Statutory pensions in Finland

Long-term projections 2007

REPORTS

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TO THE READER

Finnish statutory pensions consist of earnings-related pensions and national pensions, and pensions from motor liability, workers' compensation and military injuries insurance. This report presents projections of the long-term development of pension expenditure and the average benefit level under these acts. In addition, the report includes projections of the financing of private-sector earnings-related pensions.

The previous corresponding report of the Finnish Centre for Pensions was published in 2004. In the 2004 report, future pension expenditure was calculated in accordance with the legislation that took effect in the beginning of 2005. Since that time, the pension legislation has not been changed in any way that would significantly affect the development of expenditures. On the other hand, financing under the Employees Pensions Act (TyEL) was reformed through legislative changes that were implemented in the beginning of 2007. This financing reform has been taken into account in the financing projection for TyEL.

The projections were prepared using the long-term planning model of the Finnish Centre for Pensions. Tapio Klaavo and Ismo Risku prepared the expenditure projections, and Peter Biström prepared the financing projections. Hannu Sihvonen and Kalle Elo collected the register data for the projection. Ismo Risku wrote the report in Finnish. The report was translated by Janina Gröndahl, Patrick Wiese and Ismo Risku. Responsibility for the remaining errors, of course, remains with the authors.

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ABSTRACT

Finnish statutory pensions consist of earnings-related pensions and national pensions, and pensions from motor liability, workers' compensation and military injuries insurance. This report presents projections of the long-term development of pension expenditure and the average benefit level under these acts. In addition, the report includes projections of the financing of private-sector earnings-related pensions. The effects of the most important assumptions on the results are presented through sensitivity projections.

The results of the report have been calculated using the long-term projection model of the Finnish Centre for Pensions. The model simulates the operation of the pension scheme. Using the model, it is possible to make projections of the forecasting and planning needs of the pension scheme. The existing pension legislation and other stipulations are assumed to remain unchanged until the end of the projection period. The projections are based on an average technique by age and gender.

ABSTRAKTI

Suomen lakisääteiset eläkkeet muodostuvat työ- ja kansaneläkkeestä sekä sotilasvamma-, liikennevakuutus- ja tapaturmaeläkkeistä. Raportti sisältää laskelmat näiden lakien mukaisen eläkemenon ja keskimääräisen etuustason kehityksestä sekä yksityisalojen työeläkkeiden rahoituksesta vuoteen 2075. Keskeisimpien oletusten vaikutus tuloksiin esitetään herkkyyslaskelmien avulla.

Raportin tulokset on laskettu Eläketurvakeskuksen pitkän aikavälin suunnittelumallilla. Malli jäljittelee eläkejärjestelmän toimintaa ja sen avulla voidaan tehdä laskelmia eläkejärjestelmän ennuste- ja suunnittelutarpeisiin. Laskelmissa eläkelainsäädäntö ja muut säännökset pysyvät muuttumattomina tarkastelujakson loppuun saakka. Laskenta perustuu ikä- ja sukupuolikohtaiseen keskiarvotekniikkaan.

EXECUTIVE SUMMARY

The report presents the long-term projections of the Finnish Centre for Pensions regarding the development of statutory pension expenditure and the average pension level. Regarding the private-sector earnings-related pension acts, the report also includes a fnancing projection in which the main results are the development in contributions and assets under Employees Pensions Act (TyEL). This pension act covers private sector employees, approximately 60 per cent of the labour force.

Projection results presented in the body of this report are based on the existing pension legislation. However, the appendix presents two projections that differ from the current legislation. The purpose of these projections is to identify the fxed contribution level which, if implemented in 2008, would ensure the long-range fnancial sustainability of earnings-related pensions.

The demographic development in the baseline projection follows the latest Statistics Finland forecast up to 2040. The Finnish Center for Pensions extended this forecast beyond the year 2040. Under this extended forecast, by 2030 the life expectancy of 62-year-olds will have increased by 3.5 years (relative to its current level of 22 years), and by 2075 this life expectancy will have increased by 7 years.

The working-age population will decrease until the early 2030s, after which it will be stable. The old-age dependency ratio will increase to almost double its current level of one-fourth by the year 2030, after which the ratio will increase slowly.

The employment rate in the baseline projection is expected to rise from 69 per cent in 2006 to 71 per cent in 2025, and to 72 per cent towards the end of the projection period. The employment rate increases as the unemployment rate decreases and the effective retirement age rises. Relative to its current level, the effective retirement age is expected to increase by 2.4 years towards the end of the projection period. The expected increase in both life expectancy and the effective retirement age means that by the end of the projection period, the average time in retirement will be almost 5 years greater than it is today. In the baseline projection, the annual growth rate of the earnings level is 1.75 per cent, and the real rate of return on pension assets is 4.0 per cent per year.

The change in life expectancy of 62-year-olds has an effect on the benefit levels. If the life expectancy increases, the old-age pensions are adjusted downwards using a life expectancy coeffcient. In 2025, the coeffcient is expected to be 0.9,

and in 2075, at the end of the projection period, the coefficient is expected to be slightly less than 0.8.

The earnings-related pension expenditure for the whole economy increases relative to the wage sum, from the current level of nearly 23 per cent to 34 per cent by 2030, after which pension expenditure decreases by 4 percentage points of the wage sum by the end of the projection period. The increase in earnings-related pension expenditure is a consequence of the growth in old-age pension expenditure. Total statutory pension expenditure currently corresponds to 11 per cent of GDP, and is projected to increase to 15 per cent in the 2030s. Thereafter, the share of pension expenditure in GDP will decrease by 2 percentage points by the end of the projection period.

Over the projection period the purchasing power of the average pension almost trebles from 1,200 euros to 3,000 euros. The purchasing power of the earnings-related pension component increases as a consequence of the increase in earnings level. On the other hand, the size of the national pension component stays close to 200 euros over the whole projection period. Relative to the average wage, the average pension will increase until the beginning of the 2020s. This is explained by the maturing of the earnings-related pension scheme. After the 2020s, the relative pension level decreases. The most important reasons for this decline are the life expectancy coefficient as well as the national pension index, which increases at a slower rate than the earnings level. By the early 2030s, the ratio of the average pension to the earnings level will have returned to its current level.

The TyEL contribution rate will rise, from the current 21 per cent, by 4 percentage points by the beginning of the 2030s, after which the contribution rate will be stable. By the early 2030s, the TyEL expenditure as a per cent of wage sum will increase by 12 percentage points. The TyEL assets will increase in relation to the wage sum up to the beginning of the 2030s. Currently, the assets are 1.8 times the wage sum, and, in 2030, the assets are projected to be 2.4 times the projected wage sum. Thereafter, the ratio of assets to the wage sum will not change significantly.

Under the baseline assumptions, the TyEL contribution rate will rise by four percentage points by the beginning of the 2030s. However, when all earnings-related pensions are considered, a contribution rate increase of less than one percentage point of covered earnings is sufficient to ensure the long-range financial sustainability of the scheme. In 2005, the total contributions collected to finance earnings-related pensions were 26.6 per cent of covered earnings.

The sensitivity of the baseline projection to changes in selected individual assumptions is examined in this report. Mortality changes will affect the life expectancy coefficient, and, as a consequence, will affect benefit levels. However, mortality changes will have no significant effect on pension expenditures and contribution rates. If all those who stayed in the labour market until the age of 63 continued to work until the age of 68, the foreseeable increase in earnings-related pension expenditure rate would be postponed by five years. The ultimate level of the expenditure rate does not, however, depend on the starting age of the old-age pension. Instead the average benefit level is affected by the starting age of the old-age pension.

Under the baseline assumptions, the TyEL contribution will rise by four percentage points by the beginning of the 2030s. However, if the real rate of return were five per cent rather than four per cent, the TyEL contribution would increase by merely one percentage point. Conversely, if the real rate of return were merely three per cent, the TyEL contribution rate would increase by six percentage points.

The previous long-term report of the Finnish Centre for Pensions was published in 2004. Since that report was issued, the projected earnings-related pension expenditure rate up to the 2030s has changed only slightly. The updated projections indicate that in the long term expenditure rate as a percentage of the wage sum will be two percentage points lower than previously estimated. This difference is due to higher immigration and birth rates. The long-term TyEL contribution rate is two percentage points lower than in the previous projection. Half of this change is attributable to a change in the rate of return assumption. The remaining half is explained by other factors, including a lower long-term expenditure rate, favourable recent investment returns and new funding legislation restraining liability growth in the long term.

CONTENTS

1 Introduction

This report presents the Finnish Centre for Pensions' long-term projections of statutory pension expenditure, the average benefit level and the financing of private-sector earnings-related pensions. Statutory pensions under review are earnings-related and national pensions, as well as pensions paid based on the Military Injuries Act, the Compensation for Military Injuries Act, the Motor Liability Insurance Act and the Workers' Compensation Insurance Act (SOLITA pensions).

Earnings-related pension insurance covers all 18–67 years old gainfully employed wage and salary earners and entrepreneurs. The earnings-related pension serves to ensure that the insured and his family receive a reasonable income in relation to income earned while working, in the event of old age, incapacity for work, or death. The aim of the national pension is to provide each citizen with a minimum income in the event of old age or incapacity for work. SOLITA pensions provide benefits in the event of certain special risks. In 2006, 82 per cent of all statutory pensions were earnings-related pensions, 15 per cent were national pensions and 3 per cent were SOLITA pensions.

The projections presented in this report were prepared using the Finnish Centre for Pensions' long-term projection model. The projections describe the development of statutory pensions in accordance with current legislation, secondary regulations and current procedures. With regard to increases in funded pensions under the Employees Pensions Act and national pensions, the report presents the results of different policy options.

Descriptions of economic behaviour in the projections, for example the development of employment, constitute assumptions rather than results.

The demographic development in the baseline projection follows the forecast published by Statistics Finland in spring 2007, and the report also investigates the impact of alternative demographic forecasts. Correspondingly, economic development also follows a certain scenario in the baseline projection, and alternative projections investigate the sensitivity of the results in relation to central economic assumptions.

Results central to the report include the development of statutory pension expenditure, the average pension level and TyEL contributions and assets. The results are conditional on assumptions regarding the population and the economy.

The future development of the pension scheme will correspond to the results of the report, provided that assumptions made in the projection regarding demographic and economic development prove to be correct, and provided that no changes are made to pension legislation.

The Finnish Centre for Pension's previous long-term report dates from 2004. The current report has been expanded to also include projections on the development of the average pension level and national pension expenditure. Furthermore, the analysis of the present value of the accrued pensions is more detailed.

The projection period of the report extends to 2075. It is necessary to consider a perspective spanning several decades since the full impact of pension legislation often unfolds over very long periods of time. Although 45 years have passed since the introduction of the Employees' Pensions Act, we still live the implementation phase of the scheme. A large share of the pensions in payment is still defcient in the sense that they are not based on accrual from a full working career.

The contents of the report are the following. Chapter 2 describes the central features of Finnish pension legislation. Chapter 3 presents the projection model and assumptions about the future. The results of the baseline projection are presented in chapter 4, while chapter 5 studies the sensitivity of results with respect to certain assumptions regarding demographic and economic growth. In chapter 6, the results of this report are compared to the results of the previous report by the Finnish Centre for Pensions. The fxed contribution levels suffcient to fnance expenditures permanently are presented in the Appendix 2.

This report has been prepared by following, when applicable, the International Actuarial Association guidelines of actuarial practice for social security programs.

2   Pension benefits and pension financing

2.1   Pension acts included in the report

The earnings-related pension scheme consists of several pension acts, which together cover the different sectors of the economy. In practice, all work between 18 and 67 years of age, as employee or as an entrepreneur, is insured through the earnings-related pension acts. The national pension guarantees a minimum pension if the earnings-related pension is small.

The following earnings-related pension acts are included in the projections.

Private sector acts:
   1) The Employees Pensions Act (TyEL)
   2) Seamen's Pensions Act (MEL)
   3) Self-Employed Persons' Pensions Act (YEL)
   4) Farmers' Pensions Act (MYEL)
   5) Farm Closure Allowance Act (LUTUL).

Public-sector pension acts and regulations:
   1) State Employees' Pensions Act (VaEL),
   2) Local Government Pensions Act (KuEL),
   3) Evangelical-Lutheran Church Pensions Act (KiEL),
   4) Pension regulation for employees of the Social Insurance Institution (KELA).

Both private and public sector:
   1) Act on compensation for pension accrual from state funds for periods of childcare and periods of study (VEKL).

For private-sector pension acts TyEL, YEL and MYEL, both expenditure and financing projections are provided. For public-sector pension acts, only the expenditure projection is provided.[1]

Earnings-related pensions are defined benefits. In other words, the size of pension expenditure determines the contribution level and the need for other financing. Because the scheme is defined benefit, we first investigate pension expenditures, and, later in the report, we examine financing of these expenditures.

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1   Appendix 2 presents a calculation of the fixed contribution rate required to permanently finance the entire earnings-related pension scheme.

The national pension projection includes:
1) National Pensions Act (KEL)
2) Survivors' Pensions Act (PEL)
3) Front-Veterans Pensions Act (REL)
4) Housing Allowance for Pensioners Act (EAL).

These four acts form the national pension scheme, which will be considered as a whole in the remainder of the report.

Furthermore, statutory pensions or life annuities are based on
1) Motor Liability Insurance Act (LVL)
2) Workers' Compensation Insurance Act (TapVakL)
3) Military Injuries Act (SoVL)
4) Compensation for Military Injuries Act (SotapL).

These four acts are known as SOLITA pensions. Also these acts will be considered as a whole in the remainder of the report.

2.2 Determination of benefit levels and benefit types

Earnings-related pension. Earnings-related pension accrues from wage and salary income earned between the ages of 18 and 67, in accordance with the accrual rates shown in table 2.1. Persons under the age of 18 and over the age of 68 do not accrue a pension, nor are they covered by the insurance obligation. For wage and salary employees, the income that accrues a pension equals the salary from which the employee's pension contribution has been deducted. For self-employed and farmers, pension is accrued from the total sum of insured income without employee's pension contribution deduction.

Table 2.1. Accrual rates.

Age	Actual earnings	Age	Projected pensionable service
18–52	1.5%	18–49	1.5%
53–62	1.9%	50–62	1.3%
63–67	4.5/1.5%	63–67	0%

Note: The accrual rate for projected pensionable service is applied in the event of the disability (from the occurrence of the disability to the age of 63). The accrual rate of a 63–67 year old is 1.5 per cent if he draws an old-age pension.

According to the earnings-related pension acts, a pension accrues for people between 18 and 62 during the following earnings-related social benefit periods: unemployment allowance[2] and comparable training periods, parenthood allowance, alternating leave, and sickness allowance. Earnings-related pension also accrues from a few other benefit periods that are less significant from the point of view of pension expenditure.

Regardless of age, the accrual rate for social benefit periods is 1.5 per cent per year. The accrual is based on person's earnings prior to the benefit period. For the parenthood allowance the basis for the pension is 117 per cent of earnings; for job alternation leave and for earnings-related unemployment benefits the percentage is 75, and for other types of daily allowance the percentage is 65.

The earnings-related pension acts are supplemented by the Act on compensation for pension accrual from state funds for periods of childcare and periods of study (VEKL). Based on the act, a benefit compensating for pension accrues for studies leading to a vocational or university-level degree, as well as for child-care for children under 3 years of age. The basis for the accrual, at the 2007 level, is calculated earnings of €575.97 per month, and the annual accrual percentage is 1.5. The size of the calculated earnings for which the benefit accrues has been linked to the wage coefficient, and the benefit is paid when some pension other than a part-time pension is granted.

The accrued pension is fully portable. A change in job does not affect the amount of already accrued pension. Neither is the future indexation of the accrued pension affected. Furthermore, if the person ceases to work or moves abroad his accrued pension will remain unaffected.

When calculating the initial pension amount, the income from different years is adjusted using the wage coefficient. The wage coefficient is a weighted average equal to 80 per cent of the change in earnings plus 20 per cent of the change in consumer prices. Pensions in payment are adjusted using a earnings-related pension index. This index is a weighted average equal to 20 per cent of the change in earnings plus 80 per cent of the change in consumer prices. A one-time raise in pension is carried out for young and middle-aged disability pensioners after the pension has been paid for five years. The increase is 21 per cent for pensioners under the age

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2   Approximately half of the unemployed are granted a flat rate unemployment benefit instead of an earnings-related benefit. There is no pension accrual associated with this flat benefit.

of 27. For those over 27, the increase will be lowered by 0.7 percentage points for each year of age, until it disappears altogether.

Earnings-related pension benefts include disability, unemployment, part-time, old-age and survivors' pensions.

Disability pension can be granted either as a full pension or a partial pension, depending on the degree to which the work ability of the insured has decreased. The Partial disability pension is equal to half of a full disability pension. The disability pension is equal to the pension accrued up to the date that the disability occured, plus an additional amount based on projected pensionable service. Projected pensionable service is calculated from the time when the disability starts until the age of 63. The accrual rates for projected pensionable service vary by age (see table 2.1). The salary applied to projected pensionable service is the individual's average salary computed over the fve years preceding the incapacity for work.

The unemployment pension may be granted to long-term unemployed born in 1949 or earlier, after they have reached the age of 60. Members of cohorts entitled to the unemployment pension may start receiving the earnings-related unemployment allowance at the age of 55. Upon reaching the age of 60, the unemployment allowance is replaced by the unemployment pension.

Those born after 1949 are not eligible to receive an unemployment pension. However, if they become unemployed after the age of 57, they are eligible to receive an earnings-related unemployment allowance that is payable until the commencement of their old-age pension. These long-term unemployed may take an old-age pension at the age of 62 without a reduction for early retirement. If they wish, they may continue their job search until the age of 65. During their job search, they would continue to be classifed as unemployed.

The part-time pension can be granted to an insured person who has reached the age of 58, and who reduces his working hours in such a manner that the earnings decrease to 35–70 per cent of his stabilised earnings level. The size of the part-time pension is half of the earnings reduction caused by the decrease in the working hours. Also part-time pensioners accrue a pension. The accrual rate while working is 1.9 or 4.5, depending on the age of the person (table 2.1). In addition to this, the accrual rate while receiving a part-time pension is 0.75 per cent, and the pensionable salary is equal to the reduced earnings level.

The insured is entitled to a normal old-age pension at the age of 63 or an early old-age pension at the age of 62. However, the early pensions are lowered by 0.6 per cent for each month of early retirement. If the insured continues working after having reached the age of 63, and does not take the old-age pension, the accrual rate is 4.5 per cent. On the other hand, for those receiving an old-age pension while in gainful employment after the age of 63, the accrual rate is 1.5 per cent. After reaching the age of 68, the pension accrual and the insurance obligation end. If the insured is not yet receiving an old-age pension after he turns 68, an increment for deferred retirement of 0.4 per cent per month is added to the pension.

Surviving spouses, former spouses and children may be eligible for survivors' pension. A former spouse is entitled to a surviving spouse's pension if the deceased was obligated to pay him alimony. If the deceased had two or more children under the age of 18, the total sum of survivors' pension is as large as the deceased person's pension. If there is only one minor in the family, the total sum of survivors' pension is approximately 80 per cent of the deceased person's pension. If the deceased left no minors, the survivors' pension can be at most half of the deceased person's pension. In this case, the level of the survivors' pension is established through pension adjustment, which typically reduces the pension or removes it altogether.

Using the life expectancy coefficient, the initial amount of the old-age pension is adjusted to reflect changes in the life expectancy of 62-year-olds. The life expectancy coefficient is defined in such a way that the actuarial present value of an individual's stream of old-age pensions remains unchanged, even if the life expectancy of 62-year-olds were to differ from the life expectancy observed in the years 2003–2007. The life expectancy coefficient is also applied to those who have become disabled after 2005. The coefficient is applied when a disability pension is changed to an old-age pension at the age of 63. The life expectancy coefficient is also applied to a surviving spouse's pension in connection with pension adjustment. The life expectancy coefficient affects the pensions of those born in 1948 and thereafter. The value of the coefficient is defined separately for each one-year cohort.

National pension. National pension scheme guarantees a minimum pension, if the earnings-related pension is small. The types of pension benefits and the entitlement criteria in the national pension scheme are nearly identical those in the earnings-related pension scheme. However, partial disability pension and part-time pension

are not paid from the national pension scheme. General survivors' pension can only be paid to persons under the age of 65 who do not receive national pension.

The amount of national pension depends on the size of the pensioner's earnings-related pension and upon his family relations. Prior to 2008, the domicile also played a role in determining the amount of national pension. The amount of the national pension decreases as the earnings-related pension increases. More specifically, half of the monthly earnings-related pension that exceeds 48 euros is deducted from the national pension. As a result, the national pension is eliminated completely if the earnings pension is sufficiently large (figure 2.1).

Figure 2.1. *Total pension in 2007 according to earnings level, euros/month.*
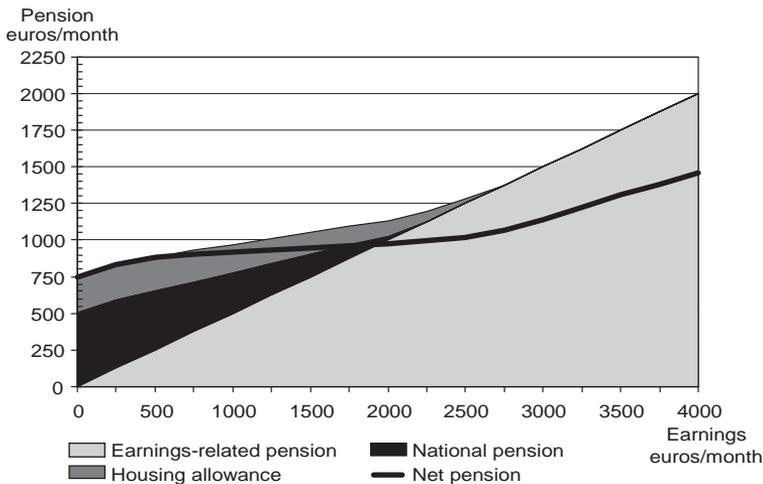
In 2007, the full amount of national pension was 445–524 euros per month. Additionally, national pension insurance includes supplements, of which the pensioner's housing allowance is the most significant. In 2006, approximately one-third of national pension expenditures were due to supplements.

The change in the earnings-related pension legislation that took place at the beginning of 2005 did not affect the retirement age in the national pension scheme, which remains at 65. However, as a result of the new legislation, any pension accrued from gainful employment after the age of 63 will not lower the amount of the national pension. In addition, lump-sum increases in disability pension based on the earnings-related pension acts, and benefits accrued from periods of childcare and study, will not be taken into account when determining the national pension.

All benefts and earnings limits of the national pension scheme have been linked to the cost-of-living index. While the initial calculation of a national pension depends on the individual's earnings-related pension, the individual's national pension is unaffected by subsequent indexation of his earnings-related beneft.. The national pension level is occasionally raised by a decision of the parliament. The last raise took place at the beginning of 2008 (by €20/month). At the same time, the classifcation of municipalities according to cost-of-living category was abolished. Three-quarters of all national pension recipients lived in municipalities in the lower cost-of-living category. Their national pension increased by approximately €40/month, in addition to the regular index adjustment.

SOLITA pensions. Based on the Motor Liability Insurance Act, disability pension is paid out in the event that a permanent injury has lead to a loss of earnings. Based on the Workers' Compensation Insurance Act (TapVakL), compensation is paid out for industrial accidents or occupational diseases. Industrial injuries pension is paid out to the injured, preceded by a period in which a daily allowance is paid (rather than a pension). Based on the Military Injuries Act (SoVL), annuity is paid out to disabled war veterans and others who, in military accidents taking place before 1991, have become disabled or ill. Military accidents and diseases incurred during military service in 1991 and after are compensated based on the Compensation for Military Injuries Act.

2.3 Pension Financing

Private-sector employees.[3] Pension acts governing private-sector employees (until 2006 TEL, LEL and TaEL; since 2007, TyEL) have, from their inception, applied a partially funded technique. The administration of the TyEL scheme is decentralised to pension insurance companies (7 companies), company pension funds (30 funds) and industry-wide pension funds (8 funds). These pension providers compete with each other, and an employer has the opportunity to choose any pension provider. All employers and their employees in covered employment are required to pay TyEL contributions with respect to their wages. The employee contribution for persons under 53 years old was 4.3 per cent of the wages in 2007. The employee

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3   Tuomikoski, Sorainen and Kilponen (2007) describe the insurance technique applied for earnings-related pension insurance in the private sector.

contribution for those over 53 years was 5.4 per cent in 2007. The employee contribution increases at the same age as the accrual rate increases (table 2.1). The average employer contribution rate was 16.5 per cent. Client bonuses and disability incidence rates affect the employer contribution. Changes in the average contribution rate are divided equally between employers and employees. That is, a change of 0.2 per cent in the average contribution rate implies a change of 0.1 per cent to both the employee and the employer contribution rates.

The employee contribution rates are determined within the TyEL scheme. However, these same employee contribution rates are also applied under the public sector's pensions acts.

Pensions are divided into a funded component and a pooled component. Assets for the funded component are accumulated at the pension provider where the employee is insured. Funds for paying the pooled component are collected during the year in which the pension is paid, in accordance with the pay-as-you-go principle. Pension benefts that are partly funded in advance are old-age, disability and unemployment pensions. Survivors' pensions and part-time pensions are fnanced according to the pay-as-you-go principle.

The pre-funding of the old-age pensions takes place between the ages of 18 and 54, while disability and unemployment pensions are funded when the pension begins. Each pension provider calculates the amount of technical provisions caused by various funded pension components using a common set of projection bases. A three per cent discount rate is used to calculate technical provisions. Financial assets cover the technical provisions of the pension providers. Pension provider funds exceeding the technical provisions constitute solvency capital by which providers prepare for investment risks.

In most years, the returns on pension assets exceed the three per cent discount rate used to calculate the technical provisions. The provisions are, however, increased on an annual basis. The increases are based on the average solvency of the pension providers. Therefore, realised investment returns affect the growth of old-age pension liabilities via solvency.[4] Since the beginning of 2007, the average realised return on share investments also affects the increase in funded old-age pension components. Pension providers may also make transfers from their solvency capital to client bonuses.

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4   This technique affects only the funding of the scheme. Benefts paid to pensioners are determined independently as described in the previous section.

Prior to 2006, funded old-age pensions for all age groups were raised proportionally. However, these proportional increases would cause an unnecessary increase in pension liabilities and funds at the same time as TyEL pension contribution increases. Therefore, beginning in 2007, increases in old-age pension liabilities can be targeted towards older age groups. This helps to avoid the excess growth of the pension liability.

In order to smooth contribution levels, old-age pension funding has, since 2003, included additional funding on top of the regular funding explained above. The target is to collect funds corresponding 7.5 per cent of wages by 2013.

Pension expenditure based on the Seamen's Pensions Act is financed by employers, employees and the state. Each has a third of the financing responsibility.

Entrepreneurs. Pension expenditure of self-employed and farmers is financed through annual premium income and a state contribution. The state pays for that part of pension expenditure that is not covered by the premium income. The contribution rate under the Self-Employed Persons' Pensions Act (YEL) roughly corresponds to the Employees Pensions Act (TyEL) contribution. The state's share in financing YEL expenditure is less than ten per cent. Three-quarters of the Farmers' Pensions (MYEL) expenditure is financed by the state. The large role of the state in regard to financing MYEL expenditures is due to an unfavourable age structure and to the low contribution level in MYEL. The average MYEL contribution rate is equal to approximately half of the TyEL contribution rate.

Public-sector employees. Each public sector pension act is administered by one institution, and therefore public sector employers are not able to choose a pension provider. State and municipal pension schemes were established on the pure pay-as-you-go system. Municipal pension insurance began funding pensions in 1988, in order to stem the growth of pension contributions. The aim is to keep the municipal pension contribution below 30 per cent of the wage sum. The State Pension Fund was established in 1990 to help finance future state pension expenditure. The purpose of the fund is to accumulate assets that can be used during peak-expenditure years to reduce the pension cost burden caused by the post-war baby-boomers.

National pension. National pensions are completely financed via the pay-as-you-go system. The expenditure is financed by the state and by the employer's national pension contribution.

3 Projection model and assumptions of baseline projection

3.1 Structure of projection model

The results of the report have been calculated using the long-term planning model of the Finnish Centre for Pensions. The model is deterministic and replicates the functioning of the earnings-related pension scheme. With the help of the model it is possible to do projections to meet the planning and forecasting needs of the pension scheme. Unless otherwise stated, acts and other regulations governing the schemes will stay unchanged until the end of the projection period.

The model consists of several interconnected modules (f gure 3.1.)

Figure 3.1. *Modules of the projection model.*
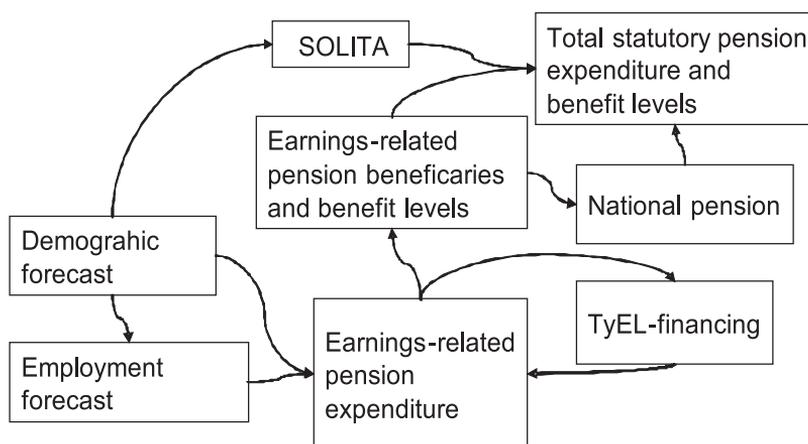
The earnings-related pension expenditure module. Earnings-related pension expenditure is projected separately for each earnings-related pension act. Pensions are paid out to pensioners on an annual basis, insured persons accrue future pensions, and persons move between different states (employed, unemployed, pensioner etc.) according to given probabilities. The model's states and transitions between these states are presented in f gure 3.2. Unemployment pensions are scheduled to be eliminated by the middle of the next decade. In the future, the transition from unemployment will be made directly to old-age pension.

Those active in the model are in gainful employment, their earnings accrue a pension, and their contributions are levied on the basis of the earnings. The unemployed are divided into three different states in the model. Persons aged less than 57 who receive an earnings-related unemployment allowance are categorized as unemployed. Long-term unemployed persons aged over the age of 57 are entitled to an earnings-related unemployment allowance for additional days until their pension starts. These two groups of unemployed accrue an earnings-related pension during their periods of unemployment. Other unemployed persons do not accrue a pension (currently about half of the unemployed) and they are categorized as inactive. Persons transferred to the category of inactive also include those who exit the labour force, and those who transfer from work covered by the act under observation to work covered by some other act. The inactive are those persons who have accrued a pension under the act under observation, but who no longer work in a job covered by this act, and who are not drawing a pension.

In addition to the transitions presented in f gure 3.2, new employees are added, on an annual basis, to the active category in accordance with population and employment forecasts. Persons in each state also die over the course of a year, and some of these deaths result in the award of a survivor's pension to living family member(s).
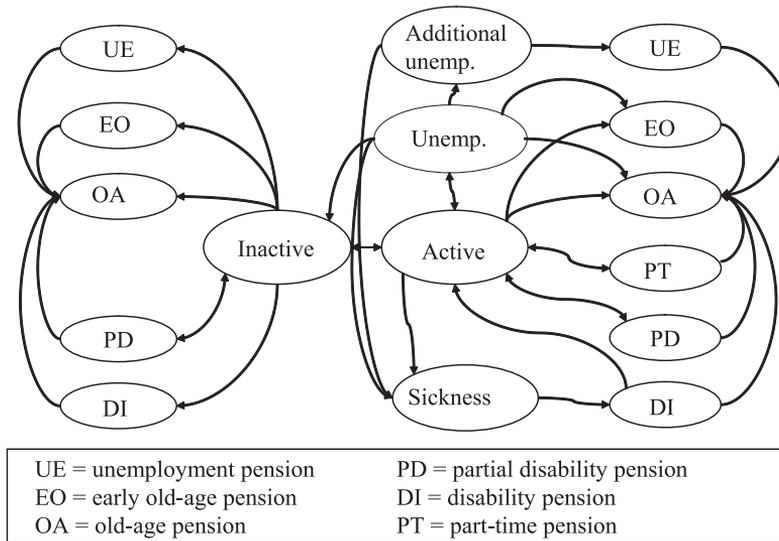
Within the model's states, people are categorised into different classes within each age and gender. An average technique is applied in these classes. Averages are calculated for each age and gender and applied to all persons within in a particular class. For example, all 50-year-old men working in employment contracts covered by TyEL are assumed to be identical to each other. It is easier to use an average modelling technique as opposed to an individual-level projection, but at the same time it produces less information. For example, a distribution of pensions by size cannot be calculated.

The average technique used by the model does not prevent capturing the selectiveness of transitions between different states. The following phenomena have been included to the model:

1) Accrued pension and salary for projected pensionable service for those transferring to disability pension are typically lower than for those continuing in gainful employment.

2) The mortality for persons drawing a disability pension is higher than the average for the population in general, while the mortality for non-disabled persons is correspondingly lower.

3) Among old-age pensioners, a large pension is associated with low mortality when age and gender are standardised.

4) Pension accruals for those dying while still within the active age range are lower than average for the insured.

Figure 3.2. *States in the projection model.*

UE = unemployment pension
EO = early old-age pension
OA = old-age pension
PD = partial disability pension
DI = disability pension
PT = part-time pension

The TyEL financing module is used to calculate the development of TyEL's contribution rate, technical provisions and assets. It contains a detailed description of the legislation and the bases of calculation pertaining to TyEL financing. The financing module is joined to the TyEL expenditure module via a two-way connection: TyEL expenditure and wage sums affect the contribution level, and also affect the formation and dissolution of technical provisions.Conversely, the size of the employee's pension contribution affects pension accrual and therefore pension expenditure.

Premium income is composed of a pooled component, a funded component and a remaining component which contains operating expenses and client bonuses. The pooled component is used to finance pay-as-you-go pensions, and the funded

premium income is accumulated into technical provisions for the pension providers. Technical provisions are also dissolved to f nance annually paid pensions. Since the required amounts of technical provisions are calculated per age group for each calendar year, the age-speci f c allocation of old-age pension liability supplements can be investigated with the help of the model.[5]

The number of earnings-related pension recipients and the average earnings-related pension are calculated once the pension expenditure of all earnings-related pension acts is known. The number of earnings-related pension recipients is calculated using the population and employment forecasts, and also using the transition probabilities from the pension expenditure module.

In the national pension module, the number and the size of national pensions is calculated. The earnings-related pension projection serves as a basis for determining the national pensions. However, the model does not provide information on the size distribution of earnings-related pensions. Therefore, in order to calculate national pensions, it is assumed that the shape of the commencing earnings-related pension distribution remains unchanged across time.

The model allows the national pension index to be a pure price index, a pure earnings level index or a weighted average of these indexes. Since the 2008 increase, no decisions have yet been made regarding the next general increase in the national pension scheme. Historically, however, the practice has been to occasionally increase the real value of national pensions. In the baseline projection, increases have been taken into account by assuming that the national pension index is equal to half of price growth plus half of average earnings growth. Chapter 5.5 analyses the impact of the national pension index on national pension expenditure and the bene f t level.

The SOLITA module is a simple description of the development of SOLITA expenditure based on a population forecasts. The starting point for the projection is current SOLITA expenditure, by age and gender. For those of active age (18–62-year olds), SOLITA pensions grow at the same rate as the general wage level. For those who are 63 or older, SOLITA pensions grow at the same rate as the earnings-related pension index.

Total statutory pension expenditure and the average total pension are calculated as the joint result of different modules. The bene f t level is calculated

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5   See chapter 5.4.

for Finnish residents receiving a pension in their own right, excluding part-time pension recipients. The average pension is calculated for everyone included in the aforementioned group, and for 68-year-olds. The pension level of 68-year-olds depicts the size of old-age entry pensions based on year of birth classif cation.

The projection model requires the following data to describe the initial situation, specif ed by pension act as well as by the age and gender of the insured:

1) population distribution over different acts and different states under the acts
2) salaries of the insured
3) amounts of pension accrued
4) technical provisions and the amount of pension assets
5) amounts of the pensions payable
6) transition probabilities between different states.

Figures describing the initial values for the projection (31.12.2005) come from the Finnish Centre for Pension's employment and pensions registers, the joint statistics of the Social Insurance Institution and the Finnish Centre for Pensions, the the Local Government Pensions Institution and the State Treasury.

Figure 3.3. Accrued earnings-related pension and earnings-related pension in payment per capita in 2006.
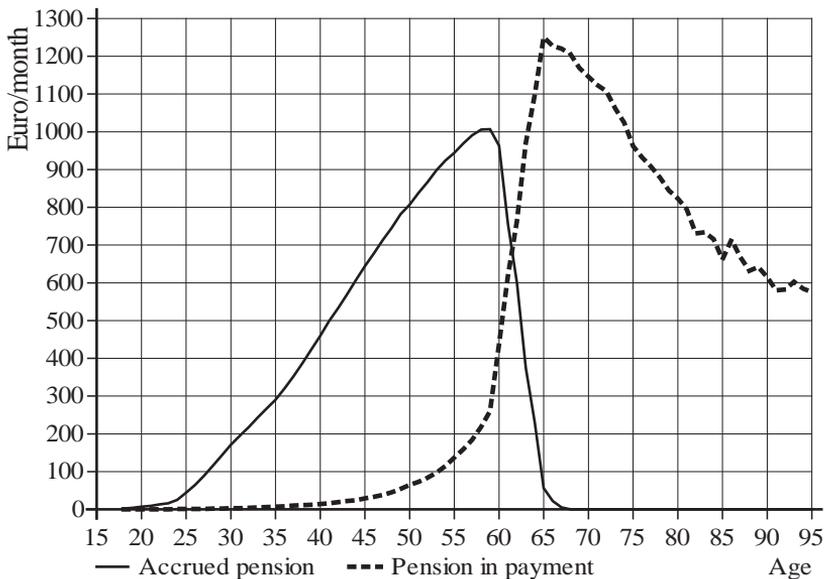
The data on accrued pensions comes from the registers of the Finnish Centre for Pensions, the State Treasury and the Local Government Pensions Institution. This data is comprehensive, but nevertheless contains a few estimates. Therefore, the data is not final. Figure 3.3 presents the size of accrued pensions and pensions in payment in 2006.

Core assumptions for the projection period are:
1) demographic forecast
2) employment forecast
3) changes in retirement risk
4) growth in income level
5) return on pension assets.

3.2 Demographic forecast

The population in the baseline projection follow the demographic forecast published by Statistics Finland in spring 2007, which covers the time period until 2040. The most important assumptions of the forecast are:
1) total fertility rate 1,84
2) net migration of 10,000 persons per year
3) the observed rate of decrease in mortality will continue in the future.[6]

The projection period of the report extends to 2075. The assumptions used in the population forecast are held constant from 2040 until 2050. From 2050 onwards, the rate of decrease in mortality is halved.

The current slow-down of the mortality rate means a considerable increase in longevity in the long term. The life expectancy of 62-year-old men is projected to rise from approximately 19 years in 2005 to almost 28 years during the projection period, with a corresponding increase for women from 23 years to almost 31 years (figure 3.4).

The old-age dependency ratio (the ratio of persons aged 65+ to persons aged 15–64) will increase to almost double its current level of one-fourth by the year 2030, after which the ratio will increase slowly. The expected deterioration of the old-age dependency ratio prior to 2030 is caused by an increase in the number of people over 65, as well as a decrease in the size of the working-age population. From 2030 onwards, the working-age population will be almost stable (figure 4.8, chapter 4).
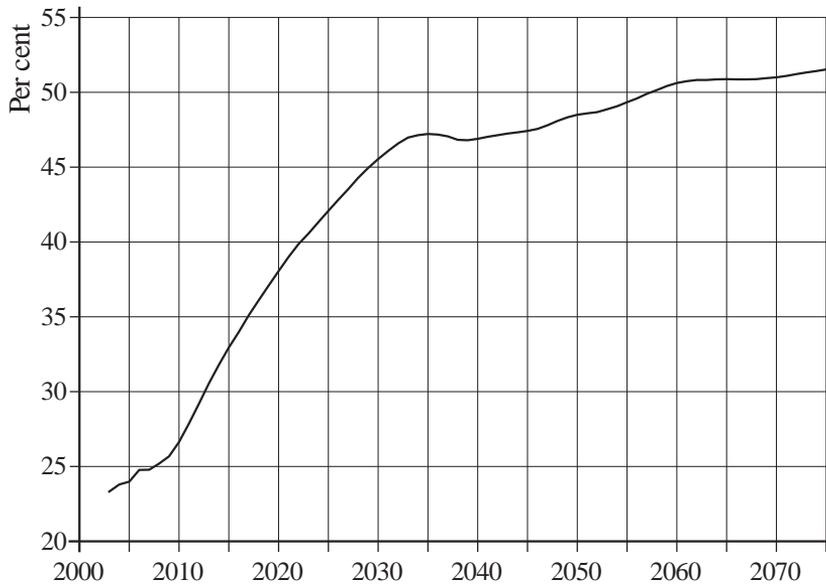

6　　The rate of change based on five-year periods between 1987–1991 and 2002–2006.

Figure 3.4. *Life expectancy for 62-year-olds in 2003–2075.*

Males

Females
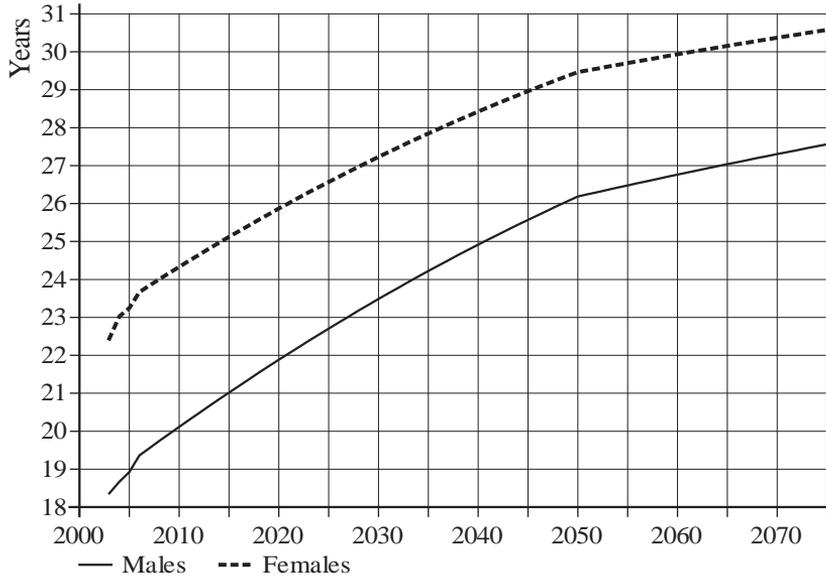
Figure 3.5. *Old-age dependency ratio in 2003–2075.**

*Population aged 65 and over, divided by population aged 15-64.

3.3   Employment and effective retirement age

In the baseline projection, the employment rate increases over time, the unemployment rate decreases, and the effective retirement age rises (table 3.1) Assumptions for the long-term level of employment and the effective retirement age are the same as in the report issued in 2004 by the Finnish Centre for Pensions. Due to the favourable development of the last few years, the employment rate and the effective retirement age at the beginning of the projection period are at higher levels than in the 2004 report.

Table 3.1. *Effective retirement age, employment and unemployment rates.*

Year	2000– 2004	2006	2010	2015	2025	2050	2075
Employment rate, %	67.4	68.9	70.3	70.9	71.2	71.9	72.0
Unemployment rate, %	9.2	7.7	5.2	5.2	5.2	5.2	5.2
Effective retirement age							
Level in years	58.9	59.5	60.0	60.4	61.1	61.9	61.9
Change from 2000–2004	0	0.6	1.1	1.5	2.2	3.0	3.0

The employment and unemployment rates of table 3.1 are adjusted to correspond to the official Statistics Finland figures. Based on the register information used in the projection model, there are more persons receiving unemployment benefit than are defined as unemployed jobseekers by Statistics Finland. Based on the employment register of the Finnish Centre for Pensions, there are fewer gainfully employed persons than the number observed in Statistics Finland.[7]

In the near future, the effective retirement age will increase because the unemployment pension will be abolished. In the long-term, further increases of the effective retirement age will occur due to a reduction of the retirement risk for disability pension and old-age pension. Lowering the retirement risk for the disability pension by one-fourth (relative to its current level) and for the old-age pension by half by 2050 will (together with the abolishment of the unemployment pension) result in an increase in the effective retirement age, as presented in the table 3.1.

The population forecast implies that in the future people will be healthier than they are currently, and the life expectancy coefficient will make early retirement a less desirable option. Additionally, since the cohorts are getting smaller, there will

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7   See appendix 1 and figure 4.8 for unadjusted numbers.

be increased demand also for ageing workforce. The postponement in effective retirement age (2.4 years from the current level) can be compared to the increase in life expectancy of 62-year-olds (7.5 years from the current level). Regardless of the decrease in retirement incidence, under baseline assumptions the average time spent in retirement will be prolonged by approximately fve years.

Table 3.1 shows the expected increase of the effective retirement age of wage and salary earners. With entrepreneurs also taken into account, the effective retirement age is increased by a slightly smaller amount (by 2.3 years rather than 2.4 years). The abolishment of the unemployment pension does not signifcantly alter the effective retirement age of entrepreneurs.

Close to 30 per cent of the work force is employed in the public sector while the rest work in the private sector. These shares are assumed to stay constant over time. The number of MYEL insured will decrease by 40 per cent by 2020, and the number of TyEL insured will correspondingly increase.

3.4　Inflation, growth in earnings level and return on pension assets

The rate of consumer price infation is assumed to be two per cent from 2009 onwards. In the years prior to 2009, the infation rate is expected to exceed the two per cent level, according to current business-cycle forecasts (table 3.2). The rate of price infation has merely a minor effect on the results. Pension accruals and benefts are adjusted in line with earnings and price levels. However, infation does play a role in the formation and dissolution of technical provisions under the Employees Pensions Act, since fnancing is based on nominal quantities.

The annul rate of growth in the income level is assumed to be 1.75 per cent from 2010 onwards (table 3.2) This rate is close to the realised historical experience. In the period from 1977 to 2006, the average real growth in the earnings index was 1.7 per cent per year and from 1997 to 2006 it was 2.0 per cent. The growth in earnings level over the next few years corresponds to current business cycle forecasts.

As a rule, earnings in each age and gender group are expected to grow at the rate of the earnings index. However, as the number of insured under the Farmers' Pensions Act (MYEL) diminishes, the average insured wage is expected to rise one per cent faster per year than the earnings index, until 2020. As the number of insured

decreases, the average farm size and earnings increase. The age profile of earnings by MYEL insured also changes. Currently the earnings peak is reached between the ages of 35 and 40. In the future, the earnings of farmers under 35 years will increase with age, but once 35 years has been reached the earnings profile becomes flat.

Table 3.2. Inflation, growth in income level and return on assets.

	1997–2006	2007	2008	2009	2010
Consumer price inflation	1.5	2.5	2.8	2.0	2.0
Nominal growth in earnings level	3.5	3.3	4.65	4.86	3.79
Real growth in earnings level	2.0	0.8	1.80	2.80	1.75
Nominal return	7.5	8.0	6.91	6.08	6.08
Real return	5.8	5.4	4.0	4.0	4.0

Sources: Price and earnings level index 1997–2006, Statistics Finland. Investment return of private-sector pension providers 1997–2006, The Finnish Pension Alliance TELA.

The real rate of return on the pension providers' assets in the baseline projection is 4.0 per cent per year (table 3.2). This is higher than the previously used return assumption, but lower than pension providers' realised returns.[8] In the period from 1997 to 2006, the average real rate of return received on earnings-related pension assets was 5.8 per cent. The investment reform of 2007 raises the expected return by changing the investment allocation in favour of shares and other risk bearing assets. The impact of the asset return under the Employees Pensions Act is investigated in the Chapter 5.3.

3.4   Summary of assumptions

The core assumptions of the projection are presented in table 3.3. Regarding economic growth and the employment rate, the assumptions used in this report are more cautious than those used by the Economic Policy Committee and the European Commission (2006) in the long term projections for Finland. The increase in life expectancy in the population forecast used by the Economic Policy Committee is slower and net migration and birth rates are lower than those used in the population forecast published by Statistics Finland in 2007. The Economic Policy Committee assumes a three per cent real return on pension assets.

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8   The real return assumption on pension assets in the 2004 report was 3.5 per cent.

Table 3.3. *Summary of assumptions.*

Population	According to 2007 forecast by Statistics Finland
Employment rate	+ 3 percentage points by 2050
Effective retirement age	+ 2.4 years from current level by 2050
Growth in earnings level	actual growth 1.75% per year
Return on pension assets	actual growth 4.0% per year

In their calculation of the f nancial impacts of ageing, Lassila, Valkonen and Määt-tänen (2007) use assumptions that are close to the baseline scenario of this report. Their population forecast and asset returns are stochastic. However, the median f gures of these stochastic processes are close to numbers used in this report.

4 Baseline projection

4.1 Earnings-related pension expenditure

This chapter presents the development of the earnings-related pension expenditure up to 2075, under the baseline assumptions. The results are presented separately for the different earnings-related pension acts and sectors of the economy.

The forecast for the life expectancy coefficient is calculated on the basis of the realised mortality in 2003–2006 and the assumed mortality in the population forecast (figure 4.1). The horizontal axis in the figure shows both the calendar year when the coefficient is first applied as well as the year of birth of each cohort to which the coefficient is applied. For instance, the initial amount of the old-age pensions for persons born in 1963 is multiplied by the figure 0.9.

Figure 4.1. Life expectancy coefficient in 2010–2075.
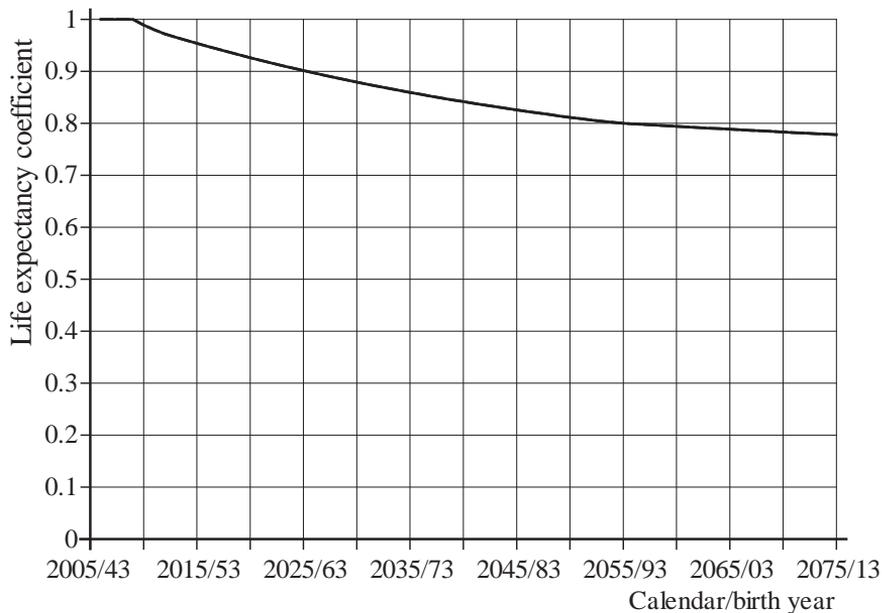
Note: On the horizontal axis the calendar year of the coefficient and birth year of the cohort to which the coefficient is applied.

For the Employees Pension Act (TyEL), the ratio of benefit expenditures to the covered wage sum will increase from the current level of 18 per cent to a level

of 30 per cent by the beginning of the 2030s, after which this ratio will be stable. Similarly, the expenditure percentage for the Self-Employed Persons' Pensions Act (YEL) increases from 20 per cent to approximately 33 per cent (figure 4.2). The most important reason for the rise in TyEL and YEL expenditure percentage is population ageing, even though the life expectancy coefficient mitigates the effect of ageing on pension expenditure. An additional reason for the increase in the ratio of expenditure to covered income is the maturation of these schemes.

The high expenditure percentage for the Farmers' Pensions Act (MYEL) is mainly due to the shrinking number of insured persons. In 1980 there were 246,000 persons insured under MYEL, but by 2006 the number had decreased to merely 88,000. In the projection, the number of active farmers is assumed to continue to decrease until 2020, at which point those insured under MYEL will amount to 60 per cent of the current number. From 2020 onwards, the development in the number of farmers insured under MYEL is assumed to follow the general population trend. From 2020 onwards, the pension expenditure percentage will decrease, and in the long term the YEL and MYEL pension expenditure percentages will settle at a level close to each other.

Figure 4.2. Expenditure rates TyEL, YEL and MYEL, as a percentage of covered incomes in 2006–2075.
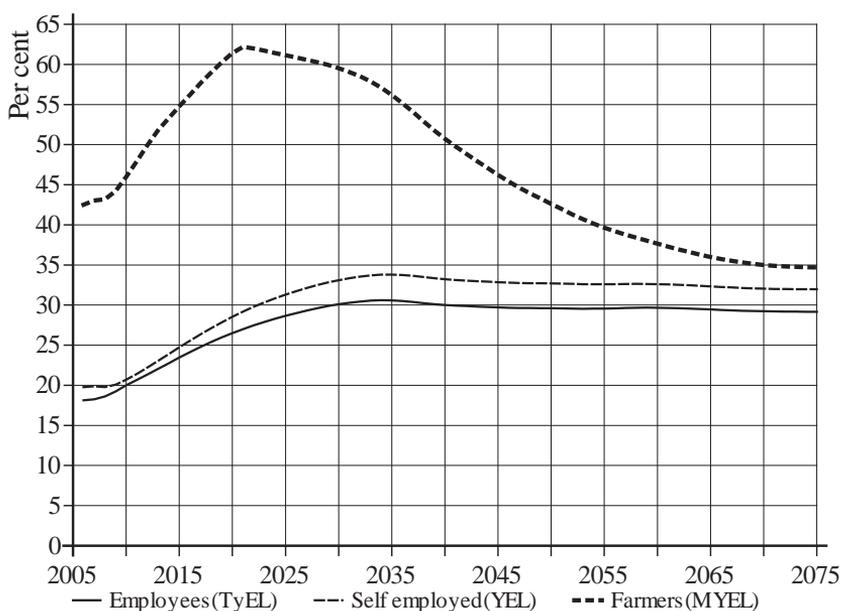
The YEL pension expenditure percentage is currently higher than the TyEL expenditure percentage, and will remain higher in the future. The persons insured under YEL are, on average, older than those insured under TyEL. In addition, the entire earned income of a self-employed person accrues a pension, whereas the TyEL pension accrues on the basis of an employee's earnings after deducting the employee's pension contribution (see Figure 4.16).

Pension expenditure due to periods of childcare and study will mature after several decades (Figure 4.3). These pensions are based on the Act on compensation from state funds for pension accrual for periods of childcare and periods of study (VEKL). The act came in the force in 1.1.2005. Under this act a benefit typically accrues for persons aged around 30 years. In the long term, the expenditure associated with these accruals will be approximately 0.6 per cent of the wage sum in the economy.

Figure 4.3. Expenditure rate, VEKL, as a percentage of covered incomes in 2006–2075.
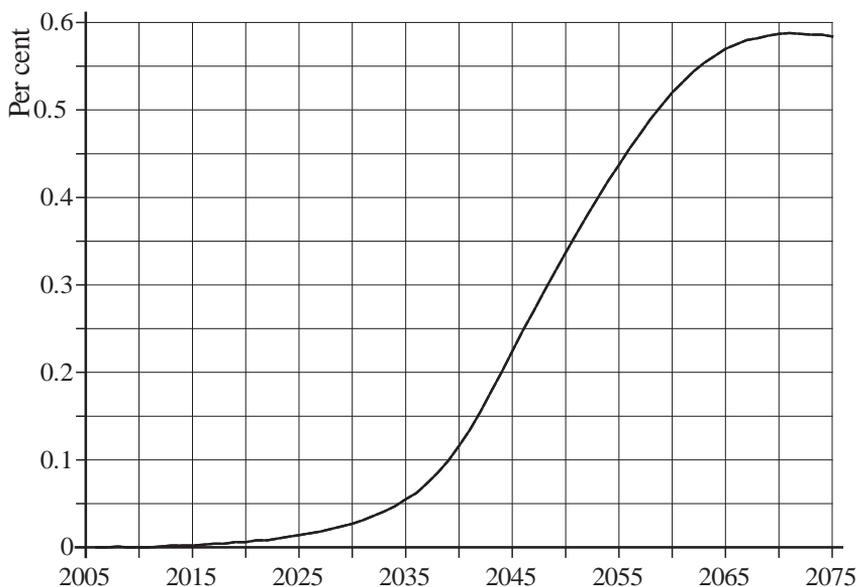
Total earnings-related pension expenditure percentage will increase by 12 percentage points relative to the current level by the beginning of the 2030s, after which the expenditure percentage decreases by 4 percentage points by 2075 (figure 4.4).

This expenditure percentage includes all statutory earnings-related pensions and pensions paid due to periods of childcare and study (VEKL). The rise in the expenditure percentage is mainly a consequence of the population ageing. The decrease in the expenditure percentage after 2030 is due to several separate factors: the life expectancy coeffcient, lower pension accruals in the public sector from the 1990s onwards, and the stabilisation of the number of gainfully employed people from the 2030s onwards.

Figure 4.4. Expenditure rates, earnings-related pensions by sector, as a percentage of covered incomes in 2006–2075.
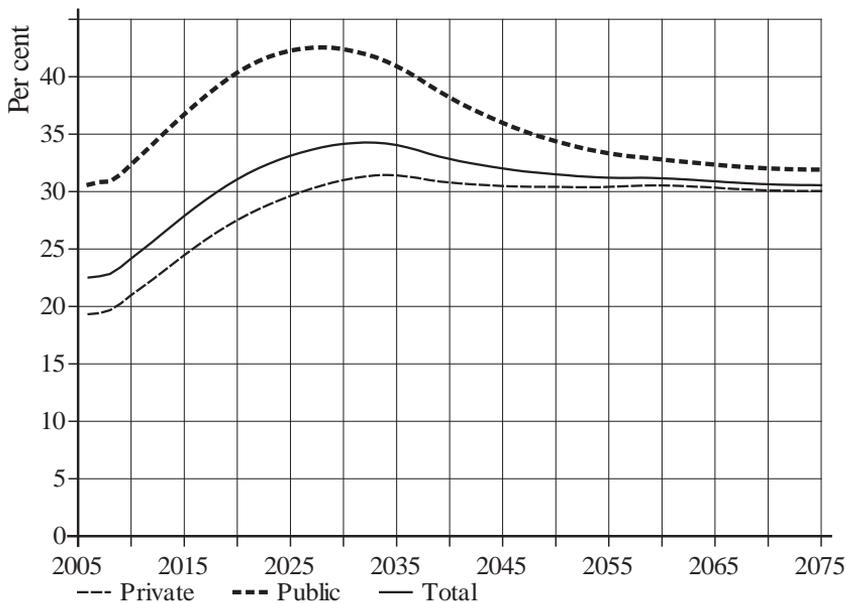
Earnings-related pension expenditure in the public sector is currently over 30 per cent of wages, and in the 2020s and 2030s it will rise to over 40 per cent. After 2040, the public-sector pension expenditure percentage decreases, approaching the private-sector expenditure percentage. In the long term, the public-sector and private-sector expenditure percentages settle close to each other because the benefit rules were harmonised in the 2005 pension reform.

The current high public-sector expenditure percentage is the legacy of more generous benefit rules that affected pension accruals in the past Privatisations also have contributed to the high expenditure percentage, because privatisations have

resulted in the transfer of employees from the public to the private sector. Further-more, public-sector employees are relatively old and thus accrue more pensions than the gainfully employed in the private sector.
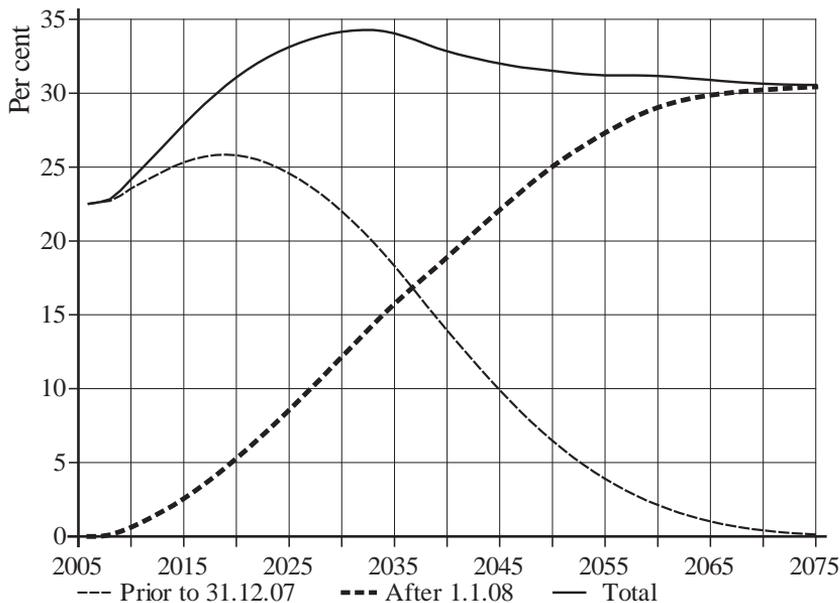
The total earnings-related pension expenditure is disaggregated by type of pensi-on benefit in figure 4.5. The growth in earnings-related pension expenditure is exp-lained by the growth in old-age pension expenditure. The payment of unemployment pensions will end after a few years. The ratio of disability pension expenditure to earned income will shrink over the projection period to half of its current level of 3.6 per cent. The expenditure percentage is reduced by the already realised and by the expected decrease in disability pension incidence. Furthermore, the termination age of the disability pension was lowered from 65 to 63 in the 2005 reform. Half of the decrease in disability pension expenditure percentage is explained by the future decrease in retirement incidence, and half of the decrease is explained by the already realised decrease in disability incidence rates, and the change in the termination age for the disability pension.

Figure 4.5. *Expenditure rates, all earnings-related pensions by type of benefit, as a percentage of covered incomes in 2006–2075.*
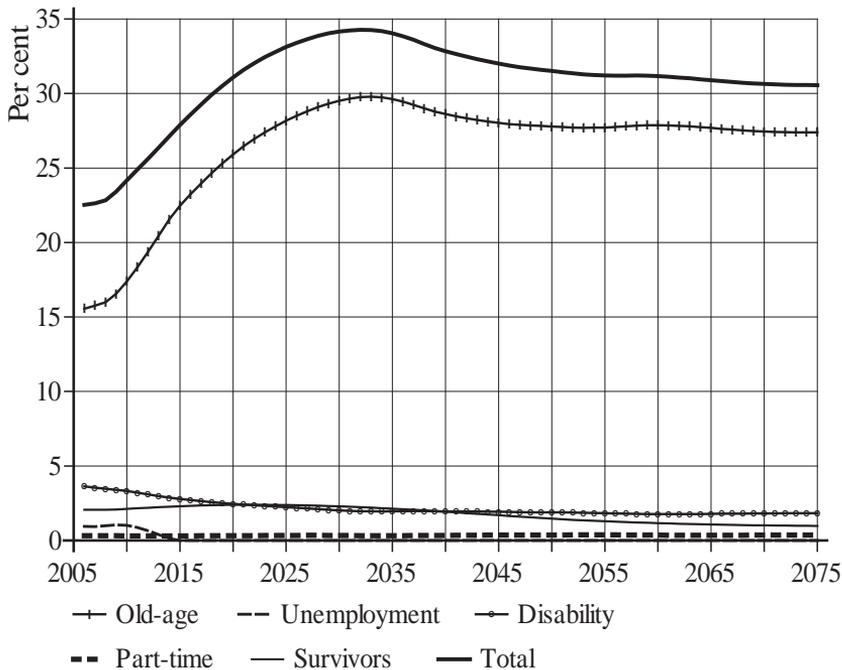
Typically, a survivors' pension is paid to the surviving spouse after the death of a husband who had been receiving an old-age pension. As old-age pension expenditure increases, the annual number of terminations of old-age pensions will also increase, albeit with a delay. Therefore, the survivors' pension expenditure also has a tendency to increase. However, in the longer term the changes in mortality patterns decrease the survivors' pension expenditure. As people tend to die at older ages, and as mortality improves (particularly, male mortality), the number of widows decreases. In addition, it is assumed that as a consequence of the decreasing number of marriages and the levelling out of the differences in pension level between the spouses, the annual number of entry survivors' pensions will decrease by 30 per cent by 2030. In 2006, survivors' pension expenditure amounted to 2.1 per cent of the earned income. By the 2020s, the expenditure is projected to rise to 2.4 per cent. By the end of the projection period, survivors' pension expenditure is projected to be one per cent of the earned income.

Figure 4.6. *Expenditure rates, all earnings-related pensions by time of accrual, as a percentage of covered incomes in 2006–2075.*

The total earnings-related pension expenditure is analysed by the time of the accrual in f gure 4.6. In this f gure, the expenditure is divided into pensions already accrued, and those that will be accrued in the future. The pension components accrued by the end of 2007 will dominate pension expenditure for a long time to come. Of the pensions payable in 2037, more than half have already been accrued by the insured. A division of the pension expenditure by the time of accrual is further explored in the chapter 4.4.

4.2   Total statutory pension expenditure

The development of total statutory pension expenditures is analysed for the following components:

1) private-sector earnings-related pensions (TyEL, MEL, YEL, MYEL, LU-TUL, VEKL)
2) public-sector earnings-related pensions (KuEL, pensions under the old local government pension regulations, VaEL, KiEL, KELA, VEKL)
3) national pensions
4) SOLITA pensions.

The total pension expenditure for earnings-related pensions follows the expenditure development described above. Voluntary pension provision is not included in the projection.

The size and number of national pensions are calculated on the basis of the size of the earnings-related pensions and the population forecast (chapter 3.1). According to the National Pension Act, national pensions are increased annually at the rate of price growth. In addition, discretionary general increases occur on occasion. In the baseline projection, the general increases after 2008 have been taken into account through the national pension index. From 2012 onwards, national pensions in payment are assumed to increase at a rate equal to 50 per cent of price growth plus 50 per cent of earnings growth. The full national pension through which the amount of new national pensions is calculated is also adjusted with the same index.[9]

The bene f t level of the persons of active age (aged 18–62) who receive a SOLI-TA pension develops in line with the earnings level. From the age of 63 onwards,

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9   The determination of an individual's national pension bene f t is explained in the chapter 2.2.

the average benefit is "bent" to follow the earnings-related pension index. The projection does not strive to model SOLITA pensions in great detail, but instead aims for an approximate estimate based on the given demographic and economic development.

The development in the total pension expenditure is presented in figure 4.7 as a percentage of GDP. GDP for the projection period has been derived from the wage sum by assuming that the share of wages in GDP stays unchanged.

Figure 4.7. *Total statutory pension expenditure as a percentage of the GDP in 2006–2075.*
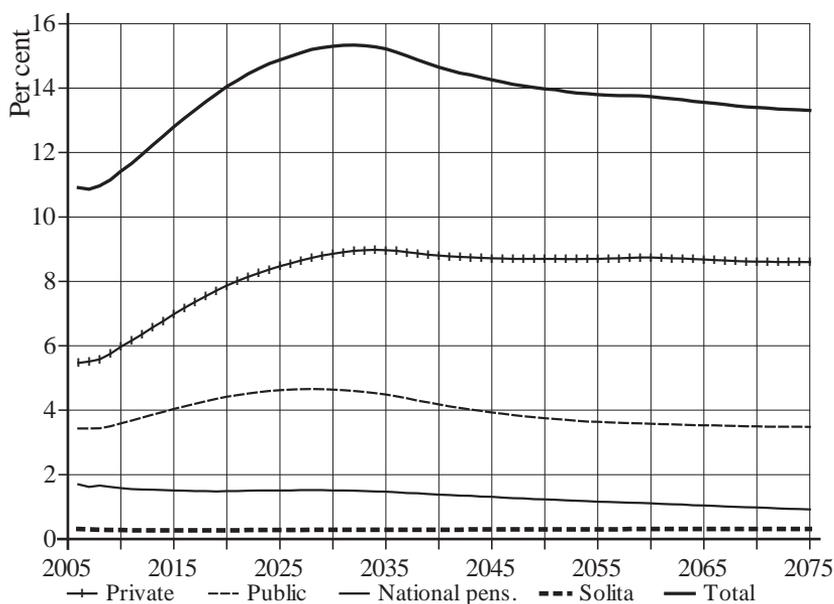

In 2006, total statutory earnings-related pension expenditure amounted to 11 per cent of GDP, and is projected to rise to 15 per cent in the 2030s. After 2030, the share of pension expenditure in GDP gradually decreases through the end of the projection period (figure 4.7). The rise in the share of pension expenditure in GDP leading up to the 2030s is due primarily to population ageing. However, while population ageing will continue after the 2030s (see figure 4.8), the share of pension expenditure in GDP will decrease. This decrease is primarily due to the life expectancy coefficient, which limits the growth in earnings-related pension

expenditure. An additional reason for the decrease is that the national pension is indexed to only to half of price growth and half of wage growth. Over the course of the projection period, the share of national pension expenditure in GDP is expected to be cut in half.

4.3 Number of pension recipients and average pension

The population of pension recipients analysed in this report includes all persons resident in Finland who receive an earnings-related pension or a national pension in their own right, excluding recipients of a part-time pension (f gure 4.8). Demographic development and retirement incidence determine the number of pension recipients. As the effective retirement age increases and as the baby-boomers pass early retirement age, the number of pension recipients increases at a slower rate than the population aged 65 and over. New cohorts entering early retirement are smaller than the current retired cohorts.

Figure 4.8. Pensioners*, covered workers and population by age in 2006–2075.
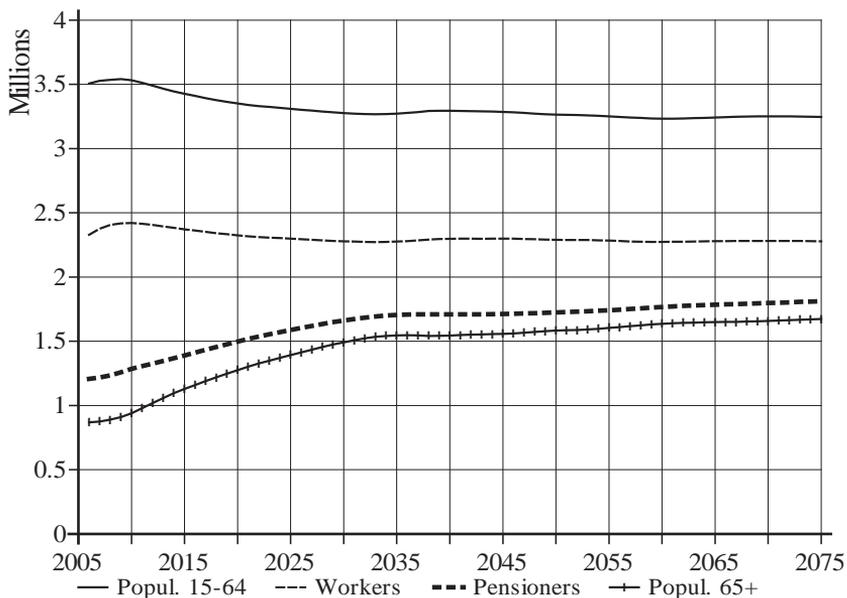

*Finnish residents receiving a pension in their own right, excluding part-time pensioners.

The size of the working-age population decreases by 7 per cent between 2007 and 2030, and the number of gainfully employed persons decreases by 4 per cent. The difference between these two percentages is due to an increase of the employment rate. After 2030, the number of both gainfully employed persons and the working-age population remains stable.

The ratio of pension recipients to gainfully employed increases as the old-age dependency ratio increases (figure 4.9). The number of the pension recipients per one hundred gainfully employed is currently slightly over 50. By the end of the projection period this number will be 80.

*Figure 4.9.* *Pensioners per covered workers and old-age dependency ratio in 2006–2075.*
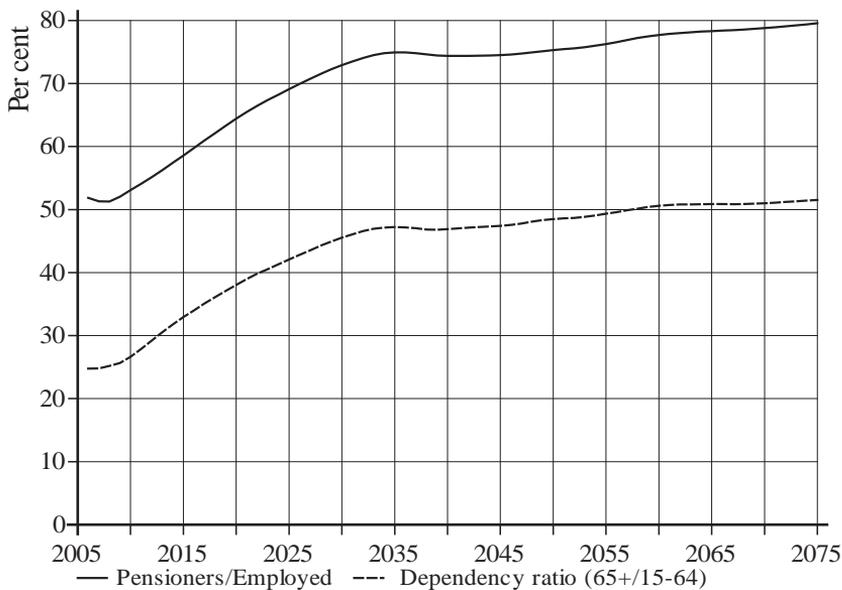
The average pension per pension recipient resident in Finland can be calculated when the pension expenditures and the number of the beneficiaries is known.[10] In 2006, the average total pension was 1,200 euros per month (figure 4.10). Over the projection period the purchasing power of the earnings-related pension compo-

10   To perform this computation, it is necessary to first deduct the following items from the total pension expenditures: Part-time pension expenditure, pensions paid abroad, and survivors' pensions, where the beneficiary is himself not a pensioner.

nent trebles from one thousand to three thousand euros. The purchasing power of earnings-related pensions improves over time because entry pensions increase in tandem with increases in the earnings level. The earnings-related pension component increases on average 1.6 per cent a year, and the growth rate in the earnings level is 1.75 per cent a year.

The purchasing power of the national pension component will remain at its 2006 level. At the beginning of the projection period, the national pension makes up 15 per cent of the average pension recipient's pension income, but by the end of the projection period the share will have shrunk to 7 per cent.

**Figure 4.10.** *Average pension euros/month 2006 prices in 2006–2075.**
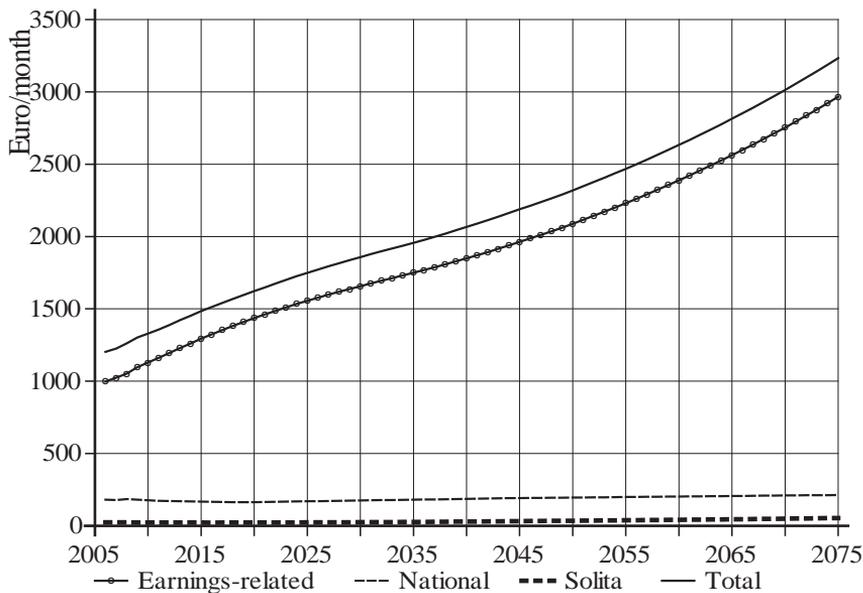
*Finnish residents receiving a pension in their own right, excluding part-time pensioners.

Figure 4.11 displays the ratio of the average pension to the average earnings (2,370 euros per month in 2006) of the gainfully employed.[11] Until the 2020s, the earnings-related pension component will continue to increase more rapidly than

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11 This is the ratio of gross pension to gross wage. When differences in household size and income transfers are taken into account, the disposable income of pensioner households was 70 per cent of the income of economically active people and over 80 per cent of that of the whole population in 2004 (Rantala 2006).

the earnings level because the earnings-related pension scheme is still maturing. In the older age groups there are a large number of persons who receive a small pension, or receive no earnings-related pension whatsoever. The decrease of the average earnings-related pension in relation to the earnings level, which will start in the 2020s, is mainly a consequence of decreasing mortality and the life expectancy coeffcient.

Figure 4.11. *Average pension in per cent of average wage in 2006–2075.*
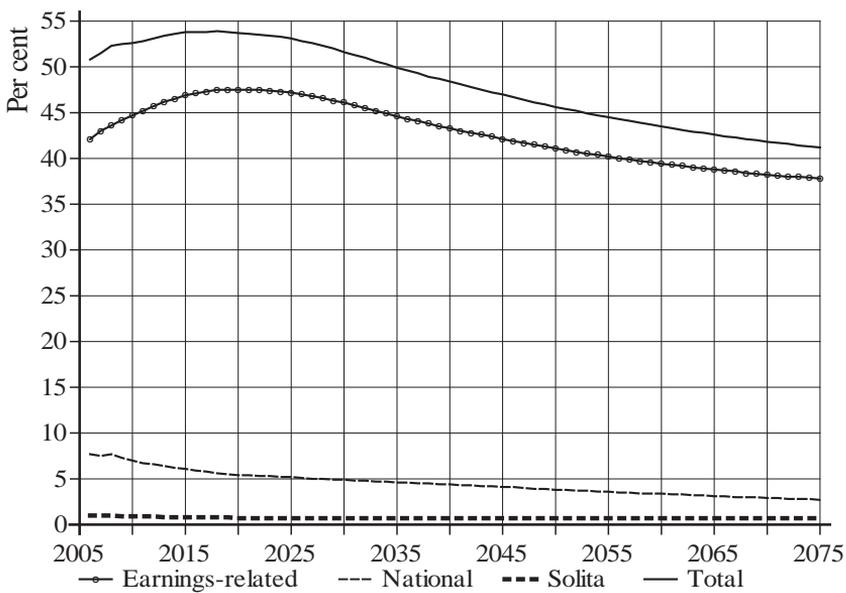

The size of the national pension component in relation to the earnings level decreases because the earnings-related pension-schemes are maturing and the national pensions are indexed 50 per cent to prices and 50 per cent to wages. The average total pension continues to increase for a while, until it starts decreasing at the beginning of the 2020s. In the mid-2030s, the ratio of average pension to earnings level has returned to its current level.

The average beneft level of 68-year-olds is a useful statistic for comparing the beneft level experienced by different cohorts. However, this statistic is not

refective of the total amount of pension income of a cohort, because it does not refect the fact that life expectancy (and retirement duration) is increasing with the passage of time.

Figure 4.12. *Average pension, 68-year old pensioners, euros/month 2006 prices in 2006–2075.* *
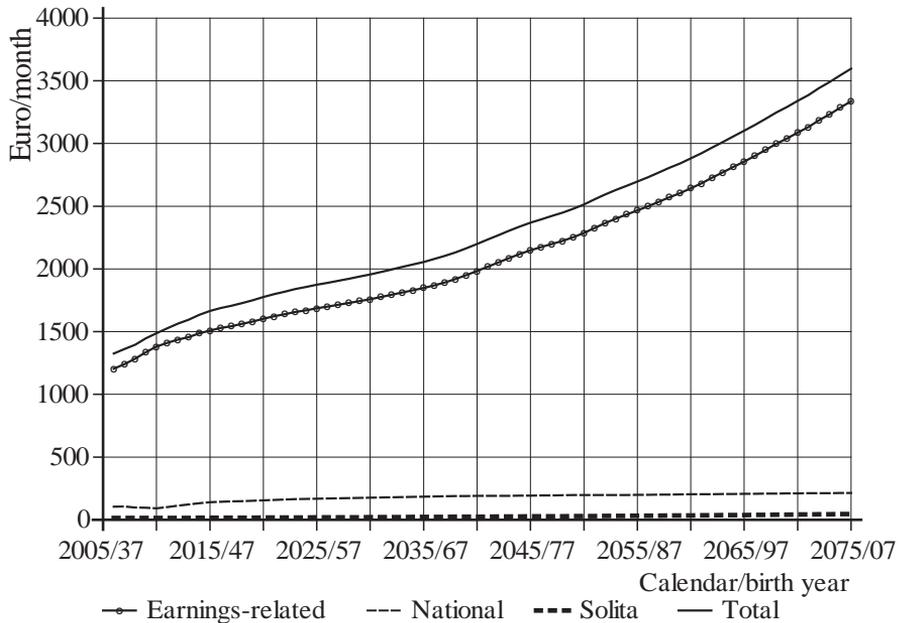
*68-year old Finnish residents receiving a pension in their own right.

The pension level of 68-year-olds exceeds the pension level of all pension recipients in all years of the projection period. The relative pension level will be at its highest for the age groups born in the mid-1940s (fgure 4.13). The pension legislation was already in the force when they entered the labour market, but the effect of the legislative changes reducing the beneft level is mild (harmonisation of public and private-sector pension accruals and the life expectancy coeffcient).

Figure 4.13. *Average pension, 68-year old pensioners, in per cent of average wage in 2006–2075.*
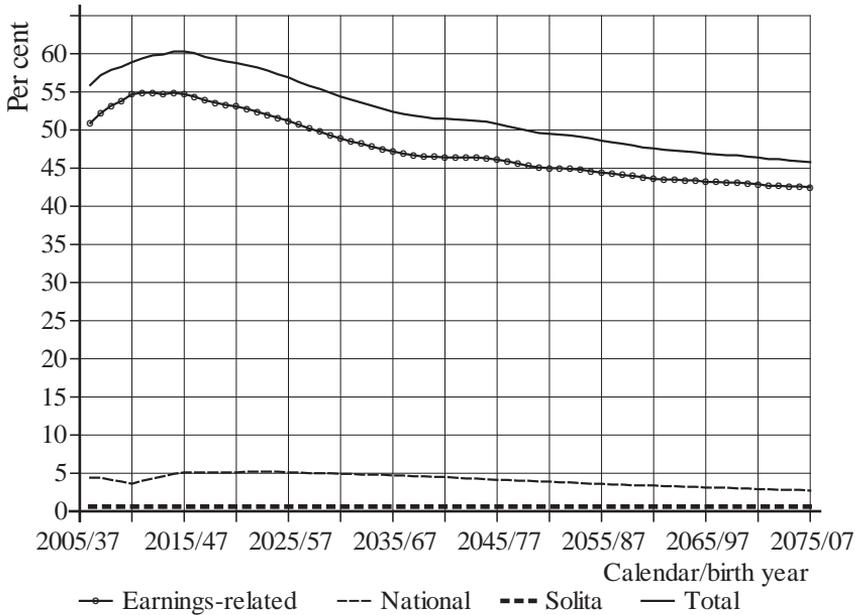
4.4   Financing of private-sector earnings-related pensions

The fnancing of pension expenditure under The Employees Pensions Act (TyEL), Self-Employed Persons' Pensions Act (YEL) and Farmers' Pensions Act (MYEL) is examined in the following section of the paper. In the fnancing projection for TyEL, the primary quantities to be analysed are the development of pension contribution and pension assets. In the fnancing projection for YEL and MYEL, the main quantities to be analysed are the premium income and the state's share of the pension expenditure.

The legislation governing pension fnancing under TyEL was reformed at the beginning of 2007. The projection refects the new legislation. From the viewpoint of the long-term development of contributions and assets, the reform entails two signifcant changes. First, assets are, to an increasing extent, allocated to instruments that are riskier but provide a higher rate of return.

Second, increases to the funded components of old-age pensions on the basis of investment returns may be allocated to older age groups in order to achieve the desired contribution development. Previously, funded components were increased