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The working group on ageing populations attached  
to the Economic Policy Committee

## ***COUNTRY FICHE ON PENSIONS: FINLAND***

*This country fiche has been written under the supervision of the Ministry of Finance of Finland. Valuable contributions have been provided by the Finnish Centre for Pensions and the Social Insurance Institution of Finland. The Ministry of Finance assumes responsibility for all remaining errors.*

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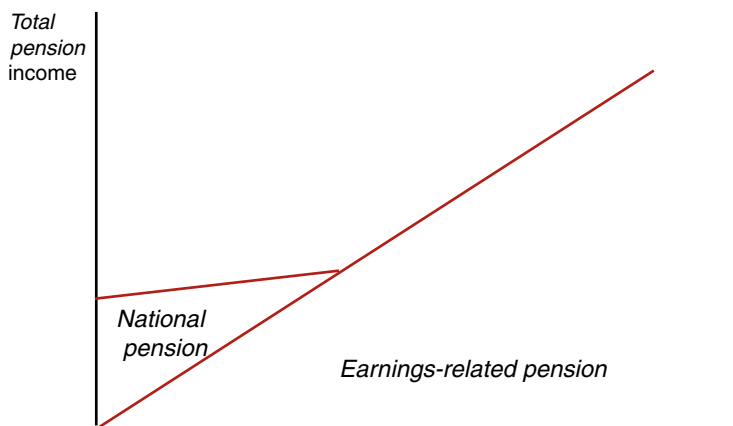
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## 1. THE FINNISH PENSION SYSTEM: AN OVERVIEW

The Finnish public pension system (the first pillar) is made up of two statutory pension schemes: one is the national pension scheme guaranteeing a minimum pension to all residents whereas the other is an employment-based, earnings-related pension scheme.

Voluntary pension schemes (the second and third pillar) have played a minor role in Finland due to the relatively high net replacement ratio of public pensions, the lack of pension ceilings and full coverage of the systems.

### *Integration of pensions*



The statutory schemes are closely linked together, with the amount of national pension depending on the size of the earnings-related pension benefits. Increases in the earnings-related pension reduce the national pension by 50 per cent of the increase in the earnings-related pension. If the earnings-related pension is above a defined level, the national pension is not paid at all. Therefore only about half of pensioners who get earnings-related pension get also national pension. At the same time there are 100 000 pensioners getting only national pension. Taking in addition all pension types into account the total number of pensioners in 2004 was roughly 1.3 million.

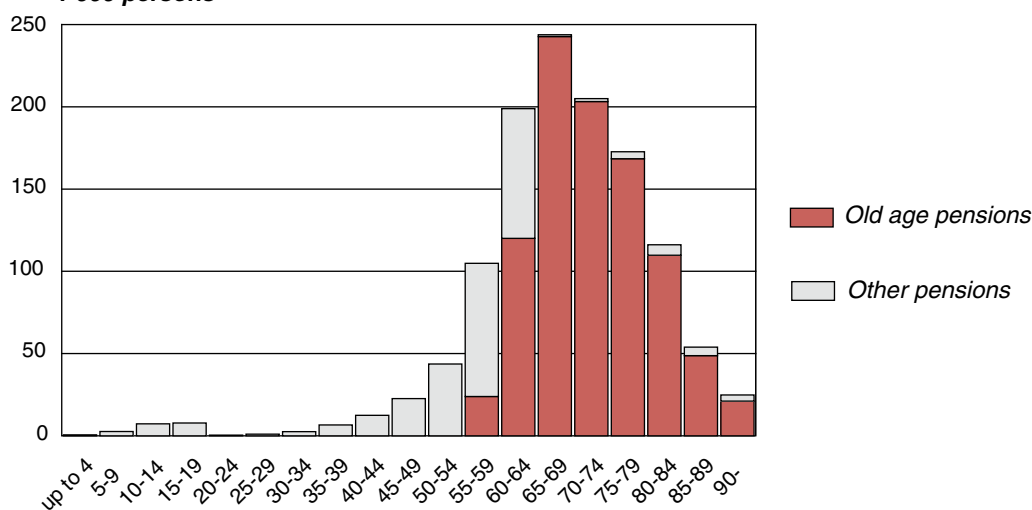
Total expenditure on pension benefits in 2004 was 11.6 % of GDP. Payments in statutory pensions amounted to 11.3 % of GDP, of which amount 10.7 % of GDP is included to the social security pensions used in the AWG-projections for Finland. Accordingly, the coverage of the projections is good. (See the appendix)

In 2004, earnings-related pensions accounted for 86 per cent and the basic national pensions for the rest. In the future, the role of the national pensions in the total pension coverage will diminish as the level of earnings-related pensions will rise. The old age and early pensions are 74 % of all social security pensions. As a consequence of a decrease in the statutory age for old age pensions in the pension reform, the share of these pensions increased and the share of other pensions decreased in 2005.

## Social security pensions in 2004, Eur million

	National pensions		Earnings-related pensions		Total	%
Old age and early pensions	1 628		10 174		11 802	73,9
Other pensions	583		3 586		4 169	26,1
Total %	2 211	13,8%	13 760	86,2%	15 971	100.0

**Number of pensioners receiving earnings-related pensions by age (31.12.2004)**  
1 000 persons



Sources: Finnish Centre for Pensions (FCP), State Treasury, The Local Government Pensions Institution

Pension-tested national pensions are administered by the Social Insurance Institution (KELA) supervised by Parliament. These pensions are financed as a pay-as-you-go by contributions of employers (46 per cent in 2004) and the rest mainly by state shares. The purchasing power of national pensions is kept intact by indexation to the consumer price index. In addition to normal index increases, the level of national pension has also been discretionarily raised, last in 2005.

The earnings-related pension system is based on a tripartite arrangement, consisting of employees, employers and the government. Private employees belong to six different sector-related schemes run by private pension institutions. There are about 60 pension institutions of very different sizes. The pension companies compete with each other in the free market. The Finnish Centre for Pensions is the statutory central body of the private sector pension schemes. The Ministry of Social Affairs and Health is in charge of the general supervision of the earnings-related schemes. Employees in central and local government as well as employees of the Finnish Evangelical-Lutheran Church have their own earnings-related schemes. The schemes for central government employees are managed by the State Treasury under the general supervision of the Ministry of Finance, whereas the Local Government Pension Institute administers the scheme for local government employees.

The financing of earnings-related pensions is a combination of a fully funded and a pay-as-you-go system based on pension contributions from both employers and employees. The pre-funded scheme covers approximately one quarter of earnings-related pension outlays, the rest (3/4) is financed through the PAYG system. Despite the partially funded system in pensions, Finland's earnings-related pension scheme is entirely of the defined-benefit type. The pre-funding is collective in the sense that actually it has no effect on the size of the pension. The main purpose of the pre-funding is to smoothen pension contributions in the coming years.

The financial position in the earnings-related pension schemes is fairly good as the system is running on surpluses. The annual surplus is some 2½ per cent in relation to GDP. The market value of the pension fund's assets was 58.7 per cent of GDP in 2004.

The individual pension is accumulated according to the following rules. Pensions accrue from the age of 18 to 52 at the rate of 1.5 per cent of wages a year, from 53 to 62 at 1.9 per cent and from 63 to 68 at 4.5 per cent a year without any cap. The retirement age is flexible (62-68).

There are two indices in the earnings-related pension system. The first (pre-retirement index) adjusts past earnings to the present level when computing the pension at the time of retirement. This "wage coefficient" puts a weight of 80 per cent on wages and 20 per cent on prices. The other index (post-retirement index) aims at keeping the purchasing power of earnings-related pensions ahead of inflation. This index has a weight of 80 per cent on consumer prices and 20 per cent on wages. The life-expectancy coefficient adjusts the pensions to be paid to the changes in longevity as of 2009.

Statutory pensions (the first pillar) are taxed as earned income (progressive tax rate) with tax deductions applying for smaller pensions. The taxation arrangement of earnings-related pensions is of the EET type. The contributions to pension schemes and investment incomes of the pension institutions are exempted from taxation. Tax treatment of supplementary pensions arranged by the employer (the second pillar) is the same as that of statutory pensions (the first pillar). Self-acquired voluntary pensions (the third pillar) are taxed in the capital income taxation regime with a flat tax rate, and pension contributions can also be deducted to a certain amount from taxation within the capital income taxation regime.

## 2. THE EARNINGS-RELATED PENSION SCHEME

### 2.1. The reformed earnings-related pension scheme

The Finnish statutory earnings-related pension scheme was extensively reformed 2005. The scheme is described below according to the new legislation. The earnings-related pension scheme consists of several pension acts, which together cover the different sectors of the economy <sup>1</sup>. In practice all work performed by a person aged 18 - 67 in the position of employee or self-employed person is covered by some pension act.

In the 2005 reform the pensions benefits under the different acts were harmonised to a large extent. There is, however, still a need for different pension acts, because of the differences in the financing of the pensions.

### 2.2. Pension accrual and pension benefits

The earnings-related pension system is of the defined benefit type, i.e. the size of the pension expenditure determines the contribution level and the need for other financing. Pension benefits and contributions are proportional to income, the earnings related scheme does not include ceilings or progression.

An earnings-related pension accrues from earnings between the ages of 18 and 67 according to the accrual rates shown in the table below. Persons aged under 18 or over 68 do not accrue a pension and they are also not covered by the insurance obligation. For employees the pensionable income is the salary/wage reduced by the employee contribution. For self-employed persons and farmers a pension accrues from the insured earned income in its entirety <sup>2</sup>.

#### Accrual rates from the earnings according to the insured person's age.

Age	Accrual rate
18-52	1.5
53-62	1.9
63-67	4.5 / 1.5

The accrual rate for a person who has reached the age of 63 is 1.5 per cent, if he or she draws an old-age pension.

Under the pension acts a person aged 18–62 accrues a pension on the basis of the following periods of social security benefits and activities:

- 1) parent's allowance
- 2) job alternation leave
- 3) earnings-related unemployment allowance
- 4) training comparable to the aforementioned
- 5) sickness allowance
- 6) rehabilitation allowance financed by the pension providers.

In addition there are certain benefit periods with minor importance.

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1) In the private sector there are acts covering employees and separate acts for sea men, farmers and entrepreneurs. In the public sector the state, local governments and the Evangelical-Lutheran Church have their own pension acts.

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2) Currently the employee contribution is 4,6 % for the insured aged 52 or less and 5,8 % for older insured (employee contribution is linked to the accrual rate, see table 2.1)

The accrual rate for periods of social security benefits is 1.5 per cent annually regardless of age and the accrual basis is the same earnings from which the actual benefit has been calculated. For parent's allowances the basis for the pension is 117 per cent of the earnings, for job alternation leave and earnings-related unemployment allowance 75 per cent and for other daily allowances 65 per cent of the earnings.

Under the so-called special act a pension accrues on the basis of studies which end with the taking of a vocational or university degree or qualification and caring for a child aged under 3 years at home. The accrual basis is a monthly income of 523.61 euros in the index level for 2004. This income is indexed by so-called wage coefficient (see below).

When calculating the initial amount of the pension the earnings for the different years are adjusted in line with the wage coefficient, where the weight of the change in wage level is 80 per cent and the weight of the change in consumer prices is 20 per cent. Pensions are adjusted in line with an index where the weight of the change in earnings level is 20 per cent and the weight of the change in prices is 80 per cent. Disability pensions payable to young and middle-aged persons are increased by a lump-sum when the pension has been paid for five years. For persons aged under 27 the increase is 21 per cent. For persons older than this the increase is reduced by 0.7 percentage points for each year, until persons having reached the age of 55 receive no increase at all.

The pension benefits are disability, unemployment, part-time, old-age and survivors' pensions. The disability pension may be granted as a full or a partial pension, depending on how much the insured person's work capacity has decreased. The partial disability pension is half of the full pension. The amount of the disability pension is obtained by adding up the pension accrued up to the start of the pension and the pension for projected pensionable service. The projected pensionable service is the time from the onset of disability to the age of 63. The accrual rate for projected pensionable service is 1.5 per cent a year until the age of 50 and 1.3 per cent a year between the ages of 50 and 62. The wage/salary used for the projected pensionable service is the average wage for the 5 years preceding the disability. The individual early retirement pensions are abolished as part of the 2005 reform. The last individual early retirement pensions will be granted in 2005-2006.

The unemployment pension may be granted to long-term unemployed persons born in 1949 or earlier when they have reached the age of 60. The age groups entitled to an unemployment pension may start receiving earnings-related unemployment allowance after having reached the age of 55 and after that start receiving an unemployment pension.

Persons born after 1949 are not entitled to an unemployment pension, but after reaching the age of 57 they may receive earnings-related unemployment allowance until the old-age pension starts. These long-term unemployed may take the old-age pension between the ages of 62 and 65 in which case they receive the pension accrued up to retirement without any abate for early retirement.

The part-time pension may be awarded to an insured person who has reached the age of 58 and who reduces the work input so that the earnings are reduced to 35–70 per cent of the stabilised earnings. The size of the part-time pension is half of the earnings reduction caused by the decrease in work input. A pension accrues from the work during the part-time pension as from other work and in addition an old-age pension accrues at the rate of 0.75 per cent a year on the earnings reduction.

The insured is entitled to a normal old-age pension at the age of 63 and to an early old-age pension at the age of 62. The early old-age pension is reduced by 0.6 per cent for each month that the pension is taken early. If the insured continues working after having reached the age of 63 and does not take the old-age pension, the accrual rate for the pension is 4.5 per cent a year. On the other hand, those who draw an old-age pension but also work after the age of 63 accrue a pension at the rate of 1.5 per cent. After age of 68 the pension accrual and the insurance obligation end. If the insured person does not take the old-age pension upon reaching the age of 68, the pension is increased by an increment for deferred retirement of 0.4 per cent per month.

Survivors' pensions can be paid to the surviving spouse, the former spouse and the children. The former spouse is entitled to a surviving spouse's pension if the deceased was liable to provide maintenance to the former spouse. If the deceased has two or more children younger than 18, the total amount of the survivors' pensions equals that of the deceased person's pension. If there is one child younger than 18, the total amount of the survivors' pensions is about 80 per cent of the deceased person's pension. If the deceased has no children younger than 18, the surviving spouse's pension can be at the most half of the deceased person's pension. In this case the final level of the surviving spouse's pension is determined on the basis of the adjustment of the surviving spouse's pension, which typically reduces the surviving spouse's pension or cancels it out completely.

The initial amount of old-age pensions is adjusted to account for the change in longevity for 62-year-olds through the life expectancy coefficient. The life expectancy coefficient is determined so that the capital value of the old-age pension remains unchanged even if life expectancy for persons of retirement age changes compared to the expectancy calculated from the statistics for 2003-2007. The life expectancy coefficient is also applied to disability pensions when they are changed to old-age pensions at age 63 and to surviving spouse's pensions in connection with the adjustment of the surviving spouse's pension. The life expectancy coefficient will affect the pensions for persons born in 1948 and later. The value of the coefficient is defined for each one-year cohort separately.

### **2.3. Financing pensions**

The annual pension expenditure for private sector employees is financed through the annual premium income, from accumulated funds and the payment transferred from the unemployment insurance contribution. In 2003 the shares of these financing sources were: premium income 75 %, funded component 21.1 %, unemployment insurance contribution 3.9 %. The transfer from the unemployment insurance to the pension scheme covers approximately the amount of pensions accruing on the basis of unemployment periods.

The private-sector pension providers have to continuously cover the actuarially determined liability. To cover the liability the pension providers have assets (pension assets). The amount of the pension providers' assets which exceeds the liability constitutes the solvency margin, through which the pension providers prepare for investment risks. New liabilities are continuously created through pension accrual and old liabilities are released as pensions become payable. For insured aged under 54 years a share corresponding to an accrual of 0.5 per cent is funded for the old-age pensions. The increase in the employee contribution levied from persons aged over 53 is funded in full. In addition the old-age pension liability is annually increased by the yields on the pension providers' investments. Disability and unemployment pensions are funded when the pension starts. The size of the funding is determined so that it is sufficient for paying the pensions until the old-age pension starts, with the exception of the index adjustments to the pensions. The 2005 reform included an additional funding by the year 2013, corresponding to 7.5 per cent of the private-sector wage sum.

Pension expenditure for self-employed persons and for farmers is financed through the annual premium income and the State's share. The State's share is the part of pension expenditure which the premium income is insufficient to finance. These two schemes are pure pay-as-you-go. The contribution under self-employed persons approximately equals the average contribution under private sector employee's pension acts. Farmers' average contribution rate is about 50% lower. Pension expenditure under seafarers' pension act is financed through employers', employees' and the State's shares. Each party is responsible for a third of the financing. Pension expenditure under the special act (covering students and parents with small children) is financed by the state on pay-as-you-go basis.

The state and local government pension schemes were originally based on a pure pay-as-you-go system. The Local Government Pension Institution started funding pensions in 1988 in order to curb the increase in pension contributions. The target has been set at keeping the local government pension contribution below 30 per cent of the wage sum. The State Pension Fund was established in 1990 to prepare for the State's future pension expenditures. The aim of the Fund is to gather assets so that the cost burden caused by the pensions of the post-war baby-boomers can be lessened in the years when pension expenditure is at its highest.

### **3. THE NATIONAL PENSION SCHEME**

National pensions are intended to provide a basic retirement income for those whose earnings-related pensions are small or non-existent. All residents of Finland are eligible for the national pension. The old-age pension is payable to insured people over 65 years. The national pension is also payable as disability, unemployment and survivor's pensions. The supplementary means-tested pension components are: pensioners' housing allowance, pensioners' care allowance, front-veterans' supplements and increase for children. The pension benefits are adjusted yearly to changes in the price index. National pensions are financed by employers' social security contributions and transfers from the state.

The employment pension reform, put into effect in 2005, had implications also for national pensions. The age-limit for early old-age pension increased by 2 years and eligibility for unemployment pension will be discontinued by 2010.

The incentives to continue to work was increased for low-income workers with short employment history. Usually the national pension decreases as the persons' earnings-related pension increases with the phasing-out rate of 50 %. The exception is made for earnings-related pension rights beyond 63 years.

### **4. THE MODELS AND THEIR ASSUMPTIONS**

#### **4.1. The model for earnings-related pensions**

##### **4.1.1. Structure**

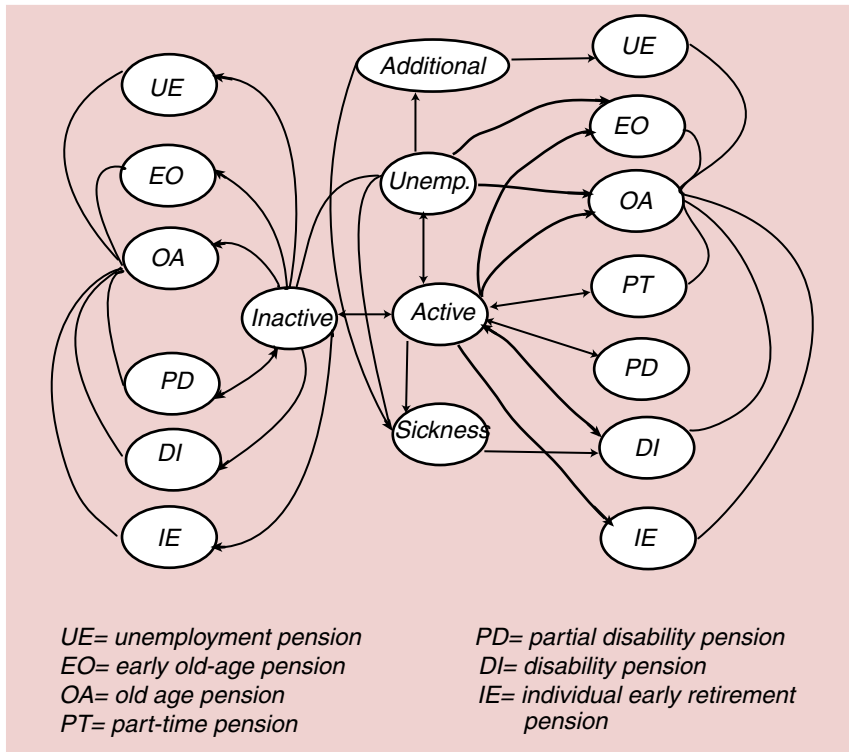
The results concerning the earnings-related pension scheme have been calculated using the long-term planning model of the Finnish Centre for Pensions. The model is deterministic and replicates the functioning of the Finnish earnings-related pension scheme. The model is developed to meet the planning and forecasting needs of the pension scheme. It is an actuarial projection model by nature and there is only little economic theory built in to the model.

The most important results of the model are annual pension expenditure, contributions and accumulation of funds. As the population has been categorised according to age and gender in the model, the model could also be used to calculate generation and gender-specific results. Results for each pension act are calculated separately. However, it is usually not worthwhile to present all the results by pension act separately, as there are numerous pension acts. Below the private and the public sector are reported separately.

Unless otherwise stated, the acts and other stipulations governing the functioning of the scheme are presumed to remain unchanged up to the end of the calculation period.

The projection model studies each pension act separately. Each year pensions are paid to the pensioners, the insured accrue their future pensions and people are transferred between different states (employed, unemployed, pensioner etc.) according to given probabilities. The states in the model and the transitions between them are shown in the figure. Over time the individual early retirement pensions and the unemployment pensions will disappear.

**States of the model and transfers between states, excluding survivors' pensions**



The “active people” in the model are working, their earnings accrue a pension and 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 earnings-related unemployment allowance are categorised as unemployed. Long-term unemployed persons aged over 57 are entitled to earnings-related unemployment allowance for additional days until the pension starts. These two groups of unemployed accrue an earnings-related pension during their periods of unemployment. The rest of the unemployed receive relatively low flat rate unemployment benefit and they do not accrue a pension (currently about half of the unemployed). They are categorised as inactive. The “inactive” are 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 also not drawing a pension.

In addition to the transitions shown in the figure, new employed persons are annually transferred to the active population in accordance with the population and employment forecast. People also die in each state and part of the deceased leave behind a survivors’ pension.

Within the states, people are categorised into different classes according to age and gender. An average technique is applied in these classes. The averages are thus calculated as standardised for age and gender, which means that for instance all 50-year-old men working in employment contracts covered by the same pension act are assumed to be similar to each other. The average technique is much lighter than individual calculation to carry out in practice, but at the same time it produces less information. For instance size distributions of the pensions cannot be calculated.

The average technique does not hinder taking into account the selectiveness associated with the transitions between different states. The following phenomena have been included to the model:

- 1) The accrued pension and the wage of persons entering to a disability pension are typically lower than those of an average worker.
- 2) The mortality risk for disabled persons is higher than the corresponding risk for the population, the mortality risk for non-disabled persons is correspondingly lower.
- 3) The pension accruals of persons who die before old-age pension are lower than on average for the insured.
- 4) For persons drawing an old-age pension a high pension is connected with a low mortality risk when age and gender are standardised.

It would be possible to take into account also other corresponding phenomena, but adding to the details makes the model more complex and presenting reliable estimates of the size of the selectiveness is problematic.

#### **4.1.2. Data requirements and application of AWG and other assumptions**

For the model the following data (specified by pension act as well as by the age and gender of the insured) is needed as a description of the initial situation:

- 1) division of the population between different pension acts and within each act between different states
- 2) wages/salaries of the insured
- 3) amounts of pension accruals
- 4) liabilities and assets of the pension institutions
- 5) amounts of the pensions payable
- 6) transition probabilities between states

The numbers describing the initial situation are mainly obtained from the employment and pension registers of the Finnish Centre for Pensions. Most of the starting data are from 2003 and 2004, on all topics not that up-to-date data are available and in some cases average numbers for the longer term have been used. Observed transition probabilities have been smoothed.

*Major assumptions for the calculation period are the following:*

##### 1) Population forecast

The Eurostat 2005 population forecast is applied.

##### 2) Employment forecast

An employment trend follows the AWG-assumptions. The number of employed and their distribution in the beginning of the calculation period however differs slightly from the AWG-assumptions. These numbers are obtained from the employment register of the Finnish Centre for Pensions. According to the employment register the level of the employment is slightly lower than according to the AWG-definition.

In the model the labour force is divided to number of pension acts. No changes are expected in the labour force shares between the different pension acts, except that the number of farmers is halved by 2020. The number of private-sector employees is expected to increase correspondingly.

##### 3) Change in the effective retirement age

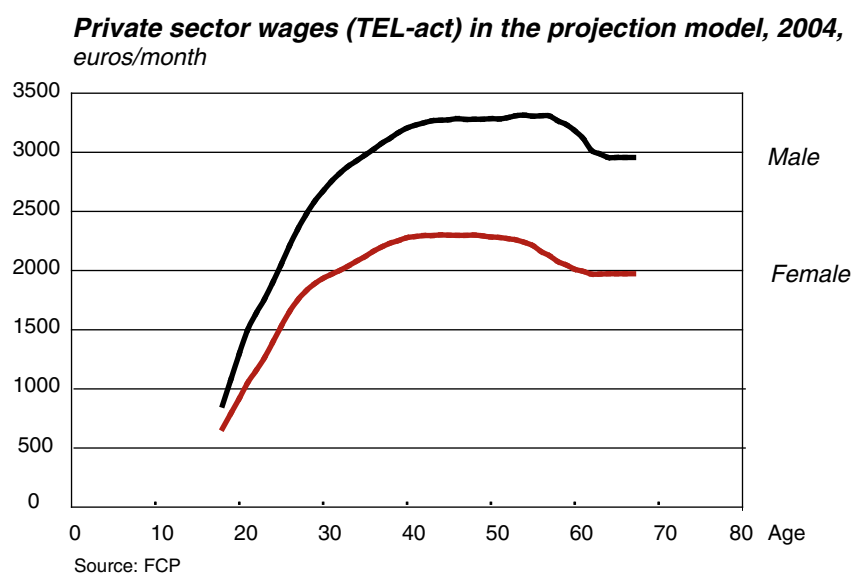
The effective retirement age is assumed to change according to the following table. This postponement of the retirement fits quite well with the AWG-employment assumption.

### The change in the expected effective retirement age for employees.

Year	2005	2010	2015	2025	2050	2075
A Change (years)	0	0.7	1.2	2.0	3.0	3.0

#### 4) Growth in the earnings level

It is assumed that the earnings level specified by age, sex and the pension act grows according to the assumed AWG labour productivity growth rate. Middle-aged and old workers earn more than young workers. During the calculation period the labour force grows slightly older. Consequently the wage level of the economy grows slightly faster than the assumed AWG labour productivity. Assumed decrease in the number of farmers has similar effect (farmers earn less than employees).



#### 5) Yield on pension assets

The real yield on pension assets is 3 % in accordance with the AWG-assumptions.

### 4.2. The national pensions model

The Social Insurance Institute is responsible for the semi-aggregated simulation model using comprehensive pension and social benefit registrars and data. The model is intended mainly for conducting projections, varying the time span, on the number of beneficiaries, on the benefit expenditure, contribution and other income of the national pension scheme. It is also intended for estimating the effects of changes in the national pension legislation. Because the national pension scheme guarantees a minimum pension level to all pensioners, the model produces the number of all pensioners including pensioners receiving only an earnings-related pension.

All residents in Finland belong to the national pension system and the model is based on this population, which is aggregated by age, sex, mortality rate, migration, etc. Because the earnings-related pension is calculated before the residence-based minimum pension, information of labour force and wage profiles are not needed in the model. The contribution projection is based on the total wages.

In the pension contribution projection the future development of payroll of various employers' sectors (private, state, etc.) have been taken into account. The number of all pensioners has been estimated by the ratio of new pensions to the non-pensioners in the last years. The number of national pensions is based on the distribution of estimated earnings-related pensions.

The average national pension for pensioners with earnings-related pension is based on the development of average earnings-related pension, which have been estimated by earnings-related pension model.

The number of years of receiving a pension is based on mortality of whole population. Mortality has been calibrated to coincide with the observed deviation between national pension recipients and total population.

The model takes into account that there will be no more new unemployment pensions after the year 2010. Changes in the earnings-related pension system are taken into account in the earnings-related pension model.

The national pension expenditure used in the AWG projections excludes housing allowances and other benefits of a compensative nature. A corresponding adjustment is made in the contribution income projection.

This aggregated model produces the number of beneficiaries of separate pension types. Therefore a slight adjustment is needed to derive the total number of the beneficiaries of the statutory pensions. The model consistency (concerning the take-up rates of pensions and the influence of the earnings-related pension expenditure to the national pension expenditure) between the earnings-related pension model and the national pension model is relatively rough, because the models are integrated only on a very aggregated level.

As mentioned above, the total number of beneficiaries of the statutory pensions has been derived from the results of the national pension model. An additional adjustment has been made based on a comparison of the total number of beneficiaries of the earnings-related pension which have been derived from the figures produced by the earnings-related pension model.

## 5. RESULTS OF THE PENSION PROJECTIONS

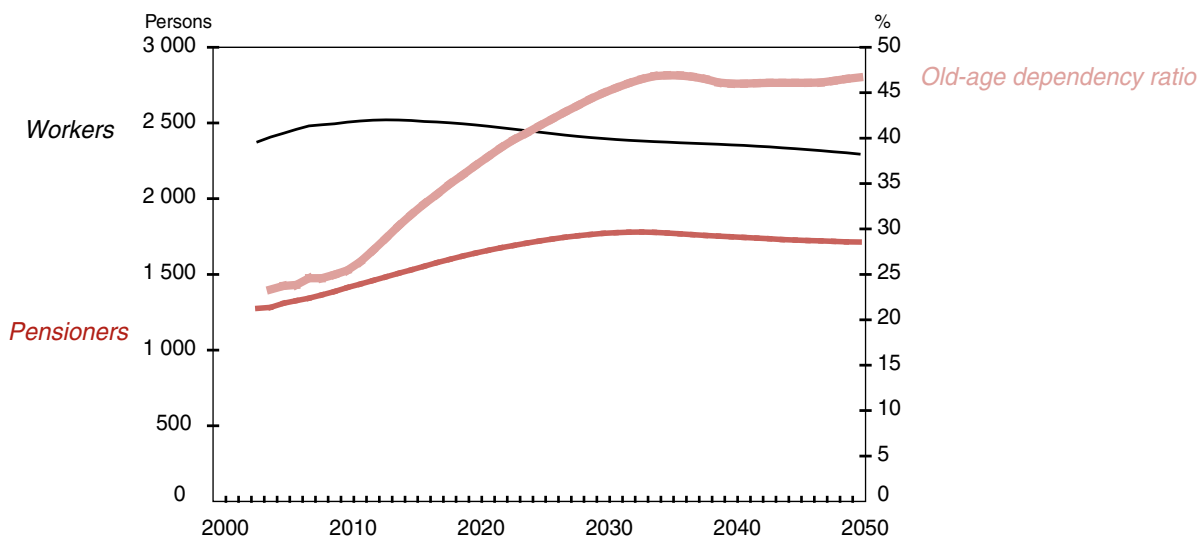
### 5.1. Population, employment and production

The projections of pension expenditure are based on assumptions on population, employment and productivity commonly agreed by the Ageing Working Group of the Economic Policy Committee. In the population projection, the fertility rate is assumed to remain at the present level of 1.8 children per woman and average life expectancy is assumed to rise by about 6 years by 2050. Net migration is assumed to be 6000 persons per year. The employment rate is assumed to rise from the present 68 per cent to 73½ per cent by 2020 and to rise to 74½ per cent by 2035, and remain thereafter fairly constant. The rise in employment is due to extension of working life and a decline in structural unemployment. The unemployment rate will decline in the projection to 6.5 per cent by 2015 and to remain at that level until 2050.

In Finland, population ageing during the next twenty years is faster than in any other EU Member State. This is due to the exceptionally big post-war cohorts and increased longevity. Working-age population will start to diminish in 2010, when the first large cohort (those born in 1945) reaches the age of 65. The number of employed will start to diminish five years later, in 2015 in spite of the increase in employment rate.

At the same time as working-age population shrinks, the number of senior citizens increases rapidly. The old-age dependency ratio (65 and older in relation to those aged 15 – 64) nearly doubles from the present just under 24 per cent to 45 per cent by the year 2030, when it is the highest in the EU. After this, the old-age dependency ratio rises only slightly so that it is below the EU average in 2050. The relation of those on a pension to the employed rises from the present 53 per cent to 75 per cent by 2030. In other words, at the present there are 1.9 persons employed per pensioners, whereas by 2030 this figure is 1.3 persons.

**Number of workers and pensioners, 1000 persons, (left axis) and old-age dependency ratio, % (right axis)**



Sources: Ministry of Finance (MoF), Finnish Centre for Pensions (FCP) and Social Insurance Institution (KELA), EU Economic Policy Committee

The growth of total production is solely due to growth in productivity after the year 2015, when the number of the employed will start to decrease permanently. The growth of total production is projected to halve from the previous slightly over 3 per cent (long-term growth rate of total production in Finland) to 1½ per cent a year on the average.

**Growth of GDP during 1900 – 2050 decomposed to employment and productivity growth, % per year**

	1900-2005	2006-2020	2021-2030	2031-2040	2041-2050
Employment	0.5	0.0	-0.4	-0.2	-0.3
Productivity	2.7	2.1	1.9	1.7	1.7
GDP	3.2	2.1	1.5	1.5	1.4

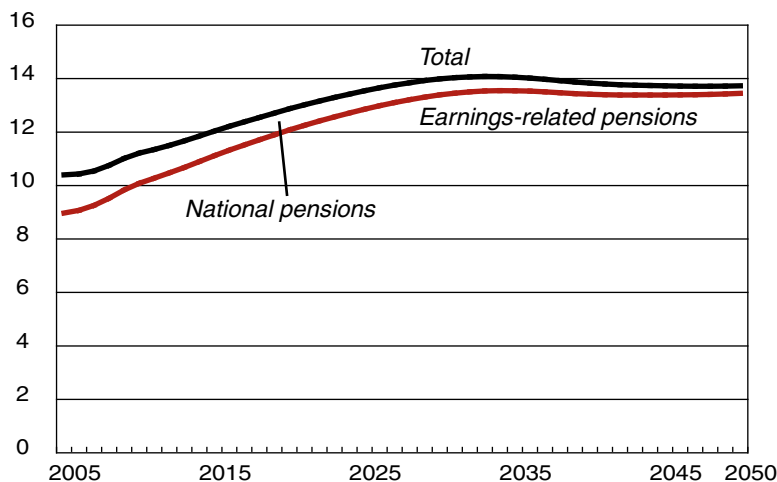
1) Hours worked

Source: EU Economic Policy Committee

**5.2. Pension expenditure projection: baseline projection**

In the baseline projection, pension expenditure in relation to total production increases from 10.4 per cent in 2005 to 14.1 per cent in 2035, after which the figure turns to a slight decrease. The growth of pension expenditure in relation to GDP is solely due to the increase in pensioners in relation to those employed.

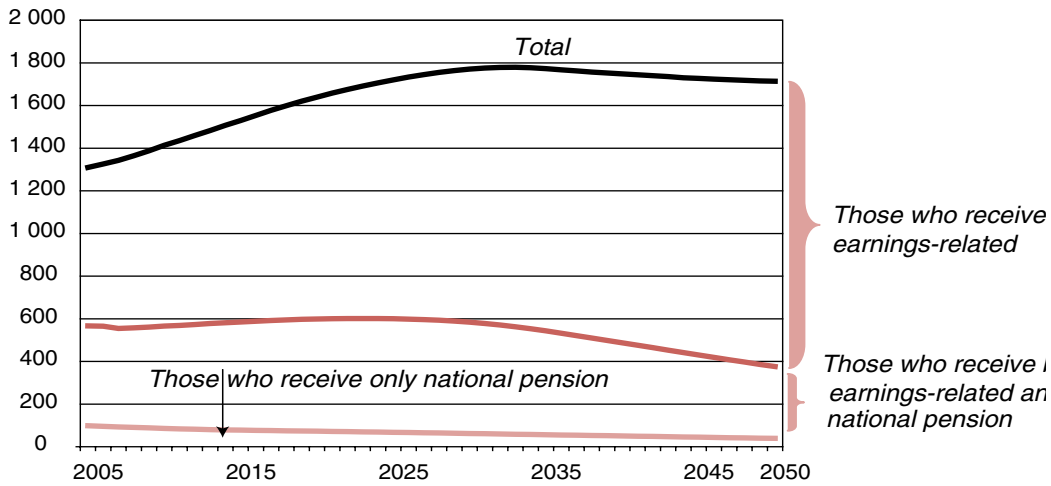
**Pension expenditure, % of GDP**



Sources: MoF, FCP, KELA

The role of income-tested basic pensions (national pensions) will diminish in total pension expenditure, while that of earnings-related pension expenditure will rise. The need for basic pensions is limited by increased coverage and level of earnings-related pensions. These two schemes are closely linked, with the amount of the basic national pension depending on the earnings-related pension benefits. The increase of earnings-related pension, reduces the basic national pension by 50 per cent of the increase in the earnings-related pension.

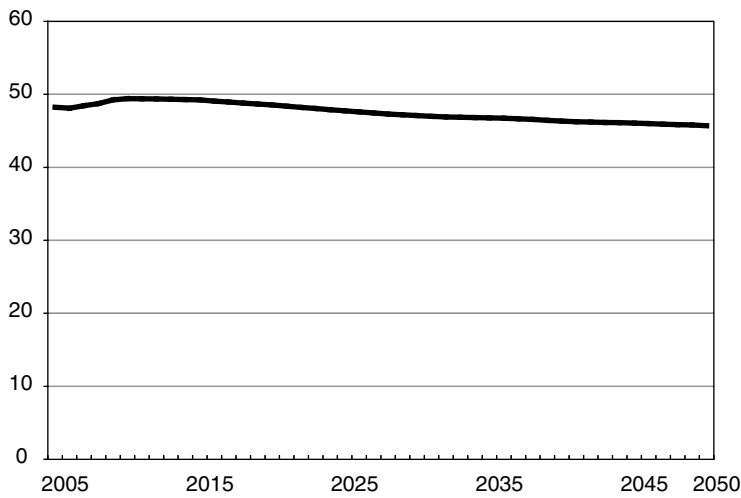
**Pensioners, 1000 persons**



Sources: MoF, FCP and KELA

The benefit ratio (average gross pension / average gross wage) is influenced by a number of factors. Lengthening the working careers increase benefit levels. On the other hand, the benefit ratio is diminished by the indexation rule and the so-called longevity coefficient.

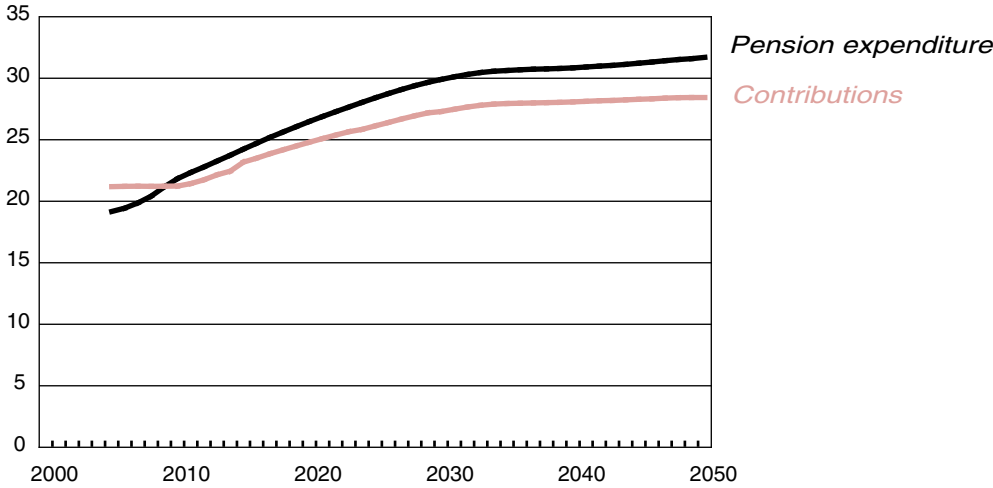
**Average pension/average wage, %**



Sources: MoF, FCP, KELA

It is important to note that Finland has prepared for increased pension expenditure by partial funding, due to which pension contributions will rise in the future much more slowly than pension expenditure. The funding of pensions has in practise no bearing on pension expenditure due to the defined-benefit nature of the Finnish pension system, in which pensions are determined by the length of the employment history and the level of wages. The aim of partial funding is to even out the pension contributions over time and therefore to focus the costs of pensions fairly between generation.

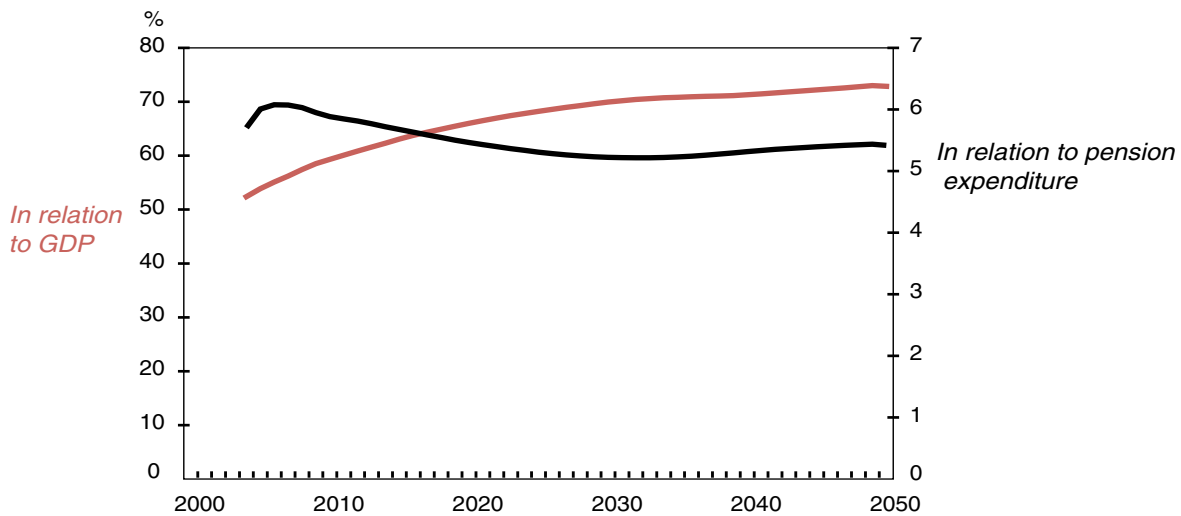
**Pension expenditure and contributions, % of wages, in the private sector**



Sources: MoF, FCP, KELA

The annual surplus of the pension funds (revenue – expenditures) is roughly 2½ per cent of GDP and the market value of pension funds assets (excluding the State pension fund) the was 52.4 per cent of GDP at the end of 2004. At the moment, pension fund assets are equivalent to 5-6 years’ pension expenditure. According to the baseline scenario, the market value of pension funds rises to 72½ per cent of GDP by the year 2050. Partial funding strengthens markedly the sustainability of the pension system. The more the rate of return of pension fund assets surpass the GDP growth rate, the greater is the benefit of funding as compared to a pure pay-as-you-go system. In the baseline projection, the rate of return of pension fund assets is 1½ percentage points higher than the long-term GDP growth rate.

**Pension fund assets, % of GDP (left axis) and in relation to earnings-related pensions (right axis)**



Sources: MoF, FCP, KELA

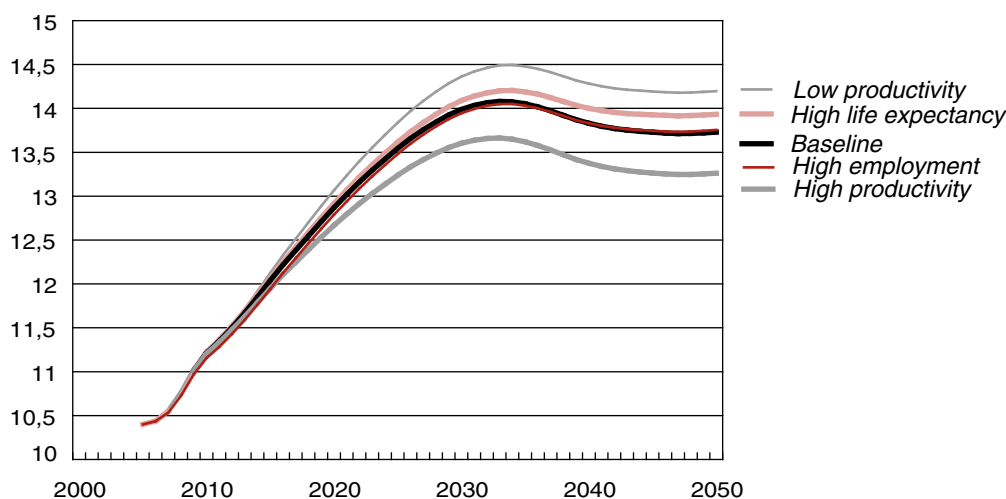
### 5.3. Sensitivity calculations

In the following section is a brief commentary on results of the sensitivity tests most noteworthy from the point of view of Finland.

#### 5.3.1 Employment

In the long term, pension expenditure in relation to GDP reacts only slightly to changes in employment. This is because the Finnish old-age pension system is nearly actuarially fair in the sense that the pension benefits are determined by life-time earnings without a ceiling and the life expectancy coefficient lowers the level of pensions if retirement is not postponed as life expectancy is increasing. The longer the working career, the higher is the earnings-related pension, and vice versa. Even if employment has little bearing on pension expenditure as percentage of GDP in the long run, in the short run a rise in employment decreases pension expenditure as percentage of GDP. In interpreting the results, it is important to note that increased employment and economic growth increase all income items. As in the sensitivity test results are compared only to GDP, the comparison depicts only the fact that the pension system reacts actuarially neutrally to changes in employment.

**Sensitivity tests:  
Pension expenditure, % of GDP**



Sources: MoF, FCP, KELA

#### 5.3.2. Productivity

Pension expenditure as a percentage of GDP is sensitive to changes in productivity. This is due to the indexation systems of pensions. National pensions are adjusted by consumer prices whereas earnings-related pensions are adjusted by an index, in which the weight of prices is 80 per cent and that of wages 20 per cent. In other words, those enjoying an earnings-related pension receive through index adjustments one-fifth of productivity (real wage) increases while those on a national pension receive nothing of productivity increases. However, national pensions are adjusted discretionarily every so often to increase their purchasing power. In this projection exercise, it is assumed that national pensions are adjusted only by the consumer price index and not by discretionary adjustments.

In calculating the reference wage of the earnings-related pension, an index is used in which the weight of wages is 80 per cent and that of prices 20 per cent. Therefore the so-called initial pension level is determined by, along with the length of the working career, 80 per cent of real wages growth (productivity growth).

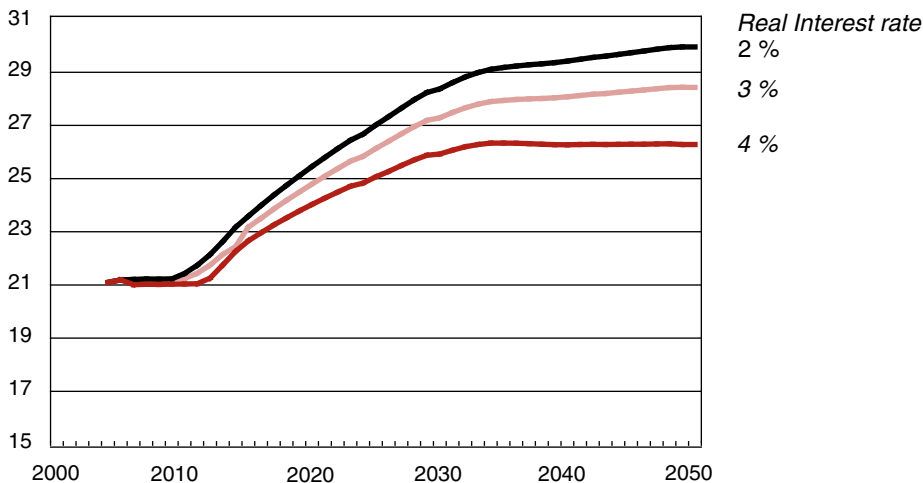
If the growth of productivity were 0.25 percentage points higher than in the baseline projection, the share of pensions as a percentage of GDP would be lowered by 0.5 percentage points in the long term. By the same token, slower productivity growth (by 0.25 percentage points in relation to the baseline) would increase the share of pension expenditure as a percentage of GDP by 0.5 percentage points.

### 5.3.3. Interest rate

As mentioned above, neither partial funding of pensions nor yields of funded pension assets have a direct effect on pensions. The reason for funding is to slow down the rise of pension contributions. Therefore the higher is the yield (real interest rate) of invested pension assets, the lower is the pension contribution rate in the future. Just less than a half of pension fund assets is invested in bonds, a third in shares and the rest in enterprise loans, real estate and money market instruments.

An assumption of 3 per cent was used for real yields of pension fund assets, and the same assumption was used for risk-free government debt. According to the sensitivity scenarios, a one per cent rise in the rate of return lowers the contribution rate by about 2 percentage points in the long run. Similarly, a one per cent lower rate of return than in the baseline scenario raises the contribution rate by two percentage points.

**Sensitivity tests:**  
**Pension contributions in the private sector,**  
 % of wages at 2%, 3% or 4 % real interest rate



Sources: MoF, FCP, KELA

## The coverage and categories of pensions in the projection model

### Total expenditure on pension benefits and the coverage of projection, 2004 , EUR million

	Total expenditure	Not included in projections
National pensions 1)	2 738	524
Employment pensions, mandatory schemes		
private sector 2)	8 144	
government	2 873	
municipalities	2 296	
other 3)	174	
Pensions under special schemes and life annuities 4)	694	694
Voluntary pension provisions 5,6)	414	414
Total	17 333	1 632

1) The supplementary pension components, such as pensioner's housing allowances and the pensioner's care allowance are not included in the model projections. The latter, however, is included in the long term-care expenditures in the age-related public expenditure projections by AWG.

2) Pensions paid under the Employees' Pension Act, the Temporary Employees' Pension Act, the Farmers' Pension Act, the Self-Employed Persons' Pension Act, the Seamen's Pension Act, and the Pension Act for Performing Artists and Certain Other Employee Groups.

3) Pension paid under the Åland islands pension legislation, the Evangelical-Lutheran and the Orthodox Church Pension Acts, staff pensions of KELA, Postipankki and Bank of Finland.

4) Employment Accident Insurance Act, Third-Party Motor Insurance Act, Military Injuries Act, Pension Scheme for Outgoing Farmers.

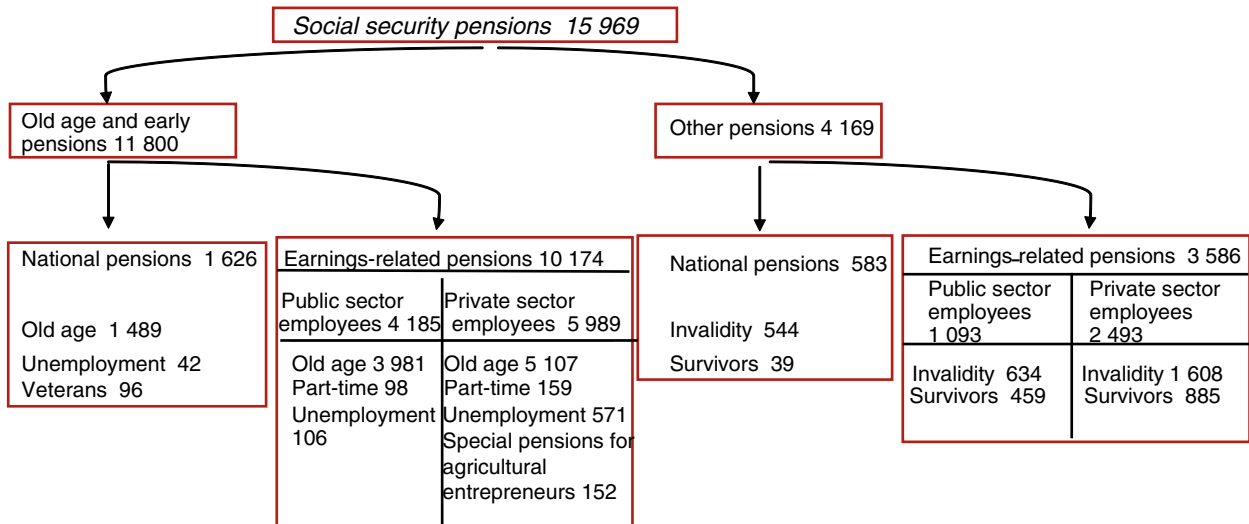
5) Additional pensions under private sector employment schemes (see note 2) and pensions paid by funds and foundations under private schemes.

6) Voluntary individual pension schemes are not included in the total expenditures in the table.

Source: Statistical Yearbook of the Social Insurance Institution 2004

The model covers about 90 per cent of all pension expenditure. Items such as pensioners' housing and care allowances, which are paid within the pension system but are not by definition pensions, are excluded from the projections. Also, private voluntary and occupational pensions as well as pensions and life annuities related to the traffic and accident insurance system are excluded. The remaining pensions are defined as the social security pensions.

**Social security pension 2004, EUR million**



Sources: MoF, FCP, KELA