Country fiche on pensions for the Netherlands-the 2014 round of projections for the Ageing Working Group

Contents

1   Structure of the Dutch pension system[1]

1.1   The composition of the pension system

The mandatory part of the Dutch pension system comprises the government provided basic old age pension scheme (first pillar), occupational pension schemes (second pillar), disability benefits and survivor benefits. The basic old age pension provides an equal income for all pensioners at a level related to the net minimum wage. The state pension in the Netherlands is only a part of the total old age pension system. The second pillar comprises the occupational pension schemes. It is funded, supplements the state pension and is related to past contributions and previously earned income. On average the two pensions are equal in size. Due to the dependency on past income however, these weights for individuals differ substantially. Figure 1 sketches how both pensions are related to past earnings. In 2013 the aggregates of paid out public and occupational pensions were roughly equal in size, both at around 5½% of GDP.

Disability benefits and survivor benefits currently make up 1,8% and 0.1% of GDP. The rest of this section describes these pensions separately.

Figure 1   Overall sketch of the 1st and 2nd pillar system
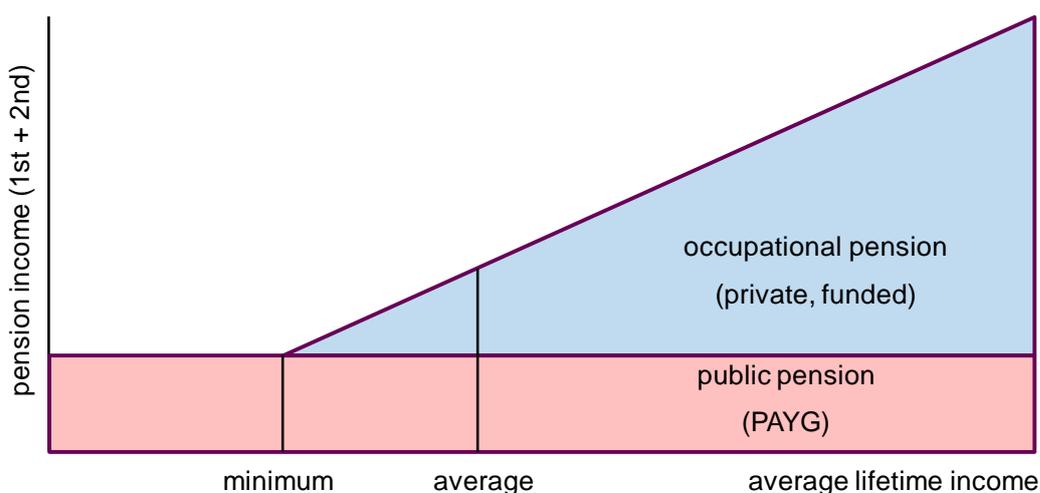
1.2   First pillar: the state old age pension (AOW)

1.2.1   The system before the 2012 reform

The AOW is the statutory old age pension scheme of the Netherlands. Before the 2012 reform, it provided all residents of the Netherlands as from the age of 65 a flat-rate pension

---

[1] This section and the next is partly based on "The old age pension system in the Netherlands; a brief outline" by the Ministry of Social Affairs and Employment.

benefit that, in net terms, equals 80% of the net minimum wage for singles. For a married couple this is 113%, each of the partners receiving half. In 2013 this amounts to 13,547 euros annually in gross terms and 12930 euros in net terms for a single. For a couple these figures are 18,566 euros and 18120 euros respectively. The pensions rise in line with minimum wages, which in turn are decided each year by the Minister of Social Affairs and Employment. There is no means-test for the eligibility of benefits; other forms of income have no effect on the AOW benefit. Until 2015, the 100% of net minimum wage benefit also applies to couples of which one of the partners has not yet reached the age of 65. As of that date however, this changes for new cases of which the younger partner has sufficient means of his or her own. This measure was legislated in 1996 and is expected to eventually curb the level of expenditure on this scheme by 3%. This effect is assumed to be reached in 2025.

All residents of the Netherlands between the ages of 15 and 65 are insured for the AOW. No distinction is made between men and women, between civil servants, employees, self-employed and housewives. During the period of insurance, entitlement is accrued in 2% steps for every insured year. This leads to a 100% entitlement to the relevant pension benefit on reaching the age of 65, provided there are no gaps in the period of insurance. A gap occurs when a person resides outside the Netherlands. People who are not entitled to the full AOW benefit and who have, together with other sources of income, a total income below the subsistence level (i.e. less than 70% of the legal minimum wage) are entitled to receive a supplementary social assistance benefit. In 2010, this supplement amounted to 203 mln euro's, or 0,7% of the aggregate AOW expenditure in that year, and it involved around 36 thousand beneficiaries. The pensions are exportable. The supplementary benefit however is not. Currently about 10% of pensions is paid to a person living outside the Netherlands. However, of those with a full pension this is only 0,6%.

State old age pensions are financed according to the pay-as-you-go system: today's contributors finance the pension payments made to the pensioners of today. The administrative body for the AOW is the Social Insurance Bank (SVB). The SVB is independent of the government in its day-to-day operations. The Board of Directors manages the Bank in consultation with the Board of Advisors. The Ministry of Social Affairs and Employment (SZW) appoints the members of both the Board of Directors and Board of Advisors and approves its annual plan and budget. The SVB is subject to inspection by the Work and Income Inspectorate (IWI), part of SZW. SZW is also responsible for the design of the pension system as well as changes therein such as the 2012 pension reform (see below).

1.2.2 The 2012 reform

The reform consists of a rise of the eligibility age for the public pension and an accompanying similar restriction in the room for saving for the 2nd and 3rd pillar pension in a standard tax favoured way.
The eligibility age for the public pension is raised by one month per year in the period 2013 till 2015, two months per year in 2016-2018 and three months per year in 2019-2023. In 2023 it will have reached the age of 67. After that year it will be linked to the remaining life expectancy for 65 year olds, as projected by Statistics Netherlands, in a way that is laid down in law by the formula:

V = (L - 18,26) - (P - 65)
in which:
V = the increase of the eligibility age (in years)
L = projected average remaining life expectancy at the age of 65 as projected by Statistics Netherlands (in years)
P = the eligibility age in the year preceding the year in which the rise is considered (in years)

The formula is applied to all future years. If V is negative or smaller than 0.25 the eligibility age remains unchanged. However, if V exceeds the value of 0.25, the eligibility age is raised by three months. The rise is announced five years before it is to become effective and is based on the latest projection of life expectancies at the time.
According to the latest Statistics Netherlands projections[2] this effectively leads to a further rise of the eligibility age to 71 years and 6 months in 2060, the last year of the projection. This will take place in 18 three month steps in 2024, 2025, 2027, 2030, 2032, 2034, 2036, 2038, 2040, 2042, 2044, 2046, 2048, 2050, 2053, 2055, 2058 and 2059. This time path is imputed in the calculations presented in section 3. Table 1 shows the accumulated effect for a selection of years. Changes in the projection of life expectancies will lead to corresponding adjustments of this time path, but not before five years after the change is made public by Statistics Netherlands. The level of the pension will remain unaffected. As the public pension remains to be a flat rate system the table features a uniform across the board rise in the eligibility age. There are currently no accompanying labour market reforms to the pension reform.

An additional effect of the rise of the eligibility age is that the duration of the social security arrangements for the under 65 year olds, i.e. the disability scheme, the survivor scheme, the unemployment scheme and social assistance, are prolonged accordingly. This entails a leakage in terms of cost savings for the government that amounts to around 25%.

Table 1   Statutory retirement age, earliest retirement age and penalties for early retirement

		2013	2020	2030	2040	2050	2060
Men - with 20 contribution years	statutory retirement age	65+1m	66+3m	68	69+3m	70+6m:	71+6m
	earliest retirement age	65+1m	66+3m	68	69+3m	70+6m:	71+6m
	penalty in case of earliest retirement age	na	na	na	na	na	na
Men - with 40 contribution years	statutory retirement age	65+1m	66+3m	68	69+3m	70+6m:	71+6m
	earliest retirement age	65+1m	66+3m	68	69+3m	70+6m:	71+6m
	penalty in case of earliest retirement age	na	na	na	na	na	na
Women - with 20 contribution years	statutory retirement age	65+1m	66+3m	68	69+3m	70+6m:	71+6m
	earliest retirement age	65+1m	66+3m	68	69+3m	70+6m:	71+6m
	penalty in case of earliest retirement age	na	na	na	na	na	na
Women - with 40 contribution years	statutory retirement age	65+1m	66+3m	68	69+3m	70+6m:	71+6m
	earliest retirement age	65+1m	66+3m	68	69+3m	70+6m:	71+6m
	penalty in case of earliest retirement age	na	na	na	na	na	na

The reform also induces behavioural responses. The most important one is that it is expected to raise the labour participation rates of the elderly workers, the affected age groups. The

---

[2] According to the current projection, average life expectancy(in years) as projected by Statistics Netherlands rises from its 2010 level of 19.34 to 20.29 in 2020, 22.53 in 2040, and eventually 24.90 in 2060.

changes are most marked in the 55-59 years age group, with an increase in 2060, when the eligibility age is increased by 6½ years, from 77,8% to 84,3%; the 60-64 year age group, with an increase from 46,7% to 70,8% and the 65-69 year group, where it rises from 18,2% to 33,0%. The overall participation rate, i.e. that of the 15 to 71year olds, which was projected to be 69,8% without the reform, is now projected to be 73,7%.

1.3   Second pillar: occupational pensions

1.3.1   The system before the reform

In the Netherlands there are four types of occupational pension providers:
1. company-specific pension fund providers that administer the pension scheme of a larger enterprise;
2. industry-wide pension fund providers that administer the pension scheme of a whole branch of industry;
3. insurance providers who have to deal with approximately 30,000 group life insurance contracts for separate enterprises;
4. pension funds for professional groups which have to do with self-employed professionals within a particular profession (there are only active members and pensioners and no employer).

The pension sector is also concentrated. The largest fund, with an invested capital of 325 billion euros at June 30 2014 (The Dutch Civil Servants' Pension Fund ABP), represents 25% of the total assets. The following largest five funds share about 50% of the total assets. At present, around 367 pension funds are in operation, of which about 284 are company-specific, around 70 are industry-wide and a few are pension funds for a particular profession. Other than these, 30,000 group pension agreements have been made with insurance providers by companies that do not have a pension fund. All these pension providers are being supervised by the Dutch Central Bank (DNB). Their joint capital is estimated at around 1325 billion euros.[3]

The vast majority of those employed in the Netherlands (over 90%) participate in an occupational pension scheme. Occupational pensions are subject to negotiation between the social partners at industry level and are legally binding for all firms in that industry. Individual firms can be exempt from these if they offer a company specific pension scheme of comparable or better quality. The pension funds have to be financed by capital funding. A pension scheme is part of the employment conditions laid down in an agreement (which may be a collective agreement). A vast majority of pension funds currently have an average pay scheme promising a yearly accrual rate of 2% of average career salary (including first pillar benefits). If the collective labour agreement lasts for 35 to 40 years, the total pension benefit (first plus second pillar) will be around 70% of the average salary. Indexation of pension rights of the working population on average equals 50% of the wage rise plus 50% of the price rise. For the retired these figures are respectively 35% and 65%. This form of saving is

---

[3] This figure includes the mandatory occupational pension savings that are not administered by pension funds but by life insurance companies. The capital of pension funds alone at June 30 amounted to 1137 billion euros.

attractive for most employees as it is tax favoured.[4] As of 2015 however it will be capped at a gross income of 100 thousand euros.

Occupational pension schemes are considered supplementary to the AOW state pension. The AOW benefit is therefore a factor included in most calculations of second pillar pension schemes in order to arrive at the 70% aim referred to above. This is known as the AOW *franchise*. Pension premiums are only paid over income above this franchise, and correspondingly only pension rights built up. On average, pension contribution rates amount to 24% of gross income above this franchise, of which roughly 70% is covered by the employers and 30% by the employees. Together these two parts of the contribution to pension funds currently amount to around 14% of aggregate gross labour income.

As of January 1st 2014, about 90% of all active members were participating in a average-wage scheme. Usually, the way contributions are divided among social partners varies from one pension scheme to another. According to statistical data of Statistics Netherlands (CBS), the average employer contribution amounts to approximately 70% of all contributions.

The third (non mandatory savings via life insurance companies) and fourth pillar (free savings) in the Netherlands are relatively small. Together, they provide around 10% of pension income.

1.3.2   The financial position of pension funds

The second pillar of the Dutch pension system is characterised by the legal obligation of full funding for the nominal, i.e. non-indexed, liabilities of pension funds. Many pension funds have invested in equity and real estate. In order to compensate the higher risks involved in these investments, the supervisor requires that a Dutch pension fund hold additional reserves (buffers).

Since the 1990's certain developments took place, including a systemic increase in pension obligations (and costs) due to a higher life expectancy, a reduction of contributions paid and a continuous drop of the capital market interest rate. These developments caused a reduction of reserves and the erosion of prudence from the pension system itself. The erosion was even deepened by the occurring shift towards high-risk investments and the recent turmoil on financial markets. Despite an increase in contributions paid during the first decade of the 21st century, these developments led to a sharp fall of the funding ratio. This ratio, which is defined as the ratio between assets and nominal, that is non indexed, liabilities fell from approximately 230% in 1990, to 115% in 2004 and to 110% in 2013. In terms of the real, indexed, liabilities the latter figure coincides with a ratio of around 80%. The supervisor subsequently tightened up the regulations for pension funds and intensified their supervision. Pension fund administrators then made arrangements in order to restore their financial positions. Most funds are currently on track to fulfill their *minimum* solvency requirement of 105%, but they still have not enough funding to fulfill the *required* solvency level of about 130%.

---

[4] Saving via the occupational pension system falls under an EET arrangement. This means that the contribution to the pension fund is tax exempt (the first E), that the accrual of revenues to the pension fund are tax exempt as well (the second E) and that the paid out pensions are taxed (the T). As for many employees the tax rate at which the contributions to the fund can be deducted is higher than the tax rate that is due on the paid out pensions this form of saving is considered to be subsidized.

From next year, the supervision structure, the financial assessment framework (FTK), is being revised, according to a cabinet proposal for new legislation. There is a consensus between the government, social partners, pension fund administrators and the supervising authority that stop-gap regulations aimed at short-term financial stability could be counterproductive to the long-term quality of the pension system. Achieving a balance between short-term exigent requirements and the long-term robustness of the pension system remains to be a challenging task for the regulator, the supervisor and pension fund administrators. From next year, pension funds are allowed to base their indexation policies on the year-averaged funding ratio instead of the funding ratio at the end of the year. Moreover, current rules already allow that the cost-effective contribution rate to be based on the ten-year-averaged interest term structure. These measures intend to make the participants in the pension system less vulnerable to short-term fluctuations in the capitilization rate of the funds.

It is legally required for pension funds to determine a cost-effective contribution rate and a minimum solvency rate in order to guarantee their members a pension benefit. If the amount is less than this basic limit, pension funds will be compelled to take measures to restore this level. According to the FTK, pension funds have to state in a clear way whether or not they will index the pension rights and under what conditions they intend to do so. The parameters used in FTK will be assessed every five years (such as the expected returns on assets and expected inflation)..

1.3.3   The 2012 reform

The reform also affects saving opportunities in the 2nd and 3rd pillar by raising the statutory retirement age to 67 in 2014. After 2014, it is linked it to life expectancy using the same formula as for the public pension but with the difference that its implementation is ten years earlier and with only one-year steps. The second adjustment here is that the maximum annual accrual rate is reduced from 2,25% to 2,15% in 2014 and from 2,15% to 1,875% in 2015. The possibilities for early or late retirement will remain to be actuarially neutral. It is important to note that built up pension rights in the past are respected and not affected by either measure.

1.4   Disability benefits

The system of disability pensions consists of three parts: the WAO, the WIA and the Wajong. Around 800 thousand people currently depend on one of these schemes, corresponding to 10% of the workforce. The WAO and WIA are financed by social security contributions paid by employers, the Wajong is financed by general taxation.

The WAO covers individuals who became disabled before 2004 and had past earnings. For these people the old benefit levels apply. It involves a benefit that depends on past earnings, age and degree of disability. It can amount to a maximum of 75% of past earnings and is capped at 36,500 euros (in 2010). Between 2002 and 2007 several reforms were implemented and the WAO was replaced by the WIA for new claimants. These reforms involved a number of measures that substantially affected the disability schemes. The

reforms intend to curb the inflow into these schemes. This inflow has always been very high in the Netherlands and has resulted in a stock of beneficiaries that amounted to almost one million.

The first round measures were threefold. First, it involved the extension from 1 to two years of the duration of the period in which employers have to continue to pay 70% of the wages of sick employees.[5] This measure has a direct limiting effect on eligibility which sharply reduced the inflow in 2005. Apart from this, it is also expected to curb the future inflow by raising the incentives for employers to enhance working conditions and to increase the effort to fit the involved employees into the workforce. A further improvement may come from recovery from sickness during the period of the extension and from the incentives of the reduced earnings (max. 170% over 2 years) on employees. The second 2004 measure involves a restriction of eligibility by raising the requirements to qualify for these schemes. Not only the new claimants are submitted to the new, sharpened, criteria, the measure also applies to the existing stock of beneficiaries which undergo a one-off screening on the basis of the revised criteria. The third measure taken in 2004 was the abolition of the, separate, public scheme for the self-employed. These people have to resort to private insurers.

The 2006 measures distinguish between degrees of disability. The effect on the inflow has proven to be substantial. This results from the combination of three effects. The first is a restriction in the eligibility of those who are partially disabled. Especially those with a low degree of disability (smaller than 35%) can in the future not apply at all. For fully and permanently disabled a new benefit scheme is introduces that provides a earnings related benefit till the pensionable age.T

Overall, the cost saving effect of the replacement of WAO by WIA results from the lower inflow. On average, benefit levels are only slightly affected. After the reforms the stock of persons that benefit from these schemes decreased substantially and between 2010 and 2040 it is expected to decline from around 600 thousand to 400 thousand, or by roughly one third. This corresponds to the reduction in the cost for government.

The third part of the system of disability benefits, the Wajong, covers young individuals. Its benefit levels are low and generally do not exceed those of social assistance. In the last decade or so this part of the system has developed unfavourably. It has shown a sharp rise in the number of claimants that partially counteracts the favourable effects of the replacement of the WAO by the WIA. In the last decade the number of claimants roughly doubled to around 200 thousand. Most claimants did not participate in the labour market at all, even though a substantial number was expected to be able to do so (at least partially). In 2010 several changes were introduced in the Wajong, aiming to stimulate labour force participation among claimants. But although these changes have reduced the inflow into the Wajong, the number of claimants in the next decades is projected to rise further to around 400 thousand if policies remain unchanged, thereby almost fully offsetting the decrease resulting from the replacement of the WAO by the WIA.

---

[5] The organizations of employees and employers can agree on a higher level in collective agreements. .

The 2012 pension reform affects the disability scheme by prolonging the ages at which one can be eligible for this benefit. This age rises in line with the old age public pension.

1.5   Survivors benefits

The scheme of survivors benefits covers widowers, widows and orphans. The benefit level has a maximum of 70% of minimum wage. This level applies only to individuals with no income from labour. In net terms it equals the social assistance level. In case the involved individual has income from labour the benefit is reduced by a level that equals 50% of minimum wage plus two thirds of the surplus of labour income. Possession of personal wealth or incomes from pensions do not lead to a reduction of the benefit. A reform that was implemented in 1996, that mainly affects individuals born as from 1950, has substantially restricted the eligibility to this scheme and consequently curbed the inflow of claimants. This development is projected to continue until 2015. For individuals born as from 1950 it was required to have a degree of disability to work of at least 45% or to be responsible for the care of a child below the age of 18.

As is case with the disability scheme, the pension reform only affects the survivor scheme by prolonging the ages at which one can be eligible for this benefit. This age rises in line with the old age public pension.

2 Demographic and labour force projections

2.1 Demographic development

Table 2 provides an overview of the demographic development until 2060. It shows that the total size of the population will remain roughly constant at around 17 million. However, the age composition shows significant changes. The old age dependency ratio roughly doubles from 25,9% in 2013 to 47,8% in 2060. This results from two factors: an increase in the size of the cohorts that reach the age of 65 and beyond (relative to the working age population) and the increase in life expectancy at 65. The latter of the two rises by 4.4 years (from 18,0 to 22,4 years) for men and by 4,6 years (from 20,9 to 25,5 years) for women.

Table 2   Main demographic variables evolution

	2013	2020	2030	2040	2050	2060	Peak year*
Population (thousand)	16804	17158	17571	17646	17381	17070	2037
Population growth rate	0,3	0,3	0,2	-0,1	-0,2	-0,2	2017
Old-age dependency ratio (pop65/pop15-64)	25,9	31,2	40,6	47,1	46,4	47,8	2060
Ageing of the aged (pop75+/pop65+)	24,7	24,3	29,3	33,8	42,0	40,5	2053
Men - Life expectancy at birth	79,3	80,3	81,6	82,9	84,1	85,2	2060
Men - Life expectancy at 65	18,0	18,7	19,6	20,6	21,5	22,4	2060
Women - Life expectancy at birth	82,9	83,9	85,3	86,6	87,8	88,9	2060
Women - Life expectancy at 65	20,9	21,7	22,7	23,7	24,6	25,5	2060
Men - Survivor rate at 65+	80,6	82,8	85,6	87,9	89,9	91,5	2060
Men - Survivor rate at 80+	44,1	49,0	55,5	61,5	66,9	71,7	2060
Women - Survivor rate at 65+	90,7	91,8	93,0	94,1	95,0	95,7	2060
Women - Survivor rate at 80+	65,7	69,3	74,0	78,0	81,5	84,5	2060
Net migration	22,1	24,2	23,5	13,0	8,9	9,3	2027
Net migration over population change	0,5	0,5	0,8	-1,0	-0,3	-0,3	2037

2.2 Labour force projections

Table 3 provides an overview of the main changes that will take place in the labour market among elderly workers in the period from 2013 and 2060. It shows that in this time period the labour force participation rates of the 55 to 64 year olds rise from 64,1% to 77,6% and those of the 65 to 74 year olds from 10,6% to 27,7%.

Table 3   **Participation rate, employment rate and share of workers for the age groups 55-64 and 65-74**

	2013	2020	2030	2040	2050	2060	Peak year*
Labour force participation rate 55-64	64,1	68,5	72,6	75,3	76,5	77,6	2060
Employment rate for workers aged 55-64	60,1	64,8	69,7	72,6	73,7	74,8	2060
Share of workers aged 55-64 on the total labour force	93,7	94,6	96,1	96,4	96,4	96,4	2055
Labour force participation rate 65-74	10,6	16,9	22,4	23,7	26,1	27,7	2060
Employment rate for workers aged 65-74	10,0	16,1	21,7	23,0	25,4	26,9	2060
Share of workers aged 65-74 on the total labour force	94,3	95,3	96,7	97,0	97,1	97,0	2044
Median age of the labour force	40,0	40,0	40,0	40,0	41,0	41,0	2044

Tables 4a and 4b focus on careers lengths and durations of retirement for respectively men and women. It shows that the average effective age of retirement rises by 1,2 years for men (from 66,9 to 68,1) and by 3,1 years for women (from 63,1 to 66,2). The increases in the average effective working careers are somewhat lower for men, 0,6 years, due to a partly offsetting rising entry age and slightly higher for women, 3,4 years, due the entry age becoming lower. In spite of the higher retirement ages the duration of retirement will rise by 3,4 years for men and 2,0 for women. For men, this is also the case for the ratio of the duration of retirement to the average working career. This statistic rises by around 19%, from 35,5% to 42,3%. In the case of women it only changes marginally.

Table 4a   **Labour market entry age, exit age and expected duration of life spent at retirement - MEN**

	2013	2020	2030	2040	2050	2060	Peak year*
Average effective entry age (CSM) (I)	20,7	21,3	21,3	21,3	21,3	21,3	2022
Average effective exit age (CSM) (II)	66,9	66,6	67,2	67,5	67,8	68,1	2060
Average effective working career (CSM) (II)- (I)	46,2	45,3	45,8	46,2	46,5	46,8	2060
Contributory period	48,0	48,0	48,0	48,0	48,0	48,0	2013
Contributory period/Average working career	104,0	106,0	104,8	104,0	103,3	102,6	2014
Duration of retirement **	16,4	17,1	18,0	18,1	18,9	19,8	2060
Duration of retirement/average working career	35,5	37,8	39,3	39,2	40,7	42,3	2060
Percentage of adult life spent at retirement***	25,1	26,0	26,8	26,8	27,5	28,3	2060
Early/late exit****	2,0	2,1	2,2	1,9	1,5	1,2	2034

Table 4b   **Labour market entry age, exit age and expected duration of life spent at retirement - WOMEN**

	2013	2020	2030	2040	2050	2060	Peak year*
Average effective entry age (CSM) (I)	22,7	22,4	22,4	22,4	22,4	22,4	2013
Average effective exit age (CSM) (II)	63,1	64,6	65,2	65,5	65,9	66,2	2060
Average effective working career (CSM) (II)- (I)	40,4	42,2	42,8	43,1	43,5	43,8	2060
Contributory period	48,0	48,0	48,0	48,0	48,0	48,0	2013
Contributory period/Average working career	118,8	113,8	112,1	111,3	110,4	109,5	2013
Duration of retirement **	22,6	21,7	22,7	22,8	23,7	24,6	2060
Duration of retirement/average working career	56,0	51,5	53,0	52,8	54,5	56,1	2060
Percentage of adult life spent at retirement***	33,4	31,8	32,5	32,4	33,1	33,8	2060
Early/late exit****	1,5	1,9	2,7	2,0	1,5	1,1	2036

3 Pension projection results

3.1 Coverage

The coverage analysis is carried out for 2010 till 2012. As the three years show similar figures we will focus on 2012. Table 5 shows that the Esspros definition of pensions for this year amounts to 13,4% of GDP, of which 7,3%-point is classified as public pension expenditure. In the AWG definition, the latter figure equals 7,2% of GDP. The difference of 0,1%-point for public pensions lies in two small items that relate to supplementary public disability benefits (in Dutch: 'toeslagenwet', being 0,13% of GDP in size) and to a government early retirement scheme ('Remkes-regeling', 0,02% of GDP). In 2012, the size of total pensions not captured by the AWG is 0,6% of GDP in size. Apart from the 0,1%-point difference in public pensions it mainly consists of a private early retirement scheme ('VUT', 0, 4%-point) and private supplementary disability benefits (0,1%-point).

Table 5 **Eurostat (ESSPROS) vs. Ageing Working Group definition of pension expenditure (% GDP)**

	2005	2006	2007	2008	2009	2010	2011	2012
1 Eurostat total pension expenditure	12,5	12,3	12,1	12,0	12,8	12,9	13,0	13,4
2 Eurostat public pension expenditure	7,1	6.7	6,6	6,6	7,0	7,0	7,1	7,3
3 Public pension expenditure (AWG)	:	:	:	:	:	6,8	7,0	7,2
4 Difference (2) - (3)	:	:	:	:	:	0,2	0,1	0,1
5 Expenditure categories not considered in the AWG definition, please specify:	:	:	:	:	:	0,6	0,6	0,6
5.1 Two small components in public pensions (see text)	:	:	:	:	:	0,1	0,1	0,1
5.2 Private early retirement pension	:	:	:	:	:	0,4	0,4	0,4
5.3 Private supplementary disability pension	:	:	:	:	:	0,1	0,1	0,1

3.2 Overview of projection results

Table 6 presents the results of the projections for both public and occupational pensions. All variables are expressed as a percentage of GDP. It shows that the public pensions, comprising old age pensions, the disability benefits and survivors benefits, rises from 7,3% of GDP in 2013 to a level of 8,9% of GDP in 2040 and eventually 8,3% in 2060, when the effects of both the ageing population and the reforms have fully kicked in. The time path of expenditure on the separate schemes is discussed hereafter.

Public pension expenditure exceeds the direct designated contributions to these schemes as the Wajong part of the disability scheme is financed from general taxation and the

designated contribution to the old age pension is capped.[6] The remainder is supplemented by the government from other forms of taxation. This cap serves distributional purposes, both between income groups and generations. As the direct contribution weighs more heavily on lower incomes it prevents differences in net income to increase. And as individuals over 65 are exempt from paying this tax it also prevents an disproportional part of the increasing costs of old age pensions to be borne by the (younger) workers.

Occupational pensions will rise from its current level of 5,6% of GDP to 8,9% in 2040 and eventually 7,0% in 2060. This rise is larger than that of the public old age pensions, which is discussed below, because pension rights that are accumulated before the rise in the eligibility age (see section 1) are preserved. This means that the dampening effect of the higher eligibility age only affects full lifetime pension benefits as far as it involves the build up of rights after the increase of the eligibility age. Over a long period of their working lives their build up of pension rights are geared to a lower eligibility age than is eventually actually materialized. Pensions are thus paid out over a smaller number of years but with, partly offsetting, higher amounts per year and the higher eligibility age therefore has a smaller effect on aggregate pensions than in the case of public pensions

The reform also has a large effect on future pension contribution rates. They will decline from their current level of 14% of gross labour income (see above) to 11% in 2040 and eventually around 9% in 2060. This is the consequence of the reduced need to accumulate assets that results from the increase in the eligibility age.[7]

Table 6   **Projected gross and net pension spending and contributions (% of GDP)**

Expenditure	2013	2020	2030	2040	2050	2060	Peak year*
Gross public pension expenditure	7,3	7,6	8,2	8,9	8,6	8,3	2041
Private occupational pensions	5,6	5,9	7,9	8,9	7,8	7,0	2041
Private individual pensions	:	:	:	:	:	:	:
Mandatory private	:	:	:	:	:	:	:
Non-mandatory private	:	:	:	:	:	:	:
Gross total pension expenditure	12,9	13,5	16,2	17,8	16,4	15,3	2041
Net public pension expenditure	6,3	6,5	7,1	7,6	7,4	7,2	2041
Net total pension expenditure	9,9	10,3	12,2	13,4	12,4	11,7	2041
Contributions	2010	2020	2030	2040	2050	2060	Peak year*
Public pension contributions	7,0	7,4	8,2	8,8	8,4	8,0	2041
Total pension contributions	12,9	12,5	12,7	12,9	12,1	11,5	2014

Table 7 separately presents the projection of the three components of public pensions. It shows that the (state) first pillar old age pensions rise from 5,5% of GDP in 2013 to 6,6% in 2040 and 6,2% in 2060. Between 2013 and 2060 its percentage increase is 13%, which mainly results from two counterbalancing effects. The first is the almost doubling of the old

---

[6] These contributions are capped at 17,9% of taxable income in the first two tax brackets. Individuals over the age of 65 are exempt from paying this contribution.

[7] As pension contributions are tax deductible, the lower pension contribution rates will lead to higher tax revenues on labour income. Unfortunately, this mechanism is not included in the AWG methodology of projecting tax revenues.

age dependency ratio (see Table 2), which given the flat rate nature and linkage of benefit levels to wages, leads to an equal upward pressure on expenditure. The second is the effect of the sharp increase in the eligibility age by 6½ years. The fact that, in spite of the full linkage to life expectancy, expenditure still shows an increase is fully due to the fact that the future cohorts of pensioners will larger in size than the current ones. A minor cost saving change in the scheme (see section 1) and rising participation rates (see above) add to this downward effect .

Table 7 also shows that disability benefits are projected to show a slight increase from 1,8% of GDP in 2013 to eventually 1,9% in 2060. There are a number of counterbalancing effects at work here. First, there is a shift within the disability schemes which were discussed in section 1. The future stock of claimants will, on average, have lower benefit levels (relative to wages) due to a shift between the parts of the disability scheme. The offsetting effect is the prolongation of this scheme that is related to the sharp rise of the eligibility age for the old age pension and leads to an increase in the number of claimants. This prolongation effect is shaped in such a way that the number of claimants at the age of 64, and the government expenditure related to it, is extended up until the age of eligibility for the public old age pension. Table 7 also shows that expenditure on survivors benefits will remain at 0,1% of GDP throughout the period.

Table 7   **Projected gross public pension spending by scheme (% of GDP)**

Pension scheme	2013	2020	2030	2040	2050	2060	Peak year *
Total public pensions	7,3	7,6	8,2	8,9	8,6	8,3	2041
of which earnings related:							
Old age and early pensions	:	:	:	:	:	:	:
Disability pensions	1,8	2,0	1,8	1,9	1,9	1,9	2014
Survivors' pensions	0,1	0,1	0,1	0,1	0,1	0,1	2013
Other pensions	:	:	:	:	:	:	:
of which non-earnings related:							
Old age and early pensions	5,5	5,5	6,3	6,9	6,6	6,2	2041

3.3   Description of main driving forces and implications

Table 8a decomposes the increase in the ratio of pension expenditures to GDP into the effects of changes in the dependency, coverage, employment, and benefit ratio and in changes in labour intensity and a residual[8]. It shows that the driving force behind the now, after the 2012 reform, modest 1%-point rise in the ratio of public pension expenditure to GDP between 2013 and 2060 lies completely in the enormous increase in the dependency ratio which results from the ageing population.

The other factors exert mitigating effects. The coverage ratio mainly decreases due to the pension reform which substantially raises the eligibility age for public old age pensions. Over

---

[8] Table 8b is not discussed separately as it almost equals table 8a.

the full period this dampens the rise by 2,4%-points. The major part of this, 2,0%-point, is caused by the reduced claims of those over the age of 65 (due to the rise in the eligibility age). The effect of the age group under the age of 65 is 0,4%-points. This results from the its declining size relative to the 65-plus population.

The benefit ratio decreases and this curbs the rise in expenditure by 0,5%-points. This results from two factors. The first is that the share of disability pensions in total pensions falls. These pensions are generally higher than the old age pensions. It is thus a composition effect. The second lies in the abolishment, as of 2015, of the full married couple public pension for couples with a younger partner below 65 (see section 1).

The labour market developments also exert a downward effect on the ratio of pension expenditure to GDP. Its total effect in 2013-2060 is 0,9%-points. Both the increasing labour participation rates of women and elderly workers below the age of 65 (employment ratio effect) as the rise of participation levels over the age of 65 (career shift effect) contribute to this in roughly equal terms.

Table 8a   Factors behind the change in public pension expenditures between 2013 and 2060 using pension data (in percentage points of GDP) - pensions

	2013-20	2020-30	2030-40	2040-50	2050-60	2013-60	Average annual change
Public pensions to GDP	0,3	0,6	0,7	-0,3	-0,3	1,0	0,024
Dependency ratio effect	1,5	2,1	1,4	-0,1	0,2	5,1	0,108
Coverage ratio effect	-0,7	-0,8	-0,2	-0,2	-0,4	-2,4	-0,053
Coverage ratio old-age*	-0,5	-0,7	-0,1	-0,3	-0,5	-2,0	-0,043
Coverage ratio early-age*	-0,8	0,8	0,9	-0,5	0,1	0,6	0,009
Cohort effect*	-0,8	-2,3	-1,7	0,6	-0,2	-4,4	-0,102
Benefit ratio effect	-0,1	-0,2	-0,3	0,1	0,0	-0,5	-0,103
Labour Market/Labour intensity effect	-0,3	-0,4	-0,2	0,0	-0,1	-0,9	-0,016
Employment ratio effect	-0,2	-0,2	-0,1	0,0	0,0	-0,5	-0,010
Labour intensity effect	0,0	0,0	0,0	0,0	0,0	0,0	0,001
Career shift effect	-0,1	-0,1	0,0	0,0	-0,1	-0,4	-0,008
Residual	-0,1	-0,2	-0,1	0,0	0,0	-0,3	-0,001

Table 9 shows the development of the replace rate at retirement (RR) and the benefit ratio (BR). Over the full period the changes turn out to be small. The higher level for private occupational pensions in the intermediate period 2030 till 2040 is a result of the preserved rights effect, discussed before, which leads to higher occupational pensions per year of retirement. The RR's are lower than the BR's because the Netherlands features a strong rise of wages with age. Wages just before retirement are therefore relatively high, leading to a larger decline in income at retirement.[9]

---

[9] The decline in net terms however is far smaller because pensioners face lower tax rates. They are exempt from paying the social security premium that is designated for old age pensions.

Table 9   **Replacement rate at retirement (RR), benefit ratio (BR) and coverage by pension scheme (in %)**

	2013	2020	2030	2040	2050	2060
Public scheme (RR)	29,8	29,7	29,0	28,2	28,4	28,3
Public scheme (BR)	35,9	35,8	35,0	34,0	34,2	34,2
Coverage	100,0	100,0	100,0	100,0	100,0	100,0
Public scheme old-age earnings related (RR)	28,3	27,0	27,8	27,2	27,4	27,4
Public scheme old-age earnings related (BR)	34,2	32,6	33,5	32,8	33,0	33,1
Coverage	:	:	:	:	:	:
Private occupational scheme (RR)	41,1	39,7	46,4	46,6	42,9	41,0
Private occupational scheme (BR)	49,5	47,8	56,0	56,3	51,7	49,5
Coverage	55,1	58,1	60,1	60,6	59,5	57,8
Private individual scheme (RR)	:	:	:	:	:	:
Private individual scheme (BR)	:	:	:	:	:	:
Coverage	:	:	:	:	:	:
Total (RR)	52,4	52,8	56,9	56,5	53,9	52,0
Total (BR)	63,2	63,6	68,6	68,1	65,0	62,8

Table 10 provides an insight in the dependency ratios and the impact of demographic factors on the financial sustainability of public pension schemes. It shows that, over the full period, the number of pensioners will increase by 20% (from 3,869 million to 4,643 million) and that employment remains roughly constant. This leads to an increase in the Pension System Dependency Ratio (SDR, row 3) from 46,1% to eventually 55,8%, a rise of 21%.

Comparing this rise to the purely demographically determined rise in the old age dependency ratio (row 6) reveals how other factors than demographic ones affect the SDR. It turns out that these are highly beneficial by exerting a strong dampening effect on this rise. This effect is expressed in the System efficiency variable (last row) which shows an strong decrease by one third from 1,8 to 1,2 over the full period, meaning that the rise in the SDR would be 50% larger without these factors. The effect follows from the increase of the eligibility age, which curbs the number of pensioners, and the rise of labour participation rates which almost undoes the detrimental effect of the declining number of people in their working ages (row 5) on employment.

Table 10   **System dependency ratio and old-age dependency ratio**

	2013	2020	2030	2040	2050	2060
I Number of pensioners (thousand)	3868,7	4203,4	4686,1	5089,9	4862,5	4643,1
II Employment (thousand)	8385,9	8653,2	8715,7	8522,1	8446,6	8319,8
III Pension System Dependency Ratio (SDR) (I)/(II)	46,1	48,6	53,8	59,7	57,6	55,8
IV Number of people aged 65+ (thousand)	2871,3	3429,9	4270,7	4769,7	4675,2	4678,0
V Working age population 15 - 64 (thousand)	11067,4	10985,5	10522,2	10119,5	10067,7	9787,7
VI Old-age Dependency Ratio (ODR) (IV)/V)	25,9	31,2	40,6	47,1	46,4	47,8
VII System efficiency (III/VI)	1,8	1,6	1,3	1,3	1,2	1,2

Tables 11a and 11b present the ratio of pensioners to respectively the inactive population and the total population by age group. Tables 12a and 12b do the same for the female population alone. The most important feature in these tables is that they all show a marked decline in these ratios among the 65-69 age group due to the rise in the eligibility age of the

old age pension that is only partially offset by an increase of people that draw from the disability and survivor schemes that are accordingly prolonged in their age coverage. To a far smaller extent this is also the case after 2040 in the 70-74 age group. This is because after 2048 the eligibility age rises above the age of 70, pushing down the number of pensioners by around 9% in 2050, when this age has become 70½ years, and 25% in 2060, when it has reached 71½ years (see tables 11b and 12b) The higher ratio of this age group relative to the 75+-group in table 11a up until 2050 results from the fact that a part of this age group still participates on the labour market and pushes down the denominator (the inactive population).

Pensioners in the age groups under 65 are in either the disability scheme or the survivor scheme. The future increases in the ratios for these groups in tables 11a and 12a mainly reflect the decrease in inactivity (the denominator) and are not the result of more people becoming dependent on these schemes (the numerator). Tables 11b and 12b, where these pensioners are expressed as a share of the total population in these age groups, makes this clear. Slightly counterintuïtively, it turns out that the 55-59 age group in tables 11a and 12a features higher percentages than the 60-64 age group. Here too, it is the result of the denominator. It is caused by the fact that participation rates of the 60-64 group are lower than those of the 55-59 group and this outflow is only partially absorbed by the public pension schemes. The remaining part covers the period up to 65 by living from privately accumulated saving or a private early retirement pension.

Table 11a   Pensioners (public schemes) to inactive population ratio by age group (%)

	2013	2020	2030	2040	2050	2060
Age group -54	8,8	9,6	11,4	11,4	11,4	11,5
Age group 55-59	75,2	72,1	81,2	101,0	101,3	106,5
Age group 60-64	49,0	46,2	47,6	59,8	63,0	68,7
Age group 65-69	118,7	107,5	72,4	49,1	31,9	33,4
Age group 70-74	110,1	113,3	118,1	119,9	111,3	92,9
Age group 75+	109,0	108,5	107,6	107,4	106,3	106,8

Table 11b   Pensioners (public schemes) to total population ratio by age group (%)

	2013	2020	2030	2040	2050	2060
Age group -54	3,3	3,5	4,0	4,2	4,1	4,1
Age group 55-59	17,5	15,0	14,6	16,8	16,4	16,7
Age group 60-64	24,2	20,1	17,1	19,8	19,7	20,0
Age group 65-69	102,3	80,9	50,5	33,2	20,7	21,0
Age group 70-74	103,6	103,4	102,4	101,3	92,8	76,5
Age group 75+	109,0	108,5	107,6	107,4	106,3	106,8

Table 12a   Female pensioners (public schemes) to inactive population ratio by age group (%)

	2013	2020	2030	2040	2050	2060
Age group -54	7,1	7,6	9,2	9,3	9,3	9,5
Age group 55-59	44,7	43,1	52,1	71,1	73,4	78,4
Age group 60-64	32,5	30,8	31,4	40,7	43,5	47,5
Age group 65-69	110,1	95,9	62,5	40,2	23,6	25,1

Age group 70-74	105,5	107,8	111,3	112,9	104,4	85,9
Age group 75+	108,3	107,8	107,0	106,9	105,9	106,4

Table 12b   Female pensioners (public schemes) to total population ratio by age group (%)

	2013	2020	2030	2040	2050	2060
Age group -54	2,9	3,0	3,4	3,5	3,5	3,5
Age group 55-59	14,8	12,4	12,0	13,8	13,7	14,0
Age group 60-64	20,2	16,4	14,0	16,1	16,1	16,7
Age group 65-69	101,9	79,8	48,3	29,9	16,7	17,2
Age group 70-74	102,9	102,9	102,0	101,1	92,1	74,9
Age group 75+	108,3	107,8	107,0	106,9	105,9	106,4

Table 13 focuses on new old age public pensions. The first two rows respectively show the development of expenditure on this item and the number new pensions. Note that both these variables are highly affected in years in which there is a rise in the eligibility age. Within this selection of years this applies to all years with the exception of 2060 (see section 1.2). The downward effects of these rises for the first five years of the selection are 8% in 2013 (the effect of the one month rise in that year) and 25% in 2020, 2030, 2040 and 2040 (years with 3 month rises in the eligibility age). There is no rise in 2060 which explains the high number of new pensioners in that year.

Row 4 presents average pensions per new pensioner. Comparing this, in row 5, to the average gross minimum wage (row 3) shows that the ratio between average gross pension levels relative to gross minimum wage roughly remains unchanged and in the range of 0,55 to 0,57. Note that the ratio in net terms is far higher as pensioners are exempt from paying the social security contribution that is designated to the public pension and thus face a lower tax rate.

Table 13   New public old age pension expenditure (non earnings-related)

New pension	2013	2020	2030	2040	2050	2060
I Projected new pension expenditure (millions EUR)	2135	1904	2933	4055	4434	9037
II. Number of new pensioners	197	155	174	168	137	192
III. Minimum wage	19,1	22,1	29,6	41,8	59,4	84,5
IV. Average flat rate public pension (I/II)	10,8	12,2	16,9	24,1	32,4	47,0
V. Pension relative to minimum wage (IV/III)	0,56	0,55	0,57	0,57	0,55	0,56

3.4   Financing of the pension system

Table 14 shows the contributions to the schemes. The employer and employee contributions grow more or less in line with the growth rate of the economy. The state contribution however grows at a far higher pace. The reason for this is that the state picks up the shortfall in the revenues that is caused by the combined facts that the social security premium is capped at 17,9% of wages in the first two tax brackets (see above) and expenditure on public old age pensions are still projected to grow faster than wages.

Table 14   Revenue from contribution (Millions), number of contributors in the public scheme (in 1000), total employment (in 1000) and related ratios (%)

	2013	2020	2030	2040	2050	2060
Public contribution	42092,6	54720,7	82458,2	121488,5	164161,8	219325,8
Employer contribution	8322,2	12649,6	17737,5	23671,1	33002,9	45802,4
Employee contribution	25045,6	26970,1	36282,5	48419,9	67508,3	93689,9
State contribution	8724,9	15101,0	28438,3	49397,5	63650,7	79833,5
Number of contributors (I)	8237,8	8549,4	8704,9	8450,1	8380,8	8253,1
Employment (II)	8385,9	8653,2	8715,7	8522,1	8446,6	8319,8
Ratio of (I)/(II)	1,0	1,0	1,0	1,0	1,0	1,0

3.5   Sensitivity analysis

Table 15 presents the effects on public (upper part) and total pensions (lower part) under assumptions that deviate from the baseline assumptions. The higher life expectancy scenario basically shows small effects on public pensions. This simply reflects the fact that the eligibility age is linked to life expectancy. The small upward effect of 0,1% of GDP in 2060 is caused by the prolongation of the disability scheme in line with the rise in eligibility age of the old age pension. Total pensions do however increase substantially, by 0,9%-points, due to the preservation of built up rights mechanism discussed above.

In the higher and lower labour productivity scenarios the ratios of public pensions remain unchanged. This reflects the wage indexation rules of public schemes. The ratios of total pensions to GDP however decline somewhat in the high growth scenario and increase somewhat in the low growth scenario, due to a lagging increase of occupational pensions. The reason for this lies in the average pay schemes. In such schemes, higher growth rates lead to a lower accrual of pension entitlements relative to GDP. The risk scenario shows the same pattern as the lower productivity scenario, which follows from the fact that it effectively boils down to such a scenario.

Both higher employment scenarios lead to a small drop in public pensions relative to GDP. This is purely due to an increase in GDP (the denominator). Public pensions (the numerator) are not affected by an increase in employment. In contrast, occupational pensions do increase in line with employment, and GDP, as this scheme links pension entitlements to past (average) wages. The effect on total pensions therefore equals that on public pensions.

The lower migration scenario shows a small upward effect on the pension expenditure to GDP. This is almost entirely due to the decrease in the denominator (GDP). The change in the numerator (pension expenditure) is extremely small.

The Policy scenario is not carried out as the eligibility age for public old age pensions are already linked to the age expectancy at 65. It would be equal to the baseline.

Table 15 **Public and total pension expenditure under different scenarios (p.p. deviation from the baseline)**

	2010	2020	2030	2040	2050	2060
Public Pension Expenditure						
Baseline	7,3	7,6	8,2	8,9	8,6	8,3
Higher life expectancy (2 extra years)	0,4	0,0	0,1	0,1	0,2	0,1
Higher lab. productivity (+0.25 pp.)	0,4	0,0	0,1	0,0	0,0	0,0
Lower lab. productivity (-0.25 pp.)	0,4	0,0	0,1	0,0	0,0	0,0
Higher emp. rate (+2 pp.)	0,4	-0,1	-0,1	-0,1	-0,2	-0,2
Higher emp. of older workers (+10 pp.)	0,4	-0,2	-0,3	-0,3	-0,3	-0,4
Lower migration (-20%)	0,4	0,0	0,2	0,1	0,1	0,2
Risk scenario	0,4	0,0	0,1	0,0	0,0	0,0
Policy scenario: linking retirement age to increases in life expectancy	:	:	:	:	:	:
Total Pension Expenditure						
Baseline	12,9	13,5	16,2	17,8	16,4	15,3
Higher life expectancy	0,4	0,0	-0,2	0,0	0,5	0,9
Higher lab. productivity (+0.1pp.)	0,4	0,0	0,2	-0,3	-0,4	-0,3
Lower lab. productivity (-0.1pp.)	0,4	0,2	0,6	0,5	0,3	0,4
Higher emp. rate (+1 p.p.)	0,4	-0,1	0,1	-0,2	-0,3	-0,2
Higher emp. of older workers (+5 pp.)	0,4	-0,3	-0,2	-0,4	-0,4	-0,4
Lower migration (-10%)	0,4	0,2	0,5	0,3	0,2	0,3
Risk scenario	0,4	0,2	0,6	0,5	0,3	0,4
Policy scenario: linking retirement age to increases in life expectancy	:	:	:	:	:	:

Note also that the effects on government finances that the low migration scenario produces up until 2060 can not be used to derive the sustainability effects of migration from. This is for two reasons. The first is that this would require an analysis that covers the full life cycle of immigrants and thus also the years in which the pension entitlements that the immigrants build up are actually paid out and included in the calculations. In our analysis that only runs up to 2060 this is not fully the case. This is reflected in the extremely small changes in pension expenditure in this scenario. The second reason is that immigrants may have economic characteristics that differ from those of the native population which are not taken account of here.

3.6   Comparison with previous projections

Table 16 compares the rise in the public pension to GDP ratio in this round of projections to their equivalents in the previous three rounds. As the 2006 and 2009 projections are similar the difference between these will not be discussed and we will focus only on the differences between the later projections.
The table shows that the 2012 projection differs much from the previous one in 2009. The 2,2%-point lower overall increase in public pension expenditure of the 2012 projection, 1,7% of GDP versus the 3,9%, is mainly the result of the reform. This explains 1,8%-point of

it.[10] The remaining 0,4%-point stems mainly from the rising employment which increases GDP and in this way reduces the rise of the ratio of pensions to GDP.

In the current 2015 round the rise in pension expenditure drops by a further 0,7% of GDP, 1,0% now versus 1,7% in the 2012 round. This can mainly be attributed to the fact that the Statistics Netherlands projection of life expectancy at 65, on which the increase of the eligibility age is based, is now higher than in 2012 round. It results in a 6½ year increase in the eligibility age over the full time horizon compared to 4¾ in the 2012 round. As the Eurostat projection of life expectancy remained basically unchanged, this leads to a smaller number of benefit claimants.[11]

Table 16   Overall change in public pension expenditure to GDP under the2006, 2009, 2012 and 2015 projection exercises

	Public pensions to GDP	Dependency ratio	Coverage ratio	Employment effect	Benefit ratio	Labour intensity	Residual (incl. Interaction effect)
2006 *	3,81	6,28	-1,62	-0,22	-0,36	:	-0,26
2009 **	3,97	6,62	-1,51	-0,16	-0,57	:	-0,41
2012 ***	1,74	5,59	-2,02	-0,55	-0,58	0,03	-0,37
2015****	1,00	5,10	-2,38	-0,54	-0,52	0,02	-0,68

Table 17 attributes the difference between the current public projection and the previous (2012) one to its causes in terms of changes in modeling assumptions and policy. It does so for selected years in the projection period. In the intermediate period there were no changes in the coverage or modeling of the pension projection, nor was there a change in the interpretation of constant policy. The whole change can therefore be attributed to changes in assumptions and changes in policy. The table shows that the changes in policy (the higher eligibility age) have a negative effect that gradually rises up to 0,6% of GDP. The rest of the difference is a result of changes in assumptions of which the main one lies in the far higher GDP levels which were imputed in the previous round over the full period from 2013 till 2060.

Table 17   Decomposition of the difference between 2012 and the new public pension projection (% of GDP)

	2013	2020	2030	2040	2050	2060
Ageing report 2012	6,8	7,0	7,9	9,1	9,0	8,6
Change in assumptions	0,5	0,6	0,4	0,1	0,1	0,3
Improvement in the coverage or in the modeling	:	:	:	:	:	:
Change in the interpretation of constant policy	:	:	:	:	:	:
Policy related changes	0,0	0,0	-0,1	-0,3	-0,5	-0,6
New projection	7,3	7,6	8,2	8,9	8,6	8,3

---

[10] This is presented in table 13a of the country fiche for the Netherlands in the 2012 round, which dealt with the effects of the 2012 pension reform.

[11] In the 2012 round the Statistics Netherlands projection of life expectancy was about 1 year lower than that of Eurostat. In their latest update SN raised their projection by around 2 years thereby surpassing Eurostat that kept its projection of this variable roughly unchanged.

4 Description of the model

This section describes the methodology that is used to carry out the long term projections of pensions. The two pillars that form the pension system are treated separately. The projections are made by using the OLG-General Equilibrium model of the Netherlands, GAMMA, developed by the CPB Netherlands Bureau for Economic Policy Analysis. The model itself does not distinguish between males and females. It works with (weighted) averages. In the projections presented in this paper this distinction was made by supplementary calculations.

4.1 The first pillar

The flat rate nature of the Dutch system of public pensions entails that a relatively simple methodology suffices to carry out projections. GAMMA relates the development of public old age pension expenditure to only two factors: the productivity in the economy and the number of people over the age of 65. The dependency on productivity is linear and reflects the fact that the pensions are linked to the (minimum) wage level. In turn, wage levels are assumed to increase in line with productivity. The dependency on the number of over 65 year olds is slightly more complicated. Some age-specificity within this group is introduced to take account of the positive correlation between age and the share of singles. As described above, singles are more expensive than married couples on a per capita basis. It is clear that, in the absence of any policy change such as an increase in the eligibility age, this system leads to an increase of the ratio of public pensions to GDP that almost exactly coincides with the rise of the old age dependency ratio.

Technically, the starting point in the exercise is realized aggregate public pensions in the base year. From this we derive the average pension per person for each age, thereby taking account of the slightly rising pensions per person with age (due to the fact that a married couple gets less than twice of what single gets, and the share of singles rises with age). This age profile is subsequently extrapolated into the future by letting it rise with the growth rate of (minimum) wages. Aggregate expenditure in year t is then calculated by multiplying this resulting vector for year t with the vector of the numbers of people of each age of t.

The projections for the disability and survivor benefits are exogenously imputed by using projections made by specialists. In this way it is possible take account of the effects of the reforms of these schemes.

4.2 The second pillar

To project the development of contribution rates, pension payments, assets of pension funds etcetera, the pension funds in the Netherlands are assembled in a model of a single average pension fund. This average pension fund offers a pre-funded average pay scheme, aiming at a

replacement rate of 70% of average pay. Survivors pensions are not modelled explicitly but are taken into account through a surcharge on the old age pension. The existence of the flat rate public pension, the AOW, is taken into account by the pension fund through a franchise. Only workers with a wage above this franchise are building up an occupational pension. The accumulated assets are invested in a mixed portfolio of bonds and equity. For the baseline case the portfolio mix is 50-50. Furthermore, actuarial cost-effective contribution rates are charged. It should be noted that the contribution rate is cost effective on an aggregate level, i.e. for the whole pension fund. Because building up pension rights is usually linear, e.g. 1,825% of the pension wage per year worked, the contribution rate is not cost-effective on an individual level. Younger workers pay more than the actuarial value of the additional pension right they receive, older workers pay less. As a result, the occupational pension system gives a positive incentive to the labour force participation of older workers.

Most pension funds in the Netherlands aim at wage or price indexation. It is, however, not guaranteed but conditional on the financial position of the fund (coverage ratio). In recent years many pension funds have constructed more explicit indexation rules, providing no indexation at all if the funding ratio is below a certain lower bound, full indexation if the funding ratio is above an upper bound and a linear cut in indexation in between. Our average pension fund aims therefore at a mixture of wage and price indexation and gives full indexation at a funding ratio of 130% (of the nominal liabilities) or more. For workers, indexation of pension rights equals the average of the rise in wages and prices. For the retired, it is 35% of the wage rise and 65% of the price rise.

The pension fund has to follow the supervision rules of the FTK. These rules prescribe, among other things, the required levels of the funding ratio and which part of the liabilities has to be covered by the cost-effective contribution rate. For our average pension fund, the funding ratio required by the FTK is 130% of the nominal, i.e. non-indexed, liabilities. For a pension fund with a 50-50 portfolio mix, a buffer of 30% is sufficient to guarantee he nominal liabilities with 97,5% certainty. In the long term, the pension fund aims at full funding of the indexed liabilities. Given the indexation assumptions, the interest rate, inflation rate and real wage growth, a nominal funding ratio of 130% is more or less equivalent with a 100% funding of the indexed liabilities in the model.

The pension model, as well as the GAMMA model, contains 99 overlapping generations. For the first year of the projections, the total level of occupational pension liabilities is divided over the different generations. For every subsequent year the liabilities of each generation grow with the additional rights build up through an additional year of work. Of course, only workers build up occupational pension rights. The level of the pension benefit depends on the number of contributing years and the average wage. The assets grow with the contribution rates paid by the workers, the investment returns minus the pension benefits paid to the retirees.

In case shocks occur that affect the funding ratio (e.g. stock market crashes, changes in the interest rate, productivity shocks, etcetera) the pension fund restores the funding ratio by cutting indexation as well as raising contribution rates. Because of the ageing of the population, the wage sum will become much smaller relative to the size of the liabilities. As a result, cutting indexation will become a more important instrument to deal with shocks than increasing contribution rates.

Appendix

Table A1 performs an alternative decomposition of the development of public pensions to GDP than the one carried out in table 8a. It shows that the dependency ratio effect over the full period (2013-60) now becomes 6,2% of GDP which larger than the 5,1%-point effect in Table 8a where it was calculated with the moving public pension to GDP basis. For the same reason the coverage ratio effect becomes smaller in absolute terms. The combined effect of the two lead to a larger residual. It increases from -0,3 to -2,0% of GDP.

Table A1 **Factors behind the change in public pension expenditures between 2013 and 2060 using pension data (in percentage points of GDP) - pensions**

	2013-20	2020-30	2030-40	2040-50	2050-60	2013-60
Public pensions to GDP	0,3	0,6	0,7	-0,3	-0,3	1,0
Dependency ratio effect	1,5	2,6	1,9	-0,2	0,4	6,2
Coverage ratio effect	-0,7	-0,7	-0,2	-0,1	-0,3	-1,9
Coverage ratio old-age*	-0,4	-0,6	-0,1	-0,2	-0,3	-1,6
Coverage ratio early-age*	-0,7	0,7	0,9	-0,4	0,1	0,5
Cohort effect*	-0,8	-1,8	-0,9	0,3	-0,1	-3,3
Benefit ratio effect	-0,1	-0,2	-0,2	0,0	0,0	-0,5
Labour Market/Labour intensity effect	-0,3	-0,3	-0,1	0,0	-0,1	-0,8
Employment ratio effect	-0,1	-0,2	-0,1	0,0	0,0	-0,5
Labour intensity effect	0,0	0,0	0,0	0,0	0,0	0,0
Career shift effect	-0,1	-0,1	0,0	0,0	-0,1	-0,3
Residual	-0,2	-0,8	-0,8	0,0	-0,3	-2,0