this reason, an estimate of the inkomstpension credit earned in the year of the report is added to the sum of the pension balances of the insured. This added amount equals about three percent of the total pension liability. The difference between estimated and confirmed pension credit is deducted in the accounts for the following year.⁵

The pension liability to retirees is calculated by multiplying the pensions granted (annual amount) by the expected number of years for which the amount will be disbursed. The number of years is discounted in order to reflect the indexation of disbursed amounts by the increase in the income index or balance index with a reduction of 1.6 percentage points.⁶ The expected number of pay-out years is calculated from measurements of the pay-out period of pension amounts according to Swedish Pensions Agency's records and is expressed in terms of so-called economic annuity divisors.⁷ An average of the preceding three years' economic annuity divisor is used in the calculation of the pension liability. For more details, see the report "VER 2016-390 Payment Age and Economic Annuity Divisors". In the years for which a balance index has been established the liability to pensioners is multiplied by the damped balance ratio established for the year $t + 1$.⁸

⁴The calculation of turnover duration is described in Appendix B, Formula B.3.1.

⁵See Note 14, Table A.

⁶The recalculation of inkomstpension is made using the ratio between the new and old income index divided by 1,016. For those years when balancing is activated, the income index is replaced by the balance index.

⁷See formula B.7.5 in Appendix B.

⁸Since the balancing period ended in 2018, no balancing effect arose in the indexation between 2019 and 2020. For more details see VER 2018-99.

As of 2018, it is no longer possible to earn ATP pension. The ATP pension liability to those who have not yet begun to withdraw old-age pension can thus be calculated without assumptions concerning future economic and demographic developments. Starting this year, the liability is valued as if ATP pension as yet unclaimed had been claimed in December of the current reporting year. The liability is calculated by calculating a ATP pension amount for each individual, taking into account age, which is then multiplied by the number of years the amount is expected to be paid out (the economic annuity divisor). Parliament has decided that pension credit will be adjusted downward during the balancing periods (SFS 2014:1548). The value of pension credit for earning year 2018 has not been adjusted downwards because the balancing ended in 2018.

Valuation of Premium Pension Assets and Liabilities

Premium pension assets are reported at their true value, or accrued acquisition cost, according to the regulations and general guidelines of the Swedish Financial Supervisory Authority (FFFS 2009:12) on Annual Reports of Insurance Companies. Assets reported at their true value as of the balance sheet date are valued at their price on the last trading day of the year. In the valuation of assets reported at accrued acquisition cost, the difference between acquisition cost and redemption price is periodized as interest revenue for the time remaining to maturity.

Temporary management consists of pension contributions paid in periodically during the year in which pension credit is earned; these are transferred to the premium pension system when the pension credit for the year has been confirmed. Assets under temporary management are reported at their accrued acquisition value.

Fund insurance assets refer to pension savers' investment in funds and are reported at the redemption price for fund assets. The pension liability for fund insurance consists of fund insurance assets and of liquid assets not yet converted into fund shares. Traditional insurance assets are invested in equity and interest funds and are reported at their true value.

The pension liability for traditional insurance with profit annuity is determined for each insurance policy as the capital value of the remaining guaranteed disbursements. That value is calculated on assumptions about future returns, life expectancy and operating expenses. The return consists of an aggregation of the market interest rate on government bonds and guaranteed mortgage bonds of varying maturities. The market rate of interest is determined on the basis of the time remaining to maturity for guaranteed disbursements. The market valuation of the liability means that provisions set aside for life insurance are affected by changes in interest rates. Paid-in premiums are reported as lump-sum premiums and increase the guaranteed amount. Assumptions about life expectancy are based on Statistics Sweden's population forecast from 2015, where mortality has been reduced by 10 per cent in order to better match mortality observed in the Swedish Pensions Agency's stock. Operating expenses are assumed to be 0.1 percent of the insurance capital. Taken together, this means guaranteed commitments in traditional insurance have been valued carefully in accordance with established actuarial methods.

4 How the National Pension System Works

The principles of the inkomstpension and the premium pension are simple. A portion of your earnings each year is set aside in two different accounts. The pension is calculated on the basis of the amount of money you have in your account when you claim your pension, and how many more years you are expected to live from that point onwards. The purpose of this section is to provide those who so desire with somewhat more advanced knowledge than these elementary basic premises.

Almost Like Saving at the Bank ...

The national pension system works much like ordinary saving at the bank. The comparison applies to both earnings-related parts of the system, the inkomstpension and the premium pension. Each year pension contributions are paid by the insured, their employers and in certain cases the central government. Contributions are recorded as pension credit 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 statement sent out each year in the Orange Envelope enables the insured to watch their own inkomstpension and premium pension accounts develop from year to year. When the insured individual retires, the stream of payments is reversed, and the inkomstpension and premium pension are disbursed for the remaining lifetime of the insured.

... but Entirely a Form of Pension Insurance

With pension insurance savings are blocked; it is impossible to withdraw all or any part of them before the minimum age for receiving a pension. Inkomstpension and premium pension can be claimed first at age 61, but an increase to age 62 in 2020 has been announced.

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 deceased persons – so-called inheritance gains (see Appendix A) – are redistributed each year to the surviving insured in the same birth cohort. Also after pension withdrawal begins, assets are redistributed from those with shorter-than-average life spans to those who live longer. This is done by basing the monthly pension on average life expectancy but disbursing it for as long as the insured lives. Consequently, total pension disbursements to persons who live for a relatively short time after retirement are less than their pension savings, and those who live longer than average receive more than the value of their own pension savings.

The balance of an insured’s pension account consists of the sum of her/his pension credit (contributions), accrued interest and inheritance gains. A charge for administrative costs is deducted from the account each year.

One Krona of Pension Credit for Each Krona Contributed

The pension contribution is 18.5 percent of the pension base. The pension base consists of pension-qualifying income and pension-qualifying amounts. In addition to earnings, benefits from the social insurance and unemployment insurance systems are treated as income. Pension-qualifying amounts are a basis for calculating pension credit but are not income, properly speaking. Pension credit is granted

for pension-qualifying amounts for sickness and activity compensation (disability pension), years with small children (child-care years), and studies. Up until 2010, pension-qualifying amounts were also granted for compulsory national service. As of 2018 it can be received again when compulsory military service is reintroduced. The maximum pension base is 7.5 income-related base amounts (SEK 483 000 in 2019). Pension credit is earned at 16 percent of the pension base for the inkomstpension and 2.5 percent for the premium pension.¹

Who Pays the Contribution?

The insured pays an individual pension contribution to the national public pension of 7 percent of her/his earnings and any benefits received from the social insurance and/or unemployment insurance schemes. The contribution is paid on incomes up to 8.07 income-related base amounts² and is paid in together with the withholding tax on earnings. The individual pension contribution of 7 percent is not included in the pension base. Annual earnings are pension-qualifying when they exceed the minimum income for the obligation to file a tax return, which as from 2003 is 42.3 percent of the current price-related base amount.³ When an individual's income has exceeded this threshold, it is pension-qualifying from the first krona. One may also take the view that it is the state that pays the individual pension contribution, since individuals receive a tax deduction for it in their income tax return.

For each employee, employers pay a pension contribution of 10.21 percent of that individual's earnings.⁴ 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. They are therefore allocated to the central-government budget as tax revenue rather than to the pension system.⁵

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

The total pension contribution is thus 17.21 percent, whereas the pension credit and the pension contribution are 18.5 percent of the pension base. The reason for the difference is that the contribution base is reduced by the individual pension contribution of 7 percent when pension credit is calculated.⁶ This means that the maximum pension base is 93 percent of 8.07, or 7.5 income-related base amounts. The maximum pension credit in 2019 was SEK 89,355.

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.⁷ Each fund receives one fourth of contributions and finances one fourth of pension disbursements. The monthly

¹Pension credit for the premium pension may be transferred between spouses. Transferred capital is currently reduced by 6 percent, since more transfers are made to women than to men and women on average live longer than men.

²In 2019: $8.07 \times 62,500 = \text{SEK } 519,708$.

³In 2019: $0.423 \times 46,500 = \text{SEK } 19,670$.

⁴Self-employed persons pay a national pension contribution of 7 percent and self-employment charge of 10.21 percent.

⁵This tax was SEK 19.1 billion in 2019; see Note 1.

⁶ $0.1721 / 0.93 \approx 0.185$

⁷In addition there is the Sixth National Pension Fund, which is an asset in the inkomstpension system but provides no contributions and pays no pensions.

pension disbursements of the inkomstpension system thus come from the buffer funds. In principle, the same moneys that were paid in during the month are paid out in pensions to retirees.

The moneys allocated to the premium pension, 2.5 percent of the pension base, are invested in interest-bearing assets until the final tax settlement. Only then can it be determined how much pension credit for the premium pension has been earned by each insured. When pension credit has been confirmed, shares are purchased in the funds chosen by the insured. For those who have not chosen a fund, their moneys will be invested in the Seventh National Pension Fund, AP7 Sjöfa, the government pension management alternative based on birth cohorts, which has a generation-fund profile. At the turn of the year 2019/2020, there were 483 funds in the premium pension system, administered by 70 different fund management companies. With each disbursement of pensions, enough fund shares are sold to provide the monthly amount.

Funds in the Premium Pension System in 2019 and Capital Managed 2015–2019

December 31, billions of SEK

	Number of registered funds 2019	Managed capital				
		2015	2016	2017	2018	2019
Equity funds	341	347	388	441	407	517
Mixed funds	38	67	69	70	66	69
Generation funds	29	128	147	166	167	209
Interest funds	74	25	127	26	30	31
AP7 Sjöfa/Premium Savings Fund	1	272	328	407	433	632
Total	483	839	959	1,110	1,103	1,458

Interest on Contributions That Gave Rise to Pension Credit

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

Thus, the interest earned on pension credit depends on the development of different variables in the general economy. The inkomstpension account earns interest at the rate of increase in incomes – in the price of labour, to put it another way. The development of the premium pension account follows the tendency on financial markets, which among other things reflects the price of capital. Neither of these rates of interest is guaranteed; they may even be negative. Through apportionment of contributions to separate subsystems where the rate of return depends on somewhat differing circumstances, risks are spread to some extent. The average return of the inkomstpension system (income-/balance index) has been 3.1 percent since 1995.⁸ During the same period, the Premium Pension system has generated an annual rate of return of 7.7 percent.

A Rate of Interest Other Than the Income Index – Balancing

Under certain demographic and economic conditions, it is not possible to earn interest on the inkomstpension account and the inkomstpension at a rate equal to the growth in average income and at the same time to finance payments of the inkomstpension with a fixed contribution. In order to maintain

⁸Capital-weighted return. For further information, see the chapter Changes in the Value of the Pension System, section on measures of change in value in the premium pension system.

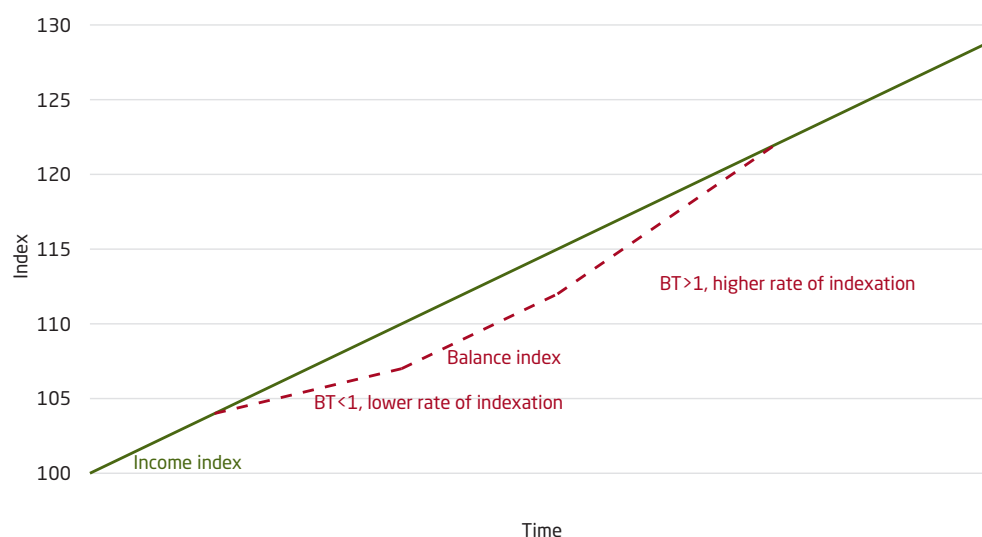
the contribution rate at 16 percent, income indexation must be suspended in such a situation. This is done by activation of balancing.

The assets of the system divided by the pension liability provides a measure of its financial position, a ratio referred to as the balance ratio (balanstalet, BT). If the balance ratio is greater than the number one, assets exceed liabilities. If the balance ratio is less than one, liabilities exceed assets, and balancing is activated. When balancing is activated, pension balances and pensions are indexed by the change in a balance index instead of the change in the income index. The change in the balance index is determined by the change in the income index and the size of the balance ratio.

An example: If the balance ratio falls below 1.0000 to 0.9900 while the income index increases from 100.00 to 104.00 the damped balance ratio is first calculated according to: $\frac{0.9900-1}{3} + 1 = 0.9967$.⁹ By multiplying the income index (104.00) by the damped balance ratio (0.9967) the balance index 103.66 is obtained. The indexation of pension balances is thus 3.66 instead of 4 percent.¹⁰ Indexation of pensions is reduced to the same extent.

If the balance ratio exceeds 1.0000 during a period when balancing is activated, pension balances and pensions will be indexed at a rate higher than the increase in the income index. When the balance index reaches the income index level, balancing is turned off. Pensions then regain the value they would have had if they had been indexed using the income index alone. The system returns to indexing based solely on changes in the income index. A schematic description is given in Figure 4.1.

Figure 4.1 Balancing – Concept description



BT Balance ratio

Pensions Reduced by Costs of Administration

The costs of administering the inkomstpension are deducted annually from pension balances through multiplication of these balances by an administrative cost factor (see Appendix A). This deduction is made only until the insured begins to draw a pension. At current cost levels, the deduction for costs will

⁹The balance index for the year 2017 and later will be calculated using the damped balance ratio (SFS:676). See also Appendix B.

¹⁰Next year's balance index is calculated by multiplying the balance index (103.66) by the change in the income index, multiplied by the damped balance ratio. See Appendix A.

reduce the inkomstpension by approximately 1 percent compared to what it would have been without the deduction.

Similarly, the costs of administration and fund management in the premium pension system are deducted from premium pension capital. In this case, however, the deduction continues to be made after the insured begins to draw a pension. On average, the cost was 0.23 percent of premium pension capital in 2019. At this level of costs, the deduction for administrative costs will reduce the premium pension by an average of about 8 percent from what it would have been without any cost deduction. In order to reduce the costs of pension savers, capital managers associated with the premium pension system are required to grant a rebate on the ordinary expenses of the funds. The rebates to pension savers in 2019 are equivalent to a reduction in fund management fees of about 0.34 percentage points. Without the rebates, pensions would be approximately 12 percent lower.

How is the Inkomstpension Calculated?

The inkomstpension is calculated by dividing the balance of the inkomstpension account by an annuity divisor (see Appendix A) at the time of retirement. The annuity divisors are specific to each cohort and reflect partly the remaining life expectancy at the age pension is drawn and partly an advance interest of 1.6 percent. Remaining life expectancy is an average for men and women. The advance interest of 1.6 percent makes the annuity divisor lower than average life expectancy and thus initial pension is higher than it would have been without the interest.

An example: a person who retires at age 65 has a remaining life expectancy of about 20 years. The advance interest of 1.6 percent causes the annuity divisor to drop to 16.99. If the person has SEK 3 million in their inkomstpension account, the person receives SEK 176,600 per year (3 million/16.99) in inkomstpension or SEK 14,715 per month.

The inkomstpension is recalculated annually according to the change in the income index after deducting the advance interest of 1.6 percentage points credited in the annuity divisor, so-called adjustment indexation.¹¹ This means that if the income index increases by exactly 1.6 percent more than inflation, as measured by the Consumer Price Index, pensions will increase at exactly the same rate as inflation. If the income index increases by more than 1.6 percent above the inflation rate, pensions will rise in constant prices, and vice versa. When balancing is activated, the income index is replaced by the balance index when pensions are recalculated.

How Is the Premium Pension Calculated?

The premium pension can be drawn either as traditional insurance with profit annuity or fund insurance. In both forms of insurance, the value of the pension account is divided by an annuity divisor, in the same way as with the inkomstpension. But for the premium pension, unlike the inkomstpension, the annuity divisor is based on forecasts of future life expectancy. The advance rate is currently 1.65 percent in both fund insurance and traditional insurance, after a cost deduction of 0.1 percent.

Drawing premium pension in the form of traditional insurance means that the pension is calculated as a lifetime guaranteed nominal monthly amount and an additional amount varying in size from year to year. In the event of a transition to traditional insurance, the insured's fund shares are sold and the Swedish Pensions Agency assumes responsibility for the management of the assets.

Fund insurance means that the pension savings remain in the premium pension funds chosen by the insured. With fund insurance, the amount of the premium pension is recalculated once each year based on the value of fund shares in December. Each month, a sufficient number of fund shares are sold to finance payment of the calculated premium pension. If the value of the fund shares increases,

¹¹The inkomstpension is recalculated as the ratio between the new and the old income index divided by 1.016. In years for which a balance ratio has been set, the income index is replaced by the balance index.

fewer shares are sold; if it decreases, more shares are sold. Variations in prices of fund shares affect the value of the following year's premium pension.

The premium pension may include a survivor benefit for the period of disbursement. This means that the premium pension will be paid to either of two spouses or cohabitants as long as one of them survives. If the insured elects to include a survivor benefit, the monthly pension will be lower, as the expected pay-out duration of the premium pension will then be longer.

Sustainability in the fund market

In 2018, legal requirements were introduced obliging fund managers to report on their sustainability work, how they take sustainability into account, what method they use and how they follow up their sustainability work. The Swedish Pension Agency has developed a new interface for manager reporting, which generates a new fact page coming after the normal fund fact sheet available for each fund. Together with the statutory requirement for sustainability information, the Swedish Pensions Agency also decided to add as a minimum requirement in the new fund contract that fund managers be signatories to the UN PRI (United Nations Principles for Responsible Investments).

The Swedish Pensions Agency has also developed a tool making it easy for savers to opt out of holdings they do not want in their portfolio, such as nuclear weapons, alcohol and cluster bombs. The template used by the Swedish Pensions Agency for collecting this information is the standard template used by the Swedish Investment Fund Association.

During 2019, the Swedish Pensions Agency continued to develop additional sustainability tools not only to make it easier for savers but also to continue the work of motivating and inspiring fund managers to work actively with sustainability in their investments. As part of this work this year the Agency developed additional tools that enable savers easily to select sustainable alternatives. We have procured two indicators where Morningstar is the external supplier.

Sustainability indicator - an indicator showing the extent to which environmental, social and corporate governance aspects, so-called ESG (Environmental, Social, Governance), are taken into account in the management of fund securities.

Carbon dioxide indicator - an indicator showing how the carbon dioxide impact is taken into consideration in the management of fund securities. Funds that fall within a range indicating low carbon dioxide impact are indicated by the Leaf symbol.

Sustainability risk (ESG) - a symbol indicating how well a fund manager succeeds in investing in sustainable companies. The analysis is based on areas such as business ethics, environmental policy and labour law for both the fund company and its supplier.

The leaf - a symbol indicating low carbon dioxide risk. All funds with low risk in switching to an economy with low carbon dioxide emissions and limited exposure to fossil fuels can get this marking if the fund is within the range indicating a low carbon footprint.

Administration of the fund market

As a result of legislative changes in 2018, the Swedish Pensions Agency cancelled all agreements with fund companies that had funds in the fund market on November 1, 2018. December 28, 2018 was the last day to apply for a new fund agreement for those fund companies wishing to keep their funds in the fund market. The handling of applications follows a process of administrative law and the burden of proof in order to be able to sign fund agreements lies with the applicant in accordance with the Public Administration Act (2017: 900).

Work on reviewing the funds began in November 2018 and continued throughout 2019. In brief, the work undertaken may be divided into two parts. In order for an application to be reviewed, the application needs to be fully completed in accordance with PFS 2018:5. In cases where applications are incomplete, they are supplemented to the extent required for the application to be reviewed and taken

up for scrutiny assessment. The application is then examined by a fund investigator who reviews the fund manager and the funds to which the application relates and, in some cases, also one or more external asset managers.

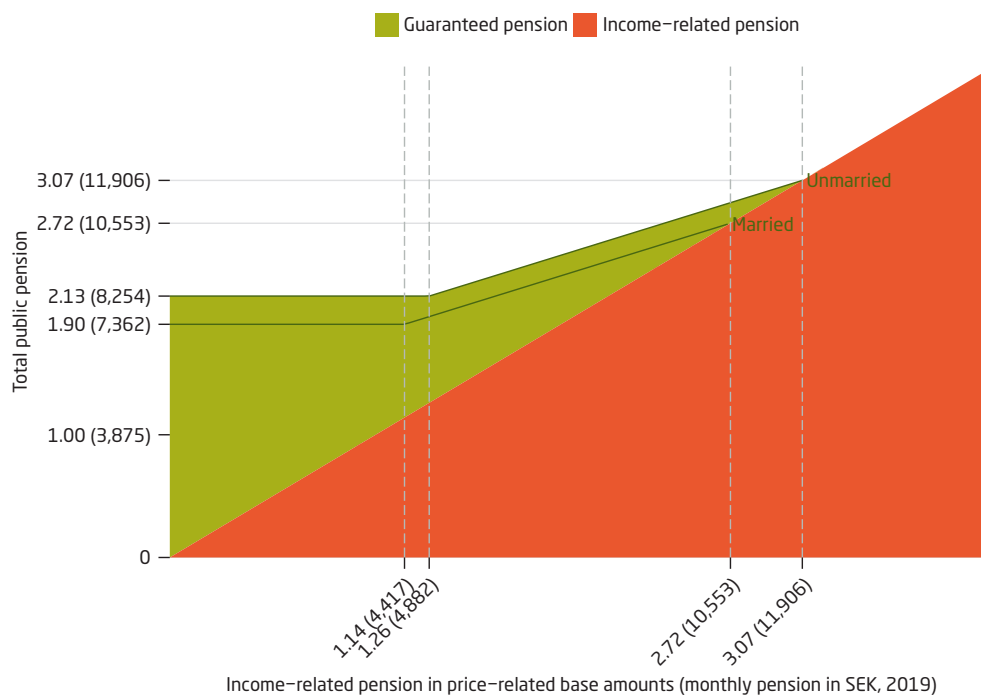
The Swedish Pension Agency has rejected nine applications submitted by the same fund company as a result of incomplete applications.

The remaining applications have been subjected to a scrutiny assessment after which an application has either been granted or rejected. The agreements that the Swedish Pensions Agency had with fund companies in 2019 were the cooperative agreement and the fund agreement. The cooperative agreement runs until the fund company receives a decision on its applications. When an application has been approved, a fund agreement is signed.

Guaranteed Pension¹²

The guaranteed pension provides basic social security for individuals with little or no income. Residents of Sweden are eligible for a guaranteed pension beginning at age 65. To receive a full guaranteed pension, an individual must in principle have resided in Sweden for 40 years after age 25. Residence in another EU/EEA country can also be credited toward a guaranteed pension. Refugees can include residence in their home country and thus receive a full guaranteed pension.

Figure 4.2 Income-related Pension and Guaranteed Pension



The figure shows total public pension at different levels of the income-based national pension, SEK per month.

¹²These provisions concern the guaranteed pension for persons born in 1938 or later. For older individuals, other rules apply.

In 2019 the maximum¹³ guaranteed pension for a single pensioner was SEK 8,254 per month (2.13 price-related base amounts¹⁴) and for a married pensioner SEK 7,362 per month (1.90 price-related base amounts). The guaranteed pension is reduced for persons with an earnings-related pension. The reduction is taken in two steps: for low incomes, the guaranteed pension is decreased by the full amount of the earnings-related pension; for higher incomes, the guaranteed pension is decreased by only 48 percent. This means that a single pensioner with a monthly earnings-related pension of SEK 11,906 or more received no guaranteed pension in 2019. For a married pensioner the corresponding income limit was SEK 10,553.

An example: A pensioner living alone has an earnings-related pension equivalent to 2.26 price-related base amounts. The guaranteed pension is first reduced by the full amount of income up to 1.26 price-related base amounts. The remainder of 0.87 price-related base amount [= 2.13 – 1.26] is reduced by 48 percent of the income above 1.26 price-related base amounts, which in this example gives a guaranteed pension of 0.39 price-related base amount [= 0.87 – 0.48 * (2.26 – 1.26)]. The total inkomstpension and guaranteed pension will then be 2.65 price-related base amounts [0.39+2.26].

When the guaranteed pension is calculated, the premium pension is disregarded. Instead, the inkomstpension is calculated as if it had been earned at 18.5 percent of the pension base, rather than 16 percent. One reason for these provisions is that they simplify administration of the guaranteed pension.

The guaranteed pension is financed 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 not earned either an inkomstpension or a premium pension. Instead, they receive the ATP (supplementary pension) according to the old pension system. 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 special transitional provisions. These individuals receive a portion of their earnings-related old-age pension as an ATP and the rest as an inkomstpension and a premium pension. The younger the individual, the smaller the proportion of ATP. Persons born in 1938 receive 80 percent of their ATP; those born in 1939 receive 75 percent of their ATP, etc. There is an additional guarantee that the pension received will not be less than the ATP earned by the individual through 1994 – the year of the decision in principle to adopt the pension reform. Those born in 1954 or later earn their entire pensions under the provisions for the inkomstpension and the premium pension.

For pension withdrawals before the year when the individual turns 65, the ATP is price-indexed. If the balancing is activated the year when the individual reaches age 65, the ATP is recalculated according to special rules. The recalculation is made in the month the person reaches the age of 65 and means that the ATP pension amount is multiplied by the ratio between the fixed balance index and the income index for the current year. From the following year, the ATP is adjustment-indexed in the same manner as the inkomstpension.

¹³In 2020 the maximum level is raised through legislation by approximately 200 SEK a month

¹⁴In 2019 the price-related base amount was SEK 46,500.

Proportion Granted a National Pension at Various Ages*
percent

Birth cohort	61	62	63	64	65	66	67	68	69	70	71-	Total	Avg age
1938	3.6	2.3	2.3	2.1	77.2	4.1	3.2	0.8	0.3	0.3	0.7	97.0	64.9
1939	3.9	1.9	2.1	2.3	75.6	6.5	2.3	0.8	0.3	0.3	0.8	96.8	64.9
1940	3.0	2.1	2.5	3.1	75.7	5.0	2.6	0.8	0.4	0.5	0.7	96.4	65.0
1941	2.9	2.2	3.0	3.7	73.1	6.3	2.8	0.8	0.5	0.4	0.7	96.4	65.0
1942	3.4	2.9	3.4	3.8	70.8	6.2	3.4	1.2	0.5	0.4	0.7	96.6	64.9
1943	3.9	3.1	3.6	5.3	66.3	7.1	4.4	1.2	0.4	0.5	0.7	96.5	64.9
1944	4.7	3.4	4.7	5.9	63.0	7.9	4.0	1.1	0.5	0.5	0.8	96.5	64.9
1945	5.1	4.2	5.3	6.1	61.5	7.2	4.0	1.3	0.5	0.5	0.8	96.3	64.8
1946	6.0	4.8	5.4	6.7	59.1	6.7	4.2	1.2	0.5	0.6	0.8	96.0	64.7
1947	6.3	4.6	6.0	7.4	56.7	6.9	4.7	1.3	0.6	0.5	0.9	95.9	64.7
1948	6.0	4.9	6.7	7.8	54.6	7.3	5.0	1.5	0.5	0.5	1.0	95.8	64.7
1949	5.8	5.4	6.9	8.6	52.2	7.9	5.4	1.4	0.6	0.5	1.1	95.8	64.7
1950	5.8	5.4	7.7	9.1	49.9	8.6	5.4	1.6	0.7	0.6	1.1	95.9	64.7
1951	6.5	6.3	8.0	9.3	47.5	8.3	5.5	1.8	0.8	0.6	1.2	95.8	64.7
1952	6.8	6.8	8.4	10.4	44.3	8.9	6.0	1.9	0.8	0.6	1.2	96.0	64.7
1953	7.7	6.5	9.4	10.4	41.9	9.5							
1954	7.5	7.1	9.5	10.7	40.5								
1955	7.6	6.6	10.3	11.2									
1956	7.0	7.8	10.3										
1957	7.7	7.8											
1958	8.9												

* The proportions are for new retirees in relation to the potential number of retirees as of December 2019. Ages are as of December 31 of the year when the pensioner began drawing an inkomstpension/guaranteed pension.

The National Pension System – in Illustrations and Figures

This section describes the pension system in figures.

Incomes, Pension Credit and Pension Disbursed

Figures 4.3–4.5 show earning for 2018, pension credit added to savers' accounts in 2019 and pension disbursements in 2018.

The figures show that average income rises up to the age of around 45 after which it remains fairly constant until around the age of 60, when it decreases. One reason for the decrease in average income is the increase in the proportion of persons with sickness compensation (disability pensioners) with lower average incomes. Another reason for the drop in average income is that certain individuals have reduced their work hours, or have fully retired during the year. The importance of the upper limit, the ceiling, on the earning of pension credit is shown in the figure – the average pension-qualifying income (pensionsgrundande inkomst, PGI) would follow the line for *Incomes, no ceiling* if there had not been a ceiling.

The amount of pension credit for inkomstpension and premium pension can be seen in the green and yellow bars respectively.

The figure provides an overview of the level of disbursements to the 2,233,000 people receiving a pension from the public pension system in December 2018. ATP pension still accounted for the largest part of the pension but it is noticeable that inkomstpension and premium pension begin to replace ATP pension for cohorts born in 1938 and later. For younger cohorts, their pension consists wholly or almost wholly of inkomstpension, premium pension and guarantee pension. Guarantee pension still makes up a large part of the pension, especially among older cohorts.

The width of the bars reflects the number of people in the annual cohort, with cohort 1990 as the norm.

Figure 4.3 Average income, pension credit earned and pension disbursed

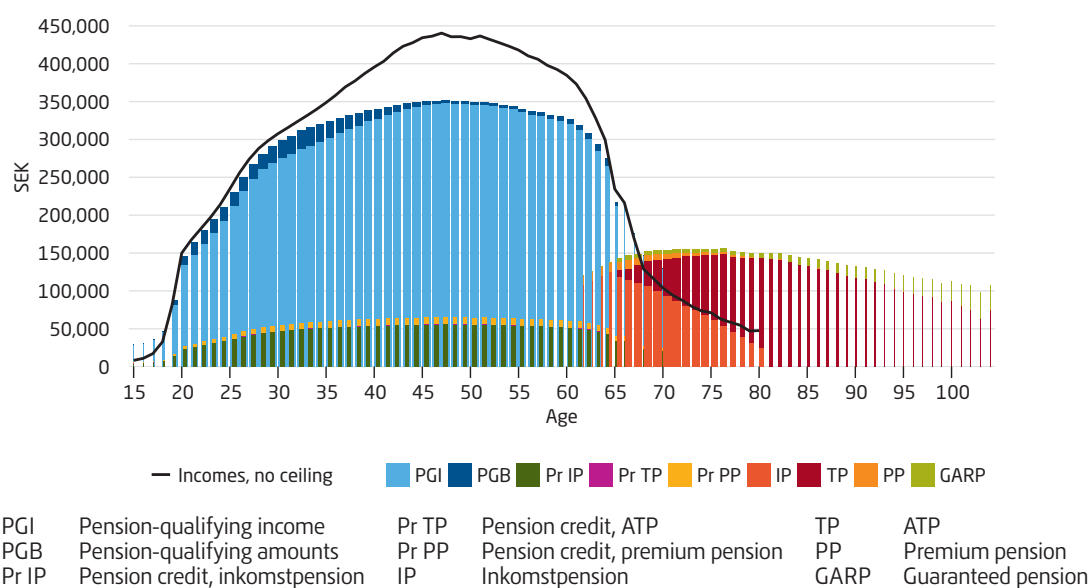


Figure 4.4 Average income, pension credit earned and pension disbursed, women

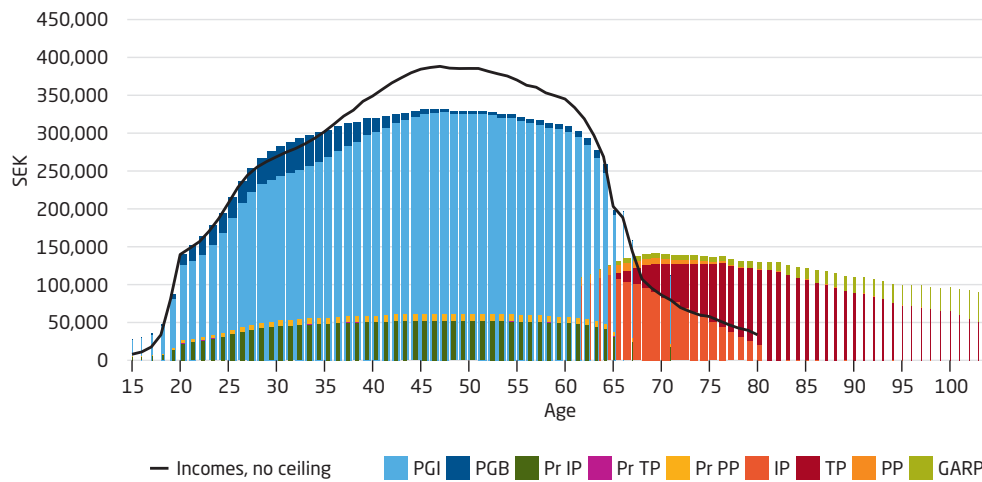
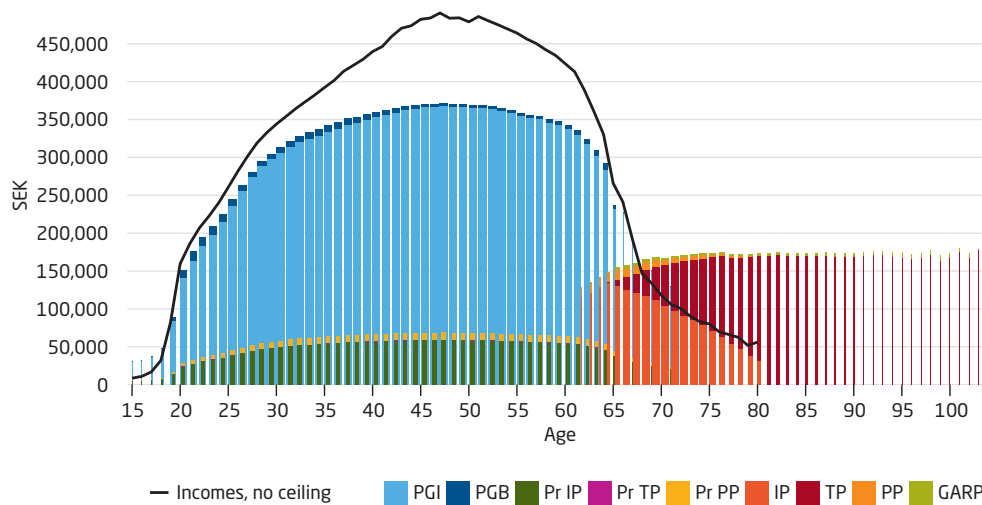


Figure 4.5 Average income, pension credit earned and pension disbursed, men

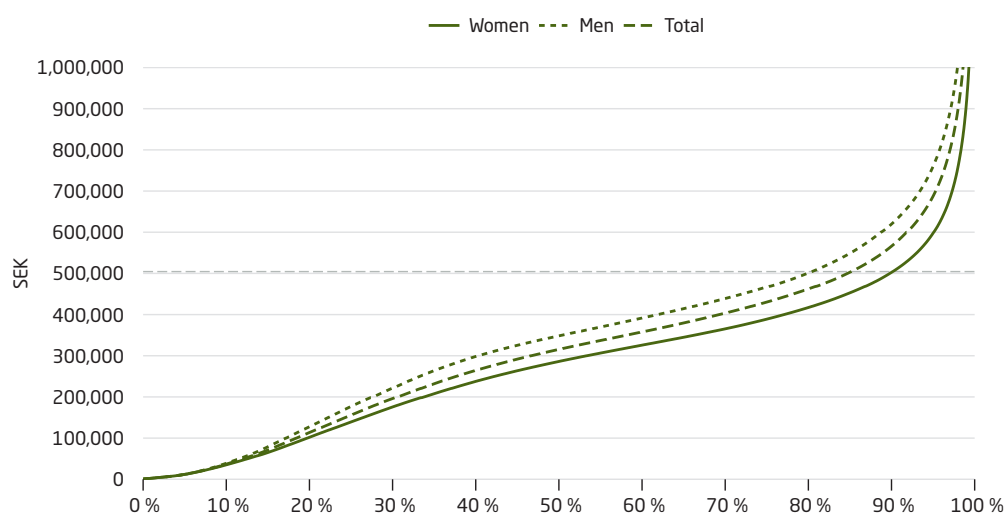


Figures 4.4 and 4.5 show that women on average have lower incomes than men. We also see that the ceiling on pension-qualifying income has a greater negative influence for men than for women, since a larger share of men's incomes are above the ceiling. That women receive more of the pension-qualifying amounts than do men is shown by the greater share of dark blue in their pension base – more details about pension-qualifying amounts can be found in Figure 4.8. Moreover, women on average have lower pensions and considerably more guaranteed pension than men.

Earned Income

Figures 4.6 and 4.7 below show earned income divided between women and men. Incomes up to 8.07 income-related base amounts (SEK 504,400 for income year 2018) form the base for the national pension. The diagram below shows incomes for the income year 2018 divided up in rising order (in total 5,753,000 persons, of which 2,800,000 women and 2,953,000 men). Of these, 4,834,000 people had incomes below the contribution ceiling (2,503,000 women and 2,332,000 men).

Figure 4.6 Earned Income for Women and Men, Income Year 2018



Refers to tax-assessed earned income (wages and salaries, income from active and passive business operations, sickness cash benefits, parental allowances, sickness and activity compensation, unemployment compensation etc.). The income is before deduction of the individual pension contribution and is shown for persons with incomes above the minimum for the obligation to file a tax declaration, 42.3 percent of the price-related base amount. The horizontal line at SEK 504,400 designates the ceiling on contributions.

Roughly 621,000 men, or 21 percent of men, had an income above the ceiling on pension-qualifying income. The corresponding proportion for women was 11 percent or approximately 297,000 persons. The table below shows the average tax-assessed earnings and pension-qualifying income for women and men. The table reveals that women's incomes are lower than men's – 80 percent of taxable income and 86 percent of pension-qualifying income.

Average Earned Income and Pension-Qualifying Income, Income Year 2018

SEK

	Tax-assessed earned income	Pension-qualifying income
Women	286,700	268,400
Men	358,600	310,500
Total	323,600	290,000

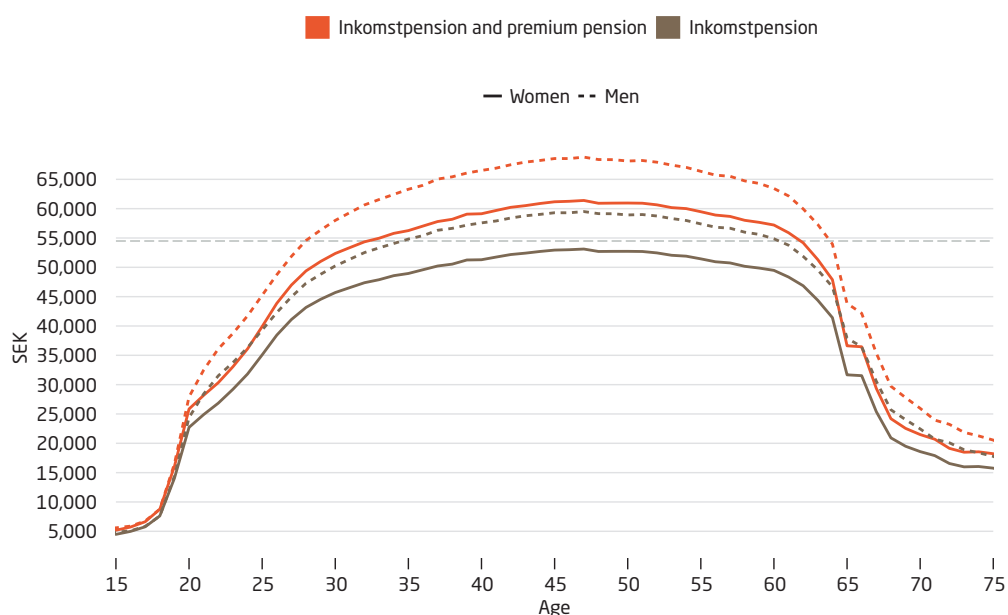
Pension Credit for the Inkomstpension and the Premium Pension

The average pension credit for inkomstpension and premium pension in 2018 amounted to 54,500 – lower for women (SEK 51,500) and higher for men (SEK 57,400). See table below.¹⁵

Average Pension Credit Earned, 2018

SEK			
	Inkomstpension	Premium pension	Total
Women	44,700	6,800	51,500
Men	49,700	7,700	57,400
Total	47,200	7,200	54,500

Figure 4.7 Average Pension Credit Earned, Women and Men, 2018



The horizontal line at SEK 54,500 shows the average for all individuals.

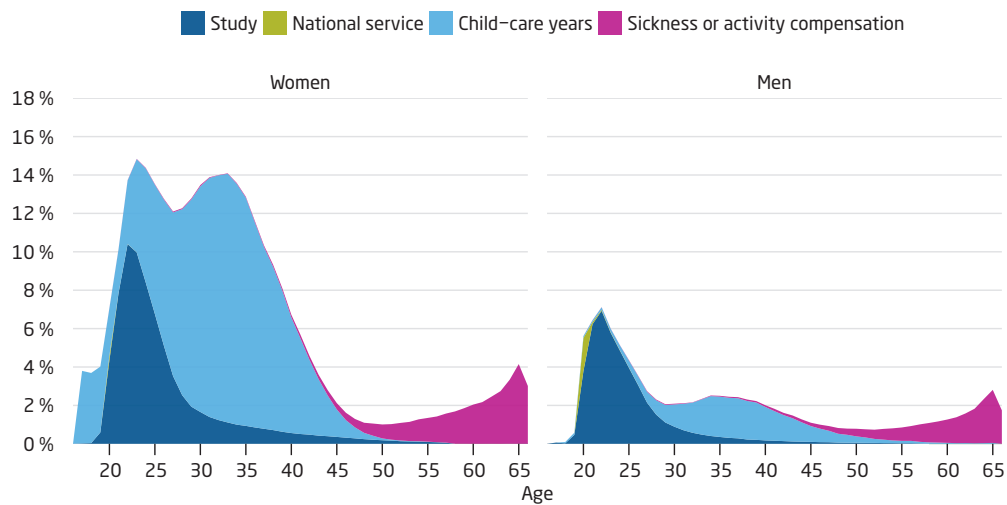
From the table and the figure above it can be seen that the average pension credit for women is approximately 90 percent of men's. The average earned pension credit for inkomstpension and premium pension is decreasing slightly from age 65 to 66 (age at year-end). That it doesn't decrease more is because at age 65 and later, the total income base is included in the inkomstpension and premium pension system. Before age 65, these cohorts have a certain proportion of their income-qualifying old age pension in the form of ATP pension and the remaining proportion in the form of inkomstpension and premium pension (twentieth-part phasing-in).

¹⁵The averages are calculated on the basis of those who have received pension credit. In previous years they were calculated on the basis of those who had an account balance. This means values for previous years are lower than they would have been if they had been calculated using the present definition.

Pension-Qualifying Amounts

Credit is granted for pension-qualifying amounts in particular phases of individuals' lives, such as years with small children or of studies. Between 1995 and 2010, national service gave pension credit. In 2010, national service was suspended, but was reintroduced in 2018. Those who earned pension credit from national service in 2018 were primarily men. In 2018 pension-qualifying amounts constituted 6 percent of the allocated pension base for women and approximately 2 percent for men. The largest portion for women, 4 percent, consisted of amounts for years with small children. For men childcare years also made up the largest portion, nearly 0.8 percent of the total pension base. Viewed over a life cycle, pension-qualifying amounts are received by younger people for study, national service and years with children, and later in life amounts are received for sickness compensation.

Figure 4.8 Pension-Qualifying Amounts, Income Year 2018
percent of pension base



Pension Liability

The pension liability – the pension capital of the insured – in the inkomstpension and the premium pension system was SEK 10,990 billion as of December 31, 2019. This liability, divided between women and men and for every age from 15 to 100, is shown in Figure 4.9.

Women have lower earned pension capital compared with men. It is also clear that supplementary pension (ATP) is the principal pension asset for older pensioners but will soon have completely disappeared for working-age cohorts.

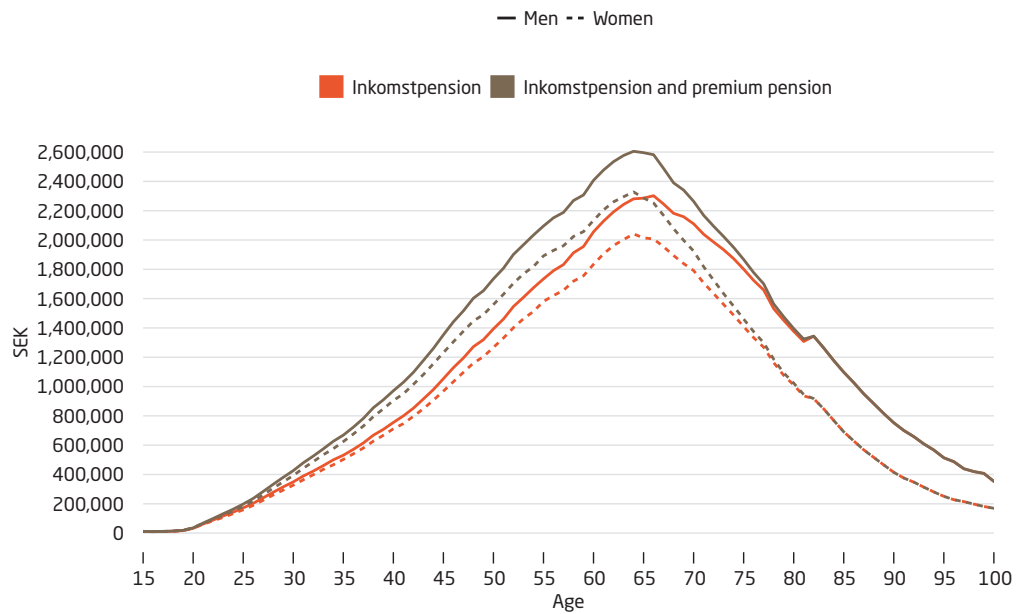
For the economically active, the inkomstpension will be the predominant pension, while at the same time the growing importance of the premium pension can be detected. If it is assumed that the individual's first earnings come at around age 20, all who were 44 years old or younger in 2019 have earned inkomstpension and premium pension credit for their entire economically active lives since the allocations began in 1995. Those who are older than this have instead earned more credit for their inkomstpension.

Figure 4.9 Pension liability, women and men, at year-end 2019



Average pension liability (the sum of all years of earned pension credit for inkomstpension and premium pension) amounted to just over SEK 1.3 million at the end of 2019. See the table below.

Figure 4.10 Average Pension Liability, 2019



Average Pension Liability, 2019

SEK

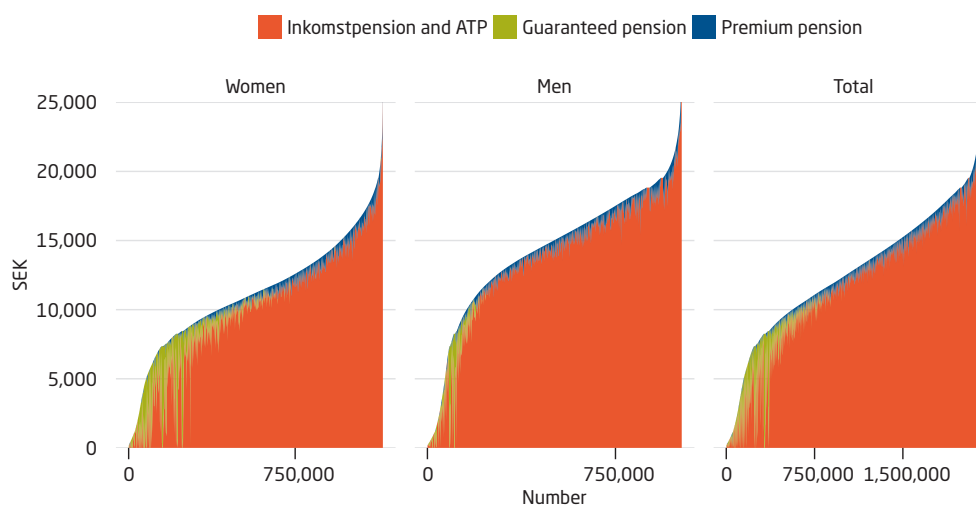
	Inkomstpension	Premium pension	Total
Women	1,038,800	180,200	1,199,800
Men	1,193,300	212,500	1,384,000
Total	1,117,600	196,700	1,293,700

The figure above shows that average liability increases with increasing age up to and including the age of 65. After that, liability decreases, since many have entered retirement.

Pension Disbursements

In the figures below the disbursements of the national pension in December 2019 for men and women born in 1954 or earlier are shown in rising order of size (1,100,000 women and 970,000 men). For total pensions disbursed during 2019, see Note 2 in the chapter Notes and Comments.

Figure 4.11 Pension Disbursements, Women and Men, December 2019



The difference in level and composition of different parts of pensions for men and women is the most striking feature of the figure. The average pension for women – income-based pension and guaranteed pension – was SEK 11,200. The corresponding amount for men was SEK 14,300. Of women’s national pensions, 93 percent consisted of income-based pensions and 7 percent of guaranteed pensions. However, a full 45 percent of women had some portion of guaranteed pension. That the proportion with guaranteed pension increases sharply with age is not shown by the diagram. Of the national pension for men, 98 percent consisted of income-based pension and 2 percent of a guaranteed pension. A total of 14 percent of men had some proportion of guaranteed pension. Neither the widow’s pension nor the housing supplement, each of which is paid primarily to women, is included in the figure.

The pattern that emerges from the figure – with swathes of people receiving only guaranteed pension – is clearest in the case of one group, consisting mostly of women, that receives maximum guaranteed pension, that is, forty fortieths of guaranteed pension. This explains the concentration of green at the maximum guaranteed pension for “married persons” (SEK 7,363 per month in 2019) and for “unmarried persons” (SEK 8,254 per month). Those with a lower guaranteed pension, but also without any income-based pension, have fewer years of residence in Sweden. Only persons born in 1938 or later can receive premium pension – based on their own income, but only on that part earned since 1995. Thus the impact of premium pension is still limited. However, the importance of premium pension is growing with each new annual cohort that draws a pension. The few individuals with a national pension exceeding SEK 20,000 per month have reached that pension level in part by postponing pension withdrawal. The maximum public pension paid in 2019 was SEK 48,900 per month. It is a person born later than 1938 who has continued to work after the age of 65 and who has postponed withdrawing a pension.

What affects the development of the balance ratio?

The balance ratio is a crucial measure of the financial position of the inkomstpension. It is part of the system's indexation mechanism which guards against paying excessive interest that might jeopardize financial stability. In this section we describe how the balance ratio is affected by a number of factors. The balance ratio is calculated as the ratio between the assets and liabilities of the inkomstpension system. The assets consist of the assets of the AP funds (the buffer fund) and the contribution asset. Contribution income consists of the year's contribution income multiplied by turnover duration, where turnover duration measures how long it is expected to take, on average, from the payment of SEK 1 in contribution to the system (earning age) until the pension credit created by the contribution is paid out in the form of pension (payment age)¹⁶.

Turnover duration decreases if average pension credit for younger people decreases more than for older people. This can happen, for example, in the case of late labour market entry or postponement of pension disbursements. Turnover duration is also affected by demographic changes. For example, it will tend to decrease during times of high immigration, due to average pension credit being higher among higher age groups, while immigrants are generally relatively young, with low incomes. Turnover duration tends to increase with increased life expectancy, especially if the life expectancy of those with above-average pension incomes increases (higher payment age). The inkomstpension system has a liability to economically active persons and to pensioners. The liability to economically active persons increases with earned pension credit, while the liability to pensioners decreases with pension disbursements. Liabilities are recalculated using the income index (or balance index when balancing is activated). The liability also increases with increased life expectancy, especially if life expectancy of people with above-average pension amounts increases. The fact that a general increase in life expectancy increases both liabilities and assets reduces the sensitivity of the balance ratio to changes in life expectancy, even if assets increase less than liabilities. The assets are affected by the return on the buffer funds, which increased in 2019 by more than 17 percent. However, the value of the funds rose by only 15 percent, because pension disbursements exceeded contribution income and administrative expenses by just over SEK 27 billion (primary financial savings). If the return on buffer funds capital is higher than growth in average income (3.1 percent), the funds contribute to strengthening the balance ratio. The buffer funds account for approximately 15-16 percent of the inkomstpension system's assets and have a significant impact on the balance ratio as the funds' return is significantly more volatile than other factors.

The balance ratio is affected by the business cycle

The somewhat simplified description above shows how changes in the balance ratio can be broken down into contribution income and average incomes, changes in turnover duration and changes in life expectancy of pensioners as well as return on buffer funds capital. Labour market developments, which vary with the business cycle, thus affect the inkomstpension system and its financial stability. The business cycle phase can be described by comparing actual GDP and employment with potential GDP and employment.¹⁷ The difference between the growth of actual and potential variables can therefore be used as an approximate measure of cyclical adjustment of developments in contribution income and the income index. As shown above, the rate of change in the number of people with pension-qualifying income is an important factor for the stability of the inkomstpension system. Below, the rate of change in the size of the labour force is used as an approximation of the rate of change in the number of persons with pension-qualifying income. Based on this, a cyclically dependent effect can be estimated.

¹⁶Details can be found in Appendix B, Mathematical description of the balance ratio.

¹⁷The levels with full resource utilization which are in the long term compatible with stable inflation. See the The Swedish National Institute of Economic Research (2018) The Economic Situation in October 2018, pp. 75-79, for a further description of economic terminology.

The balance ratio is also affected by the fact that the pension liability in year t is adjusted upwards by the income index, which measures the change in average income between year $t - 1$ and $t - 2$, while contribution income in year t grows with the change in income between year t and $t - 1$. This time-lag means that the difference in growth rate between year t and $t - 1$ can also affect the balance ratio.¹⁸ The Swedish economy in 2019 was at the end of a boom according to the Swedish National Institute of Economic Research. The difference between actual and potential GDP (the GDP gap) was 0.6 percent and is expected to fall to -0.2 percent by 2020. It indicates that actual contribution income was approximately 0.6 percent higher than structural contribution income in 2019.¹⁹ Turnover duration can also be affected by the business cycle. Delayed labour market entry, which often occurs especially in deeper recessions, tends to increase the earning age and thereby reduce turnover duration. To illustrate some possible sequences of events, a number of stress tests are carried out on a simplified balance sheet and balance ratio. The examples are to be regarded as purely illustrative, despite some of the values having been taken from the Swedish National Institute of Economic Research forecast of December 2019.

How different alternatives affect the balance sheet and balance ratio

Option 1

: Unchanged contribution income but fewer employed (income index, average income thus assumed to be 0.6 percent higher)

Option 2

: Balance ratio adjusted for time-lag in income index (slower increase in contribution income by 0.3 percent and lower indexing 0.6 percentage points).²⁰

Option 3

: Buffer fund return lower by SEK 102 billion (roughly 10 percentage points) in 2019

Option 4

: Lowest withdrawal age 62 in 2019²¹

¹⁸For a full description of the time-lag and further considerations regarding the income index, please refer to “Kompletterande analys av inkomstindex utformning”, *VER 2013-35* and DS 2015:6 “En jämnare och mer aktuell utveckling av inkomstpensionerna.”

¹⁹That is if the wage fraction of GDP remains unchanged (for the last decades these have been stable and on made up 40 percent of GDP). Incomes above the maximum contribution level have for the last years been stable around 10,3 percent.

²⁰The earning age is assumed to remain unchanged

²¹In this case the earning age is assumed constant and that changes in the payment age will take full effect starting in 2019.

Simplified Income Statement and Balance Sheet
Millions of SEK

	2019	Opt. 1	Opt. 2	Opt. 3	Opt. 4
Change in fund assets, of which	213,223	0	-868	-138,318	1143
Pension contributions	289,386	0	-868	0	0
Pension disbursements	-314,724	0	0	0	1143
Return on funded capital ¹	240,318	0	0	-138,318	0
Change in contribution assets	371,998	0	-25,848	0	22,466
Value of change in contribution income	331,755	0	-25,787	0	434
Value of change in turnover duration	40,243	0	-61	0	22,032
Change in pension liability, of which	371,998	-34,977	34,108	0	558
New pension credit	-302,495	0	-868	0	0
Pension disbursements	314,724	0	0	0	-1143
Indexation	-268,855	-34,977	34,976	0	1556
Value of change in life expectancy	-31,559	0	0	0	145
Net income for the year	295,644	-34,977	7,392	-138,318	23,051
Assets					
Fund assets	1,596,342	0	-868	-138,318	1143
Contribution assets	8,616,216	0	-25,787	0	22,466
Total assets	10,212,558	0	-25,848	-138,318	23,609
Liabilities and income					
Closing balance	758,329	-34,977	7,392	-138,318	23,051
Pension liability	9,454,228	34,977	-34,108	0	558
Total liabilities and income	10,212,557	0	-26,716	-138,318	23,609
Balance ratio	1.0802	-0.004	0.001	-0.0146	0.0024

1 No consideration for any return

In the first alternative, the income index is higher than the actual index (due to fewer people with pension-qualifying income) which increases pension liability and thus marginally weakens the balance ratio. In the second alternative, the balance ratio is strengthened by the fact that the contribution asset decreases less than indexation of the pension liability. This is because the business cycle at the time of writing was assumed to have peaked in 2019 and the strength of the economic upturn was declining from 2018 to 2019.

The third alternative, where the return on funded capital has been adjusted down by approximately 102 billion SEK, gives a significantly greater impact on the balance ratio than the cyclical adjustments in the first two alternatives. This partly reflects the fact that the ongoing economic cycle - a long-drawn-out economic recovery - does not dramatically affect the balance ratio. On the other hand, more drastic cyclical changes have a greater impact on the balance ratio. It may also be noted that raising the minimum age for pension disbursement strengthens the balance ratio even under the assumption that contribu-

tion income does not increase, mainly because the disbursement age increases. If raising the minimum age also leads to increased labour force participation, the balance ratio is further strengthened.

5 Costs of Administration and Capital Management

The amount of costs is an important factor for future pensions. Of the factors affecting pension capital, the size of costs is the one which the responsible authorities have the greatest opportunity to influence. In the case of premium pension, however, costs also depend on the saver's own choice of fund.

This section brings together gross¹ and net reported costs² and also such transaction costs as are impossible for the National Pension Funds and the Swedish Pensions Agency to wholly quantify. The aim is to provide as complete a picture as possible of the total costs of the old-age pension system. It is important to keep in mind that net management costs and transaction costs have already had a negative affect on the performance of the funds.

Accounting for Total Costs

The total cost of insurance administration and capital management for the pension system, in addition to other charges, amounted to SEK 6.9 billion, of which SEK 2.4 billion is reported in the income statement of the pension system. The SEK 2.4 billion is the sum of insurance administration (SEK 1,395 million) and the operating expenses of the National Pension Funds (SEK 1,016 million). See the table Total Costs and Charges of the Old-Age Pension System.

Inkomstpension costs

For inkomstpension the costs reported in the income statement amounted in 2019 to SEK 1,757 million, of which SEK 741 million was for insurance administration and SEK 1,016 million was for National Pension Funds' operating expenses. In addition to the SEK 1,016 million in operating expenses, the National Pension Funds had fixed management fees of SEK 753 million. The sum of reported asset management costs as shown in the National Pension Funds' income statements thus amounted to SEK 1,769 million. Performance-based fees and transaction costs such as brokerage commissions are not reported as direct costs by the National Pension Funds but instead have a negative effect on returns. Performance-based fees are not an ordinary administrative cost, but a way for the National Pension Funds to share risk and reward with their external managers. In total the National Pension Funds paid SEK 406 million in performance fees and SEK 203 million in brokerage commissions and other transaction costs. When these costs and fees are included, the sum total of costs for inkomstpension is SEK 3,195 million.

Premium pension costs

In the income statement of the Swedish Pensions Agency for the premium pension system are reported administrative costs of SEK 578 million. In previous years in addition to administrative costs mortgage

¹The pension system's income statements for inkomstpension and premium pension show the costs that the Swedish Pensions Agency and the National Pension Funds report as expenses in their own income statements as "gross reported costs."

²The asset management costs of the National Pension Funds and the premium pension system which are 'net reported' against revenue and net fund return are not visible in the income statement of the pension system. The concept of net reported costs refers here to such costs as those which in the National Pension Funds' income statement consist of fixed management fees and which in the premium pension income statement are used as the net for items named management fees and discounts on management fees.

payments have been made on the implementation costs of the premium pension system. In 2018 the final installments on this debt was made and thus this cost is no longer present in 2019. The total cost of premium pension insurance administration amounted to SEK 578 million. See Total Insurance Administration in the table below.

Within the premium pension system the item Management Fees refers to both fixed and performance-based fees that the premium pension funds (including the 7th National Pension Fund) charge after rebates have been returned to premium pension savers. The gross calculated premium pension funds' management fee amounts to SEK 7,143 million. Of this gross fee it is estimated that repayment from the funds provides SEK 4,643 million in the form of rebate. The net fee can then be totaled as SEK 2,500 million³. The discount model limits the maximum fee charges to a percentage of the funds. For equity funds the fee is limited to maximum 0.89 percent after returned rebate, for bond funds it is limited to 0.42 percent, and for mixed and generation funds it is limited to 0.62 percent. In addition to the SEK 2,500 million in fixed management fees an estimate of premium pension funds' transaction costs is also shown. Transaction costs consist primarily of commissions paid by the funds as a part of buying/selling liquidity when the funds trade in securities and these are estimated in 2019 at SEK 646 million.

Costs and Charges of the Old-Age Pension System

millions of SEK

	Inkomstpension	Premium pension	Total
Insurance administration			
Pension administration ¹	411	515	926
Payments to other agencies	406	63	469
Amortization and interest implementation loan			0
Total Insurance administration	817	578	1,395
Capital management costs and charges			
Operating expenses of the National Pension Funds (reported gross)	1,016		1,016
Management fees	1,159	2,500	3,659
Fixed management fees (reported net)	753		753
Performance-based fees ²	406		406
Transaction costs ³	203	646	849
Total Capital management costs and charges	2,378	3,146	5,524
Total	3,195	3,724	6,919

1 The amount for the inkomstpension refers to actual cost, whereas the amount in Note 4 refers to the compensation paid by the National Pension Funds for costs of administration.

2 This item represents fees that the National Pension Funds pay only if a particular manager achieves a certain agreed result.

3 Transaction costs refer to brokerage and clearing fees charged on the stock and derivatives market. These charges are included directly in the transaction and have a negative effect on the return earned by the funds. Interest and foreign-currency transactions are paid for through the difference between buying and selling prices and thus cannot be reported as a separate charge. The calculation of premium pension transaction costs is now based on a selection of the funds in the system.

³These costs are preliminary and are based on an upward adjustment of costs for the quarters 1–3. The amount does not include management fees relating to traditional insurance of SEK 10.5 million. This cost is net reported through a reduction in return on funded capital (see note 17)

Development of Costs

Below, cost items are shown for the past five years. Costs are reported in millions of SEK and in SEK per number of insured, that is, the number of persons with a pension account, including pensioners.

Costs of the Inkomstpension

millions of SEK

	2015	2016	2017	2018	2019
Insurance administration					
Pension administration ¹	462	455	434	428	411
Payments to other agencies	406	406	432	421	406
Total Insurance administration	868	861	866	849	817
Capital management costs and charges					
Operating expenses of the National Pension Funds (reported gross)	913	890	953	956	1,016
Management fees	1,273	1,219	1,243	1,091	1,159
Fixed management fees (reported net)	927	847	801	760	753
Performance-based fees ²	346	372	442	331	406
Transaction costs ³	322	289	233	244	203
Total Capital management costs and charges	2,508	2,398	2,429	2,291	2,378
Total	3,376	3,259	3,295	3,140	3,195

1 The amount for the inkomstpension refers to actual cost, whereas the amount in Note 4 refers to the compensation paid by the National Pension Funds for costs of administration.

2 Some adjustments have been made to fees in 2018.

3 See the explanation in the table Total Costs and Charges of the Old-Age Pension System

Costs of the Premium Pension

millions of SEK

	2015	2016	2017	2018	2019
Insurance administration					
Pension administration	342	379	417	463	515
Payments to other agencies	63	63	68	66	63
Amortization and interest implementation loan	181	169	181	325	0
Total Insurance administration	586	611	666	854	578
Capital management costs and charges					
Management fees (net reported)	2,029	2,033	2,466	2,279	2,500
Transaction costs	415	428	519	551	646
Total Capital management costs and charges	2,444	2,461	2,985	2,830	3,146
Total	3,030	3,072	3,651	3,684	3,724

Figure 5.1 Insurance Administration, Inkomstpension

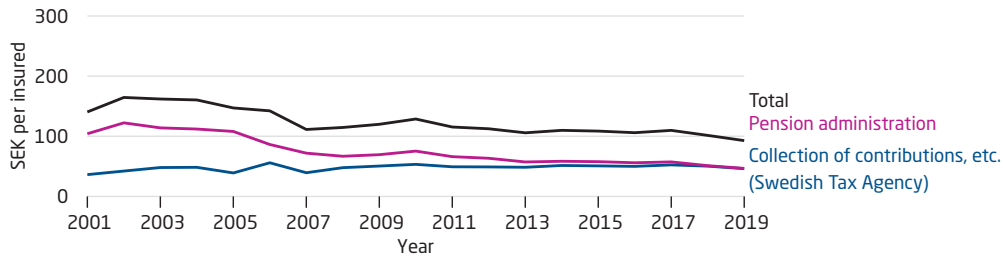


Figure 5.2 Insurance Administration, Premium Pension

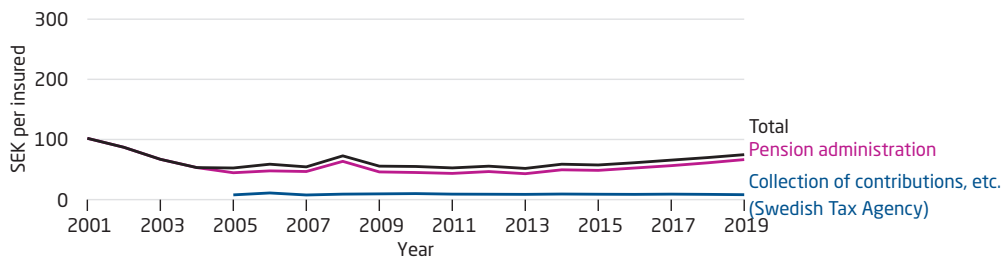


Figure 5.3 Capital management costs and charges, Inkomstpension

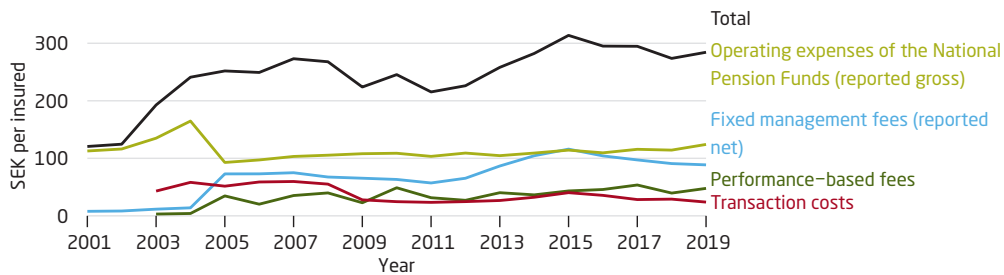
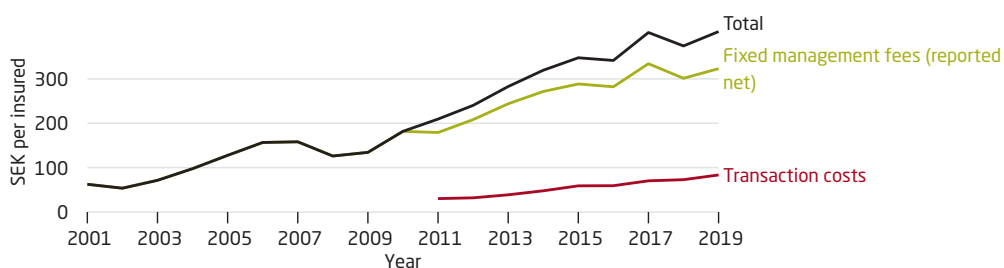


Figure 5.4 Capital management costs and charges, Premium Pension



The above tables show that inkomstpension costs have been somewhat stable in the last five years. In 2018, the cost increase ended, partly due to the fact that performance-based costs fell with the stock market. The table on the next page shows a certain reduction in asset management costs relative to assets managed.

Total premium pension capital management costs and fees have increased from 2018 to 2019, also in terms of cost per insured. The development of capital management costs and fees results from the fact that average managed capital has increased and that capital management costs are charged as a percentage of capital managed. On the other hand, as a percentage of the capital, premium pension costs have decreased over the last five years. The discount model used in the premium pension system is progressive, meaning that greater managed capital automatically gives a higher percentage discount and thus lower fees percentually. The annual cost is estimated on the basis of costs during quarters 1–3.

There are a number of cost items within insurance administration that are common to inkomstpension and premium pension. Examples are the production and distribution of the Orange Envelope, and the Swedish National Tax Board's reimbursement for tax collection, etc. Such costs are spread between the various branches of insurance in proportion to the number of insureds, volume of fees or other distribution key.

Capital Management Costs in Relation to Pension Capital Managed

In 2019 the total capital management costs for the First–Fourth National Pension Funds and for the much smaller Sixth National Pension Fund was 0.12 percent of the capital managed. The AP funds' performance-based fees amounted to 0.03 per cent, transaction costs amounted to 0.01 per cent of assets under management. The sum of asset management costs and fees totalled 0.16 percent of assets under management.

The capital management costs of the premium pension refer to the fees that the premium pension funds, including the Seventh National Pension Fund, have deducted after rebates, as well as the capital management costs of the premium pension system for traditional life insurance with profit annuity. In SEK, costs are determined by each fund's percentual fee and the, by the saver, chosen distribution between the premium pension funds. The premium pension uses a discount model, obliging funds to repay retroactively a large part of the charged fees to the Swedish Pensions Agency, for redistribution to savers and pensioners. The capital management costs reported for funds within the premium pension system amounted after rebates to 0,18 percent, while the funds' transaction costs are estimated at 0.05 percent. The total of capital management costs and charges was thus 0.23 percent of the capital managed.

The percentual cost differences between the inkomstpension's funded assets and premium pension funds are explained partly by economies of scale within AP funds 1–4, partly because these funds invest approximately 35 percent of their capital in bonds or similar assets with low management costs compared to shares. In the premium pension system, approximately 10 percent of total assets are invested in holdings of this type.

Average capital managed billions of SEK

	2013	2014	2015	2016	2017	2018	2019
Inkomstpension	1,008	1,121	1,207	1,276	1,367	1,398	1,490
Premium pension	527	662	829	854	1,030	1,161	1,280

Capital Management Costs in Relation to Capital Managed percent

	2015	2016	2017	2018	2019
Inkomstpension					
Reported capital management costs	0.15	0.14	0.13	0.12	0.12
Operating expenses of the National Pension Funds (reported gross)	0.08	0.07	0.07	0.07	0.07
Fixed management fees (reported net)	0.08	0.07	0.06	0.05	0.05
Performance-based fees	0.03	0.03	0.03	0.02	0.03
Transaction costs	0.03	0.02	0.02	0.02	0.01
Total Inkomstpension	0.21	0.19	0.18	0.16	0.16
Premium pension					
Reported capital management costs	0.25	0.23	0.22	0.20	0.18
Fixed management fees (reported net)	0.25	0.23	0.22	0.20	0.18
Transaction costs	0.05	0.05	0.05	0.05	0.05
Total Premium pension	0.30	0.28	0.27	0.25	0.23

Insurance Administration Costs in Relation to Pension Balance/Capital

To cover the AP funds' reported expenses for inkomstpension, a cost deduction is made from the pension funds each year. For the year 2019, cost deduction for inkomstpension from pension balances was 0.030 percent. The deduction for costs is made only up to the time pension disbursement begins. Neither the fixed net reported management fees of 0.05 percent of assets managed nor the performance-based fees of 0.03 percent of assets managed nor the trading costs of 0.02 percent of assets managed are charged to pension savers through cost reductions. The net reported costs are charged to the buffer capital in the National Pension funds. The cost deducted from inkomstpension balances shall correspond to the cost declared in the inkomstpension income statement. This amount, divided by the pension liability – the insured persons' balances in their inkomstpension accounts – that has not started to be paid out ought to be the cost deduction expressed as a percentage. One reason why this is not the case concerns the phasing-in of the system; up to 2021, the costs deduction is increased successively from 94 per cent to 100 per cent, an increase of 2 percentage points per year, see Note 11. Another reason is that it is budgeted expenses which are deducted from the accounts. The (small) discrepancies between costs deducted and actual costs thus seen are followed up and corrected in the next year's cost deduction.

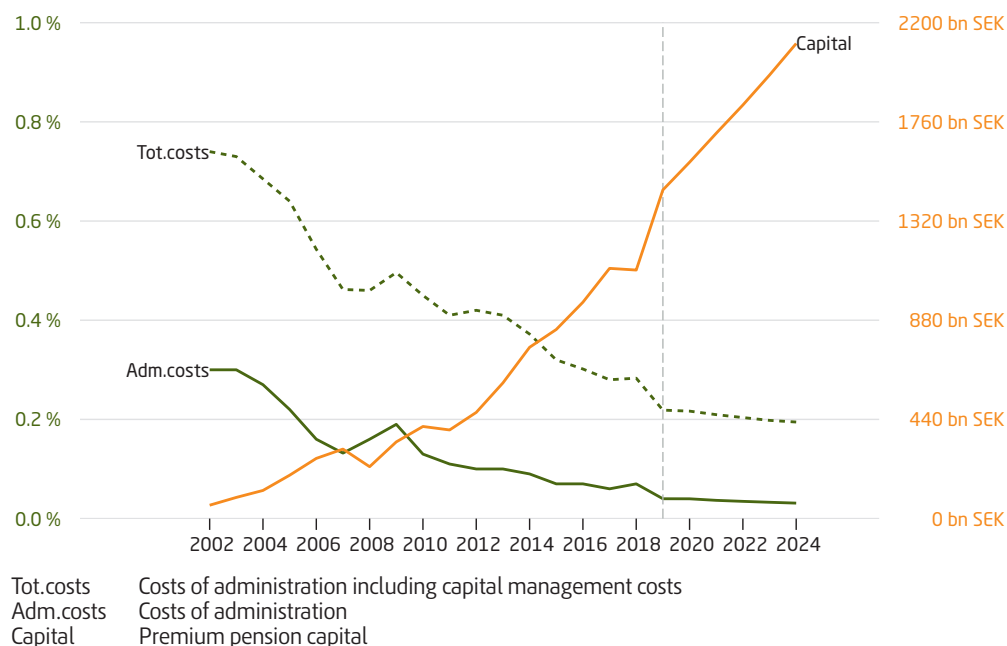
In 2019 the deduction for administrative costs for premium pension insurance was on average 0.04 percent of the premium pension capital. The maximum cost charged in 2019 was SEK 100 per account holder. The premium pension has, just like inkomstpension, small periodic discrepancies between fee charged and the actual cost. These deviations too are corrected continuously.

Insurance administration costs percent

	2014	2015	2016	2017	2018	2019
Inkomstpension ¹	0.0326	0.0284	0.0302	0.0305	0.0310	0.0300
Premium pension	0.09	0.07	0.07	0.06	0.07	0.04

¹ The cost deduction for income pension also includes costs incurred by the National Pension Funds. The deduction is made up until the point where the first payment is made.

Figure 5.5 Premium pension costs and capital



What Difference Do Costs Make in the Size of a Pension?

Costs are an important factor in determining the size of a future pension. A seemingly low annual fee can reduce the pension by a considerable amount since the fee is deducted annually over a long period. Of the factors affecting pension capital, the size of costs is the one which the responsible authorities have the greatest opportunity to influence. Also the insured are able to influence certain costs for the premium pension.

The following simplified calculation provides a fairly accurate portrayal of how a certain cost percentage affects the size of the pension disbursed. The average time for which a paid-in contribution remains in the inkomstpension system before being disbursed is roughly 21 years.

If the cost of the inkomstpension is 0.03 percent, the charge for administrative costs will reduce the inkomstpension to $(1-0,0003)^{21} \approx 99$ percent of what it would have been without the charge, or by roughly 1 percent. If premium pension costs are 0.3 percent, the deduction will reduce the premium pension by just over 9 percent $(1-0,003)^{33}$ of what it would have been without the cost deduction. The reason for the deduction being made over 33 years is that in the premium pension system, pension capital is annually recalculated with costs deduction even during the period of retirement. The expected return is slightly higher, which contributes to a longer turnover period. A fairly normal management fee in Sweden for saving outside the national pension system is around 1 percent – not infrequently, it is even higher. If the charge for costs for the same period as in the example above is 1 percent, pension capital savings will be 72 percent of what they would have been with a fee of 0 percent; in other words, 28 percent is lost in charges for costs.

6 Changes in the Value of the Pension System

Sweden's national pension is based primarily on earnings. In each of their economically active years, gainfully employed individuals contribute a certain portion of their income toward a pension. The bulk of their contribution goes to the inkomstpension system, a lesser share to the premium pension system. Pension credit is accumulated over a long period, 40–45 years, sometimes even more. The size of future pensions will thus depend on the change in the value of contributions paid into the system. For example, someone who deposits a constant amount each year for 40 years, at an annual interest rate of 2 percent, will end up with a final balance that is 54 percent higher than that of a saver with no return.

In the inkomstpension system the change in value is normally determined by the percentage increase in the income index. This index follows the average rate of growth in the earnings of the economically active. In the premium pension system, on the other hand, the change in value is determined by the return on the funds of pension savers. For pensioners choosing traditional insurance with profit annuity, the development of value is determined by that of the assets in which the Swedish Pensions Agency has invested. The discussion below applies hereafter to the development within fund insurance. Another difference is that the change in the value of the inkomstpension is the same for everyone, whereas the return of the premium pension may vary from one individual to another, depending on the type of funds chosen.

Changes In Value During 2019

The pension balance in the inkomstpension system is normally written up in step with the income index, but during a balancing period, the balance index is used. The balancing period that began in 2010 ended in 2018. The change in value only occurs at the turn of the year for the income/balance index, unlike the premium pension system, where changes are ongoing. Indexation between 2019 and 2020 was 3.8 per cent (see the year 2019 in the table below). It was thus by this percentage that earned inkomstpension credit of employed persons was changed at the end of the year.

For pensioners the inkomstpension and the ATP are recalculated each year by the change in the income-/balance index, reduced by 1.6 percent. The reduction is due to the fact that an advance interest rate of 1.6 percent has already been credited to the inkomstpension in the annuity divisor.¹

During a balancing period, inkomstpension is affected by developments in capital markets, as the AP funds are included in the calculation of the balance ratio. They account for just over 16 percent of reported assets, so their impact is not so extensive. The decrease in the market value of investments in the record drop of 2008 was one of the main reasons why balancing was activated in 2010. The positive return has subsequently contributed to higher indexation of inkomstpension and to the ending of balancing in 2018.

Change in value of the premium pension system is wholly determined by developments in capital markets. Both the global stock market (measured in SEK) and the Swedish stock market had a positive development in 2019, unlike the preceding year, when they both showed a negative development. The

¹For a more detailed description of the income index and the balance index, see chapter 4 How the National Pension System Works.

change in value of premium pension funds in 2019 was -29.5 percent, which may be compared with last year's return, -3.4 percent.

Annual Indexation of Inkomstpension Accounts and Return on Premium Pensions percent

	2004	2005	2006	2007	2008	2009	2010	2011
Income-/balance index	2.4	2.7	3.2	4.5	6.2	-1.4	-2.7	5.2
Premium pension index ¹	8.8	30.6	12.1	5.7	-34.2	34.7	12.2	-10.7
	2012	2013	2014	2015	2016	2017	2018	2019
	5.8	-1.1	2.5	5.9	4.4	2.6	3.1	3.8
	12.1	21.1	20.7	6.4	10.9	12.6	-3.4	29.5

1. The premium pension index measures how much an amount paid into the system at a certain point in time has changed over a certain period (so-called time-weighted return). In this case the period is the same as a calendar year. The return for individual pension savers will normally have varied depending on the funds that they have chosen.

Measures of Change in Value in the Premium Pension System

The change of value in the premium pension system can be measured in several ways. The measures presented in this chapter are so-called time-weighted return and capital-weighted return. Another term for capital-weighted return is internal rate of return.

Time-weighted return is used to describe the change in value of a fund or an index. The time-weighted return shows the return on one krona deposited at the outset of the period. No consideration is given to whether deposits or withdrawals have been made during the period.

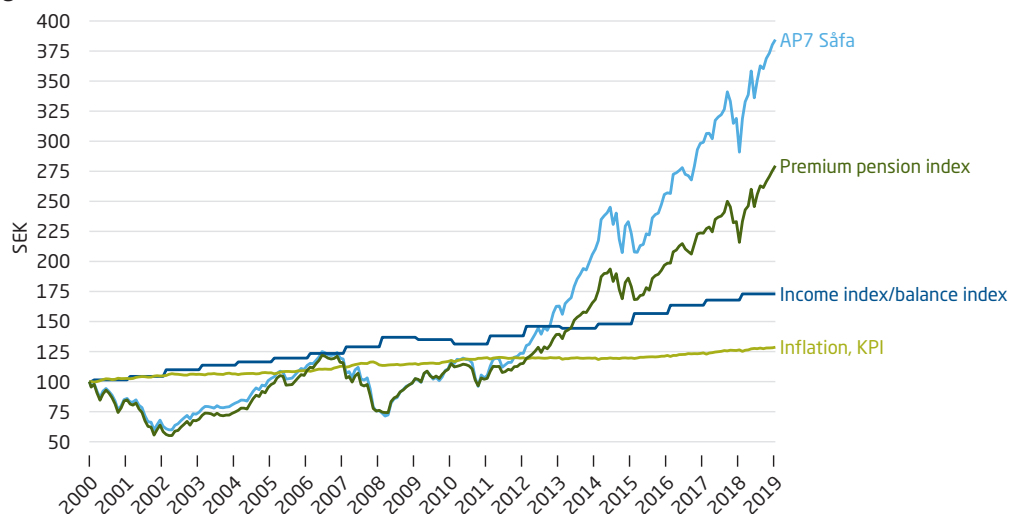
Capital-weighted return can be used for evaluating the premium pension on an overall basis, but also individual accounts. Consideration is given to the timing and amount of all deposits and withdrawals for the account, and to the balance at the end of the period. The capital-weighted return matches the average annual interest rate during the period.

In the section Income and Premium Pensions as Complementary, time-weighted return is used, whereas capital-weighted return is used in the section Change in Value of Pension Savers' Accounts. (For a more thorough description of the time- and capital-weighted return, see Appendix A.)

Income and Premium Pensions as Complementary

One reason for establishing the premium pension as complement to the inkomstpension was that variations over the years in the growth of earnings and return on capital could tend to offset each other. Development over time shows that these indexations do not necessarily follow each other (see the table above). The importance of spreading risk may increase in the future, when the premium pension funds' share of total pension capital increases.

Figure 6.1 Value of SEK 100



Value of SEK 100 paid into the inkomstpension system in December 2000 (income-/balance index) and into the premium pension system (premium pension index and AP7 Såfa). Inflation is included as a reference.

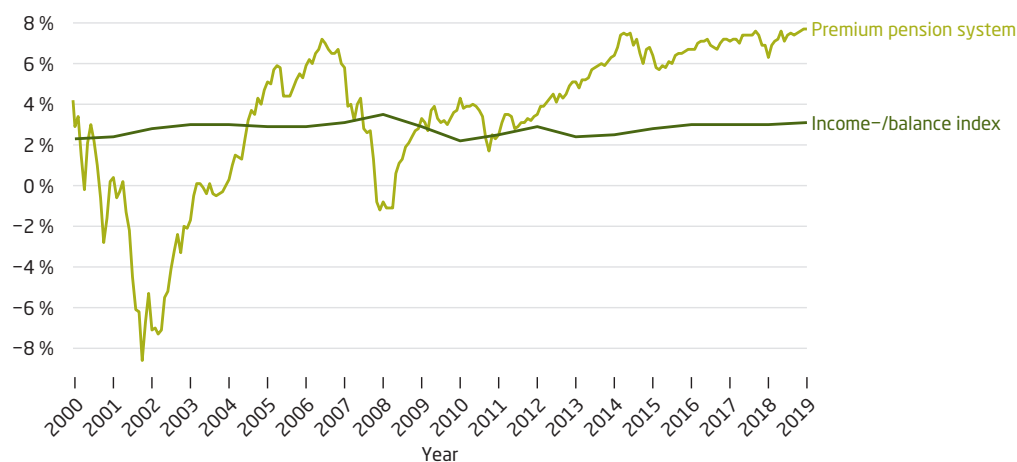
In December, 2000, premium pension savers could begin investing their capital in the funds of the system. Before then, the capital had been under temporary management, which had invested it in an interest-bearing account with the Swedish National Debt Office (Riksgälden). The value of an amount deposited at the start in 2000 has varied substantially over the years. Indexation of the income pension have however remained relatively stable.

Those who refrained from selecting funds, and thus had their moneys invested in the AP7 Såfa, the Central Government Fund Management Alternative (Statens Årskullsförvaltningsalternativ), had by December 31, 2019 obtained a return on moneys invested in December, 2000, greater by 105 percentage points than that of the average fund saver (premium pension index, which includes AP7 Såfa).

Change in Value of Pension Savers' Accounts

The time-weighted return shown above does not take into account changes in the amount of capital during the period of saving, most notably deposits, but disbursements as well. For individual savers, but also for the premium pension system as a whole, it is important to show the return as measured by the capital-weighted rate of return. One reason is that the capital in pension savers' accounts has increased considerably since the beginning because the system is being built up. At the end of 2007, there was six times as much capital in the funds as at the end of 2000. Thus, the amount on which the extremely high return was obtained in 2005 was much larger than the amount adversely affected by the equally negative return of 2002. The capital-weighted rate of return takes this difference into account by assigning greater weight to 2005 than to 2002. In the Swedish Pensions Agency's calculations of internal rate of return, consideration is also given to other factors, such as management fees, rebates and inheritance gains.

Figure 6.2 Average Capital-Weighted Rate of Return for All Premium Pension Savers up to Different Points in Time during the Years 2000–2019



Each point on the curve shows the average annual internal rate of return (after 1995) until the time concerned.

Figure 6.2 shows the progression by year of the average annual capital-weighted rate of return for the premium pension built up at different points in time, as well as the corresponding rate of return if the premium pension had instead developed like the income/balance index. With this return, the capital-weighted rate of return through the end of 2019 would have been 3.1 percent per year. This may be compared with the actual average capital-weighted rate of return for the premium pension, 7.7 percent through 2019. The diagram shows that the corresponding calculation through 2008 was minus 0.8 percent for the premium pension system and plus 3.5 percent if the premium pension system had developed like the income/balance index. Note that the curve does not show the actual capital-weighted rate of return for inkomstpension savers, since the capital structure of the inkomstpension system is considerably different.

Figures 6.1 and 6.2 reflect two points of view for the saver, based on time-weighted and capital-weighted return as explained above. In the first diagram SEK 100 is deposited in the premium pension system in December, 2000, and it is worth about SEK 280 at the end of December, 2019. The value reached its low point of SEK 55 during 2002–2003. To take into account the deposits of premium pension savers into the system each year, and the long-term nature of pension saving, the second diagram shows the average annual capital-weighted return up until a certain point in time. The average annual capital-weighted return on moneys paid into the premium pension system was 7.7 percent in December, 2019. The annual average capital-weighted return was lowest, at -8.6 percent, in 2002 and highest, at 7.7 percent, in 2019. As the premium pension system matures, the annual variation in capital-weighted return will diminish, as is clearly shown in the diagram.

Figure 6.3 shows the average capital-weighted rate of return for pension savers sorted according to their first year of contributing to the system. The difference in return decreases the longer the birth cohorts have participated and been paying into the system. Pension credit earned in 2018 was invested in funds in December 2019; this also applies to new savers who had made no active fund choice. Prior to the earning year 2017, capital for new savers was invested in April of the following year.

Figure 6.3 Average Capital-Weighted Rate of Return Annually from the Saver's First Pension Qualifying Year

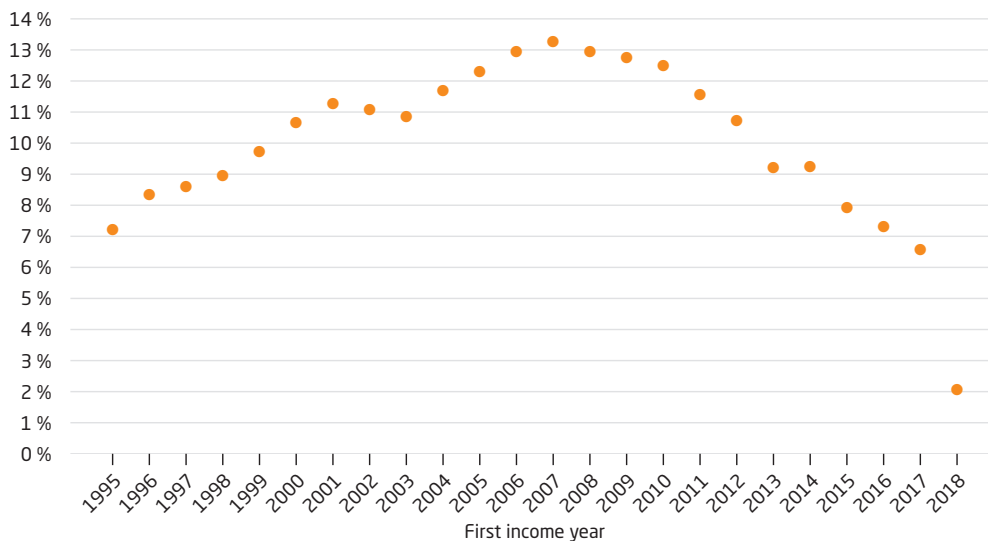
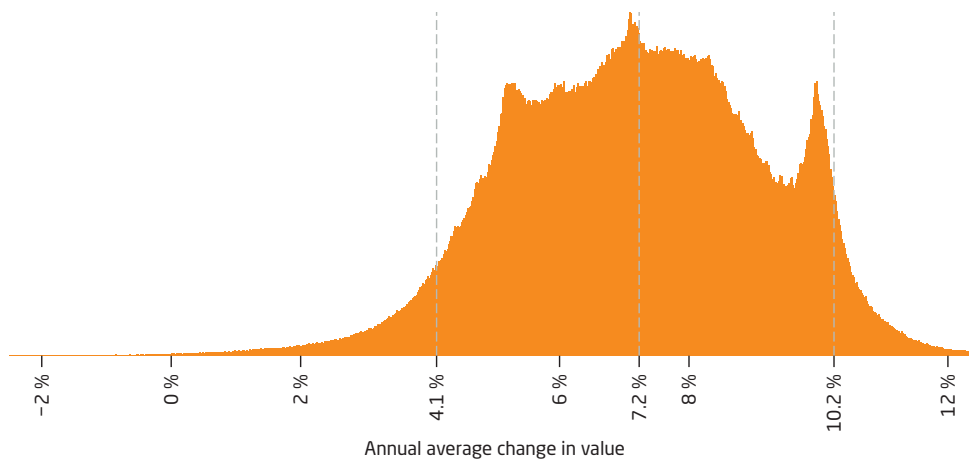


Figure 6.4 shows the distribution of the capital-weighted rate of return among pension savers who have been in the system for an equally long time. Among pension savers who began earning pension credit in 1995 and who then invested it in funds in 2000, just over 99 percent reported a positive change in value at the end of 2018. The figure is divided into those who at some time made an active choice (the Fund Market) and those who never made an active fund choice (AP7). The fact that return differs among those who only had the national pre-selected alternative is mainly because the distribution between the two funds involved, AP7 Equity Fund and AP7 Fixed Income Fund, varies according to the age of fund savers.

Figure 6.4 Pension Savers who Began Earning Pension Credit in the Premium Pension System 1995, Sorted According to Annual Capital-Weighted Rate of Return up to and including 2019



The dashed lines indicate the median and the percentiles for 5 and 95 percent.

Since the data refer to participants since 1995, the explanation for the spread is not that they entered the system at different times. Compare Figure 6.3, which shows the distribution by first year of credit earning. Rather, the principal reason is the choice of fund investments with differences in rate of return.

The table below summarizes the average annual change in value with the time- and capital-weighted rates of return during the existence of the premium pension system. From 1995 on, allocations were set aside for the premium pension, but not until December, 2000, were the moneys paid into funds. During the period 1995–2000 the moneys were invested in interest-bearing assets.

Nominal Average Annual Change in Value and Inflation, Respectively
percent

	1995–2019	2000–2019
Premium pension index (time-weighted)	5.3	5.5
Premium pension (capital-weighted)	7.7	7.9
Income/balance index (time-weighted)	2.8	2.9
Income/balance index (capital-weighted)	3.1	3.1
Inflation	1.1	1.3

Importance of a Long-Term View

The aspects of the pension system that relate to its change in value cannot be judged on the basis of the changes in value over only a few years. The importance of a long-term view is easily underestimated, both when stock prices are rising and when they are falling. For the 90-year period 1924–2014, the average real rate of return globally was 6.1 percent per year. However, this does not guarantee such a return in 10 or even in 20 to 30 years. For different 10-year periods since 1930, the real rate of return has varied considerably, on the Stockholm Stock Exchange, from 23 percent per year (1980–89) down to negative figures in certain other periods. There have often been major changes between adjacent 10-year averages, both on the Stockholm Stock Exchange and world-wide.

One conclusion is that “long term” is not 5–7 years, or even 10 years, as is sometimes said, but that in the matter of equity returns one should imagine a much longer period. In the context of pensions, it is reasonable for younger people to have a 30–40-year perspective. Historically, the real value development for longer periods has also been much more stable. Only over a term of at least 35 years is the real value growth for global equities comparable in stability with Swedish real wage development over 10 years. Real wage growth is the factor above all that governs the value growth of inkomstpension. The real wage per employee increased over the period 1918–2012 by an estimated 2.1 percent per year, thus significantly slower than the annual 6.1 percent of real stock returns. The difference was most pronounced during the 1980s and 1990s.

7 Three Scenarios for the Future of the National Pension System

To show how different developments can affect the long-term financial position of the national pension system and the size of pensions, projections are presented for the evolution of the pension system over the next 75 years in.

This section is primarily based on calculations made using the Swedish Pensions Agency's Pension model. The agency's Typical-case model has also been used. These models may be found on the agency's website.¹ Projections of the pension system are as usual based on the system's financial position at the latest year-end. The economic impact of the current outbreak of Covid-19 on the system has not been taken into account in this year's report, but will be apparent in the financial report for 2020 and in projections for the system in that year's Orange report.

The long-term financial position of the inkomstpension system is described below in three different projections, or scenarios. New for this year is the expansion of the base scenario to include an alternative scenario where retirement ages follow the expected target age. These are referred to as the base, optimistic and pessimistic scenarios. The following three aspects of financial position treated are:

- Net contribution
- Fund strength
- Balance ratio

The net contribution is the difference between the system's contribution revenue and pension disbursements. For a better comparison, the net contribution is expressed in the scenarios as a percentage of total paid-in contributions; this adjusts for the volume effect of long-term economic growth. The net contribution is currently -8.8 percent.

¹<https://www.pensionsmyndigheten.se/statistik-och-rapporter/pensionsmodellen/>

Net Lending of the Inkomstpension System *
billions of SEK

	2019
Primary net lending	
Net contribution	-25
Contribution	289
Pensions	-315
Costs of administration etc., net	-2
Total Primary net lending	-27
Return	
Interest income	11
Dividends on shares	24
Total Return	35
Net lending	7

* There may be some minor deviations from the National Accounts.

The net contribution corresponds (after deduction for costs of administration etc.) to the *primary* net lending of the system. Total net lending includes the net return of the National Pension Funds, which consists of interest income and dividends on shares.

Net lending contributes to the change in the size of the National Pension Funds. In addition, there are upward and downward fluctuations, sometimes considerable, in the market value of the securities held. In 2019, the total return generated by the buffer funds (First – Fourth and Sixth AP Funds) was SEK 240 billion.

Fund strength is the market value of National Pension Fund capital divided by pension disbursements for the year. Fund strength shows how many years of pension disbursements can be financed by the fund. For the year 2019 fund strength was 5.0 years.

The balance ratio is a measure that summarizes the financial position of the inkomstpension system. The balance ratio is the ratio between the total assets of the system and its liabilities. The assets consist of the contribution asset with the addition of the market value of the National Pension Funds. (For a more detailed discussion, see chapter 4 How the National Pension System Works and Appendix B Mathematical Description of the Balance Ratio). Calculated on the basis of assets and liabilities as of December 31, 2019, the balance ratio was 1.0802.

The future financial position of the inkomstpension system will depend on the development of several demographic and economic factors. The three scenarios studied differ in the following respects:

- Demographic development
- Change in average income
- Return on the National Pension Funds

The detailed assumptions for the scenarios are presented last in this chapter under the heading Assumptions in the Calculations for the Three Scenarios.

The number **paying contributions** is determined by the working-age population and the proportion thereof with earned income or other pension-qualifying income subject to contributions. The development of the working-age population depends primarily on net immigration and – in the longer term – the birth rate. The development of the number paying contributions is of significance for the financial

position of the system. Pensions and the pension credit earned by the gainfully employed are revalued annually by the change in average income (the income index, or the balance index in years when balancing is activated). If there is an increase in the number of people with incomes who are paying contributions, the consequences will be that the net contribution, the buffer fund and the balance ratio all increase.

The change in the **average income** of the economically active is of limited importance for the net lending of the pension system, for pensions are linked to the income index, which follows average income. A change in average income results in corresponding changes in both contribution inflow and pension disbursements. In principle, therefore, a change in average income will have no effect on the relative net contribution. The value of the inkomstpension will of course be heavily influenced by the change in the income index.

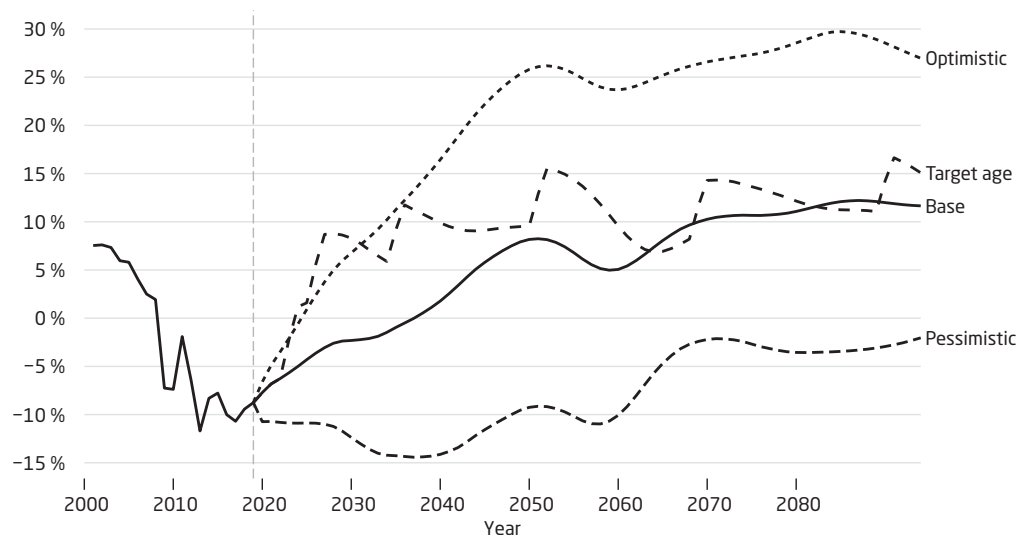
The **return** on the National Pension Funds affects the size of the Funds and thus fund strength and the balance ratio as well. The negative effect of weak growth in the net contribution on fund strength and the balance ratio can be offset by a high return on fund capital. In the base scenario, the real annual return assumed is 3.25 percent; in the optimistic and pessimistic scenarios, the respective returns assumed are 5.5 percent and 1.0 percent. A factor of importance for both fund strength and the balance ratio is the difference between the return and the average income. This is due to the fact that both pension disbursements and the system's pension liability grow at the same rate as average income, whereas the market value of the National Pension Funds grows with the return and is included in the numerator both for the measure of fund strength and for the balance ratio. See Appendix B Mathematical Description of the Balance Ratio.

In summary, the net contribution will be negative in the base and pessimistic scenario for many years to come. Pension disbursements are thus forecast to exceed contribution revenue for these scenarios.

Net Contribution

As previously noted, the net contribution is the difference between contribution revenue and pension disbursements in relation to contributions. Since the birth cohorts in the population differ in size and have worked to differing degrees, the contribution revenue and pension disbursements of the system will vary over time. For a better comparison of the net contribution in the three scenarios, the net contribution has been divided by the inflow of contributions in the scenario. This eliminates the volume effect of the differing growth rates on the net contribution in monetary terms.

Figure 7.1 Net Contribution



Contribution revenue less pension disbursements as a percentage of contribution revenue.

The net contribution was negative for the first time in 2009 and is expected to remain so for many years in the base and pessimistic scenarios. The explanation is that the large birth cohorts of the 1940's almost completely have left the labour force and retired. The negative balancings of 2010, 2011 and 2014 appear in the diagram as improvements in the net contribution. Around 2020 the net contribution begins to slowly improve and the contribution deficit to slowly decrease. From 2039, income is expected to be greater than expenditure in the base scenario. The principal reason is that the large birth cohorts of the 1990s and the 2010s will be of working age at the same time as the cohorts of the 1960s with pension disbursements will be decreasing; see figure 7.8 at the end of this chapter. If pension-related age limits are raised in accordance with the proposals in DS 2019:2 (Raised Age Limits in the Pension System and in Other Social Security Systems) and occur under the conditions in Statistics Sweden's population projection from 2019, the net contribution will be positive as early as 2024.² With each increase in the target age, net contribution grows and then declines until the next increase in the target age. The decline is due to pension disbursements being higher than in the base scenario due to retirement being postponed. The effect of demography is also reflected in the peaks and troughs in the figure above. The difference in timing of the peaks and troughs between the pessimistic and other scenarios is due to different demographic assumptions. In the pessimistic scenario, net contribution is negative throughout the whole period, but in the optimistic scenario up until and including 2024. The pessimistic scenario has low net immigration and reduced birth rate (see Figure 7.8).

The Buffer Fund – Fund Strength

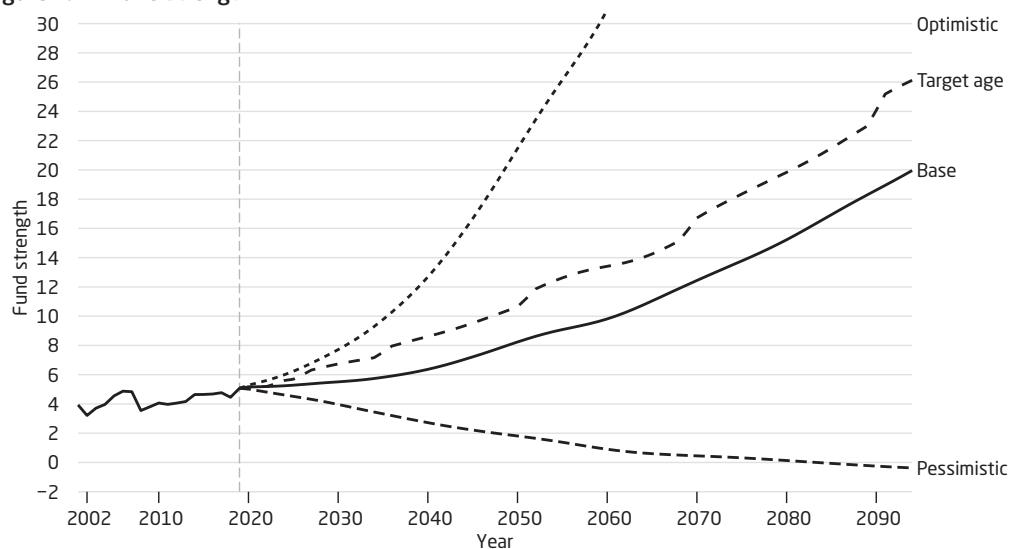
The size of the buffer fund is expressed in terms of fund strength, that is, the fund capital at year-end divided by pension disbursements for the year. Fund strength shows how many years of pension disbursements the fund can finance without additional contributions or return in the future. The different

²The pension model uses a naive assumption that when the target age is raised, the insured postpone their retirement by a full year. The gainfully employed thus work a full extra year and receive one year less of pension disbursements. This is unlikely to happen in real life.

development of the buffer fund in the three scenarios is due to differences in net contribution and in the assumed return on the fund.

Fund strength has averaged 4–5 years since 1990. At the end of 2019, it was 5 years.

Figure 7.2 Fund Strength



Size of buffer fund divided by pension disbursements the same year.

In the **base scenario**, fund strength increases as the contribution net is assumed to have a positive development combined with the fact that the funds' return (3.25 percent) is expected to exceed average income growth (1.8 percent). If retirement ages are raised concurrently with the target age, fund strength will be even higher because net contribution will be positive earlier than in the base scenario with no retirement age increases.

In the **optimistic scenario**, fund strength grows faster than in the base scenario, which is explained by a stronger improvement in the contribution net and a greater difference between fund return (5.5 percent) and average income growth (2 percent). In 2028, fund size corresponds to 7 years of pension disbursements.

In the **pessimistic scenario**, fund strength gradually decreases throughout the projection period. Due to unfavourable age composition the fund is empty around 2080 and then continues to decrease.

The Balance Ratio

The financial position of the inkomstpension is expressed in terms of a ratio: the system's assets in relation to pension liabilities. See the section A Rate of Interest Other Than the Income Index – Balancing in chapter 4, How the National Pension System Works. When the ratio is less than one, liabilities exceed assets. A ratio of 2.0 means that assets are twice as great as liabilities and that the system in principle is fully funded, that is, the buffer fund, the contribution asset and the pension liability are of equal size.

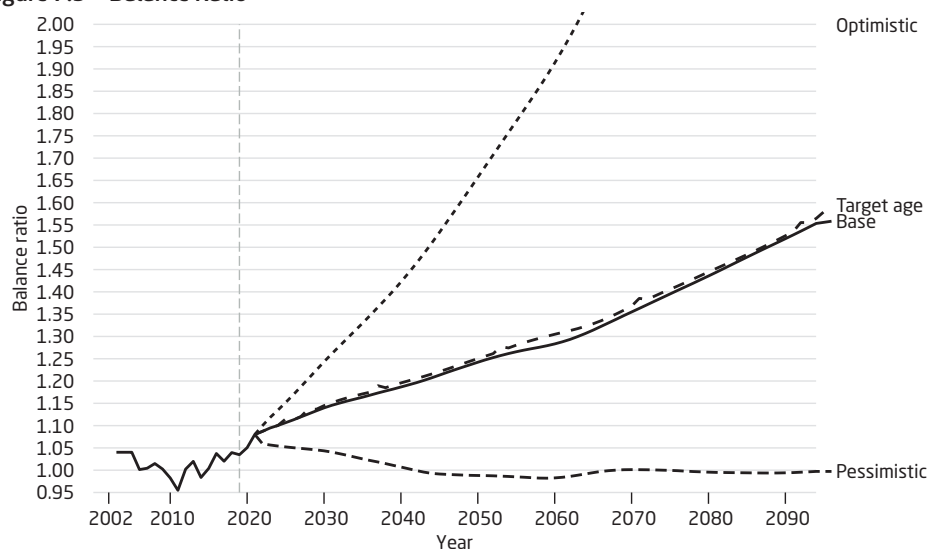
In 2010 balancing was activated, and it ended in 2018. When balancing is activated, "interest" is credited to pensions and pension balances through the change in the income index and the balance ratio. As long as balancing is activated, the cumulative indexation is less than it would have been without balancing but in the years the balance ratio is greater than 1 during a balancing period, indexing is greater than that of the income index.

Cumulative balance ratio product *

Year	Base	Optimistic	Pessimistic
2009	1.0000		
2010	0.9826		
2011	0.9383		
2012	0.9406		
2013	0.9592		
2014	0.9436		
2015	0.9474		
2016	0.9829		
2017	0.9894		
2018	1.0000		
2019	1.0000		
2020	1.0000		
2021	1.0000	1.0000	1.0000
2022	1.0000	1.0000	1.0000
2023	1.0000	1.0000	1.0000
2024	1.0000	1.0000	1.0000
2025	1.0000	1.0000	1.0000
2026	1.0000	1.0000	1.0000
2027	1.0000	1.0000	1.0000
2028	1.0000	1.0000	1.0000
2029	1.0000	1.0000	0.9998
2030	1.0000	1.0000	0.9989
2031	1.0000	1.0000	0.9972
2032	1.0000	1.0000	0.9948

* Historical and forecast accumulated balance ratio product. When the product reaches 1.0000, the balancing period is over. As of 2021, the balance ratios are based on forecasts according to three scenarios.

Figure 7.3 Balance Ratio



(Contribution asset + buffer fund) / pension liability

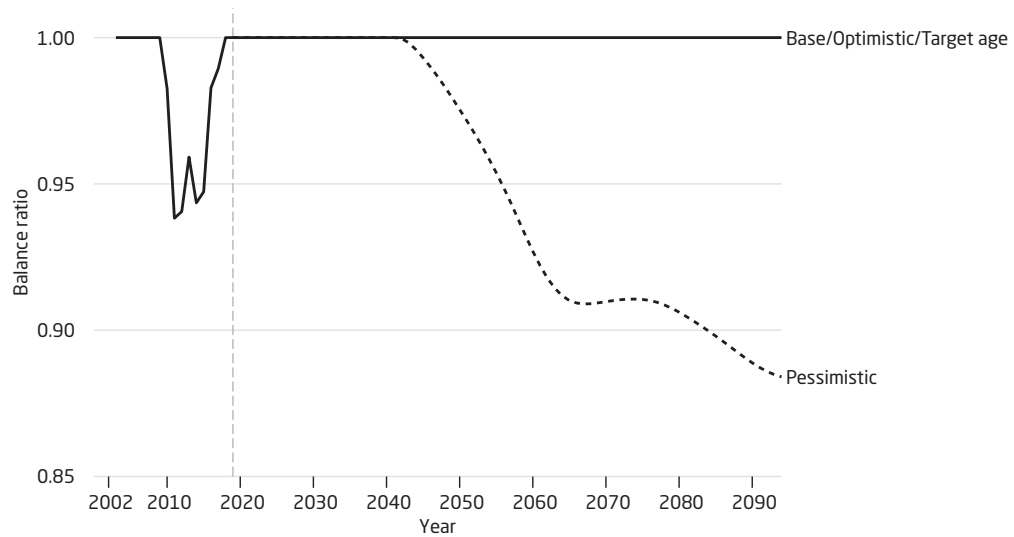
In the **base scenario** the balance ratio is greater than 1 throughout the projection period. In the base scenario the balance ratio strengthens gradually because of demographic factors and the fact that the return on the buffer fund is greater than the income index. The balance ratio reaches 1.1 around 2024, a level that according to the proposal in “Utdelning av överskott i inkomstpensionssystemet” (Distribution of Surpluses in the Inkomstpension System, (SOU 2004:105) would mean that there were distributable surpluses. However, no such proposal has been presented to the Swedish Parliament. There are two reasons why level 1.1 is reached 6 years earlier than in the base scenario in the Orange Report 2018: the starting-out position is higher than the previous year with a balance ratio of 1.0802 due to the conditions obtaining in 2019 compared with 1.0505 in 2018. The second reason is that the earliest retirement age for claiming income-based old-age pension was raised from 61 to 62 in 2020. This results in a slightly higher contribution income and thus a higher contribution asset. The same effect can be seen in the target age alternative with a slight twitch in the curve in those years when the target age is raised. In other years, the curves follow each other because pension liability increases with increasing pension credit.

In the **optimistic scenario** the balance ratio is also greater than 1 throughout the projection period. As of 2022 the balance ratio exceeds 1.1.

In the **pessimistic scenario**, the balance ratio lies between 0.984 and just over 1 throughout the whole projection period. A new balancing period will occur in 2042. After 2068 and for some years following, the balance ratio will be just over one but then it will drop again.

The figure for the balance ratio does not show the damped balance ratio but the balance ratio as a measure of the financial position of the pension system. The damped balance ratio is that which in combination with the income index affects the upward adjustment of pensions and pension balances during balancing periods. The effects of this are shown in the table for the Cumulative balance ratio product and in Figure 7.4. The balancing period that starts in 2042 in the pessimistic scenario continues throughout the whole projection period, despite the balance ratio being temporarily greater than one at the end of the 2060s.

Figure 7.4 Adjusted Balance Index

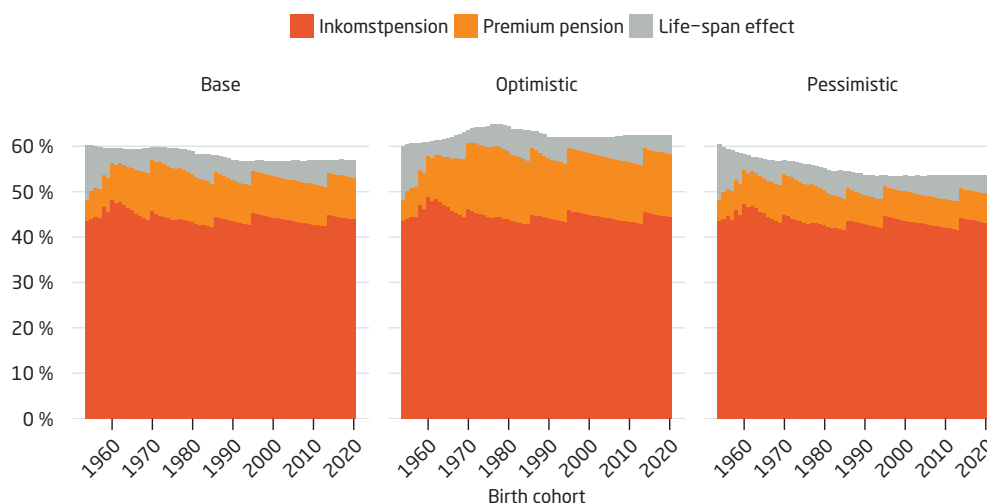


Balance Index / Income Index

Development of Pension Levels for Typical Cases

Below is an account of how the pension develops relative to earned income for typical cases born in the years 1954-2020 using the three different scenarios. The effect of the scenarios on pension level has been streamlined inasmuch as pensions have been calculated for an individual who starts working at the age of 23 and retires at the so-called target age - the age when national social insurances (unemployment insurance, sickness benefit etc.) cease and basic protection for the elderly comes into play. Income for typical cases increases with national income growth. Pension level is the national pension at the target age in relation to average salary during the final five years of pension earning. Note that the target age today is 65 years and is expected to be raised to 66 years in 2023, affecting the 1958 birth cohort, which will thus not be entitled to basic protection at age 65. In 2026, the target age is expected to be raised again by one year to age 67, affecting those born in 1960. Thereafter, the target age will be increased by about two-thirds of the increase in life expectancy. However, this will happen with some time lag, and gradually. .

Figure 7.5 Pension in Proportion to Final Earnings, Different Birth Cohorts



The scenarios' pension levels at the target age are shown in the figure above, one for each scenario. The figure also demonstrates the life expectancy effect. This constitutes total national pension received when typical cases postpone their retirement sufficiently to fully compensate for the negative effect of increased life expectancy on the monthly pension. Increased life expectancy refers to the period since 1994 when the inkomstpension and premium pension system was introduced. Prolonged working life results in a higher pension due to the earning of new pension credit, return on pension capital, a lower annuity divisor in the calculation of the pension, as well as inheritance gains.³ In the figure above, the pension level typical cases reach at the higher retirement age required to compensate for the life expectancy effect, has been marked in light gray.

In the **base scenario**, the pension level decreases successively each time the target age is raised but then increases once again once the target age is reached (because the following birth cohort/typical case works one extra year). The long-term the trend is declining pension levels. One reason is the return: older cohorts with a longer pension history generally have a higher return than the assumed future return. Another reason for lower compensation levels is the fact that reduced risk of death applies to all ages, from 18 to target age, thus giving lower inheritance gains, while the change in target age only takes into account increased life expectancy after the age of 65. Those born in 1954 must work up to age 67 years and 6 months to compensate for the eroding effect of life expectancy on pensions. At that retirement age, the pension is estimated to be around 57 percent of final salary income. The declining pension level despite neutralization is due as noted to the lower average return for younger people. If working life is prolonged so that the effect of increasing life expectancy on pension level is neutralized, the pension level stabilizes at around 56 percent in the base scenario.⁴

In the **optimistic** and **pessimistic scenarios**, growth in average income is higher respectively lower than in the base scenario, as also return on premium pension. The pension levels in the scenarios at age 65 are described in the figures above, one for each scenario. The figures show a life-expectancy effect

³Inheritance gain can be seen as compensation for the risk of the typical case not surviving until retirement and thus not receiving part of the pension due.

⁴Note that the outcome also depends on the phasing-in of the system (1995 was the first year it was possible to earn pension credit in the premium pension system, and at the end of 2001 the fund marketplace was opened for individual fund choice).

in the form of the total national pension received if the typical case postpones retirement to the extent required to compensate for the increase in life expectancy.

An extended working life gives a higher pension because new pension credit is earned, pension capital yields interest and a lower annuity divisor is used in the calculation of the pension. The retirement age required for the pension level not to decrease because of the increase in life expectancy is shown in the table in the next section, *Life Expectancy Effect and Alternative Retirement Age*. In the figure the pension level for the typical cases at their alternative retirement age are marked by light grey.

In the **base scenario** the pension level at age 65 decreases successively from 48 percent of final earnings for birth cohort 1953 to about 38 percent for birth cohort 2018. Those born in 1953 have an alternative retirement age of 67 years and 6 months. At that retirement age, the pension level is estimated to be just over 55 percent of final salary. The falling pension level is due in part to the expected increase in life expectancy. If working life is lengthened so that the effect of the increased life expectancy is neutralized, the pension level stabilizes.

The figure shows that the premium pension share of pensions varies between cohorts. This is due to the phasing-in of the system (1995 was the first year it was possible to earn credit in the system). The fact that average return has been higher than both the expected future return and the indexation of inkomstpension is another explanation. For the youngest cohorts, premium pension at age 65 amounts to just over 8 per cent of final income and inkomstpension to just over 30 per cent. For the alternative retirement age, the corresponding proportions are 12 and 47 percent respectively.

In the **optimistic and pessimistic scenarios** average growth is higher and lower, respectively, than in the base scenario. There is also a difference in the return on the premium pension.

When balancing is not activated, the inkomstpension accrues interest (is indexed) by the change in average income, and inkomstpensions are changed at the same rate as average income. In this case the relationship between the inkomstpension and final salary is not affected by the growth in real earnings, and the inkomstpension as a percentage of income remains unchanged. On the other hand, the inkomstpension will naturally be lower in monetary terms with lower growth and higher with higher growth.

The relationship between the return of the premium pension system and the increase in average income affects the relative size of the premium pension. The larger the positive discrepancy between return and wage growth, the greater the share constituted by the premium pension.

Pension level increases for typical cases if they have an occupational pension. The increase depends on the contractual area, but is about 20-25 percentage points of pensions at the alternative retirement age (ranging from 50 to 70 percent).

Life Expectancy Effect and Alternative Retirement Age

The table below shows, among other things the life expectancy for persons at age 65 for birth cohorts 1930—2020. Remaining life expectancy at the age of 65 is expected to increase from 17 years and 4 months for persons born in 1930 to 25 years and 10 months for persons born in 2020, an increase of 8 years and 6 months. If those born in 2020 are to have the same pension level that they would have had if life expectancy had not increased, a portion of the increased life span after age 65 must be devoted to working longer. For the cohort born in 2020, working life must be extended to 72 years and 1 month. This measure is called the alternative retirement age. During 2017, the Swedish Pensions Agency changed its formula for alternative pension age.⁵ However, in the Swedish government proposal DS2019:2, 'Höjda åldersgränser i pensionssystemet och andra trygghetssystem' (Raised age limits in the pension system and in other social security systems), another formula is proposed (normal pension age) giving a lower retirement age than the alternative retirement age and thereby a lower level of

⁵Report from 2017: Formula for an alternative retirement age

compensation since it does not take into account changes in life expectancy before the age of 65. At the same time, those born in 2020 – despite such a higher retirement age – may look forward to being pensioners 3 years and 0 months longer than those born in 1930.

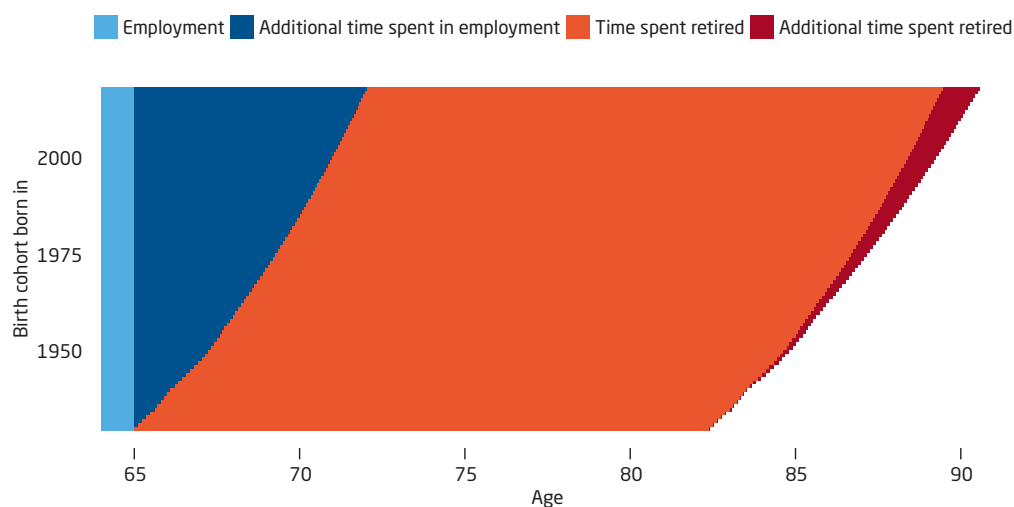
Target age, alternative retirement age and time as retired *

Birth cohort born in	... reaches 65 in	Life expectancy at 65	Expected target age	Time spent retired	... compared to birth cohort 1930	Alternative age of retirement
1930	1995	82 yr 4 m	65 yr	17 yr 4 m	0 yr 0 m	65 yr 0 m
1935	2000	83 yr 0 m	65 yr	18 yr 0 m	0 yr 8 m	65 yr 7 m
1940	2005	83 yr 6 m	65 yr	18 yr 6 m	1 yr 2 m	66 yr 1 m
1945	2010	84 yr 2 m	65 yr	19 yr 2 m	1 yr 10 m	66 yr 8 m
1950	2015	84 yr 9 m	65 yr	19 yr 9 m	2 yr 5 m	67 yr 2 m
1955	2020	85 yr 3 m	65 yr	20 yr 3 m	2 yr 11 m	67 yr 8 m
1960	2025	85 yr 11 m	67 yr	19 yr 3 m	1 yr 11 m	68 yr 0 m
1965	2030	86 yr 5 m	67 yr	19 yr 8 m	2 yr 4 m	68 yr 5 m
1970	2035	86 yr 10 m	68 yr	19 yr 4 m	2 yr 0 m	68 yr 10 m
1975	2040	87 yr 4 m	68 yr	19 yr 9 m	2 yr 5 m	69 yr 3 m
1980	2045	87 yr 9 m	68 yr	20 yr 2 m	2 yr 10 m	69 yr 7 m
1985	2050	88 yr 2 m	69 yr	19 yr 8 m	2 yr 4 m	70 yr 0 m
1990	2055	88 yr 7 m	69 yr	20 yr 1 m	2 yr 9 m	70 yr 4 m
1995	2060	89 yr 0 m	69 yr	20 yr 5 m	3 yr 1 m	70 yr 7 m
2000	2065	89 yr 5 m	70 yr	19 yr 11 m	2 yr 7 m	70 yr 11 m
2005	2070	89 yr 9 m	70 yr	20 yr 3 m	2 yr 11 m	71 yr 3 m
2010	2075	90 yr 2 m	70 yr	20 yr 7 m	3 yr 3 m	71 yr 6 m
2015	2080	90 yr 6 m	70 yr	20 yr 11 m	3 yr 7 m	71 yr 10 m
2020	2085	90 yr 10 m	71 yr	20 yr 4 m	3 yr 0 m	72 yr 1 m

* The table has been corrected as compared to previously published version of Orange rapport 2019. Time as retired refers to the expected number of remaining years of life at the expected target age.

Figure 7.6 shows a graphic representation of the same trend. As shown by the dark red part of the graph, younger generations are expected to have a longer period of retirement than those born in 1930. For those born in 1954 and thereafter (that is, for individuals covered entirely by the rules of the new pension system), the alternative retirement age means that on average 2/3 of the increased life span⁶ will be spent working, and about 1/3 on a longer period of retirement.

Figure 7.6 Alternative age of retirement



Assumptions in the Calculations for the Three Scenarios

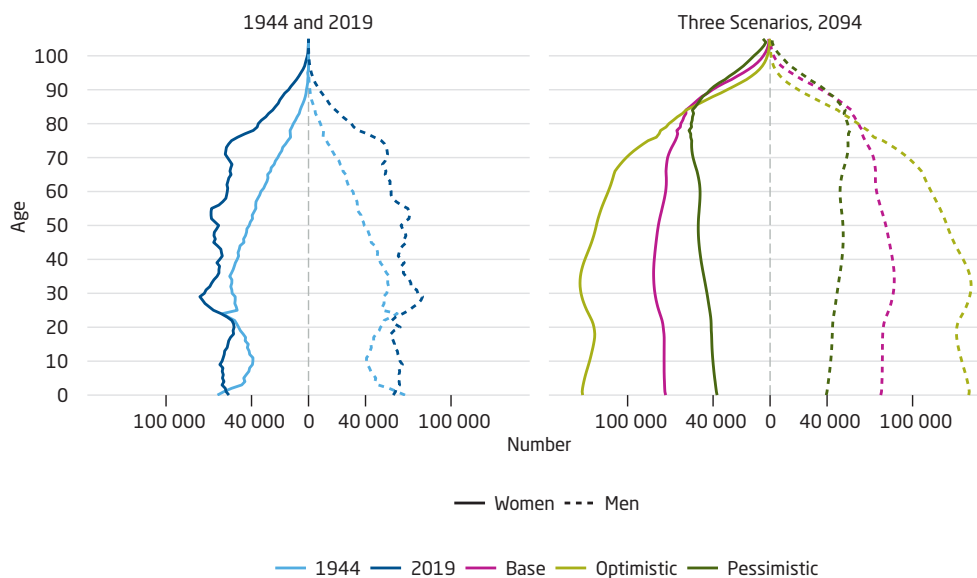
In the table and in the figure below, the various assumptions in the scenarios are summarized.

Bases for Calculation percent

	Base	Pessimistic	Optimistic
Inflation	2.00	2.00	2.00
Change in average income	1.80	1.00	2.00
Real return, net, after fees to fund management companies			
Premium pension funds	3.90	1.00	5.50
Buffer fund	3.25	1.00	5.50
National Debt Office	2.75	1.00	3.00

⁶2/3 of the increase in average life expectancy from the age of 23, or 85 percent of the increase in average life expectancy from the age of 65.

Figure 7.7 Population for 1944 and 2019, Projection for 2094 in the Three Scenarios



Base Scenario

The demographic development in the base scenario follows the latest official population forecast of Statistics Sweden from 2019. There it is assumed that nativity will eventually stabilize at 1.86 children per Swedish-born woman. The average life span for men born in 2019 is 81.0 years and is expected to increase to 85.2 years in 2050. For women the average life span is expected to increase from 84.4 to 87.5 years during the same period. For the remainder of the time until the end of the projection period in 2094, the average life span will increase by approximately 4 years for both men and women. The population forecast from 2019 predicts lower net immigration for the next 5 years than the previous forecast, that is, 250,000 people compared to the previous figure of 320,000. Subsequently net immigration drops by a few thousand persons per year to stabilize at just over 20,000 people per year. This year's assumption for the base scenario is constant employment, that is to say, future employment is the same as today. The reason for this is that Statistics Sweden's main alternative implies future employment increases in the older section of the population. This can instead be controlled in the current pension model by increasing the retirement age. Real average income is expected to increase by 1.8 percent per year. The buffer fund's real return is assumed to 3.25 percent per year. As of 2020, the minimum retirement age is 62 years. For the base scenario with target age increases, everything is the same except the chance to retire is postponed by a whole year. This means that the cohort affected by the higher target age works for another year and those with transfers also receive these for another year. Since the mortality rate is the same, the time as a pensioner is reduced by one year.

Optimistic Scenario

The demographic assumptions do not follow the base scenario and are based on Statistics Sweden's forecasts from 2018. Both nativity and net immigration are higher than in the base alternative. In the long run, nativity is estimated at 2.06 children per Swedish-born woman. Long-term immigration is assumed on average to show a surplus of some 70,000 persons per year. Mortality is assumed to be constant and to retain the same 2019 values throughout the whole of the forecast period. Assumptions

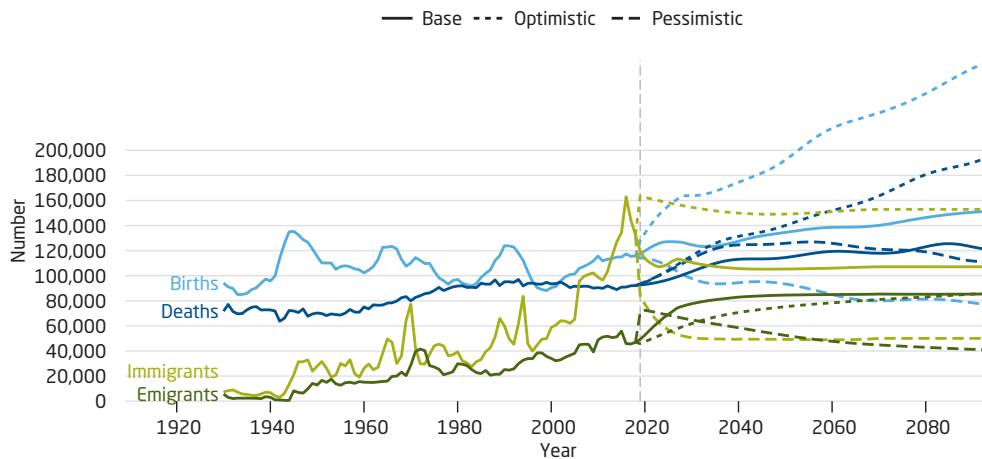
regarding employment are the same as in the base scenario. The real growth in average income is 2.0 percent after 2019, and the real rate of return on the buffer fund is assumed to be 5.5 percent per year in the future. The real return for the premium pension is also assumed to be 5.5 percent before costs of administration. The temporary administration of the premium pension at the Swedish National Debt Office is assumed to yield an interest rate of 3.0 per cent. As of 2020, the minimum retirement age is 62 years.

Pessimistic Scenario

The assumptions in the pessimistic scenario about birth rates and net immigration are lower than in the base alternative. Nativity is assumed to be about 1.65 children per Swedish-born woman. Net immigration is negative during the period 2022–2056, later rising to approximately 5,000 per year. In the pessimistic scenario life expectancy increases faster than in the base scenario. Remaining life expectancy increases from 84.4 years for women to 89.7 years in 2050 and 95.0 years in 2094. The corresponding figure for men is 81.1 to 87.3 and finally 93.4 years. The proportion employed is assumed to remain unchanged for the time ahead. The real growth in average income is assumed to be 1 percent per year. The real rate of return for the Buffer Fund, the National Debt Office and the premium pension funds is also assumed to be 1 percent per year. With a return equal to the growth in average income, the return of the buffer fund does not, in principle, contribute to the long-run financing of pensions. The buffer fund is then demographically determined and serves as a neutral repository of pension capital for the purposes of the system's financing. The assumptions in the pessimistic scenario mean that the contribution flow grows slowly in relation to the desired indexation of the average income. The pessimistic scenario describes how pensions are affected by a prolonged weak development with an unfavorable age structure. As of 2020, the minimum retirement age is 62 years.

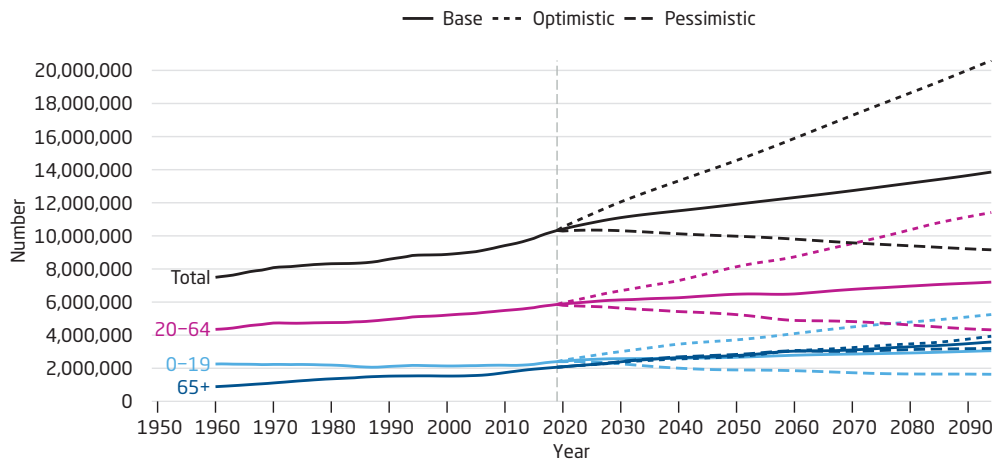
Description of the Assumptions in the Scenarios

Figure 7.8 Births, Deaths, Immigration and Emigration, 1930–2019, and Assumptions Through 2094



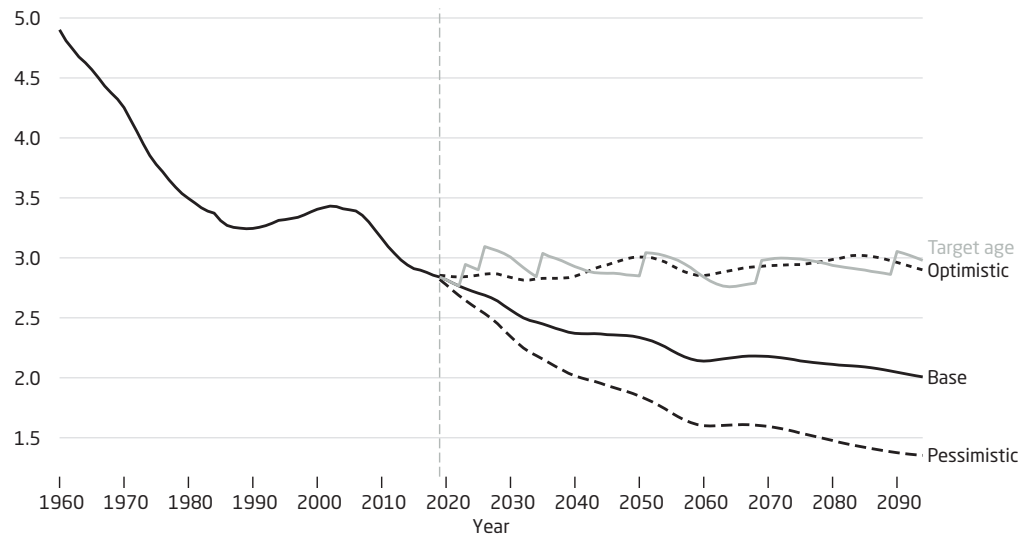
The diagram shows the development of the population since 1930 and the assumptions for 75 years into the future. The large birth cohorts of the 1940's, 1960's, 1990's and 2010's are evident. The number dying increases each year, not because of rising mortality, but because of a growing population. The peak years of immigration are the 1960's and 1970's, when there was substantial immigration of labour, particularly from Finland. There was another peak at the outset of the 1990's, when many refugees arrived, primarily from ex-Yugoslavia. The large immigrant cohorts in recent years are also reflected in the diagram.

Figure 7.9 Size of Population



The total population increases in both the positive and base scenarios, the reasons being a high birth rate and net immigration. The number of persons over 65 is more or less the same from one scenario to another. The historical data are estimates.

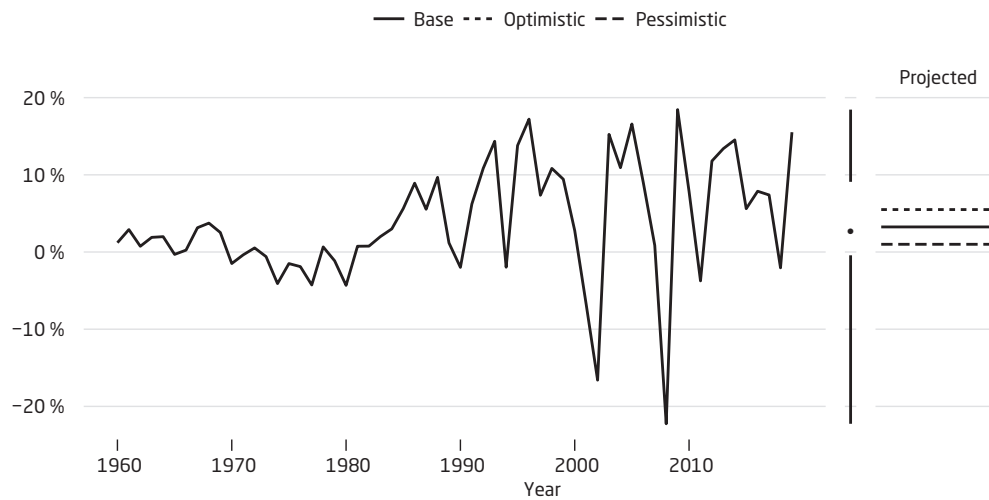
Figure 7.10 Support Ratio During 1960–2019 and Projection According to Statistics Sweden's Three Scenarios for 2019–2094



For the three scenarios the support ratio is calculated as the number of persons aged 20–64 years divided by the number aged 65 or older. The support ratio for the base scenario has also been calculated with alternative retirement ages instead of age 65 as a limit. For this curve, a smoothed mean value for the burden of support is used.

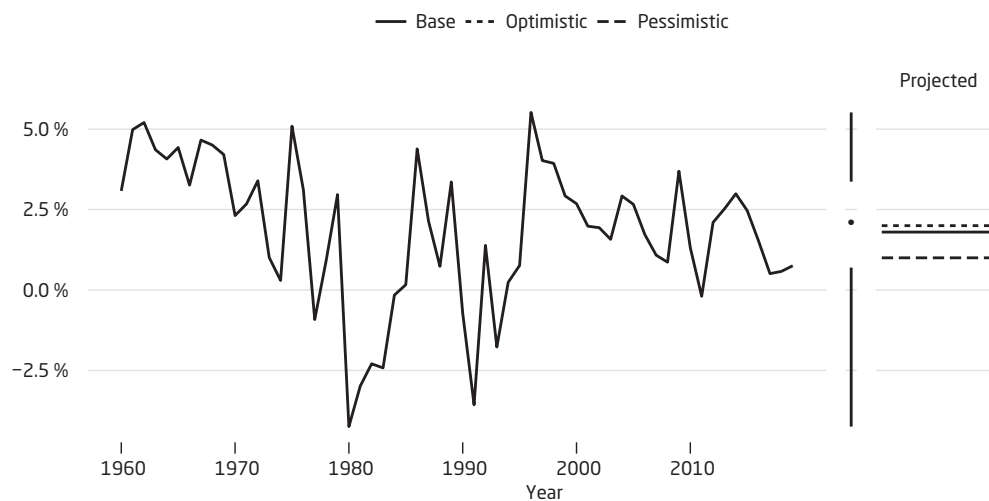
Figure 7.10 shows the support ratio for the elderly for the three scenarios and for the base scenario with target age increases. With each increase in the target age, one cohort is moved from belonging to the elderly to belonging to the gainfully employed, leading to a temporary increase in the support ratio for the elderly. For the base and the pessimistic scenarios with a fixed age limit of 65, there is a steadily declining support ratio for the elderly. The pessimistic scenario stands out with almost 1.35 persons of working age per old person at the end of the simulation period. This is due to unfavourable demographics with increasing life spans, low net immigration combined with low fertility.

Figure 7.11 Real Return on the Buffer Fund, 1960–2019, and Assumptions until 2094



The historical return of the buffer fund for the last 59 years. The point between the vertical lines is the median value. The starting point for the upper vertical line is the 75th percentile; the ending point is the maximum value. The starting point for the lower vertical line is the 25th percentile; the ending point is the minimum value.

Figure 7.12 Real Growth in Earnings, 1960–2019, and Assumptions until 2094



The development of real earnings for the last 59 years. The point between the vertical lines is the median value. The starting point for the upper vertical line is the 75th percentile; the ending point is the maximum value. The starting point for the lower vertical line is the 25th percentile; the ending point is the minimum value. Source: Swedish National Mediation Office

8 Notes and Comments

Note 1 refers to both inkomstpension and premium pension. Notes 2-14 refer to inkomstpension and notes 15-25 refer to premium pension. All amounts are stated in SEK million. In some tables, the sum of the secondary level items does not tally with the total due to rounding.

Note 1 Pension Contributions

In the national pension system there are a number of different contributions, as can be seen in the table on the next page. Not all contribution revenue goes to the pension system. The part of old-age pension contribution transferred to the central government budget is that part of income above the ceiling on pension-qualifying income. Before deduction for general pension contribution this ceiling is 8.07 income-related base amounts, and after such deduction it is 7.5 income-related base amounts. Since these contributions do not correspond to any pension credit, they are in fact taxes. The old-age pension contribution is paid by employers and self-employed persons; the general pension contribution is paid by all gainfully employed persons who thus earn pension credit. In addition, national old-age pension contributions are paid from various appropriations in the central government budget for pension credit resulting from certain transfer payments such as sickness benefit and unemployment cash benefit. The central government also pays a pension contribution for so-called pension-qualifying amounts, for years with small children and for study, for example.

The table on the next page shows pension contributions received during the income year by the Swedish Social Insurance Agency and the Swedish Pensions Agency. Employer contributions or self-employment contributions are entered in the Social Insurance Agency account. The contributions for the inkomstpension system are transferred to the Swedish Pensions Agency and thereafter to the National Pension Funds. Those contributions calculated to correspond to pension credit for premium pension are forwarded to the National Debt Office. The general pension contribution and the general government old-age pension contribution are entered in the Swedish Pensions Agency account before being transferred to the National Pension Funds and the premium pension system respectively. Of the contributions registered in a particular year, a portion relate to the preceding year or, in some cases, to several years earlier. Employer contributions, for example, are registered at least one month after the corresponding salaries are paid.

The general pension contribution is transferred in its entirety to the National Pension Funds. For employer contributions and self-employment contributions, there is a preliminary allocation among the National Pension Funds, the premium pension system and the central government budget. The allocation for a year is made according to set percentages calculated by the Swedish Pensions Agency and set by the Government. It is intended that the premium pension system should receive in the course of a year contributions equivalent to premium pension credit earned during that year while the state receives contributions corresponding to taxable earnings over the so-called ceiling of 8.07 of the income-related base amount. Remaining contributions are to go to the National Pension Funds. National old-age pension contributions for a year are similarly distributed between the National Pension Funds and the premium pension system according to fixed percentages.

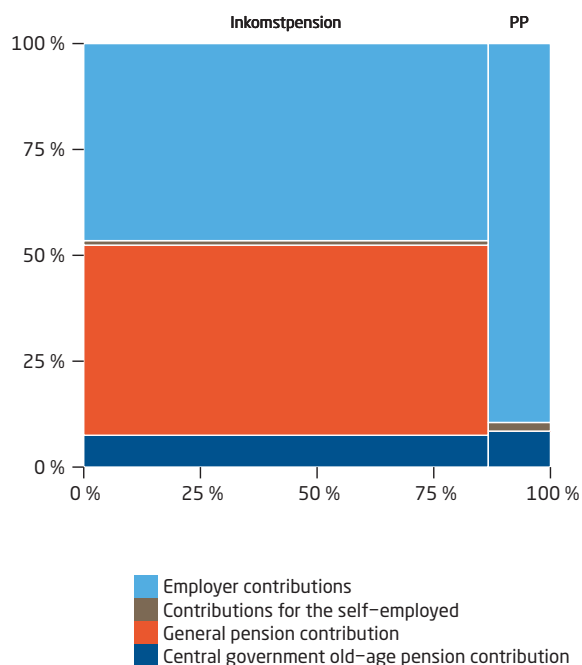
Pension Contributions by Type, 2019*
millions of SEK

	Inkomst-pension	Premium pension	Central government budget	Total 2019	Total 2018
Employer contributions	134,241	39,663	19,961	193,865	186,062
Contributions for the self-employed	3,064	906	463	4,433	4,561
General pension contribution	129,503	0	0	129,503	122,866
Central government old-age pension contribution	21,675	3,765	0	25,440	26,413
Final settlements etc.	903	806	-1,311	398	2,181
Final settlements in 2019 for 2017	1,204	107	-1,311	0	0
Collection loss, settlement	-227	0	0	-227	-240
Adjustment to accounting of National Pension Funds and premium pension system	-74	699	0	625	2,421
Total	289,386	45,140	19,113	353,639	342,084

* Contributions received by the Swedish Social Insurance Agency/the Swedish Pensions Agency in 2019 and transferred to the National Pension Funds, the premium pension system and the central government budget, respectively.

To ensure that the premium pension system has received contributions corresponding to the pension credit earned for a particular year and that the central government budget has received contributions for the part of incomes above the contribution ceiling, any discrepancies are reconciled two years later. Adjustments are then made between the national budget, premium pension and the inkomstpension system (the National Pension Funds). The settlements mean that contribution revenue is redistributed between the premium pension system, the central government budget and the National Pension Funds, ensuring that the first two receive the correct amount for a year's contributions while the National Pension Funds receive the remainder. Settlements are also made between the national pension system and the various appropriations in the government budget charged with national old-age pension contributions. This is to ensure that the various appropriations pay the correct amount for national old-age pension contributions. These settlements are made three years after the year they apply to.

Figure 8.1 Pension Contributions



Contribution income for the inkomstpension system increased by SEK 11.2 billion between 2018 and 2019, or by 4.1 per cent. This amounts to almost the entire increase in wages in 2019 according to the National Institute of Economic Research.

The difference between the National Pension Funds' reporting of contribution revenue and that of the Swedish Social Insurance Agency and the Swedish Pensions Agency (SEK -74 million) can be explained largely by periodization differences. The difference between reported contribution revenue in the premium pension system and that reported by the Swedish Social Insurance Agency/the Swedish Pensions Agency (SEK 699 million) is partly due to certain adjustment amounts being included in the amount for the premium pension system (see Note 18).

Table A Pension Contributions, Excluding Settlements etc. Allocated by Type of Contribution Base, 2019*
millions of SEK

	Employer, self-employed, and centr. govt. pension contribution	General pension contribution	Total
Earned income ¹	198,298	122,754	321,052
Transfer payments, see Table B	9,780	6,749	16,529
Pension-qualifying amounts, see Table C	15,660	0	15,660
Total	223,738	129,503	353,241

* The allocation of the general pension contribution between the two types of contribution base is estimated and is not shown in the accounting systems.

1 Including sick pay and self-employment income, excluding transfer payments.

The national pension contribution from households is 7 per cent on earned income and pension-qualifying transfers such as sickness benefit, etc., but not sickness and activity compensation. The national pension contribution is only charged on income up to the tax ceiling of 8.07 income base amounts and for incomes above 0.423 income base amounts. Households receive a tax reduction for the pension contribution. Household tax reduction for the pension contribution is reported in the state budget.

The pension contribution paid by employers and self-employed 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 general pension contribution, is 18.5 percent.

The allocation in Table A refers to the contributions received by the Swedish Social Insurance Agency or the Swedish Pensions Agency in 2019.

Table B Pension Contributions for Transfer Payments, 2019*
millions of SEK

	Cent. govt. pension contrib.	General pension contrib.	Total
Sickness cash benefit	2,840	1,960	4,800
Rehabilitation cash benefit	48	33	81
Allowance for care of close relatives	16	11	27
Work injury compensation, etc.	205	141	346
Parental insurance	3,930	2,712	6,642
Care allowance	397	274	671
Unemployment cash benefit etc.	2,339	1,614	3,953
Educational allowance	0	0	0
Artists' Board	3	2	5
Allowance to disease carriers	0	0	0
Total	9,780	6,749	16,529

* The allocation of the general pension contribution among the different types of transfer payments is estimated and is not shown in the accounting systems.

Table C Pension Contributions Paid for Sickness/Activity Compensation and Pension-Qualifying Amounts, 2019
millions of SEK

Sickness and activity compensation ¹	5 561
Amounts credited for years with small children	7 303
Amounts credited for study ²	2 720
National service	76
Total	15 660

1 Amount refers to contributions for disbursements of both pension-qualifying benefits and pension-qualifying amounts. In both cases the contribution is 18.5 percent.

2 A minor portion of amounts credited for study consists of pension-qualifying income.

Notes and Comments Regarding the Inkomstpension

Note 2 Pension Disbursements etc.

ATP and Inkomstpension Disbursements and Amounts Transferred to the European Community
millions of SEK

	2018	2019
Pension disbursements	304,439	314,724
ATP disbursements	168,136	162,584
Inkomstpension disbursements	136,303	152,140
Transfers to European Communities	5	0
Total	304,444	314,724

During the year 2019, SEK 314,724 million was paid out in pensions from the AP funds, an increase of SEK 10.3 billion or 3.4 per cent. In 2018, disbursements increased by SEK 8 billion or 2.9 percent. Pension disbursements of almost SEK 315 million reduced pension liability to pensioners by a corresponding amount.

According to the Act (2002:125) on Transfer of Pension Credit to and from the European Communities (EC), the value of pension credit for EC officials can be transferred from the National Pension Funds and the premium pension system to the service pension system of the EC. In 2019 no such funds were transferred.

Note 3 Return on Funded Capital

Return on Funded Capital of the First–Fourth and Sixth National Pension Funds, 2019

millions of SEK

	First	Second	Third	Fourth	Sixth	Total 2019	Total 2018
Stocks and shares	37,383	39,161	50,009	62,300	2,939	191,792	1,034
Dividends received	4,998	5,754	6,830	6,035	32	23,649	23,219
Gain/-loss, listed and unlisted stocks and shares, net	32,385	33,407	43,179	56,265	2,907	168,143	-22,185
Bonds and other interest-bearing securities	6,099	9,944	6,255	5,349	0	27,647	5,029
Net interest	2,336	3,836	2,738	2,027	0	10,937	10,467
Gain/-loss, interest bearing assets, net	3,763	6,108	3,517	3,322	0	16,710	-5,437
Other investments	5,560	4,469	3,619	7,957	13	21,618	-6,028
Gain/-loss, derivatives, net	-1,783	-932	-964	2,018	0	-1,661	-22,844
Net foreign-exchange gain/-loss	7,343	5,401	4,583	5,939	0	23,266	16,817
Costs of commissions	-186	-292	-122	-139	0	-739	-764
Total	48,856	53,282	59,761	75,467	2,952	240,318	-729

The item of Gain/-loss, derivatives¹, net includes all derivatives; there has therefore been an adjustment of net interest under Bonds and other interest-bearing securities.

The item Commission Expenses comprises fees which are not result-based. Result-based charges, brokerage fees and other expenses have reduced the return (see chapter 5 Costs of Administration and Capital Management).

¹Derivative is a collective name for a type of financial security whose value is linked to the value of an underlying asset (equities, stock indexes, currencies, interest rates and commodities). The most common derivatives are options, futures, warrants and swaps.

Note 4 Costs of Administration

Costs of Administration

millions of SEK

	2018	2019
Costs of Insurance administration	865	741
Swedish Pensions Agency	444	335
Tax administration and other agencies ¹	421	406
Costs of fund administration	956	1,016
First National Pension Fund	223	238
Second National Pension Fund	219	240
Third National Pension Fund	202	212
Fourth National Pension Fund	211	231
Sixth National Pension Fund	101	95
Total	1,821	1,757

1 Includes Enforcement Authority and the National Government Service Centre

For the First–Fourth National Pension Funds, only internal administrative costs are reported. External costs of administration and custodial fees are referred to as costs of commissions and are reported as negative revenue (see Note 3). The costs of administration for the Sixth National Pension Fund also include certain external costs of administration. For all funds, result-based charges, transaction costs etc. have reduced the return shown in Note 3 (see chapter 5 Costs of Administration and Capital Management).

Owing to phase-in provisions applicable until 2020, only a portion of administrative costs (96 percent in 2019, see Note 11) is charged to the pension balances of the insured. Each fund finances its costs of administration by drawing on its own fund.

Note 5 Value of Change in Contribution Revenue

Contribution Revenue*

millions of SEK

	2018	2019
Change in contribution revenue	10,810	11,169
Contribution revenue 2019		289,386
Contribution revenue 2018	278,217	-278,217
Contribution revenue 2017	-267,407	
(Turnover duration 2019 + Turnover duration 2018)/2		x 29.70323
(Turnover duration 2018 + Turnover duration 2017)/2	x 29.74479	
Value of change in contribution revenue	321,541	331,755

* Duration in years. x denotes multiplication.

It has been noted earlier that contributions increased by SEK 11 billion and the value of the change in contribution income amounts to just over SEK 322 billion. Below the value of the reduced turnover duration is given.

Note 6 Value of Change in Turnover Duration

Turnover Duration *

millions of SEK

	2018	2019
Change in turnover duration	-0.22491	0.1418
Turnover duration 2019		29.77413
Turnover duration 2018	29.63233	-29.63233
Turnover duration 2017	-29.85724	
(Contribution revenue 2019 + contribution revenue 2018)/2		x 283,802
(Contribution revenue 2018 + contribution revenue 2017)/2	x 272,812	
Value of change in turnover duration	-61,358	40,243

* Duration in years. x denotes multiplication.

Basis for Calculating Turnover Duration

	2015	2016	2017	2018	2019
Turnover duration	30.13850	29.85724	29.63233	29.77413	
Income age	45.45309	45.66774	45.90862	45.76243	
Payment age	75.59159	75.52498	75.54095	75.53656	
Turnover duration for contribution asset calculation	30.37530	30.13850	29.85724	29.63233	29.77413

As of the financial year 2015 the calculation of turnover duration has changed. Turnover duration is now calculated directly as the difference between the expected payment age and income age. Previously the corresponding calculation was made in a round-about way via expected pay-in and pay-out time. Since income age cannot be calculated until all pension credit have been determined, the latest year for which turnover duration can be calculated is the year before the accounting year.

The bottom line of the table "Turnover duration for contribution asset calculation" shows which turnover duration has been used for each financial year. Note, however, that the calculated balance ratio refers to the reporting year + 2 years, namely the turnover duration 29.77413 for the year 2019 is used for the calculation of the balance ratio for the year 2021.

Appendix B - Mathematical description of the balance ratio - describes how turnover duration is calculated.

Note 7 New Pension Credit

New pension credit includes certain other adjustment amounts that affect the size of the pension liability. What these amounts consist of is shown in the following tables.

Value of New Pension Credit * millions of SEK

	2018	2019
Estimated inkomstpension credit earned ¹	278,217	289,386
Adjustment amount, new pension credit	5,898	6,644
Confirmed inkomstpension credit earned in <i>t-1</i>	267,250	277,960
Estimated inkomstpension credit earned in <i>t-1</i>	-267,211	-278,217
Adjustments affecting pension balances, etc.	-4,173	-3,801
Change in amounts disbursed	10,032	10,702
Adjustment amount, new ATP points ²	-8,643	6,465
Effect of difference between assumed value for year <i>t</i> and estimate for <i>t-1</i> etc.	-10,363	-81
Change in amounts disbursed	1,720	6,546
Total	275,472	302,495

* The table is reported after the income year. It is no longer possible to earn ATP points so estimated value of ATP points earned are excluded.

1 Since balancing ended in 2018 figures for Non-adjusted Estimated Pension Credit for Inkomstpension and Adjustment Amount for Estimated Pension Credit for Inkomstpension are excluded.

2 Liabilities for persons with ATP that has yet to retire are calculated using a new method since 2018, thus figures for the value of other paid-in pension contributions for ATP are excluded.

Since the tax assessment for the year of the financial statements had not been completed when the statements were prepared, the value of pension credit earned during this year can only be estimated. The adjustments affecting the size of pension balances also represent tax-assessment changes etc.; see Note 14, Table A. The change in disbursed amounts refers to changes in the pension liability to retirees as a consequence of other changes in disbursements than those due to indexation; see Note 14, Table C.

Note 8 Indexation

Indexation, 2019

millions of SEK

	Active	Retired	Total
Indexation of Pension Balance and Pensions ¹	212,785	100,347	313,132
Change in Indexation regarding Pension Liability ²	-44,277	0	-44,277
Total	168,508	100,347	268,855

1 see Table A

2 see Table C

Indexation, 2018

millions of SEK

	Active	Retired	Total
Indexation of Pension Balance and Pensions ¹	167,805	84,351	252,156
Change in Indexation regarding Pension Liability ²	-84,664	-35,973	-120,636
Total	83,141	48,378	131,520

1 see Table B

2 see Table D

Table A Indexation of Pension Balance and Pensions, 2019

millions of SEK

	Active	Retired	Total
Inkomstpension, indexation	212,201	57,049	269,250
Effect of income index	212,201	57,049	269,250
Effect of balancing	0	0	0
ATP, indexation	584	43,298	43,882
Effect of income index	584	43,298	43,882
Effect of balancing	0	0	0
Total	212,785	100,347	313,132

Table B Indexation of Pension Balance and Pensions, 2018
millions of SEK

	Active	Retired	Total
Inkomstpension, indexation	167,805	44,441	212,246
Effect of income index	167,805	23,706	191,511
Effect of balance ratio	0	20,735	20,735
ATP, indexation	0	39,910	39,910
Effect of income index	0	21,289	21,289
Effect of balance ratio	0	18,621	18,621
Total	167,805	84,351	252,156

Pension liability changes with the change in the income index when balancing is de-activated in the system. Balancing was activated 2010-2017 and pension liability then changed with the balance index. Since 2018, liability changes with the income index. The indexation value refers to indexation affecting pension liability on December 31, 2019.

Table C Change in Indexation regarding Pension Liability, 2019
millions of SEK

	Active	Retired	total
Last year's liability adjustment	166,211	0	166,211
This year's liability adjustment	-210,488	0	-210,488
total	-44,277	0	-44,277

Table D Change in Indexation regarding Pension Liability, 2018
millions of SEK

	Active	Retired	Total
Last year's liability adjustment	81,548	-35,973	45,575
This year's liability adjustment	-166,211	0	-166,211
Total	-84,664	-35,973	-120,636

Note 9 Value of the Change in Life Expectancy

Value of the Change in Life Expectancy, 2019

millions of SEK

	Active	Retired	Total
Income pension		17,416	17,416
ATP	105	14,038	14,143
Total	105	31,454	31,559

Value of the Change in Life Expectancy, 2018

millions of SEK

	Active	Retired	Total
Inkomstpension		-7,560	-7,560
ATP	0	-11,714	-11,714
Total	0	-19,274	-19,274

The lifespan referred to here is the number of years that an average pension amount is assumed to be paid out, the so-called economic lifespan or economic annuity divisor. The method of calculating economic annuity divisors is shown in formula B.7.5 in Appendix B. Income pension liability for pensioners is not affected by changes by lifespan changes.

The average economic lifespan has increased, which contributes to a higher pension liability for pensioners by just over SEK 31 billion. The value of the change in life expectancy is the difference between the pension liability calculated with the economic annuity divisors used in the year of the financial statements, and the pension liability calculated with the economic annuity divisors used in the previous year.

Note 10 Inheritance Gains Arising, Inheritance Gains Distributed

Inheritance Gains, Arising and Distributed

millions of SEK

	2018	2019
Inheritance gains arising	12,793	12,633
60 years or older	5,912	5,748
Younger than 60 years ¹	6,881	6,885
Inheritance gains distributed	15,446	15,697
60 years or older	8,607	8,851
Younger than 60 years	6,839	6,846

1 Died last year, distributed current year.

The pension balances of deceased persons (inheritance gains arising) are distributed to the survivors of the same age. The distribution is made as a percentage increase in pension balances according to an inheritance gain factor. Until the year when a birth cohort reaches age 60, the inheritance gains distributed are those actually arising. Because of the taxation procedure, allocation lags by one year. The inheritance gain factor is thus determined by the total pension balances of decedent persons of the same age. The inheritance gains from persons dying before their 60th year in 2018 (born in 1959 or later) were distributed to the respective birth cohorts in 2019. The difference between inheritance gains arising and inheritance gains distributed is explainable in part by the annual adjustment of pension balances for changes in tax assessments.

From the year a birth cohort reaches the age of 60, actual inheritance gains are not distributed but instead inheritance gains that have been demographically calculated to arise. Inheritance gain factors are estimated on the basis of the mortality observed by Statistics Sweden for an earlier period. Partly because this mortality will not be exactly the same as actual mortality in the year concerned, there is a discrepancy between inheritance gains arising and inheritance gains distributed. For those dying in their 60th year or at a higher age in 2019 (born in 1959 or earlier), the inheritance gains are distributed in the same year.

Note 11 Deduction for Costs of Administration

Deduction for Costs of Administration

millions of SEK

	2018	2019
Deduction for Costs of Administration	1,734	1,673

Costs of administration are financed by a percentage deduction from the pension balances of the insured. In order to avoid charging a disproportionately high cost to younger birth cohorts during the period when the ATP is being phased out, this administrative cost deduction is being introduced in steps. In 2019, 96 percent of administrative costs were financed by a deduction from pension balances. This deduction will increase by 2 percentage points each year and thus will not cover 100 percent of administrative costs until 2021.

The calculation of the administrative cost factor is based on budgeted costs of administration, costs of the National Pension Funds for the current year and the pension balances for the preceding year (see Appendix A). The difference between the monetary amount of the deduction made and the cost

confirmed is considered in the in the calculation of the administrative cost factor for the following year. The deduction for administrative costs is made by multiplying pension balances by the administrative cost factor. The deduction in 2019 was 0.0288 percent and totalled SEK 1,673 million. The previous year, the deduction amounted to 0.0310 percent or SEK 1,734 million.

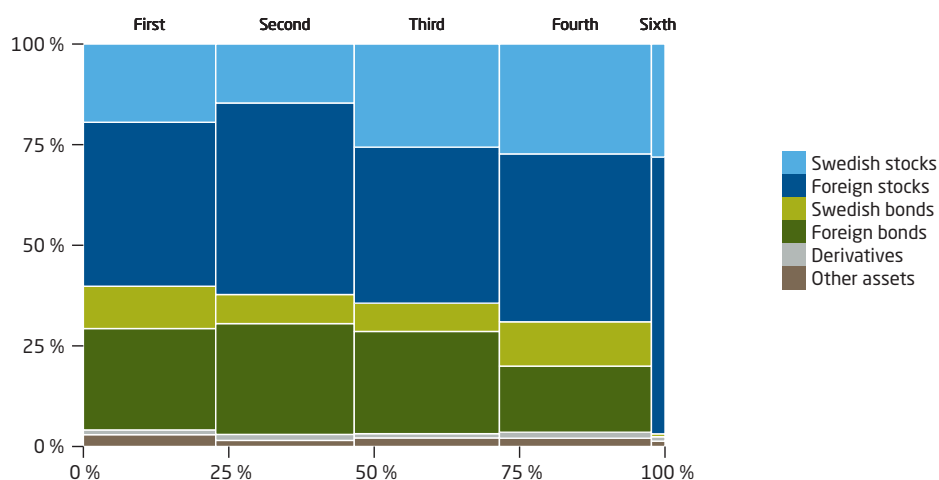
Note 12 Fund Assets

Assets and Liabilities of the Buffer Fund, 2019

millions of SEK

	First	Second	Third	Fourth	Sixth	Total 2019	Total 2018
Assets							
Stocks and shares	221,505	239,722	259,899	291,668	36,606	1,049,400	867,619
Swedish	71,547	56,401	103,406	115,369	10,616	357,339	299,366
Foreign	149,958	183,321	156,493	176,299	25,990	692,061	568,253
Bonds and other interest-bearing securities, net	131,400	133,875	130,870	115,965	268	512,378	493,630
Swedish bonds	38,710	27,832	28,348	46,540	268	141,698	153,264
Foreign bonds	92,690	106,043	102,521	69,425	0	370,679	340,366
Derivatives	4,356	5,734	4,268	6,307	417	21,082	16,176
Other assets	10,810	5,835	8,598	8,693	505	34,441	31,914
Total Assets	368,077	385,166	403,635	422,633	37,796	1,617,307	1,409,338
Liabilities							
Derivatives	-1,526	-1,537	-1,438	-1,112	-81	-5,694	-5,630
Others	-791	-2,279	-8,500	-3,493	-207	-15,270	-20,589
Total Liabilities	-2,317	-3,816	-9,938	-4,605	-288	-20,964	-26,219
Total	365,760	381,350	393,696	418,028	37,508	1,596,342	1,383,119

Figure 8.2 Fund Assets



The distribution between Swedish and foreign assets for the Sixth AP Fund has been estimated from the funds annual report. For other funds, the data is taken from the annual report of each fund.

The item of Other assets include cash and bank balances, prepaid expenses and accrued revenue etc. Liabilities, aside from derivative instruments, include other liabilities, prepaid revenue and accrued expenses.

As stated in previous notes, contribution income (SEK 289 billion) was lower than pension disbursements (SEK 315 billion) and administrative expenses (SEK 2 billion), which resulted in negative primary savings of SEK 27.1 billion (negative savings were just over SEK 28 billion in 2018). The return for the buffer funds i.e. First, Second, Third, Fourth and Sixth AP Fund i.e. was SEK 240 billion. This resulted in positive savings of almost SEK 213 billion for 2019. Overall, this meant that fund assets rose to a total of SEK 1600 billion. The above summary shows that the funds consist of 66 per cent shares with the remainder in interest bearing securities and derivatives.

Note 13 Contribution Asset

Contribution Asset millions of SEK

	2018	2019
Contribution revenue	278,217	289,386
Turnover duration (years) ¹	x 29.63233	x 29.77413
Contribution Asset	8,244,218	8,616,216

1 x denotes multiplication

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

Note 14 Pension Liability

Pension Liability, 2019

millions of SEK

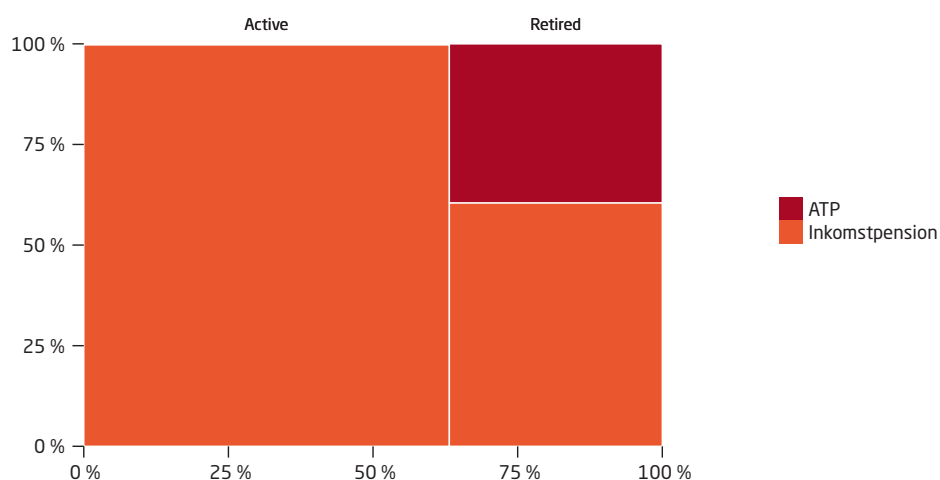
	Active	Retired	Total
Inkomstpension	6,094,659	2,152,255	8,246,914
ATP	12,774	1,405,028	1,417,802
Indexation/balancing	-210,488	0	-210,488
Total	5,896,945	3,557,283	9,454,228

Pension Liability, 2018

millions of SEK

	Active	Retired	Total
Inkomstpension	5,870,293	1,944,674	7,814,967
ATP	19,898	1,495,998	1,515,896
Indexation, see table D	-166,211	0	-166,211
Total	5,723,980	3,440,672	9,164,652

Figure 8.3 Pension liability, 2019



The pension liability to retirees for the ATP and the inkomstpension is calculated in the same manner for both. A cohort's liability is obtained from the product of the cohort's pension disbursements in December, a factor of 12 to get the annual amount, and the cohort's average economic lifespan. The total liability to retirees is the sum of the cohorts' pension liabilities. Average economic lifetime is expressed in the form of economic annuity divisors. Liability pertaining to inkomstpension and the

economically active is the sum of all insured persons' pension balance on December 31, 2019, with the addition of estimated earned pension credit for 2019. The ATP liability for individuals (born 1938–1953) who have not yet retired is estimated as the annual pension they would have received if they had retired in December. In order to calculate the liability, the pension is multiplied by the economic annuity divisor $i_c^{1/2}$ the expected remaining disbursement period $i_c^{1/2}$ for each cohort. The ATP liability to the economically active is gradually decreasing due to the phasing-out of the system, liability amounting to almost SEK 12 billion in 2019 (20 billion in 2018). The pension liability increased by 3 per cent or by SEK 289,6 billion. Many factors are involved in this increase some of the most important being increased contributions and higher indexation.

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

	2018	2019
Inkomstpension liability to the economically active, December 31, <i>t-1</i>	5,684,576	5,870,293
Of which estimated pension credit for inkomstpension earned in year <i>t-1</i>	-267,211	-278,217
Pension balances as of December 31, <i>t-1</i>	5,417,365	5,592,076
Inheritance gains arising from persons dying before age 60 ¹	-6,881	-6,885
Adjustments affecting pension balances ²	-530	-691
Opening pension balance in year <i>t</i>	5,409,954	5,584,500
Inheritance gains arising, persons dying at or after age 60	-5,912	-5,748
Changes in tax assessments etc. affecting pension balances	-3,643	-3,110
Confirmed inkomstpension credit earned in year <i>t-1</i> ³	267,250	277,960
Distributed inheritance gains from persons dying at or after age 60	8,607	8,851
Distributed inheritance gains from persons dying before age 60	6,839	6,846
Indexation	167,805	212,201
Deduction for administrative costs	-1,734	-1,673
Pensions drawn	-260,805	-278,232
Pensions revoked	3,715	3,678
Pension balances as of December 31, <i>t</i>	5,592,076	5,805,273
Estimated inkomstpension credit earned in year <i>t</i>	278,217	289,386
Inkomstpension liability to the economically active	5,870,293	6,094,659

* Figures related to 2018 are shown for reference.

1 Distributed in year *t-1*.

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

3 See Note 7.

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

	2018	2019
ATP liability to the economically active, December 31, <i>t-1</i>	47,816	19,898
Effect of difference between assumption for year <i>t</i> and estimate in <i>t-1</i> etc.	-10,363	-81
Opening ATP liability, year <i>t</i>	37,453	19,817
Indexation	0	584
Pensions drawn	-17,555	-7,732
Value of change in life expectancy	0	105
ATP liability to the economically active	19,898	12,774

* A new model for calculation was introduced in 2018 which set some values to 0. It is no longer possible to earn ATP points, because of this these figures are excluded from this report.

Table C Analysis of the Change in Pension Liability to Retirees, ATP and Inkomstpension, 2019
millions of SEK

	Inkomstpen- sion	ATP	Total
Pension liability to retirees, December 31 <i>t-1</i>	1,944,674	1,495,998	3,440,672
Additional liability to the economically active ¹	274,554	7,732	282,286
Change in amounts disbursed	10,702	6,546	17,248
Pensions disbursed ²	-152,140	-162,584	-314,724
Indexation	57,049	43,298	100,347
Value of change in life expectancy	17,416	14,038	31,454
Total	2,152,255	1,405,028	3,557,283

1 Inkomstpension: Net of Pensions drawn and Pensions revoked, see Table A. ATP: See Table B.

2 See Note 2.

Notes and Comments Relating to the Premium Pension

Note 15 Pension Disbursements

Pension Disbursements Premium Pension

millions of SEK

	2018	2019
Pension disbursements	9 537	10 942
Fund insurance	8336	9510
Traditional insurance	1200	1432
Transfers to European Communities	1	0
Total	9 537	10 942

At the time of retirement, a pension saver has the option of retaining her/his accumulated balance in fund insurance; the amount of the pension will then depend on the rate of return of the funds chosen by the saver. The other option is to switch to traditional insurance with profit annuity, either on retirement or later. With traditional insurance with profit annuity, the pension is disbursed as a nominal guaranteed monthly amount. If the management of the traditional insurance with profit annuity capital achieves a return higher than the guaranteed rate, pension savers will receive a rebate in the form of a monthly supplement, which may vary from year to year. In 2019, SEK 774 million was disbursed in supplementary amounts, as shown in Note 23. In 2018 the supplementary amount was SEK 869 million.

According to the Act (2002:125) on Transfer of Pension Credit to and from the European Communities (EC), the value of pension credit for EC officials can be transferred from the National Pension Funds and the premium pension system to the service pension system of the EC. In 2019 no funds were transferred from the premium pension.

Note 16 Return on Funded Capital

Return on Funded Capital, 2019

millions of SEK

	Fund Insurance	Traditional insurance	Total 2019	Total 2018
Return				
Stocks and shares	323,701	4,295	327,996	-42,244
Direct return	40	45	85	22
Realized and unrealized capital gains	323,661	4,250	327,912	-42,266
Bonds and other interest-bearing securities	283	1,902	2,185	696
Direct return (net interest)	-8	-5	-13	-18
Realized and unrealized capital gains	291	1,907	2,198	714
Net foreign-exchange gain/-loss	1,311	0	1,311	2,458
Total Return	325,295	6,196	331,491	-39,090
Allocated Management Fees	4,720	21	4,741	4,738
Change, Traditional insurance		5,679	5,679	1,077
Total	330,015	6,217	341,911	-33,276

The return earned includes realized and unrealized foreign-exchange gains and losses after deduction of fund management costs and distributed rebates of fund management fees.

The pension liability was changed by the return on the premium pension funds, which totals SEK 331,491 (-39,090 in 2018) million.

Note 17 Costs of Administration

Costs of Administration

millions of SEK

	2018	2019
Operating expenses	518	554
Financial items, net	-8	43
Total	510	597

The item of Financial items, net, refers primarily to borrowing expenses, gain/-loss on trade inventories and interest revenue (net). Costs of fund management are paid directly from insurance assets and are not included in the premium pension system's operating expenses. Total costs of administration in 2019 were SEK 597 million, of which SEK 20.8 million refers to change in traditional insurance with profit annuity. The corresponding amount for costs of administration in 2018 was SEK 510 million, of which SEK 9.8 million refer to traditional insurance with profit annuity. A presentation of the respective gross and net reported costs is provided in the chapter Costs of Administration and Capital Management.

Note 18 New Pension Credit

New Pension Credit

millions of SEK

	2018	2019
Preliminary contribution revenue, including interest on the premium pension earned in 2016/2017	45,298	47,440
Adjustment amount, confirmed pension credit	-722	-2,312
Confirmed pension credit, including interest, for the premium pension earned in 2017/18 and 2018/19	41,344	42,986
Preliminary contribution for the premium pension earned in 2017/18 and 2018/19	-42,067	-45,298
Change in pension credit	9	12
Total	44,584	45,140

In the operations of the premium pension system, the equivalent of contribution revenue is new pension credit including interest for the period during which the contribution moneys are managed before being invested in the funds chosen by the insured. During the year, changes in pension credit have come from previous income years. Total new pension credit for the premium pension in 2019 was SEK 45,140 million; in 2018 it was SEK 44,584 million.

Note 19 Inheritance Gains Arising and Distributed

Inheritance Gains, Arising and Distributed

millions of SEK

	2018	2019
Inheritance gains arising	3,197	3,700
Inheritance gains distributed	3,197	3,700

Inheritance gains arising and distributed are analogous to decedents' capital. Inheritance gains are distributed once a year; in addition, a minor portion is distributed during the course of the year in connection with changeovers from fund insurance to traditional insurance with profit annuity. In 2019 inheritance gains distributed were SEK 3,700 million; this amount was determined by the sum of the capital released by deaths in calendar year 2018. The corresponding amount distributed in 2018 was SEK 3,197 million. This item includes reductions in premium pension credit when premium pensions are transferred between spouses.

Note 20 Deduction for Costs of Administration

Costs of Administration

millions of SEK

	2018	2019
Deduction for costs of administration	772	474

The amount of SEK 474 (772) million is for the fees deducted by the Swedish Pensions Agency to finance the costs of administration for the premium pension system in 2019 (2018). The average fee for 2019 (2018) was equivalent to 0.04 (0.07) percent of pension savers' account balances with a ceiling of SEK 100 (160). During the build-up phase and until 2018, the premium pension system will be financed by a combination of fees deducted, interest-bearing overdrafts for working capital needs and borrowing within authorized limits from the National Debt Office. The financing of premium pension operations was completely repaid during 2018. The amount of the fee deducted is based on the cost level forecast for 2019.

Note 21 Insurance Assets

Insurance Assets, 2019

millions of SEK

	Fund insurance	Traditional insurance	Temporary management	Total 2019	Total 2018
Stocks and shares	1,371,241	17,288		1,388,529	1,045,463
Bonds and other interest-bearing securities	86,807	29,038	40,886	156,731	131,402
Trade in progress and inheritance gains arising	3,683	105		3,788	3,303
Total	1,461,732	46,431	40,886	1,549,049	1,180,168

In 2019, insurance assets in fund insurance amounted to SEK 1,461,732 million, of which SEK 3,683 million was attributable to current trading and mortality capital. Temporary management of preliminary contributions refers to income year 2019. As of December 31, 2019, there were 6,073,944 premium pension savers, all of them in fund insurance, and 1,644,003 pensioners, of whom 1,336,762 were in fund insurance and 327,241 in traditional insurance with profit annuity.

Note 22 Other Assets

Other assets

millions of SEK

	2018	2019
The Swedish Pensions Agency's administrative inventory of fund shares (trading inventory)	201	87
Other assets	8,768	7,261
Total	8,969	7,348

The Swedish Pensions Agency's administrative inventory of fund shares facilitates trade in fund shares by reducing the number of trading transactions with fund managers.

The item of Other assets consist of cash and bank balances, fund trading in progress, other receivables and accrued interest revenue.

Note 23 Change in Owner Equity

Change in Owner Equity, 2019

millions of SEK

	Fund insurance	Traditional insurance	Total 2019	Total 2018
Opening owner equity:				
Consolidation fund	2	11,980	11,982	11,239
Rebate paid from consolidation fund		-774	-774	-869
Net income for the period	-123	5,677	5,554	1,345
Total owner equity	-121	16,883	16,762	11,715

At the beginning of the year, the Swedish Pensions Agency reported negative equity for unit-linked insurance operations. The solvency rules of the Insurance Business Act do not apply to the Swedish Pensions Agency, but the deficit is financed by credit at the National Debt Office. In 2019 a balance between assets and liabilities was reached. Traditional insurance with profit annuity reports a positive result that will be added to the consolidation fund as owner equity. The amounts in the consolidation fund are distributed to pensioners as refunds in connection with pension disbursements.

Note 24 Pension Liability

Pension Liability

millions of SEK

	2018	2019
Fund insurance	1,106,073	1,461,885
Traditional insurance	23,320	29,602
Liabilities in regard to preliminary contributions	39,124	40,674
Total	1,168,517	1,532,161

The pension liability is a liability to pension savers and to pensioners. Pension liability in fund insurance is linked primarily to fund shares and is affected by the development of the market value of the funds chosen.

Pension liability in traditional insurance with profit annuity is calculated for each insurance as the capital value of remaining guaranteed disbursements. The value is calculated on assumptions about future return, life expectancy and operating expenses. The value of the asset is shown in Note 21.

Information on how the economic annuity divisors for fund insurance and traditional insurance with profit annuity are calculated is found in Appendix A Calculation Factors.

Liabilities in regard to preliminary contributions correspond to the assets invested under temporary management; the value of these assets can be found in Note 21.

Table A Pension Liability, 2019
millions of SEK

	Fund insurance	Traditional insurance	Liabilities in regard to preliminary contributions
Premium pension capital, December 31, 2019	1,461,885	29,602	40,674
Pension liability, December 31, 2018	1,106,073	23,320	39,124
Change in value	325,295	6,196	-2,717
Confirmed premium pension credit earned in 2017	42,609	377	-42,986
Preliminary contributions, premium pension, earned in 2018			47,440
Management fees allocated, etc.	4,721	21	
Inheritance gains arising	3,416	284	
Settlement, preliminary contributions, previous years			-187
Change in pension credit for the premium pension	12	0	
Decrease in liability because of pensions drawn in 2018	-9,510	-1,432	
Switch to Traditional insurance from fund insurance	-6,816	6,816	
Inheritance gains distributed ¹	-3,416	-284	
Deduction for costs of administration	-474		
Change in pension liability		-5,696	
Other	-25		
Adjustment affecting premium pension capital			
Total	1,461,885	29,602	40,674

1 Inheritance gains, capital released in 2018, to be allocated in 2019.

The pension liability is changed by new pension credit earned, preliminary contributions, changes in the extent of pension withdrawal, changes in pension credit due to changes in taxation, changes in value of assets, costs of administration, pension disbursements and estimates of future mortality for the insured.

Note 25 Other Liabilities

Other Liabilities

millions of SEK

	2018	2019
Other liabilities	8,901	7,469
Share of consolidated Swedish Pensions Agency assets, liabilities and result, net	5	5
Total	8,906	7,474

Other liabilities consist chiefly of fund trading in progress, borrowings from the National Debt Office, accrued management fees and accrued interest fees.

The accounting for the premium pension's share of the Swedish Pensions Agency's assets, liabilities and results has been simplified so that a net amount is reported. It is included so that the balance sheet will balance.

Appendix A Calculation Factors

The Social Insurance Code 58 Ch. 10 § (SFB) (2010:110) requires that the income index be calculated for each year. By Government decision, the Swedish Pensions Agency is to calculate and prepare proposals for an income index, which the Government then confirms. In addition, the Agency is required by the Regulations for the Earnings Related Old Age Pension (1998:1340) to calculate and confirm factors for inheritance gains, administrative costs and annuity divisors.

According to 64 Ch. 3 § SFB, premium pension operations are to be conducted according to sound insurance principles. These principles, as interpreted by the Swedish Pensions Agency, govern the calculation of the bonus rate, inheritance gains and annuity divisors for the premium pension. Further, the Swedish Pensions Agency is to calculate the fee that will finance premium pension operations.

Income Index

The change in the income index shows the development of the average income. Here, income refers to pension-qualifying income without limitation by the ceiling, but after deduction of the individual pension contribution.

$$I_t = I_{t-1} \cdot \frac{u_{t-1}}{u_{t-2}} \quad (\text{A.1.1})$$

$$u_t = \frac{Y_t}{N_t} \quad (\text{A.1.2})$$

t	calendar year
I_t	income index year t
u_t	average pension-qualifying income in year t . The denominator uses the same income data previously used to calculate the income index for the previous year and is therefore an estimate
Y_t	total pension-qualifying income without limitation by the ceiling, person aged 16–64 in year t , after deduction of the individual pension contribution
N_t	number of persons aged 16–64 with pension-qualifying income in year t

As of 2017, the income index is calculated according to new rules (SFS 2015: 676). The income index for year t will measure the change in average income between the years $t - 2$ and $t - 1$. Pension qualifying income is first known after taxation, that is, in December of the year following the income year. This means the income of the two most recent years is based on estimates. The income data used in the denominator is the same income data used for previous years. For 2018, the income index was calculated in a special way $I_t = I_{t-2} \cdot u_{t-1}/u_{t-3}$. Income index for year t is thus corrected by the outcome for the year $t - 3$. In the denominator for this calculation year, the outcome of average pension-qualifying income is used.

Balance Index

When balancing is activated, the balance index is used instead of the income index.

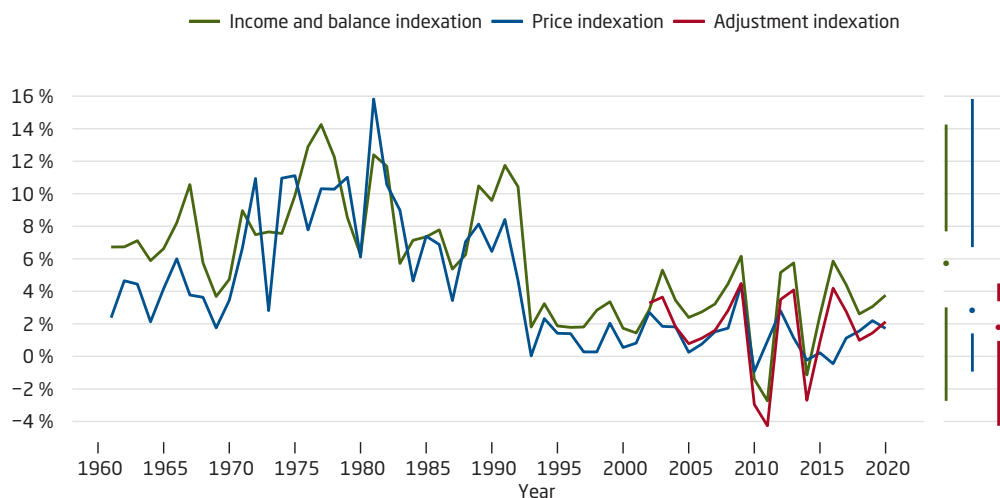
$$B_t = I_t \cdot BT_t^* \quad (\text{A.2.1})$$

$$B_{t+1} = B_t \cdot \left(\frac{I_{t+1}}{I_t} \right) \cdot BT_{t+1}^* = I_{t+1} \cdot BT_t^* \cdot BT_{t+1}^* \quad (\text{A.2.2})$$

B_t balance index year t
 I_t income index year t
 BT_t^* damped balance ratio year t^1

At the turn of the year $(t - 1) \rightarrow t$, indexation takes place via multiplication of pensions by the ratio between the balance index for year t and the income index for year $t - 1$ divided by 1.016, and of pension balances by the ratio between the balance index for year t and the income index for year $t - 1$. At the end of year t , there is analogous indexation of the ratio between the balance index for year $t + 1$ and the balance index for year t . Indexation by the balance index ceases when the balance index reaches the level of the income index.

Figure A.1 Indexation



The point between the vertical lines is the median value. The starting point for the upper vertical line is the 75th percentile; the ending point is the maximum value. The starting point for the lower vertical line is the 25th percentile; the ending point is the minimum value.

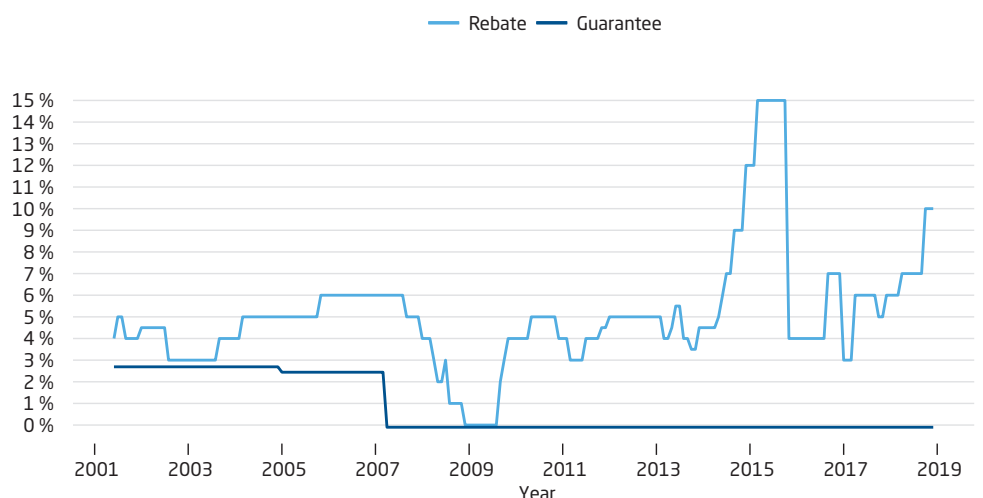
Rate of return

In the premium pension system the amount to pay out is recalculated each year based on the value of the premium pension account. For those with fund insurance the yield from the account will depend on the fund returns, while for those with traditional insurance with profit annuity the value of the account will depend on the rate of return. The guaranteed amount in traditional insurance with profit annuity is only recalculated when more money comes in. The rate of return does not affect the amount

¹For balance index 2016 and earlier the balance ratio was used (SFS:2015:676).

of the life-insurance provisions since the pension liability is calculated on the basis of expected future payments of guaranteed amounts.

Figure A.2 Rate of Rebate and Guarantee



The point between the vertical lines is the median value. The starting point for the upper vertical line is the 75th percentile; the ending point is the maximum value. The starting point for the lower vertical line is the 25th percentile; the ending point is the minimum value.

Inheritance Gain Factors for the Inkomstpension

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

$$AF_{i,t} = \begin{cases} 1 + \frac{\sum_{j=2}^{17} PBd_{j-1,t-1}}{\sum_{j=2}^{17} PB_{j-1,t-1}}, & i = 2, 3, \dots, 17 \\ 1 + \frac{PBd_{i-1,t-1}}{PB_{i-1,t-1}}, & i = 18, 19, \dots, 60 \\ \frac{L_{i-1,t} + L_{i,t}}{L_{i,t} + L_{i+1,t}}, & i = 60, 61, \dots \end{cases} \quad (A.4.1)$$

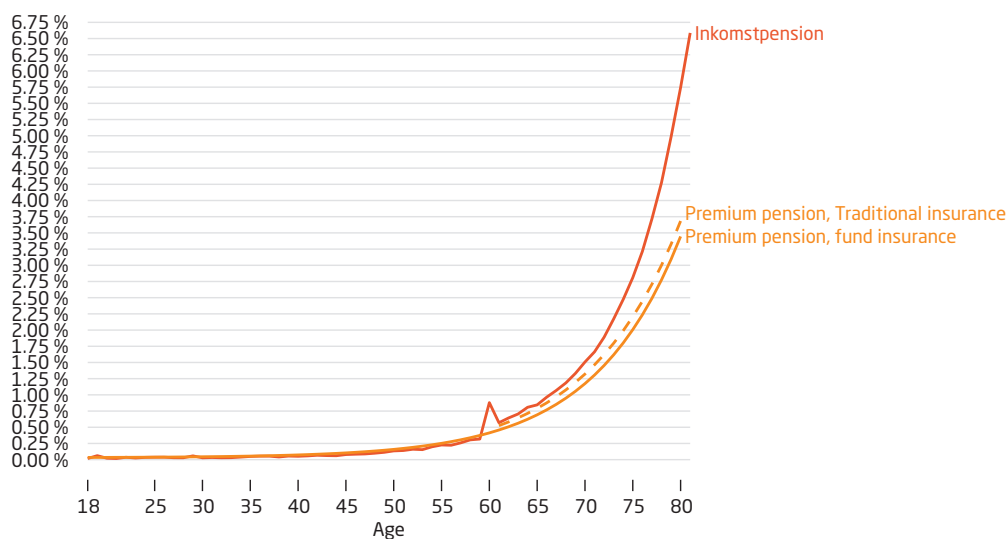
- i age at end of year t
- $AF_{i,t}$ inheritance gain factor, year t for age group i
- $PBd_{i,t}$ pension balances of persons dying in year t in age group i
- $PB_{i,t}$ total pension balances of survivors in year t in age group i
- $L_{i,t}$ number of survivors in year t in age group i out of 100,000 born, according to the life span data of Statistics Sweden for the five-year period immediately preceding the year when the insured reaches age 60 for $i = 60-64$ and age 64 for $i = 65$ or older.

For persons 60 years of age or less, the inheritance gain factor is calculated as the sum of the pension balances of the deceased divided by the sum of the pension balances for the survivors in the same age group. For the group aged 2–17 years, a common inheritance gain factor is calculated. As there is some

delay in information on persons dying during the year, the distribution of inheritance gains to persons aged 60 or less is made with a time lag of one year. For older persons, inheritance gain factors are calculated on the basis of the life-expectancy statistics from Statistics Sweden.

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

Figure A.3 Inheritance Gains



The inheritance gain factor for the inkomstpension for 60-year-olds is shown in the diagram as the two inheritance gain factors multiplied by each other. In the actual distribution of inheritance gains, however, the two different inheritance gains factors are applied to different bases.

The impact of inheritance gains on the pension liability is limited, for the pension balances of deceased persons are redistributed to the survivors. There is, however, an effect on the inkomstpension liability to the economically active because of the difference between inheritance gains arising and inheritance gains distributed; this effect is shown in Note 10. For the group dying before their 60th year, the difference is explained by tax assessment changes between the time when inheritance gain factors are calculated and the time when the gains are distributed, and by late information on persons dying. For the group dying in their 60th year or thereafter, the reasons are differences between estimated and actual mortality, and possible variations in mortality depending on the insured's level of income, i.e. the effect due to the shorter average life spans, for each gender, of persons with low incomes compared to persons with high incomes.

Inheritance Gain Factors for the Premium Pension

In the premium pension system, inheritance gains are calculated as a percentage of the premium pension capital of the survivors. The percentage corresponds to the one-year risk of death, i.e. the probability

of dying within one year. Inheritance gains are distributed once a year for both the economically active and retirees. As with the inkomstpension, future expected inheritance gains are included in the annuity divisor. If the insured elects a survivor benefit, the inheritance gain will be much smaller, as it is then based on the probability that the longer-surviving party, whether the primary insured or the co-insured, will die within one year of the first party.

The risk of death in year t is calculated by Makeham's formula (see Annuity Divisors for the premium pension). The values of a , b and c in the formula are determined by the relationship between the capital of pension savers dying in year $t - 1$ and the capital of the surviving pension savers in the same year, calculated for each age group. The pension capital used to determine the inheritance gain in year t corresponds to the average balance of the premium pension account as of the last day of every month of year $t - 1$. The amounts of the inheritance gains are adjusted by a factor (close to 1) that will equalize with the greatest possible accuracy the total amount distributed in year t and the capital of pension savers dying in year $t - 1$.

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

Values in determination of inheritance gain for 2017, distributed during 2018

	a	b	c	factor
Fund insurance	0.00030	0.0000054	0.1094	0.9892
Traditional insurance	0.00010	0.0000101	0.1025	0.9764

Administrative Cost Factor, Inkomstpension

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

$$FF_t = 1 - \left(\frac{B_t \cdot A_t + J_{t-1}}{PB_{t-1}} \right) \quad (\text{A.6.1})$$

FF_t	administrative cost factor, year t
B_t	budgeted costs of administration, year t
A_t	proportion charged to pension balances, year t
J_t	adjustment amount, equals the difference between the amount that would have been deducted from pension balances in year t , based on actual cost in year t and the adjustment amount in year $t - 1$, as well as the actual deduction taken from pension balances in year t .
PB_t	total pension balances, year t

The administrative-cost factor is calculated on the basis of a certain proportion, A , of budgeted costs for year t . Until the year 2021, the proportion charged to pension balances will be less than 100 per cent (see Note 11). Moreover, there is an adjustment for the administrative costs of year $t - 1$. The adjustment amount is equal to the difference between the amount that would have been deducted from pension balances, based on actual cost and the adjustment amount for the previous year, and the actual deduction made from pension balances in the same year.

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

Charge for Costs of Administration, Premium Pension

In the premium pension a charge is deducted from pension savers' premium pension accounts once a year. The charge is to cover the total operating costs of the premium pension, including interest and other financial expenses.

Administrative costs affect the capital of the premium pension system and at the same time, through the deduction from pension balances, they affect the premium pension liability by the same amount (see Notes 17 and 20) for fund insurance. For traditional insurance with profit annuity, life-insurance provisions are affected by assumptions of future expected operating costs.

Annuity Divisors for the Inkomstpension

The annuity divisors for the inkomstpension are used for recalculation of pension balances as annual disbursements and are a measure of life expectancy at retirement, with consideration given to the interest of 1.6 percent (advance interest) credited to pensions in advance.

$$D_i = \frac{1}{12L_i} \sum_{k=i}^r \sum_{X=0}^{11} \left(L_k + (L_{k+1} - L_k) \frac{X}{12} \right) (1.016)^{-(k-i)} (1.016)^{\frac{-X}{12}}, \quad i = 61, 62, \dots, r \quad (\text{A.8.1})$$

- D_i annuity divisor for age group i
 $k - i$ number of years of retirement ($k = i, i + 1, i + 2$, etc.)
 X number of months (0,1,...,11)
 L_i number of survivors in age group i per 100,000 born, according to the life span statistics of Statistics Sweden. These statistics are for the five-year period immediately preceding the year when the insured reached age 60 in the case of pension withdrawal before age 65, and age 64 in the case of withdrawal thereafter.

For persons who have begun drawing their old-age pensions before age 65, the amount disbursed is recalculated, because of the recalculated annuity divisors, at the outset of the year when the individual turns 65. The reason for the recalculation is the change in the underlying statistical data for the latest life expectancy statistics available in the individual's 65th year. With the continuing increase in life expectancy, the recalculated annuity divisors have so far been higher than before, resulting in reduction of future monthly pensions. The consequent marginal decrease in the inkomstpension liability to retirees is a component of the Change in Amounts Disbursed in Note 14, Table C.

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

Drawing an old-age pension involves a transfer of pension liability from the economically active to retirees. The actual recalculation of pension balances as annual disbursements results in a marginal change in the pension liability. The change arises because of the difference between annuity divisors and what we refer to as "economic annuity divisors" in this report. For a description of economic annuity divisors, see Appendix B Mathematical Description of the Balance Ratio, Pension Liability. The economic annuity divisors are used to calculate the pension liability to retirees.

Annuity divisors are determined for each age with no upper age limit.

Confirmed Annuity Divisors for the Inkomstpension *

	61	62	63	64	65	66	67	68	69	70
1938	17.87	17.29	16.71	16.13	15.56	14.99	14.42	13.84	13.27	12.71
1939	17.94	17.36	16.78	16.19	15.62	15.04	14.47	13.89	13.32	12.76
1940	18.02	17.44	16.86	16.27	15.69	15.11	14.54	13.96	13.39	12.82
1941	18.14	17.56	16.98	16.39	15.81	15.23	14.65	14.08	13.50	12.94
1942	18.23	17.65	17.06	16.48	15.89	15.31	14.74	14.16	13.59	13.02
1943	18.33	17.75	17.16	16.58	15.99	15.41	14.84	14.26	13.68	13.11
1944	18.44	17.86	17.28	16.70	16.11	15.54	14.96	14.38	13.80	13.23
1945	18.55	17.96	17.38	16.80	16.22	15.64	15.07	14.48	13.91	13.33
1946	18.64	18.05	17.47	16.89	16.31	15.73	15.16	14.57	13.99	13.41
1947	18.73	18.15	17.56	16.98	16.40	15.83	15.24	14.66	14.07	13.49
1948	18.83	18.24	17.66	17.07	16.49	15.91	15.33	14.74	14.16	13.58
1949	18.89	18.31	17.72	17.13	16.55	15.97	15.38	14.79	14.21	13.63
1950	18.98	18.39	17.80	17.21	16.63	16.05	15.46	14.87	14.28	13.70
1951	19.06	18.48	17.89	17.30	16.71	16.13	15.54	14.95	14.37	13.78
1952	19.14	18.55	17.96	17.37	16.78	16.20	15.61	15.02	14.43	13.85
1953	19.20	18.62	18.03	17.44	16.85	16.26	15.68	15.09	14.50	13.91
1954	19.28	18.69	18.11	17.52	16.93	16.34	15.76	15.17	14.58	13.99
1955	19.34	18.75	18.16	17.58	16.99	16.40	15.81	15.22	14.63	14.04

* Annuity divisors are confirmed each year for all ages, but the table shows only the divisors up to age 70.

Annuity Divisors for the Premium Pension

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

$$D_x = \int_0^{\infty} e^{-\delta t} \frac{l(x+t)}{l(x)} dt \quad (\text{A.9.1})$$

$$\delta = \ln(1+r) - \epsilon \quad (\text{A.9.2})$$

$$l(x) = e^{-\int_0^x (1-s)\mu(t)dt} \quad (\text{A.9.3})$$

$$\mu(x) = \begin{cases} a + be^{cx} & \text{for } x \leq 100 \\ \mu(100) + (x - 100) \cdot 0.01 & \text{for } x > 100 \end{cases} \quad (\text{A.9.4})$$

D_x	annuity divisors
x	exact age at time of calculation
r	interest rate
ϵ	interest intensity of operating costs
s	mortality charge

The annuity divisors are calculated in continuous time and according to exact age at retirement, but in principle they are consistent with the formula for the annuity divisor for the inkomstpension.² The

²The formula applies in cases where one life is insured, i.e. where there is no survivor coverage.

survival function, $l(x)$, can be considered equivalent to the number L used in the calculation of the inkomstpension. The mortality function, $\mu(x)$, is the so-called Makeham's formula used for calculating the risk of death within one year. The values of a, b and c correspond to Statistics Sweden's forecast of remaining life expectancy in the years 2015–2110 for individuals born in 1938, 1945 or 1955.

So-called cohort mortality is used, which means that the year cohort 1938 is used for individuals born in the 1930s or earlier, year cohort 1945 is used for individuals born in the 1940s, and year cohort 1955 is used for individuals born in the 1950s or later. For $x > 100$ $\mu(x)$ merges with a straight line with a slope of 0.01. During 2016, a charge s was imposed on mortality intensity following an analysis of how premium pension mortality differed from that found in Statistics Sweden.

Current Values for Disbursement Amounts in Fund Insurance and Traditional Insurance

Cohort	a	b	c	s
1930s	0.00005	0.00000198	0.1239	0.1
1940s	0.00460	0.00000053	0.1373	0.1
1950s	0.00470	0.00000019	0.1476	0.1

When calculating the guaranteed amount in traditional insurance with profit annuity, the Statistics Sweden alternative with low mortality is used, reduced by a further 10 percent. In the calculation of the payment amount, the interest rate assumption is called advance interest rate. The interest intensity δ is based on the interest rate of 1.75 percent for both fund insurance and traditional insurance, reduced by the interest intensity for operating expenses of 0.1 percent, which corresponds to $\delta = 0.016349$.

When calculating the annuity divisor to produce the guaranteed amount in the traditional insurance, we use Statistics Sweden's alternative with low mortality reduced by a further 10 per cent, an interest rate which is -1.0 percent and an interest intensity for operating expenses of 0.1 percent.

In traditional insurance, the technical insurance provision, FTA ("pension liability"), consists of life insurance provision, unpaid claims and other technical insurance provisions. The life insurance provision is determined for each insurance as the capital value of remaining guaranteed payments. The value is calculated using assumptions about the discount rate, mortality and operating costs. As of May 1, 2017, when a new law regulating the Swedish Pensions Agency's premium pension operation came into effect, the discount rate is given by an interest rate curve that is the average of the interest rate curve for government bonds and mortgage bonds. The mortality assumption is different for men and women, but otherwise calculated as for amounts to be paid out, cohort-based and using Statistics Sweden's forecast with a deduction of 10 per cent. Operating expenses are assumed to be 0.07 per cent of the capital.

Unpaid claims are pension disbursements that have not been able to be carried out. Remaining technical provisions consist of reductions from the transfer of pension credit between spouses not yet distributed. These two items are very small compared to the life insurance provision.

Annuity divisors are determined for each age, without an upper age limit. For an annual amount, they are calculated using an interest rate of 1.75 percent for both fund and traditional insurance.

Annuity Divisors for Annual Amount, Fund and Traditional Insurance

	61	62	63	64	65	66	67	68	69	70
Without survivor benefit										
	20.91	20.37	19.82	19.26	18.69	18.12	17.54	16.29	15.71	15.13
With survivor benefit										
Co-insured 55	26.30	26.12	25.95	25.80	25.65	25.51	25.38	25.17	25.06	24.97
Co-insured 60	24.69	24.44	24.19	23.96	23.75	23.55	23.36	23.04	22.89	22.75
Co-insured 65	23.39	23.05	22.72	22.40	22.10	21.81	21.53	21.06	20.83	20.63
Co-insured 70	22.31	21.88	21.45	21.04	20.63	20.23	19.84	19.12	18.79	18.47

Annuity Divisors for Guaranteed Annual Amount (Traditional insurance)

	61	62	63	64	65	66	67	68	69	70
Without survivor benefit										
	27.64	26.82	25.99	25.17	24.34	23.51	22.69	20.25	19.46	18.68
With survivor benefit										
Co-insured 55	36.66	36.34	36.04	35.76	35.50	35.26	35.03	34.53	34.36	34.20
Co-insured 60	33.86	33.42	33.02	32.63	32.27	31.94	31.63	30.95	30.72	30.51
Co-insured 65	31.69	31.12	30.58	30.07	29.58	29.13	28.70	27.73	27.41	27.11
Co-insured 70	29.80	29.10	28.42	27.75	27.11	26.48	25.88	24.41	23.92	23.45

Change in Value, Premium Pension

In chapter 6 Changes in Value of the Pension System, two different measures are used for calculating the change in value in the premium pension system. These measures are time-weighted return and capital-weighted return. They are briefly described below.

Capital-Weighted Rate of Return

The capital-weighted rate of return takes into consideration the capital flow of the account by weighing together the return and the capital in the account during the corresponding period. This means that during periods when the sum under capital management has been large, the return is given greater weight in the calculation than the return during periods when there has been little capital managed. The cash flows chiefly included in the calculations consist of paid-in pension credit and pension disbursements. The interest on the preliminary pension credit, the return on the funds in the portfolio, the administration fee to the Swedish Pensions Agency, the management fee to fund companies, the bonus on the management fee and inheritance gains are not included in the cash flows, but affect the return directly.

When the capital-weighted return is calculated, the so-called internal rate of return is sought. This rate is a discount rate at which the present value of all cash flows, including the value of the closing balance but with the opposite sign, will equal zero.

The capital-weighted return (also referred to as the Internal Rate of Return, or IRR) is calculated by solving the equation

$$\sum_{t=0}^T \frac{C_t}{(1+r)^{\frac{t}{365}}} = 0 \quad (\text{A.10.1})$$

r internal rate of return during the period, expressed as an annual rate

t	number of days since the starting point
T	closing point
C_t	transaction (cash flow) at time t
C_T	final value, that is, the value of the account as of the day when the valuation is made

The equation requires that the final value be negative so that a value of SEK X results in a transaction of SEK $-X$. C_T is thus always ≤ 0 .

To calculate the internal rate of return, it is therefore necessary to know the closing value of the portfolio (market value), all cash flows to and from the portfolio, and the time when these cash flows take place. The internal rate of return can be said to yield the “interest rate on bank accounts” which, given the deposits and withdrawals, have resulted in the current closing value.

The formula above for the internal rate of return is the one normally used in financial matters.

It can also be expressed in the following way, which is consistent with how interest is actually credited to bank accounts:

$$\sum_{t=0}^{T-1} C_t \cdot (1+r)^{\frac{T-t}{365}} = C_T \quad (\text{A.10.2})$$

Interest is earned on each deposit C_t from the time of deposit t until the closing date T .

C_T is greater than or equal to zero, and is the balance at the time of calculation.

Time-Weighted Rate of Return

With the time-weighted return, adjustment is made for the effects of capital inflows and outflows, that is, to prevent new pension credit recorded or pensions paid from affecting the calculated rate of return. The time-weighted return thus measures the return for a certain deposited amount for a certain period of time. If time-weighted, the return is measured for a period, the returns for the partial periods are weighed together with equal weights. A partial period consists of the time between two cash flows. The equation below describes the time-weighted return.

$$R_t = \left(\prod_{t=0}^T \frac{MV_{t+1}}{MV_t + C_t} \right) - 1 \quad (\text{A.10.3})$$

R_t	return during the period
t	number of days since the starting point
T	closing point
MV_t	market value at time t
C_t	transaction (cash flow) at time t

The time-weighted return can be used to obtain accurate comparisons of the return between funds, where fund managers cannot set aside more capital under favourable return conditions or vice versa. The measure can also be used for comparisons with relevant market indices or with the return achieved by other managers. In the premium pension system, the pension saver cannot freely determine the in- or outflow of capital for the premium pension account. On the other hand, the saver decides whether and when the moneys invested are to be transferred to another fund. The fund companies have no influence over the flow of capital in the fund.

Measures of the development of value for the system

How well are the funds doing?

- Time Weighted Return (Premium Pension Index)

How well are the pension savers doing?

- Capital-Weighted Return
-

Measures of the development of value for fund savers

How well are *my* funds doing?

- Time Weighted Return per Fund
- Time-Weighted Return for the Fund Portfolio

How well is *my* account/*my* pension doing?

- Capital-Weighted Return
-

Appendix B Mathematical Description of the Balance Ratio

Excerpt from Regulation (2002:780) on the Calculation of the Balance Ratio¹

In accordance with Ch. 58 § 14 of the Social Insurance Code (SFB, 2010:110), a balance ratio is to be calculated annually². The regulations (2002:780) require the Swedish Pensions Agency to prepare a calculation of the balance ratio, to be confirmed subsequently by the Government. The balance ratio is calculated as follows:

Balance Ratio, BT

$$BT_t = \frac{AT_{t-2} + BF_{t-2}}{S_{t-2}} \quad (\text{B.1.1})$$

$$AT_t = A_t \cdot OT_{t-1} \quad (\text{B.1.2})$$

t	calendar year if the variable refers to flows, end of calendar year if the variable refers to stocks
AT_t	contribution asset year t
BF_t	buffer fund, the aggregate market value of the assets of the First–Fourth and Sixth National Pension Funds in year t . By market value is meant the value which according to Ch. 6 § 3 of the National Pension Funds Act (2000:192) and Ch. 4 § 2 Sixth National Pension Fund Act (2000:193), is to be shown in the annual reports of these funds.
S_t	pension liability, year t
A_t	contribution revenue of the pay-as-you-go system, year t
OT_t	turnover duration, year t

Damped Balance Ratio, BT^*

The damped balance ratio for a year is equal to 1 plus one-third of the difference between the balance ratio fixed for that year and the number 1. The damped balance ratio is rounded to four decimal places.

$$BT^* = \frac{BT - 1}{3} + 1 \quad (\text{B.2.1})$$

¹Some editing has been done to simplify the presentation.

²New rules came into force on January 1, 2016. The changes affected liability and asset estimates, and the new regulations in Chapter 58 of the Social Insurance Code (2010:110) were applied for the first time in the calculation of the balance ratio and damped balance ratio of 2017. For more details on the changeover, see the Orange Report 2015.

Turnover Duration, OT

$$OT_t = U\dot{A}_t - I\dot{A}_t \quad (\text{B.3.1})$$

Income Age, $I\dot{A}$

$$I\dot{A}_t = \frac{\sum_{i=16}^{R_{intj,t}} \overline{PR}_{i,t} \cdot L_{i,t} \cdot (i + 0.5)}{\sum_{i=16}^{R_{intj,t}} \overline{PR}_{i,t} \cdot L_{i,t}} \quad (\text{B.4.1})$$

$$\overline{PR}_{i,t} = \frac{\frac{PR_{i,t}}{N_{i,t}} + \frac{PR_{i+1,t}}{N_{i+1,t}}}{2}, \quad i = 16, 17, \dots, R_{intj,t} - 1 \quad (\text{B.4.2})$$

$$\overline{PR}_{R_{intj,t}} = \frac{PR_{R_{intj,t}}}{N_{R_{intj,t}}} \quad (\text{B.4.3})$$

$$L_{i,t} = L_{i-1,t} \cdot h_{i,t}, \quad i = 17, 18, \dots, R_{intj,t} \text{ where } L_{16,t} = 1 \quad (\text{B.4.4})$$

$$h_{i,t} = \frac{N_{i,t}}{N_{i-1,t-1}}, \quad i = 17, 18, \dots, R_{intj,t} \quad (\text{B.4.5})$$

- i age at year-end
- $R_{intj,t}$ the highest age group to have earned pension credit for year t
- $PR_{i,t}$ the sum of 16 percent of pension qualifying-income calculated according to Ch. 59 of the Social Insurance Code and 16 percent of the pension-qualifying amounts calculated according to Ch. 60 of said code, income year t , age group i
- $N_{i,t}$ number of individuals in age group i who at any time through income year t have been credited with pension-qualifying income or pension-qualifying amounts and have not been registered as deceased
- $L_{i,t}$ proportion of persons in age group i year t
- $h_{i,t}$ change in proportion of persons in age group i year t

The proportion of pension liability relating to pensioners R_i^*

The proportion of pension liability relating to pensioners R_i^* indicates how large a share of pension liability in age group i concerns pensioners and is included in the calculation of the payment age $U\dot{A}$.

$$R_i^* = \frac{SP_{i,t}}{SP_{i,t} + PB_{i,t}^*} \quad (\text{B.5.1})$$

$SP_{i,t}$ pension liability in year t for age group i concerning pensioners in the distribution system in respect to pensions paid

$PB_{i,t}^*$ the sum of pension balances without regard to change in the income index between year t and $t + 1$

Payment Age, $U\dot{A}$

$$U\dot{A}_t = \frac{\sum_{i=61}^{R_{utb,t}} 1.016^{-(i-61+0.5)} \cdot L_{i,t}^* \cdot (i + 0.5) \cdot R_i^*}{\sum_{i=61}^{R_{utb,t}} 1.016^{-(i-61+0.5)} \cdot L_{i,t}^* \cdot R_i^*} \quad (\text{B.6.1})$$

$$L_{i,t}^* = L_{i-1,t}^* \cdot he_{i,t} \quad \text{där } L_{60,t}^* = 1 \quad (\text{B.6.2})$$

$$he_{i,t} = \frac{U_{i,t}}{U_{i,t} + Ud_{i,t} + 2 \cdot Ud_{i,t}^*}, \quad i = 61, 62, \dots, R_{utb,t} \quad (\text{B.6.3})$$

$R_{utb,t}$ oldest age group receiving a pension, year t

$L_{i,t}^*$ proportion of remaining disbursements to age group i year t

R_i^* the proportion of pension liability in age group i concerning pensioners

$he_{i,t}$ change in pension disbursements due to deaths, year t , age group i

$U_{i,t}$ total pension disbursements in December of year t to age group i

$Ud_{i,t}$ total of last monthly pension disbursements to persons in age group i who received pensions in December of year $t - 1$, but not in December of year t ³

$Ud_{i,t}^*$ total of last monthly pension disbursements to persons in age group i who were granted pensions in year t but did not receive a pension payment in December of year t ⁴

³As of 2016, only payments terminated due to death are included. In previous years payments terminated as a result of pension deferral were also included. The risk period has been changed to cover an entire year. Previously the only payments included were those made to individuals who had received at least one payment in year t (in practice, to be included in the variable, previous payments in December of year $t - 1$ and January of year t was required).

⁴As of 2016, only payments terminated due to death are included. In previous years payments terminated as a result of pension deferral were also included.

Pension Liability, S

$$S_t = SA_t + SP_t \quad (\text{B.7.1})$$

$$SA_t = PB_t^* + IPR_t + TP_t \quad (\text{B.7.2})$$

$$PB_t^* = \frac{PB_t}{I_t} \quad (\text{B.7.3})$$

$$SP_t = BT_{t+1}^* \cdot \sum_{i=61}^{R_{utb,t}} U_{i,t} \cdot 12 \cdot \left(\frac{De_{i,t} + De_{i,t-1} + De_{i,t-2}}{3} \right) \quad (\text{B.7.4})$$

$$De_{i,t} = \frac{\sum_{j=i}^{R_{utb,t}} \frac{1}{2} \cdot (L_{j,t}^* + L_{j+1,t}^*) \cdot 1.016^{i-j-1}}{L_{i,t}^*}, \quad i = 61, 62, \dots, R_{utb,t} \text{ where } L_{R_{utb,t}+1}^* = 0 \quad (\text{B.7.5})$$

- SA_t pension liability in year t in regard to pension commitment for which disbursement has not commenced (pension liability to the economically active)
- SP_t pension liability in year t in regard to pensions being disbursed to retired persons in the pay-as-you-go system
- PB_t^* the sum of pension balances without regard to change in the income index between year t and $t + 1$
- IPR_t estimated value of pension credit earned in year t for inkomstpension according to Chapter 61 §§ 5-10 of the Swedish Social Insurance Code, calculated according to Chapter 62 § 5, second paragraph of same code
- TP_t estimated value of ATP, year t for persons who have not begun to draw this pension
- PB_t the sum of pension balances for year t according to Chapter 62 §§ 2, 5 and 7 of the Swedish Social Insurance Code
- I_t income index for year t according to Chapter 58 § 11 of the Swedish Social Insurance Code
- BT_t^* damped balance ratio, calculated according to Chapter 58 § 20a of the Swedish Social Insurance Code, when the balance index has been fixed for the same year⁵
- $De_{i,t}$ economic annuity divisor for age group i year t

⁵When the balance index has not been fixed, BT_t^* is set to 1

Appendix C List of Terms

actuarial provisions (försäkringstekniska avsättningar)
provisions set aside to guarantee the commitment of the insurer in traditional insurance.

adjustment indexation* (följsamhetsindexering)
annual recalculation of inkomstpension and ATP pension based on the change in the income index. The change in the index is 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 follows:

$$\text{Adjustment indexation (at the turn of the year } (t - 1) \rightarrow t) = \frac{I_t/I_{t-1}}{1.016}$$

During a balancing period, the income index is replaced by balance index.

administrative costs* (administrationsavgift)
fee to cover costs of administration and operations, (see Appendix A).

annuity divisor* (delningstal)
a number used to calculate pension amounts in premium-based pension insurance. The annuity divisor reflects remaining life expectancy at retirement, taking into account the imputed interest credited to the pension (see Appendix A). Economic annuity divisors are used for calculating the pension liability (see Appendix B).

ATP (tilläggs pension)
part of the national public pension calculated according to the ATP system. Supplementary pension refers to the former ATP plus folkpension and is paid to all persons born before 1938. Persons born between 1938 and 1953 receive a certain number of twentieths of their income-related pension as ATP and the remaining number of twentieths as inkomstpension and premium pension. The respective number of twentieths depends on the year of birth. The ATP system was a defined-benefit pension system. The ATP portion of the ATP plus folkpension is equal 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 single pensioners and 78.5 percent for married pensioners. To receive a full pension, an individual must have at least 30 years of pension-qualifying income.

balance index* (balansindex)
replaces the income index during a balancing period. When balancing is activated, pension balances and pensions are indexed by the change in a balance index instead of the income index.

balance ratio (balanstal)
a number that expresses the relationship between assets and pension liability in the inkomstpension and ATP pension system (see Appendix B).

*For amounts and values, see Statistik och publikationer at www.pensionsmyndigheten.se.

balancing	(balansering)
a method for restoring financial balance in the inkomstpension and ATP pension systems of the national pension. Balancing is activated if the balance ratio drops below 1.0000, that is, if the pension liability exceeds the assets of the system, and ends when the balance index reaches the same level as the income index.	
buffer fund	(buffertfond)
absorbs interperiod discrepancies between pension contributions and pension expenditure in a pay-as-you-go system. The primary purpose of the buffer fund is to stabilize pension disbursements and/or pension contributions in relation to economic and demographic variations. The buffer fund of the national public pension system consists of five different funds: the First-Fourth and Sixth National Pension Funds.	
capital-weighted return	(kapitalviktad avkastning)
another term for the capital-weighted return is internal rate of return. In the premium pension system, the measure is used in evaluating individual accounts, but also for the system as a whole. Consideration is given to the point in time and amount of all paid-in pension credit and pensions disbursed as well as pension account balances at the end of the period. The capital-weighted return corresponds to the average annual return during the period and may be compared, for example, with the interest on a bank account. The Pensions Agency's calculation of the capital-weighted return for the premium pension includes in the return not only the change in value of the funds concerned, but also inheritance gains, bonuses and management fees. For more detailed information, see Appendix A.	
ceiling on contributions*	(avgiftstak)
the highest income on which the national pension contribution and the central-government pension contribution can be based, equivalent to 8.07 income base amounts.	
ceiling on pension-qualifying income*	(intjänandetak)
the highest income, after deduction of the individual pension contribution, for which pension credit is earned. It corresponds to 7.5 income base amounts.	
central government old-age pension contribution	(statlig ålderspensionsavgift)
a pension contribution paid by the central government. The contribution is 10.21 percent of pension-qualifying social-insurance benefits, except for sickness and activity compensation (disability pension). For sickness and activity compensation and so-called pension qualifying amounts, the contribution is 18.5 percent.	
compounding	(förräntning)
in this report, synonymous with indexation.	
contribution asset	(avgiftstillgång)
the value of the flow of contributions to the inkomstpension. Calculated by multiplying the contribution revenue by turnover duration.	
contribution base	(avgiftsunderlag)
the incomes and amounts on which a pension contribution is to be paid. Consists primarily of earnings, but also of social insurance benefits, such as sickness cash benefits and unemployment cash benefits, as well as pension-qualifying amounts.	

*For amounts and values, see Statistik och publikationer at www.pensionsmyndigheten.se.

contribution revenue	(avgiftsinkomst)
the total pension contributions paid to the pay-as-you-go system in one year.	
damped balance ratio	(dämpat balanstal)
the damped balance ratio for a year is equal to 1 plus one-third of the difference between the balance ratio fixed for that year and the number 1. The damped balance ratio is rounded to four decimal places.	
defined-benefit pension system	(förmånsbestämt pensionssystem)
a pension system where pensions are set in advance to a fixed amount or a certain percentage of, for example, final salary or average earnings during a specified number of years. In a defined-benefit pension system the financial risk - due to variations over time in return on the system's assets and in mortality rates - is borne by the insurer. In a public pension system, the insurer is the taxpayers, which means that contributions/taxes to the system may vary.	
defined-contribution pension system	(avgiftsbestämt pensionssystem)
a pension system in which pension credit in monetary terms accrues by the same amount as the pension contribution paid by or for the individual. In a defined-contribution pension system, the insured bears the financial risk deriving from the variability over time in the mortality rate and in the rate of return on the assets of the system. This means that the value of the pension is not guaranteed but may vary.	
fund	(fond)
a legal entity operated by a fund management company. The fund management company invests in securities in which investors in turn can buy shares.	
fund asset	(fondtillgång)
the value of the assets at the end of the confirmation year.	
fund insurance	(fondförsäkring)
pension insurance where capital is invested in funds that may be selected via an insurance company. Through their choice of funds, the insured decide how to invest their saving and bear the risk associated with the development of their pension balances.	
fund strength	(fondstyrka)
the monetary amount of the buffer fund at the end of a given year divided by the pension disbursements for the same year. It is a measure of the size of the buffer fund in relation to the flow of pension payments.	
funded system	(fonderat system)
a pension system in which contributions or premiums paid in are placed in funds and saved separately for each individual or for a collective. The premium pension system is an example of a funded system.	
guarantee rule/guaranteed supplement	(garantiregel/garantitillägg)
an amount by which ATP pension is raised for those born 1938-1953 to ensure they will not receive lower pensions than what they earned up to and including 1994.	
guaranteed pension	(garantipension)
portion of the national public pension paid to those with little or no inkomstpension and/or ATP pension.	

income age	(intjänandeålder)
indicates the average expected capital-weighted age for earned pension credit.	
income index*	(inkomstindex)
the change in the income index shows the development of the average income each year. The measure of income used here is pension-qualifying income, without limitation by the ceiling, but after deduction of the individual pension contribution, (see Appendix A).	
income-based old-age pension	(inkomstgrundad ålderspension)
the inkomstpension and ATP plus the premium pension.	
income base amount*	(inkomstbasbelopp)
base amount which is recalculated each year according to the change in the income index. The income base amount is used primarily to calculate the ceilings on contributions and pension-qualifying income.	
indexation*	(indexering)
recalculation of pension balances by the change in the income index, or balance index, and the recalculation of pensions by adjustment indexation.	
individual pension contribution	(allmän pensionsavgift)
pension contribution paid by each person individually via income tax. It corresponds to 7 percent of income up to the ceiling for contributions.	
inheritance gain*	(arvsvinst)
pension balance or insurance capital from a deceased insured person that goes to survivors in the insurance collective. In the national public pension, this refers to inkomstpension assets and premium pension capital inherited by the surviving insured (see Appendix A).	
inkomstpension	(inkomstpension)
the portion of the national public pension where the contribution, 16 percent of the pension base, is paid to a pay-as-you-go system.	
internal rate of return	(internränta)
see capital-weighted return.	
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.	
national public pension	(allmän pension)
pension provided for by law. The national public pension is governed by the Social Insurance Code and consists primarily of the inkomstpension, the ATP pension, the premium pension and the guaranteed pension.	

*For amounts and values, see Statistik och publikationer at www.pensionsmyndigheten.se.

- old-age pension contribution (ålderspensionsavgift)
paid by employers as an employer contribution and by self-employed persons as an individual pension contribution. The contribution rate for the old-age pension is 10.21 percent. It is paid on the individual's entire income, but the contribution levied on the portion of income above the ceiling is not credited to the pension system, but to the central government.
- pay-as-you-go pension systems (fördelningssystem)
pension system in which pension contributions or premiums paid in during a given year are used to finance disbursements the same year. In a PAYG system with a buffer fund, any surpluses are used to finance deficits in other years.
- payment age (utbetalningsålder)
indicates the average capital-weighted age for pension payments.
- pension balance (pensionsbehållning)
the value of earned pension credit within the national public pension at any given time. The pension balance for inkomstpension, after deduction of administration costs, is the sum of pension credit each year, adjusted to reflect inheritance gains distributed and recalculated by changes in the income index or the balance index.
- pension base (pensionsunderlag)
the total of an individual's pension-qualifying income and pension-qualifying amounts, but no higher than 7.5 income base amounts per year.
- pension contribution (pensionsavgift)
contribution to the national public pension. See individual pension contribution, old-age pension contribution and central-government old-age pension contribution.
- pension credit (pensionsrätt)
amount set aside each year for inkomstpension and premium pension. An individual's pension credit is 18.5 percent of her/his total pension base and equal to her/his total contribution to the pension system. 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 level (pensionsnivå)
in this report, the average pension in relation to the average pension-qualifying income for persons aged 16–64.
- pension liability (pensionsskuld)
in this report, the financial commitment of the pension system at the end of each year. For the inkomstpension, the pension liability to the economically active is calculated as the sum of the pension balances of all individuals. The pension liability to retirees is calculated by multiplying the annual pension amount of each birth cohort by the economic annuity divisor for that cohort. Through 2017 the pension liability will also be calculated for the ATP credit earned by the economically active. With fund insurance, the pension liability for the premium pension is calculated as the total value of all fund shares; with traditional insurance, the pension liability is calculated as each guaranteed amount multiplied by an annuity divisor.
- pension points (pensionspoäng)
points in the national public pension for persons born 1938-1953 which are calculated annually on the basis of pension-qualifying income and are used to calculate ATP pension. Pension points

are calculated as follows:

$$\text{Pension points} = \frac{\text{PGI} - \text{HPBB}}{\text{HPBB}}$$

PGI pension-qualifying income
HPBB the higher price-related base amount

pension-qualifying amounts (PGB) (pensionsgrundande belopp)
basis for pension credit in the national public pension for a fictive income for: years with small children, studies, national service, sickness or activity compensation.

pension-qualifying income (PGI) (pensionsgrundande inkomst)
income used as a basis for calculating pension credit in the national public pension. 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.

potential GDP (potentiell BNP)
the level of gross domestic product (GDP) that would arise in the absence of cyclical fluctuations and which in the long term is compatible with stable inflation. Potential GDP cannot be observed in the data but is the result of an assessment. The difference between actual and potential GDP, the so-called GDP gap, indicates which cyclical phase the economy is currently in. If the gap is positive, the economy is experiencing a boom, if the gap is negative the economy is in recession.

premium pension (premiepension)
part of the national public pension in which the contribution, consisting of 2.5 percent of the pension base, is invested in funds.

price-related base amount* (prisbasbelopp)
an amount used in the national pension system for purposes including calculation of the guaranteed pension. The price-related base amount is recalculated each year according to the change in the Consumer Price Index (for June). In addition there is a higher price-related base amount, which is used to calculate pension points and also follows changes in the Consumer Price Index.

resource utilization (resursutnyttjande)
indicates the extent to which the economy's productive resources – labour and capital – are being utilized. Full resource utilization means the economy is in balance.

return (avkastning)
income that results from an investment. For shares of stock, the return may consist of a dividend and the change in the market price. In this report, the concept refers to the direct return plus the change in value of the buffer fund and the premium-pension funds.

time-weighted return (tidsviktad avkastning)
the time-weighted return is used to describe the change in value of a fund or index. The measure shows the return on a deposit made at the outset of the period, without consideration of whether additional deposits or withdrawals have been made during the period. For more detailed information, see Appendix A.

*For amounts and values, see Statistik och publikationer at www.pensionsmyndigheten.se.

traditional insurance (traditionell försäkring)

pension insurance where the insurance company decides how the insurance capital is to be invested and provides some form of guaranteed payments together with the chance to receive a share of any surplus.

turnover duration (omsättningstid)

reflects the expected time from the earning of pension credits to their payment in the form of inkomstpension. The turnover duration is calculated as the difference between payment age and income age. The turnover duration is used to value the flow of contributions. It is determined by the rules for earning pensions and pension payments and by the earned income and mortality patterns of each age group.