

## **FUTURE PUBLIC PENSIONS IN THE NETHERLANDS**

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### **1. Introduction**

This paper provides an insight in how ageing of the population affects government finances in the Netherlands. More specifically, it presents how public expenditure on pensions will develop in the coming decades if present policies are continued. It is organised as follows. Section 2 discusses the components of the public pension system. It also describes the supplementary pensions that are provided by the private sector. Section 3 describes the model that is used for the extrapolation of public pensions and section 4 presents the results of the base case scenario. The outcomes under the assumptions of the 'Lisbon' scenario are presented in section 5. Section 6 explores the sensitivity of the results. One major restriction of the results of sections 4 to 6 is that it provides only a partial insight of the impact of ageing on the public budget. This gives reason to broaden our scope and to include also the other ways in which ageing will affect future government finances, mainly by increasing the costs of health care and, in the Netherlands, also by generating higher tax revenues. This exercise is performed in section 7. Section 8 concludes.

### **2. Description of public pension systems**

The Dutch pension system consists of three pillars. The first comprises the basic state-guaranteed retirement pension plan for everyone in the Netherlands. The second

comprises work-related supplementary pension plans arranged between employers and employees. And the third pillar comprises pension plans arranged by individuals. There are no differences whatsoever between public and private sector employees. The second pillar applies to the public sector in the same way as to the private sector. In the public sector supplementary pension arrangements, which are agreed between employers and employees, are also in place. This section provides an outline of the pension system. The annex discusses it in detail.

### **The first pillar (the statutory basic retirement pension plan)**

The first pillar in the Netherlands is enshrined in the General Old Age Pensions Act (AOW), which provides for a compulsory insurance plan yielding a retirement pension for everyone living in the Netherlands aged 65 and over. Up to retirement age, everyone with a taxable income has to pay AOW contributions. Everyone aged 15–65 is insured, regardless of nationality. In addition to people living in the Netherlands, non-residents who pay income tax in the Netherlands are also insured. All men and women aged 65 and over are entitled to a pension in their own right. A person aged over 65 with a partner aged under 65 can claim a supplement if the partner's earned income is insufficient or non-existent. The AOW pension is paid as a fixed amount per month. The amount is linked to the statutory net minimum wage, which is determined by law and applies to everyone working in the Netherlands. A married or cohabiting retired person who has built up a full AOW entitlement<sup>1</sup> receives an AOW pension worth 50% of the net minimum wage. A single pensioner receives 70% of the net minimum wage,

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<sup>1</sup>Everybody who is 15 or older and lives in the Netherlands or works and pays social premiums in the Netherlands builds up entitlement; the full entitlement is reached after 50 years.

and a single pensioner with a child or children aged under 18 receives 90% of the net minimum wage. The AOW is a pay-as-you-go arrangement.

### **The second pillar (work-related supplementary pensions)**

The second pillar comprises work-related supplementary pensions, which are the primary responsibility of the social partners. Supplementary pension plans are part of the terms of employment agreed in negotiations between social partners. Employers are not legally obliged to provide supplementary pension plans for their employees, but if they do so, the pension plans have to meet certain statutory requirements. Second (or third) pillar schemes are always funded arrangements.

Tax legislation in the Netherlands makes contributions to supplementary pension plans tax-deductible, whereas pension payments are taxed. The capital income that accrues to the pension funds is tax exempt<sup>2</sup>. In the Netherlands, 91% of employees take part in the second pillar of the Dutch pension system. Of the second pillar schemes are 88% defined benefit plans. The private sector provides also a voluntary early retirement scheme that is described in the annex. Table 2.1 provides the developments of supplementary pension finances in the base case scenario. The contribution level rises slightly, while the level of paid-out pensions shows a sharp rise. This rise is not only the result of ageing. It also reflects the fact that future pensioners have built up more pension rights than the present ones.

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<sup>2</sup> This combination of deductibility of pension premiums, tax exempt capital income for pension funds and taxation of pension benefits is sometimes referred to as an EET-system.

*Table 2.1 Pension contributions and supplementary pensions in the baseline scenario*

|                                                  | 2001 | 2020 | 2040 |
|--------------------------------------------------|------|------|------|
| Supplementary pension contributions (% of wages) | 6.8  | 6.8  | 7.2  |
| Supplementary pensions (% of wages)              | 9.1  | 14.7 | 26.2 |
| Supplementary pensions (% of GDP)                | 4.1  | 7.3  | 12.9 |
| Supplementary pension result (% of final wages)  | 38.1 | 42.4 | 50.2 |
| Supplementary pension fund assets (% of GDP)     | 121  | 172  | 195  |

Note: these data are based on a demographic scenario that deviates from the Eurostat-scenario. This demographic scenario is explained in section 4.1.

### **The third pillar (individual retirement plans)**

The third pillar of the Dutch pension system comprises individual pension plans. These should be taken out by an insurance provider and have nothing to do with the relationship between employees and employers. There are two main forms of insurance in the third pillar. The first is the annuity, which entitles the holder to a fixed and periodic benefit or a unit-linked product whereby the periodic benefit can fluctuate with the value of the underlying investments. The second is the capital insurance, which is linked to the financing of a home and pays out a fixed amount against the risks of death or long life.

### **Survivor benefits**

In the calculations for the Netherlands two other schemes are included in the definition of public pensions: the survivor benefits and the disability schemes.

The survivor benefits (laid down in the Algemene Nabestaandenwet - ANW) is a general insurance scheme for people under 65. People are entitled to a benefit if their partner has deceased and either:

- they were born before 1 January 1950;
- or they have to take care for a child under 18 or are pregnant;

- or they are disabled for 45% or more for at least three months.

The insurance premium that every working person has to pay is 1.25% over a maximum income of 48,994 guilders (22,232 Euro). The maximum benefits are 70% of the legal minimum wage and are corrected for own income. People over 65 have no right for survivor benefits. The scheme was changed in 1996. The former scheme, the AWW, was more generous. Now people are urged more to earn their own income. Transitional measures were taken for people who received benefits under the old scheme. In 1999 172000 people received survivor benefits.

### **Disability schemes**

The main disability scheme in the Netherlands is the WAO. Essentially every working person is insured under the WAO. If a person has been on sickness leave for 52 weeks, he or she enters the WAO. Although the WAO is no pre-pension scheme, it is included in the calculations because entering WAO is strongly age-dependent. There are seven categories of disabled people, ranging from 15% to 100% disabled. For example, if you are able to earn 50% of your previous income, you fall in the category of 45-55% disablement. The benefits are related to the previous income and to the level of disablement. The maximum benefit (for people who are 80-100% disabled) is 70% of the previous income (with a maximum) and during a limited time period dependent on age. In most cases additional (private) insurance is agreed in collective labour agreements between social partners, compensating for the lower benefits up to 70% of the previous income. The WAO is financed by social security premiums. Since 1998 employers have to pay these premiums (before 1998 employees) because of the implementation of the Wet Pemba. The goal of this law is to make employers more

responsible for the influx in the WAO: an employer has to pay a higher premium if more employees of this employer become disabled.

There are two more disability schemes: the Wet arbeidsongeschiktheidsverzekering zelfstandigen (WAZ) and the Wet Arbeidsongeschiktheidsvoorziening jonggehandicapten (Wajong). These two schemes have existed since 1998 and replaced the Algemene Arbeidsongeschiktheidswet (AAW). The WAZ is a disability scheme for self-employed people. The benefit is calculated more or less the same way as a WAO-benefit. The premium is 8.8% until a maximum income. The Wajong is a scheme for young-handicapped people, more precisely people who are disabled at their 17th birthday or were students at the time they became disabled. The benefit is based on the minimum wage or the youth minimum wage. It is financed out of the general budget.

### **3. The projection model**

#### *The model*

The instrument that was used to project future government expenditure on public pensions is a deterministic model. It does not take account of behavioural responses or equilibrium effects. The model was developed at CPB Netherlands Bureau for Economic Policy Analysis. It covers all public expenditures and revenues and can thus provide a comprehensive analysis of the effect of ageing on the public sector. Section 7 of this paper will show the result of this exercise.

Apart from ageing, the model takes account of a number of other trends such as increasing (female) labour participation and a rise of disability claimants. The model

does not only construct future public budgets, it has also been designed to perform Generational Accounting analyses. This form of analysis focuses on government expenditure and revenues accruing to separate generations.

#### *The role in the policy making process*

The model has been used to perform the calculations for a comprehensive CPB study on ageing, which was published in September 2000 and is titled 'Ageing in the Netherlands'. This study is comprehensive in that it takes into account all expenditure and revenue items of the public sector and explores trends in various other fields such as the labour market and private sector saving. The same calculations were used in a study of the high-level advisory body chaired by the Treasurer General of the Ministry of Finance, which was published, in Dutch, under the title 'An exploration of debt policy over the long term'<sup>3</sup>. These studies focus mainly on the effect of ageing on the public sector, in particular its impact on government finance, and on the various possible policy responses that can be pursued to deal with ageing. An important objective underlying the choice of the policy responses was to arrive at a sustainable system of public arrangements within a few years. It turns out that this requires that public debt is almost eliminated in the next 25 years and that, correspondingly, the government should pursue fiscal surpluses during this period. Sensitivity analyses point out that this policy prescription does not change if other assumptions are made with respect to demographic developments, growth rates etc.

These studies play an important role in informing policy makers (members of parliament and ministers) as well as the general public on the extent of the ageing

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<sup>3</sup> An executive summary is available in English; the complete study is only available in Dutch under the title 'Een verkenning van de schuldpolitiek op lange termijn'

problem for the public sector and various other aspects that are attached to it. The necessity of reducing public debt in order to achieve sustainable public arrangements seems to get a relatively wide recognition. Most political parties, as well as the social partners, are in favour of debt reduction in the coming decades. The studies also form important input for a group of civil servants, the Study Group on the Budget Margin, which traditionally prepares an influential advice for the fiscal policy to be pursued in the next cabinet period.

#### *Coverage of the calculations pensions*

In the calculations we have covered the public old-age pension system (the AOW-scheme), all disability benefits (the WAO-,WAZ- and WAJONG-schemes) and survivor benefits (the ANW-scheme). Other expenditures are not included in the calculations. Pre-pension schemes are not included in the calculations, because these are private arrangements.

#### *Extrapolating public pensions*

Public old-age benefits and survivor benefits are extrapolated by assuming that - apart from indexation to productivity in the private sector - age-specific benefits per person from these expenditures remain unchanged. Average public expenditures related to a person of a certain age will thus increase each year at a rate that is equal to the increase of productivity in the private sector. This form of extrapolation is in accordance with the wage indexation of the AOW-scheme<sup>4</sup>. It is also a reasonable

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<sup>4</sup> More exactly, the AOW -pension is linked to minimum wage, rather than to average wage. In the next decades these are assumed to have the same growth rate.

approximation of how present public arrangements will have an effect on future expenditure on the ANW- scheme. This entails that aggregate future expenditures of these budget items will depend on productivity growth and the growth and change of composition of the population.

The extrapolation of disability benefits deviates from this procedure. To derive the future numbers of beneficiaries, we use the present age-specific probabilities of flowing in and out of these schemes. The resulting numbers are translated into expenditures by assuming an age-specific benefit increase that equals the productivity increase.

*Table 3.1      Persons on disability insurance*

|                      | 2001             | 2020 | 2050 |
|----------------------|------------------|------|------|
|                      | thousand persons |      |      |
| Disability insurance | 944              | 1250 | 1225 |
|                      | % labour force   |      |      |
| Disability insurance | 12¾              | 15½  | 16   |

The number of people claiming disability benefits is expected to increase to 1.25 million in 2020 and shows only a small decline after that (see table 3.1). About a quarter of this number can be explained by the ageing of the work-force, which raises the number of older workers with a higher risk of flowing into these schemes. Increased employment in recent years contributes to this. Almost half of the increase is due to past employment growth of women, in particular, since it takes quite some time for the stock of disabled to adjust to the resulting higher inflow-rates. The remainder is largely caused by an increase in the number of 'young disabled', a scheme for young people who are disabled before the start of their careers. Since this is a relatively new scheme, it will still take a couple of years for the stock to mature. After 2020, the number of disabled persons remains roughly constant on balance. On the one hand there is some carrying over of past employment growth; on the other hand, the work force is getting relatively younger again.

## 4. The current policy scenario

### 4.1 The assumptions

#### *Demography*

The baseline projection employs the base-case projection of Eurostat. This incorporates the insights into the development of fertility, mortality rates and immigration patterns. Table 4.1 provides an overview of this development. It shows that the total population will show a gradual increase from 15.9 million in 2000 to 17.9 million in 2040. After 2040 it will fall slightly to 17.7 million in 2050. This is mainly a result of the maturing of the baby boom generation. The number of those in their working ages (between 20 and 64) and the young (those under 20) will show relatively small changes. As a result the elderly dependency ratio, defined as the number of 65+ as a percentage of the 20 to 64-year olds, is projected to rise from 22.1% in 2000 to 48.1% in 2040, and will show a small decline to 44.9% in 2050.

This demographic scenario assumes that the fertility rate is about 1.8 over the whole period, that net immigration remains roughly constant at 35,000 and that, during the course of the next 100 years, life expectancy rises from its present level of 75.5 years to 80.0 years for males and from 80.9 years to 85.0 years for females.

Table 4.1 *Population and its composition in 2000-2050*

|                          | 2000        | 2020        | 2040        | 2050        |
|--------------------------|-------------|-------------|-------------|-------------|
| Age group                | thousands   |             |             |             |
| 0-19                     | 3869        | 3832        | 3871        | 3785        |
| 20-64                    | 9836        | 10137       | 9442        | 9585        |
| 65+                      | <u>2154</u> | <u>3301</u> | <u>4537</u> | <u>4300</u> |
| Total                    | 15859       | 17270       | 17850       | 17670       |
| Elderly dependency ratio | 21.9%       | 32.5%       | 48.1%       | 44.9%       |

The Eurostat demographic forecasts differ from those of Statistics Netherlands (SN), which are used in 'Ageing in the Netherlands' and 'Een verkenning van de schuldpolitiek op lange termijn'. Table 4.2 sums up the main differences. In the Eurostat forecast, almost all demographic assumptions are higher than in the forecast of Statistics Netherlands (SN). Eurostat assumes a higher total fertility rate, a higher life expectancy at birth for both males and females, and from 2010 onwards a higher net migration.

The last row shows that the Eurostat forecast leads to a roughly 5%-points higher level of the elderly dependency ratio in the long run. The reason for the higher level of this key variable is twofold. The first lies in the higher life expectancy for females. The second reason is that SN forecasts emigration by using emigration *rates*, instead of emigration numbers as Eurostat does. SN extrapolates the present emigration rates that are specific to age, gender and country of birth. Because of these emigration rates, the age distribution of emigration changes with the age distribution of the total population. This has two consequences for the population. First of all, it leads to smaller emigration numbers for young people, and consequently to more people in the reproductive ages, and therefore to more births. This compensates for the lower total fertility.

*Table 4.2 Comparison of population forecast by Eurostat and Statistics Netherlands*

|                                 | 2000  | 2020 | 2040 | 2050 |
|---------------------------------|-------|------|------|------|
| Difference Eurostat - SN        |       |      |      |      |
| -Total Fertility Rate           | 0.1   | 0.1  | 0.1  | 0.1  |
| -Life expectancy males (year)   | 0.2   | 0.4  | 0.3  | 0    |
| -Life expectancy females (year) | 0.3   | 1.5  | 2.1  | 2    |
| -Net migration (thousands)      | - 4.6 | 6.8  | 11.4 | 12.7 |
| -Population (billions)          | 0     | 0.2  | 0.4  | 0.4  |
| -Ratio 65+ / 20-64 (%)          | 0     | 1.4  | 5.1  | 5.1  |

An argument in favour of the forecast by Eurostat is that it is more recent. It contains the demographic developments between 1998 and 2000, and uses the most recent assumptions. There are three arguments in favour of the forecast by SN. First, it uses more advanced methods (such as emigration rates instead of emigration numbers). Second, it provides information on confidence intervals. Thirdly, it covers up to the year 2100, rather than 2050. This is helpful in the analysis of the ageing problem. On balance, the CPB prefers the SN-forecasts. For this reason section 7, which presents a comprehensive view on future budgets, will also provide a variant that uses the SN-data.

#### *Forecasting GDP and labour participation*

The growth forecast for GDP is obtained by summing up the increase in labour supply and the average labour productivity. Labour supply, in turn, is a combined result of the growth of population in the working ages, which is projected to change little in the next decades (see above), and labour participation rates.

In the last two decades, labour force participation has increased markedly. In coming years this trend is expected to continue, although at a somewhat lower rate. Participation is expected to rise by about 5 %-points<sup>5</sup> until 2020, which is equivalent to a relative increase of 7 %. Measured in full-time equivalents, the rise will be less,

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<sup>5</sup> The projection for labour force participation is based on the 'European Co-ordination' scenario (see CBS/CPB 1997). However, the present forecast, which was also used in 'Ageing in the Netherlands', is lower. The main reason for this is that CBS/CPB (1997) assumes new policies concerning disability insurance, early retirement schemes and childcare being implemented, while the present forecast takes only presently implemented policies into account. We have lowered the labour force participation rates by the effects of these assumed, not implemented policies. This results in the growth rate of the participation rate in the projection being about 3½% lower than in the 'European Co-ordination' scenario.

mainly due to a higher incidence of part-time work. As this increase of part-time work is projected to be 4%, this entails a relative increase in full-time equivalents that amounts to around 3%.

The principal determinants of the projected development of participation are the positive influence of a continuing rise in female participation rates and the negative influence of ageing on the potential labour force (see table 4.3). Age-specific participation rates are assumed to be constant after 2020, given their already high levels at that point in time. From then on, only the composition of the population has an effect on the total participation rate.

The ageing of the potential labour force dampens average participation rates. The reason is that the participation rate of older persons is less than the participation rate of younger persons. Especially in the age groups over fifty-five, participation drops significantly. Until 2020, the share of persons aged 55 to 64 in the potential labour force is expected to increase from 15% to 21% in 2020, thereafter levelling out at around 20%.

Age-specific participation rates of men remain at a relatively high level. The notable exception is the participation of older men, which stays relatively low. A modest increase is foreseen though, as a consequence of present policies to curb the number of disability claimants and the planned transformation of early retirement schemes into programmes for flexible retirement in some collective labour agreements.

*Table 4.3      Decomposition of the change in labour force participation (age 20 to 64)*

|                      | 2001 - 2020        | 2001 - 2050 |
|----------------------|--------------------|-------------|
|                      | change in %-points |             |
| Level in 2001        | 72                 | 72          |
| Ageing               | - 4                | - 3         |
| Male participation   | 0                  | 0           |
| Female participation | 9                  | 9           |
| Total change         | 5                  | 5           |
| Level in final year  | 77                 | 77          |

Age-specific female participation rates will continue to go up under the influence of trends of emancipation and individualisation. Increases are mainly located among women over thirty-five. These women already participate more than the older cohorts when they were young. For instance, the participation rate of women aged 30 to 34 rose during the last decade by 20%-points. It is expected that these cohorts continue to work more in the coming years. By 2020, it is expected that female participation rates reach the high levels currently seen in the US and Sweden. In the coming years the share of ethnic minorities in the total population is expected to grow considerably: from 9% to about 15% in 2020. Since labour force participation of minority groups is relatively low, this has a negative influence on the overall participation rate. No account is taken of the further expected rise of the share of ethnic minorities after 2020. After that year, age- and sex-specific participation rates are assumed to be constant.

#### *The impact of the business cycle*

Our way of extrapolating GDP, as explained above, applies to structural growth. It does not take account of the fact that in our starting year, 2001, GDP is considered higher

than in a cyclically neutral year. The magnitude of the cyclical component in GDP is difficult to determine. Measurements of this impact show very divergent results.<sup>6</sup> Our calculations take the average of these results. This implies an output gap of 2.3% in 2001. We imputed a gradual return of GDP to its structural level.

## 4.2 The base case results

Table 4.4 displays the base case projections, in terms of percentages of GDP, for government expenditure on public pensions until 2050. It also shows its three components. Our extrapolation points out that public pensions rise from 7.9% of GDP in 2000 to 14.1% when it reaches its peak in 2040. This is a rise of 6.2%-points. Between 2040 and 2050 it declines slightly to 13.6%. The breakdown into its three components shows that the growth of old-age pensions is by far the main component of this rise of public pensions. It accounts for about 85% of it. The remaining 15%, i.e. about 1% of GDP, is a result of the increase of disability benefits.

*Table 4.4 Public pensions in 1995-2050*

|                      | 1995 | 2000 | 2010 | 2020 | 2030 | 2040 | 2050 |
|----------------------|------|------|------|------|------|------|------|
|                      | %GDP |      |      |      |      |      |      |
| Public pensions      | 8,9  | 7,9  | 9,1  | 11,1 | 13,1 | 14,1 | 13,6 |
| -old-age benefits    | 5,0  | 4,8  | 5,4  | 7,0  | 9,0  | 10,2 | 9,7  |
| -disability benefits | 3,2  | 2,7  | 3,3  | 3,7  | 3,7  | 3,5  | 3,6  |
| -survivor benefits   | 0,7  | 0,4  | 0,4  | 0,4  | 0,4  | 0,4  | 0,4  |

Table 4.5 shows how public pensions, and its three components, develop as an index (in real terms). The upper part of the table presents real expenditure. The middle and lower part decompose real expenditure in numbers of beneficiaries and average pension benefits. The table shows that old-age benefits is the fastest grower of the three between 1995 and 2050. This can be mainly attributed to the demographic

<sup>6</sup> These various ways of measuring the output gap are discussed in CPB (2000).

development that translates in table 3.5 in the increase in numbers. This applies to almost the whole period. Between 1995 and 2000, years in which major measures were undertaken to cut the cost of disability and survivor benefits, the average pension level added to the larger growth of old-age pensions. After 2000, the average benefits of the three components are indexed to wages and grow at an equal rate.

*Table 4.5 Public pensions in 1995-2050 (1995 =100)*

|                                    | 1995 | 2000 | 2010 | 2020 | 2030 | 2040 | 2050 |
|------------------------------------|------|------|------|------|------|------|------|
| <b>Expenditure (in real terms)</b> |      |      |      |      |      |      |      |
| Public pensions                    | 100  | 106  | 149  | 220  | 298  | 376  | 436  |
| -old-age benefits                  | 100  | 114  | 159  | 248  | 366  | 487  | 553  |
| -disability benefits               | 100  | 94   | 141  | 190  | 218  | 241  | 296  |
| -survivor benefits                 | 100  | 63   | 74   | 89   | 102  | 120  | 144  |
| <b>Number of beneficiaries</b>     |      |      |      |      |      |      |      |
| Public pensions                    | 100  | 107  | 126  | 157  | 178  | 190  | 186  |
| -old-age benefits                  | 100  | 106  | 123  | 162  | 201  | 225  | 216  |
| -disability benefits               | 100  | 105  | 133  | 152  | 145  | 135  | 140  |
| -survivor benefits                 | 100  | 71   | 70   | 70   | 68   | 68   | 68   |
| <b>Average pension expenditure</b> |      |      |      |      |      |      |      |
| Public pensions                    | 100  | 99   | 118  | 140  | 167  | 198  | 235  |
| -old-age benefits                  | 100  | 107  | 127  | 151  | 180  | 214  | 254  |
| -disability benefits               | 100  | 89   | 106  | 125  | 150  | 178  | 211  |
| -survivor benefits                 | 100  | 89   | 106  | 125  | 150  | 178  | 211  |

Table 4.6 provides a decomposition of the factors behind the increase of public pensions relative to GDP. It shows that the increase of the elderly dependency is the main determinant of the growth of old-age benefits (AOW). The increase in the coverage rate is the main factor behind the higher disability benefits. This is explained in section 3. Overall, the elderly dependency ratio turns out to be the main factor behind the increasing cost of public pensions.

**Table 4.6 Determinants of the rise of pensions in 2000-2050**

|                      | elderly<br>dependency<br>ratio | replacement<br>rate | coverage<br>rate | participa-<br>tion rate | Total<br>increase |
|----------------------|--------------------------------|---------------------|------------------|-------------------------|-------------------|
| %GDP                 |                                |                     |                  |                         |                   |
| Public pensions      | 5,1                            | 0                   | 1,0              | -0,3                    | 5,7               |
| -old-age benefits    | 5,1                            | 0                   | 0                | -0,2                    | 4,9               |
| -disability benefits | 0                              | 0                   | 1,0              | -0,1                    | 0,9               |
| -survivor benefits   | 0                              | 0                   | 0                | 0                       | 0                 |

## 5. The Lisbon scenario

There is one main difference between the base case scenario and the Lisbon scenario that affects pension expenditure relative to GDP. This is the more optimistic pace at which the participation rate is assumed to increase. In the base case scenario it is assumed that the participation rate will rise by 7% in persons, which means 3% in working years. In the Lisbon scenario, the projected increase is more optimistic: in persons the increase is 10% and in working years 6%. This difference accounts for the better results. One remark that should be made is that in the base case scenario the increase in participation rate will be achieved within the next 20 years, whereas in the Lisbon scenario the increase will only be achieved in 45 years. This means that in the base case scenario the increase in participation rate during the next 20 years is larger than in the Lisbon scenario. As a result, the Lisbon scenario shows a higher ratio of pensions to GDP during these years. Eventually, however, the Lisbon scenario shows a 0,2 percentage points lower ratio. The difference is small since the difference in participation rates is also small.

|                    | 2000 | 2005 | 2010 | 2020 | 2030 | 2040 | 2050 | Change 2000-peak year |
|--------------------|------|------|------|------|------|------|------|-----------------------|
| base case scenario | 7.9  | 8.3  | 9.1  | 11.1 | 13.1 | 14.1 | 13.6 | 6.2                   |
| Lisbon scenario    | 7.9  | 8.3  | 9.2  | 11.5 | 13.3 | 13.9 | 13.4 | 6.0                   |

## 6. Sensitivity tests and policy simulations

### *High and low population scenario*

The results of the projections show that the ratios do not differ much during the whole forecasting period. The reason for this is that the differences in assumptions largely offset each other. The high population scenario combines a high longevity with a high fertility rate and the low population scenario combines the low assumptions for these two parameters. Therefore, the scenarios show small differences in the elderly

dependency ratio, which is the main determinant for the ratio of pensions to GDP. Somewhat surprisingly, the base case scenario shows the highest numbers throughout. The maximum difference over the period is only 0,3%-points and in 2050 it is 0,2%-points.

|                    | 2000 | 2005 | 2010 | 2020 | 2030 | 2040 | 2050 | Change 2000-peak year |
|--------------------|------|------|------|------|------|------|------|-----------------------|
| base case scenario | 7.9  | 8.3  | 9.1  | 11.1 | 13.1 | 14.1 | 13.6 | 6.2                   |
| high population    | 7.9  | 8.3  | 9.1  | 11.2 | 13.1 | 13.9 | 13.4 | 6.0                   |
| low population     | 7.9  | 8.2  | 9.0  | 10.9 | 12.8 | 13.8 | 13.4 | 5.9                   |

#### *High and low participation rates*

Participation rates as measured in persons have increased significantly over the past decades. This process is expected to continue. The base case scenario already includes a rise of the participation rate by 7%. In full time equivalents, participation rates can still be increased substantially. Besides, there is still a high rate of inactivity. The high participation rate scenario shows the outcome if a level of participation (in persons) can be achieved that is 5 percentage points higher than in the base case scenario. This means that it is even higher than in the Lisbon scenario (82% vs. 79% in 2050). As a consequence, the public pension ratio rises to only 13,0% , which is lower than in the Lisbon scenario. In the low participation scenario, the ratio rises to 14,3%.

|                         | 2000 | 2005 | 2010 | 2020 | 2030 | 2040 | 2050 | Change 2000-peak year |
|-------------------------|------|------|------|------|------|------|------|-----------------------|
| base case scenario      | 7.9  | 8.3  | 9.1  | 11.1 | 13.1 | 14.1 | 13.6 | 6.2                   |
| high participation rate | 7.9  | 8.2  | 9.0  | 11.0 | 12.7 | 13.4 | 13.0 | 5.5                   |
| low participation rate  | 7.9  | 8.3  | 9.1  | 11.3 | 13.5 | 14.7 | 14.3 | 6.8                   |

#### *High and low productivity scenario*

The public pensions are linked to wages (and GDP). A higher or lower rate of productivity growth thus also leads to a higher or lower level of pension benefits. Therefore, the pension expenditure projection as a percentage of GDP hardly changes.

|                   | 2000 | 2005 | 2010 | 2020 | 2030 | 2040 | 2050 | Change 2000-peak year |
|-------------------|------|------|------|------|------|------|------|-----------------------|
| base scenario     | 7.9  | 8.3  | 9.1  | 11.1 | 13.1 | 14.1 | 13.6 | 6.2                   |
| high productivity | 7.9  | 8.3  | 9.1  | 11.1 | 13.1 | 14.1 | 13.7 | 6.2                   |
| low productivity  | 7.9  | 8.3  | 9.1  | 11   | 13.1 | 14.0 | 13.6 | 6.1                   |

### *High and low interest rate*

There are no differences between the base scenario and the high or low interest rate scenario's. Public pensions are financed with a pay-as-you-go system and are not affected by a change in interest rate. Of course public finance is affected via the interest payments on public debt. However, there could be an effect on private supplementary schemes, since these are funded.

We did not perform a low unemployment analysis. The reason for this is that the Dutch unemployment rate is presently already within the 3 to 5% margin.

## **7. A comprehensive view on future budgets**

The extrapolations in the previous sections provide only a partial view on the impact of ageing on the public budget. As was referred to in section 3, CPB Netherlands Bureau for Economic Policy Analysis developed an instrument that constructs a comprehensive view of future budgets. This allows us to incorporate additional factors that will affect future budgets. One of these is the rise of the costs of health care, which is expected to form an additional burdening factor on public finances. This expenditure item is extrapolated in the same way as the old-age benefits and survivor benefits, *i.e.* by assuming that the present age-specific outlays per person are indexed to wages<sup>7</sup>

<sup>7</sup> The forecast of expenditure on health care incorporates some refinements to this method. These are explained in CPB (2000).

and therefore to productivity. A second burdening factor is the dwindling of revenues from natural resources (gas). The third, and alleviating, factor is that the ageing population will also bring about an increase of pension incomes relative to GDP. As the Netherlands has an EET-system of pension taxation (see section 2), this increase will generate a rise of direct taxes as well as of indirect taxes. A fourth factor that can be incorporated by a comprehensive analysis is the favourable starting position formed by the present fiscal surpluses. These generate a substantial reduction of debt and future interest payments and is thus also an alleviating factor.

Table 7.1 reveals a condensed view of a comprehensive future budget when we use the demographic forecasts of EUROSTAT. It shows that health care forms an additional burden that amounts to 4,8% of GDP between 2000 and 2050. The increase of revenues, which stems primarily from rising tax revenues from pension incomes, forms an important alleviating factor. On balance however, the burdening factors outweigh this alleviating factor, which results in a deterioration of the primary balance from 5,0% of GDP in 2000 to -1,9% in 2050. This deterioration of 6,9%-points is larger than the deterioration of 5,7%-points that results from public pensions alone. The present positive fiscal balance turns out to lead to a reduction of debt and interest payments in the first 20 years, and thereby forms a second alleviating factor. It will eventually turn out not to have enough effect to prevent an increase of the fiscal balance and of public debt in the period after 2020.

Table 7.1 *Future public budgets with EUROSTAT-demography*

|                           | 2000 | 2020 | 2040 | 2050 |
|---------------------------|------|------|------|------|
|                           | %GDP |      |      |      |
| Public pensions           | 7,9  | 11,1 | 14,1 | 13,6 |
| Health care               | 7,2  | 8,8  | 11,6 | 12   |
| Other primary expenditure | 27,6 | 27,0 | 27,0 | 27,1 |
| Interest payments         | 3,9  | 1,9  | 4,3  | 6,7  |
| Total expenditure         | 46,6 | 48,8 | 57,2 | 59,4 |
| Total revenues            | 47,7 | 47,8 | 51,3 | 50,9 |
| of which:                 |      |      |      |      |
| - from pension incomes    | 3,3  | 5,4  | 9,4  | 9,2  |
| - from national resources | 1,0  | 0,6  | 0,2  | 0,1  |
| Fiscal balance            | 1,1  | -1,0 | -5,9 | -8,6 |
| Primary balance           | 5,0  | 0,9  | -1,6 | -1,9 |
| Public debt               | 59   | 34   | 78   | 120  |

Table 7.2 provides a condensed view of future budgets if we use the national forecasts for the demographic development. As explained in section 4.2, this is the forecast we used in 'Ageing in the Netherlands'.

Table 7.2 *Future public budgets with national demography*

|                           | 2000 | 2020 | 2040 | 2050 |
|---------------------------|------|------|------|------|
|                           | %GDP |      |      |      |
| Public pensions           | 7,9  | 10,8 | 12,8 | 12,2 |
| Health care               | 7,2  | 8,6  | 10,6 | 10,7 |
| Other primary expenditure | 27,6 | 26,9 | 27,2 | 27,3 |
| Interest payments         | 3,9  | 1,7  | 2,9  | 4,1  |
| Total expenditure         | 46,6 | 48,0 | 53,5 | 54,3 |
| Total revenues            | 47,7 | 47,7 | 50,2 | 49,8 |
| of which:                 |      |      |      |      |
| - from pension incomes    | 3,3  | 5,2  | 8,4  | 8,4  |
| - from national resources | 1,0  | 0,6  | 0,2  | 0,1  |
| Total revenues            | 47,7 | 47,7 | 50,2 | 49,8 |
| Fiscal balance            | 1,1  | -0,4 | -3,4 | -4,5 |
| Primary balance           | 5,0  | 1,3  | -0,5 | -0,4 |
| Public debt               | 59   | 28   | 51   | 74   |

The table shows that the lower increase of the elderly dependency ratio has the corresponding effect on the public budget by leading to a less pronounced rise of expenditure on public pensions and health care. In this scenario the primary balance

decreases to -0,4% of GDP, or by 1,5% less than in the EUROSTAT-scenario.

Consequently, the effects on the fiscal balance and on government debt are less severe. Calculations that were performed in 'Ageing in the Netherlands' point out that sustainability can be arrived at with a relatively small policy adjustment.

Table 7.3 shows the expected development of expenditure and revenues and the remaining financing gap. The necessary adjustment turns out to be 4½% of GDP. This can be achieved by the total reduction of public debt: the windfalls in interest expenditures can largely offset the increasing expenditures related to the ageing of the population. Extrapolation of the present revenues and expenditures shows that a large part of this total reduction of public debt will already be achieved. This means that sustainability of the budget can be achieved by a relatively small policy adjustment.

*Table 7.3 Development expenditures and revenues 2000-2040 (in % GDP)<sup>a</sup>*

|                                     |      |
|-------------------------------------|------|
| Expenditures                        |      |
| AOW                                 | +4¼% |
| Health                              | +3¾% |
| Disability                          | +¾%  |
| Total expenditures                  | +8¾% |
| Revenues                            |      |
| Direct taxes from higher pensions   | +3%  |
| Indirect taxes from higher pensions | +2%  |
| Natural Gas revenues                | -¾%  |
| Total revenues                      | 4¼%  |
| Balance (financing gap)             | 4½%  |

<sup>a</sup> Unchanged policy scenario: wealth indexed public arrangements and constant tax- and premium structure.

Source: CPB, Ageing in the Netherlands.

## 8. Conclusions

The ageing of the population turns out to lead to a substantial increase of expenditure on public pensions as a share of GDP. Using the EUROSTAT demographic forecast, this increase amounts to 6,2% of GDP between 2000 and the peak year 2040 and 5,7% between 2000 and 2050 in the base case scenario. The sensitivity analysis points out that other assumptions on productivity, participation etc. do not lead to

substantially different outcomes. When the national demographic forecasts are used, these numbers are somewhat lower, namely respectively 5,1% and 4,5%.

This paper also set out to construct a comprehensive view on future budgets. This allows for the incorporation of several other age-related trends on the expenditure and revenue side of the government budget. It also allows us to take account of the present fiscal surplus that forms a favourable starting position. On balance, however, the calculations point out that, given the present system of public arrangements, ageing will cause a major budgetary challenge. Therefore it will be necessary to take steps to create the necessary budgetary room. If measures are taken in time, the necessary adjustments are smaller.

## **References**

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## **Annex: the Dutch pension system in detail**

The Dutch pension system consists of three pillars. The first comprises the basic state-guaranteed retirement pension plan for everyone in the Netherlands. The second comprises work-related supplementary pension plans arranged between employers and employees. And the third pillar comprises pension plans arranged by individuals.

The first pillar is paid for by the pay-as-you-go method, and the second and third pillars by the capital funding method. This combination of funding methods has a hedging effect: the first pillar's pay-as-you-go method hedges against inflation, and the second and third pillars' capital funding method hedges against the rising cost of demographic ageing.

### **The first pillar (the statutory basic retirement pension plan)**

#### *System*

The first pillar in the Netherlands is enshrined in the General Old Age Pensions Act (AOW), which provides for a compulsory insurance plan yielding a retirement pension for everyone living in the Netherlands aged 65 and over. Up to retirement age, everyone with a taxable income has to pay AOW contributions. Everyone aged 15–65 is insured, regardless of nationality. In addition to people living in the Netherlands, non-residents who pay wages and salaries tax in the Netherlands are also insured.

The AOW pension is paid to individuals. All men and women aged 65 and over are entitled to a pension in their own right. A person aged over 65 with a partner aged

under 65 can also claim a supplement if the partner's earned income is insufficient or non-existent. The AOW pension is paid as a fixed amount per month. The amount is linked to the statutory net minimum wage, which is determined by law and applies to everyone working in the Netherlands. In 2001, the statutory minimum wage is EUR 14,961 gross per year. A married or cohabiting retired person who has built up a full AOW entitlement receives an AOW pension worth 50% of the net minimum wage. A single pensioner receives 70% of the net minimum wage, and a single pensioner with a child or children aged under 18 receives 90% of the net minimum wage. From 1 January 2001, married couples each of whom has an AOW pension worth 50% of the net minimum wage and no supplementary pension will together receive EUR 1,144.50 net per month in AOW pension payments.

A full AOW entitlement accrues from the Dutch resident's 15th to 65th birthday at the rate of 2% per year. When the AOW was introduced on 1 January 1957, everyone aged 65 and over could claim a full AOW pension. A transitional arrangement was established to ensure that all persons aged 15 and over on that date would receive a full AOW pension even though they had not built up a full AOW entitlement. The arrangement will remain in force until 1 January 2007, so that everyone who reaches the age of 65 before that date will be legally guaranteed a pension at the social minimum level. In 2007, the transitional arrangement will cease to apply, since all new retired persons will have had 50 years in which to build up a full AOW entitlement. The pensions of those who have not built up a full entitlement will, under the Social Assistance Act (ABW), be brought up to the social minimum level.

### *Demographic ageing*

The AOW is paid for by the pay-as-you-go funding method. Contributions now being paid in cover pensions now being paid out. On 1 January 1998, the government put a ceiling on AOW contributions to prevent them from soaring as a result of demographic ageing. They may not exceed 18.25% of taxable income (the current rate is 17.9%) and are paid only by those aged under 65. If the income from contributions is not enough to cover AOW spending, the shortfall will be paid from general tax revenue. This will widen the base for covering AOW spending, since retired persons too will be contributing indirectly to it. Although retired persons do not pay AOW contributions, they do pay tax.

At the same time as putting a ceiling on AOW contributions, the government introduced another instrument to cover the expected rise in AOW spending: the AOW Savings Fund. By law, the Fund receives annual deposits from general tax revenue. Thanks to these, and the interest earned, its capital is expected to reach about EUR 135 billion in 2020<sup>1</sup>. From that year, it will be possible to use the capital to help cover AOW spending. Given a cautious prognosis of economic growth, when demographic ageing reaches its peak around 2030, the AOW Savings Fund will be covering about 12% of AOW spending. The ceiling on AOW contributions and the money from the AOW Savings Fund should provide a solid guarantee against the forecast rise in AOW spending.

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<sup>1</sup> When using an average interest rate of 6%.

## **The second pillar (work-related supplementary pensions)**

### *Introduction*

The second pillar comprises work-related supplementary pensions, which are the primary responsibility of the social partners (representatives of employers' and employees' organisations). Supplementary pension plans are part of the terms of employment agreed in negotiations between the social partners. Employers are not legally obliged to provide supplementary pension plans for their employees, but if they do so, the pension plans have to meet certain statutory requirements, which are described below.

### *Pension and Savings Funds Act*

The Pension and Savings Funds Act (PSW) lays down statutory requirements to protect employee pension entitlements. The main ones are that the money in the pension fund may not be invested in any risk undertaken by the employer and that the pension plan has to be paid for by the capital funding method. The investment of pension fund money in risks undertaken by the employer can be avoided by creating an industry-wide pension fund to provide an industry-wide pension plan, or by creating a company pension fund to provide a pension plan for the company or a group of companies linked to it, or by making an arrangement with a private insurer. The PSW also allows employees to transfer pension entitlements if they change employer, it obliges providers to index early leavers' entitlements in the case of indexed pension plans, and it obliges providers, including those of defined contribution plans, to pay

men and women equal pensions. In addition, the PSW regulates the composition of pension fund executive boards, pensioner participation in decision-making, information to be made available by pension funds and insurers, and the substantive supervision of pension funds by the Pensions and Insurance Board. To this end, it gives the Pensions and Insurance Board several statutory instruments of varying severity.

As well as substantive supervision, the PSW regulates the financial supervision of pension funds. Pension fund money has to be invested in safe undertakings. The "prudent person" principle applies. The PSW does not impose specific solvency requirements on pension funds. The Pensions and Insurance Board does impose requirements on the actuarial and operating structure of pension funds. In 1997, these requirements were laid down in the Actuarial Principles for Pension Funds. The Board examines how pension funds invest their money against the background of their financial, actuarial, and operating structure, the nature of the obligations they have undertaken, and their financial situation.

#### *Insurance Supervision Act*

The 1993 Insurance Supervision Act (WTV) regulates the financial supervision of insurance providers. It is largely based on EU insurance directives. The WTV's main thrust is that the technical provisions must be good enough to meet existing and future obligations to policy holders. It requires insurance providers to make available a summary of the actuarial principles applied in calculating technical provisions, which have to be covered by enough claims and investments. The WTV also sets out to guarantee safe and prudent investment. It has required a list to be drawn up of types of

investment that may be made to cover the technical provisions. It also regulates the solvency margins applied by insurers.

Although there are more regulations governing the financial supervision of insurance providers than that of pension funds, in practice there are many fewer differences than the regulations suggest. The freedom that the Pension and Insurance Board enjoys in supervising the finances of pension funds is governed in such a way by the Actuarial Principles for Pension Funds that the financial supervision of pension funds differs little from that of insurance providers.

#### *Tax legislation*

Tax legislation in the Netherlands makes contributions to supplementary pension plans tax-deductible, whereas pension payments are taxed. For this to apply, a pension plan must aim exclusively, or almost exclusively, to provide:

- \* a pension for the whole of a person's retirement
- \* a surviving dependant's pension (not life-long)
- \* an orphan's benefit (for children and foster children)
- \* a bridging pension (to bridge the lack of the AOW, in case of pensioning before the age of 65)
- \* a surviving dependant's bridging pension
- \* a reasonable invalidity benefit.

Supplementary pension plans also have to comply with the fiscal limitations imposed on them. Final pay plan entitlements may accrue by a maximum of 2% per year to

achieve a result of 70% over 35 years. The minimum age at which this percentage may be applied is 60; the maximum pensionable age is 70. In the case of early retirement, the pension has to be reduced on an actuarial basis. Career average plan entitlements may accrue by a maximum of 2.25% per year. When the retirement pension begins, at the age of 65 at the latest, the pension fund examines whether the pension is worth more than 100% of the final pay. If it is, the surplus is taxed at the progressive rate of income tax. Such pensions assume that holders receive an amount equal to a proportionate part of the AOW pension for the years in question. How exactly they are to allow for the AOW pension is not regulated by law. In practice, there are various options. The minimum amount to be allowed for if supplementary pension plans are to be eligible for tax relief is that of the full AOW pension for married persons, which is 50% of the minimum wage.

### *Pension systems*

Just as supplementary pension plans are not obligatory by law, nor is the form that they take. There are therefore various types of pension plans in the Netherlands. The two main types are on those based on salaries/years of employment and those based on defined contributions. A look at the total number of employees with supplementary pension plans shows that the role of defined contribution plans is very modest in the second pillar of the Dutch pension system. Among pension plans based on salaries/years of employment, those whereby the size of the pension is based on the income last earned (final pay plans) are the most common, serving more than 60% of all pension plan holders in the Netherlands.

**Table 1 Proportion of holders in each type of pension plan in 1999**

| Type of pension plan               | Active participants | percentage |
|------------------------------------|---------------------|------------|
| Salary / years of employment plans |                     |            |
| • final pay                        | 3,171,067           | 63         |
| • career average                   | 1,281,142           | 25         |
| Defined contribution plans         | 41,290              | 1          |
| Combination plans *                | 513,436             | 10         |
| Other                              | 49,438              | 1          |
| Total                              | 5.056,373           | 100        |

\*Pension plans combining two or more types of pension, such as final pay and career average or final pay and defined contribution

source: Socio-Economic Council, *Pension Map of the Netherlands*, Leiden 2000.

Most final pay plans aim to pay out 70% of final pay given a full number of accrual years (usually 40 years at an annual accrual rate of 1.75%), taking into account the AOW pension, which is a basic pension at the social minimum level. In practice, however, not everyone achieves the maximum number of accrual years, and the actual pension paid out is often lower.

#### *Participation level*

Presently, 91% of Dutch employees take part in the second pillar of the Dutch pension system. Several industries have compulsory supplementary pension funds. If a representative number of employers and employees in an industry demand it, the Minister of Social Affairs and Employment may make participation in an industry-wide pension fund compulsory. The employers in that industry then have to take part in the industry-wide pension fund. In addition, they all pay the same pension contribution for each employee, regardless of age. This creates industry-wide solidarity among all employers in the industry, ensuring that employers with a relatively old, hence expensive, workforce do not have to provide lower-quality supplementary pension plans than employers with lower pension costs in order to remain competitive.

### *Demographic ageing*

To protect entitlements, Dutch law makes capital funding compulsory in the second pillar. For every employee, there should be enough reserves (together with the cash value of the contributions and interest still expected) so that when the pension begins, the money needed will have been saved. The second pillar, which is an important part of the Dutch pension system, is therefore less susceptible to demographic developments than pay-as-you-go systems. Pension funds now often have buffers to cushion rises in contributions caused by demographic ageing.

In 1997, the Dutch government agreed with the social partners to further modernise supplementary pension plans and keep their costs under control. A number of indicators (contribution-free allowances, accrual percentages, types of plan, the existence or otherwise of collective surviving dependants' pensions, and the possibility of exchanging a surviving dependants' pension for a higher or earlier retirement pension) will be used to evaluate how far the objectives have been achieved. The evaluation will be complete in 2001. Lowering the AOW-franchise (the factor used in calculations in pension schemes to arrive at the aimed pension level, including the AOW benefits) in supplementary pension plans will play an important part in modernising supplementary pension plans.

## **The third pillar (individual retirement plans)**

### *System*

The third pillar of the Dutch pension system comprises individual pension plans. These are private and have nothing to do with the relationship between employees and employers. There are two main forms of insurance in the third pillar: the annuity policy, which entitles the holder to a fixed, uniform, and periodic benefit, a unit-linked product whereby the periodic benefit can fluctuate with the value of the underlying investments; and capital insurance policies, linked to the financing of a home, which pay out lump sums against the risks of death or long life. Pension plans in the third pillar can only be taken out with insurance providers. The capital funding system also applies to the third pillar.

### *Fiscal provisions*

Contributions to annuity policies are deductible from taxable income. There is a fixed basic allowance of EUR 1,036. Annuity contributions are also eligible for tax relief if they are intended to fill a gap in the accrual of second pillar entitlements that will not be filled by existing annuity policies.

## **Private voluntary early retirement plans**

In addition to arranging work-related retirement pension plans, most industries or individual businesses have reached agreements with employees on voluntary early retirement. Voluntary early retirement (VUT) plans came about as a temporary

measure in the 1980s. They were intended to allow older employees to retire early and make way for younger ones, among whom the unemployment rate was then high. But as time went by, these plans ceased to be regarded as temporary by employees and some employers. VUT plans were and sometimes still are regarded as an acquired right.

With the onset of demographic ageing, however, the Dutch government has ceased to regard pay-as-you-go-financed VUT plans as an option. The social partners agree: many VUT plans are now being converted into capital-funded pre-pension or flexible pension plans. But in the Dutch government's opinion, this is not happening not fast enough. The transition periods applied to conversion are often too long, often to around 2035 or 2040. Just when demographic ageing in the Netherlands starts to peak, around 2020, all VUT plans will have to be capital-funded. To achieve this, the Dutch government has adopted a policy of abolishing tax relief (the deductibility of contributions) on pay-as-you-go-financed VUT plans around that time.