Increasing the official retirement age to 67. An analysis for the Netherlands

ERASMUS UNIVERSITY ROTTERDAM

Erasmus School of Economics

Department of Economics

Supervisor: Yvonne Adema

Abstract:

This thesis, tries to explain the necessity of a higher official retirement age in the Netherlands. Demographic developments will have large affects on the sustainability of the Dutch governmental expenses in the future. Increasing the official retirement age is a widely discussed political issue in the Netherlands, which should cut governmental expenses and increase labour participation of the elderly. To see how effective this policy will be, I start explaining how the Dutch pension system works and analyzing the effects of the demographic developments. After this, a comparison between seven OECD countries will be made, which shows that the seriousness of the demographic developments differs per country and that the different pension systems affect workers retirement behaviour. In the last two sections, the effects of an increased official retirement and other possible policies to increase the sustainability of public expenditures will be analysed. An increased official retirement age on its own will not be enough to keep governmental expenses sustainable in the future, but it is a start. Additional policies to increase the sustainability in the future will be inevitable.

Name: Stefan Vink

Exam number: 322943sv

E-mail address: moi__14@hotmail.com

Table of contents:

1 Introduction

There has been and still is a lot of discussion about an increase in the official retirement age lately. In the beginning of 2011, a new policy around the Dutch pension system has been the center of a lot of discussion between the largest union in the Netherlands, the FNV and the Dutch cabinet. According to the spokesperson of the FNV, Agnes Jongerius, the risk of this new policy is completely carried by the employees and the retired. Whoever is right in this discussion, it does not change anything to the fact that changes need to be made to keep the Dutch pension system sustainable in the future. Lower fertility rates and increasing life-expectancy are expected to cause real problems in the near future in the Netherlands and other OECD countries. Lower fertility rates and increasing life-expectancy will result in an increase among elderly, with an age of 65 or above. This phenomenon will result in pressure on the Pay-As-You-Go system in the Netherlands because an increasing burden will be on the shoulders of a decreasing amount of workers. This burden will only increase in the future which can result in serious sustainability problems.

The big question is whether increasing the official retirement age from 65 to 67 will be the best solution to this problem, and if this policy implication is even necessary in the first place. Are there other possible, maybe better, solutions? And if this policy is implemented, will the results be enough to guarantee a sustainable pension system in the future? The main question of this thesis will be: *Does the Dutch government need to increase the official retirement age from 65 to 67?*

This question will be answered through a couple of subjects to clarify the problems and the effect of possible solutions. After this introduction, the second chapter will explain the current Dutch pension system and its realization. The third chapter will explain the effects of demographic developments on the sustainability of the Dutch pension system. The fourth chapter will compare the demographic developments, pension systems and retirement behaviour in the Netherlands to 6 other OECD countries. These countries are: Iceland, Japan, the United States, Germany, France and Austria. The fifth chapter will be dedicated to the effects of an increased official retirement age in the Netherlands. The sixth chapter will explain about other policy measures that can be taken to increase the sustainability of the Dutch pension system. The last chapter will be the conclusion of this thesis.

2 The Dutch pension system

The main goal of this chapter is to explain how the pension-system in the Netherlands works. First, the three pillar system will be explained. The three pillar system in the Netherlands consists of a PAYG system, a funded occupational system and a individual pension system. The next subject is about the early retirement schemes and their realization. The changes and problems of these early retirement schemes will be analysed as well as the alternative ways to retire early. The last subject of this chapter will consist of the literature about retirement behaviour in the Netherlands.

2.1 The three pillar system

The state pension system in the Netherlands was introduced in 1957 and had an official retirement age of 65. The pension system consists of three pillars (Figure 2.1). The first pillar is a Pay-As-You-Go (PAYG) system. In the Netherlands this is called the AOW and is paid out to retirees from the age of 65. The AOW consists of 70% of the minimum wage for singles and 50% of the minimum wage for married couples. If the retiree has a partner who is not 65 yet an additional fee is paid out. Everyone who lives in the Netherlands is automatically insured for AOW. Every year a person has lived in the Netherlands, and has not worked in a foreign country, 2% of the full AOW-pension is gained. A full AOW pension is gained when someone has been insured from the age of 15 to 65. The collection of the AOW premiums is done by the tax authorities. The premiums are a fixed percentage of income in the first and second tax bracket, and are paid by all working people younger than the age of 65. Pension schemes in the Netherlands are based on defined benefits which means that the relation between cash benefits and earned income are fixed. Pension schemes can also be based on defined contribution, which makes the participant bear the risk because only the inlay is fixed (v.d Grift, 2008). People that save according to a defined contribution scheme work longer then people that save according to a defined benefit scheme. With a defined contribution system, people only save for their own pension. A defined contribution system stimulates postponing retirement because the longer someone works the higher the pension benefits are going to be. Defined benefit systems do not support this because the pension benefits are fixed (Groot, Heyma, 2004).

The second pillar consists of occupational pensions which build up in ones working career. The premiums are paid by employees and employers. All premiums are managed by Dutch pension funds and insurers. The second pillar is based on a funded system, which means that pension funds invest these premiums. The amount of pension gained in the second pillar depends on work history, pension schemes in a sector and the amount of income gained in ones work career.

The third pillar consists of individual pension plans. Just like the second pillar, the third pillar is funded as well. The third pillar is most important for employers and the self-employed because they are not eligible for the second pillar. The income provisions in this pillar mainly consist of life annuity policies (v.d Grift, 2008).

Figure 2.1: Distribution of pension claims over the 3 pillars for the whole population, 2005
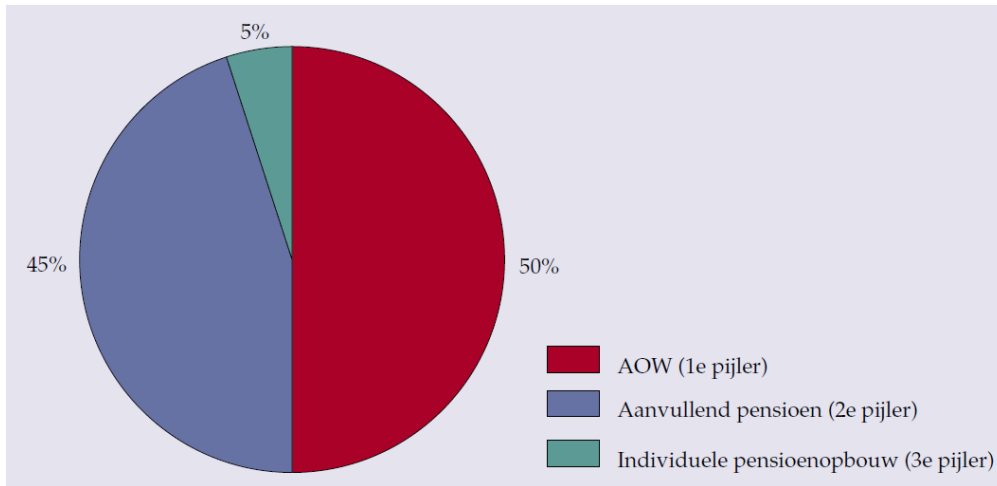
Source: v.d Grift, 2008

2.2 VUT and Pre-pensions

In the eighties and nineties the participation rate for people between 55 and 64 was very low. The government stimulated older people to quit working early, the idea was that in this way more new younger workers could join the labour force. This did not work out the way it was intended because the government assumed there was a fixed amount of work which needed to be divided. This phenomenon is also referred to as the lump of Labour fallacy. In fact, the labour supply decreased, which resulted in a decrease in labour demand because supply and demand tend to be in equilibrium. The lump of labour approximation does not take the recovery of equilibrium into account. In the long run, employment will be affected by the available labour supply (Ewijk, 2003). Early retirement through the VUT became a natural phenomenon. Who was not covered by the VUT could take an early exit through unemployment benefits and disability insurance. In the mid-nineties governments came to realise that the VUT was a very costly system and needed to be changed.

The VUT scheme was first introduced in the Netherlands in the 1970s and was financed as a PAYG system. The replacement rates were 80% of the last earned income and did not depend on the retirement age, which made it very attractive to retire at the eligible age. To qualify for early retirement, a worker was required to work in the same sector or firm for at least 10 years.

5

At the end of the 1980s the eligible age to retire was 60 or 61. Around 1980, 20.000 person were on a VUT-scheme and around 1990 this number had increased to 150.000 (OECD, 2005).

In the 1990s concerns arose about the financial sustainability of the VUT schemes. The participation of elderly men had been decreasing since the 1970 (Figure 2.2). Because the VUT was financed by a PAYG system the claimants did not bear any responsibility over the costs of their early retirement, which made it a very attractive possibility. Another reason for the decrease in participation was that there were no benefits to work longer than necessary. Pensions were not adapted if you worked longer, which made it very unattractive to work longer (Groot, Heyma, 2004).

In 1997 the government and its social partners agreed upon a reform to change early retirement behaviour. The PAYG VUT schemes were replaced by, so called, Pre-Pension schemes. The reason for this change was an ageing population which would result in an increased burden for future generations. These Pre-Pensions were capital funded instead of PAYG which means that individuals now save for their own early retirement. Another change was that actuarial adjustment schemes replaced the flat-rate VUT schemes, which reward workers that postpone retirement. The switch from VUT to Pre-Pensions made early retirement much less attractive because of lower replacement rates and the old-age retirement rights which do not increase during early retirement. Also, instead of the 10 years of required work to receive full benefits from VUT, 35 or 40 years of work are required, depending on the regulations of the early retirement scheme.

Figure 2.2: Employment rates among elderly men, Netherlands, 1971- 2003
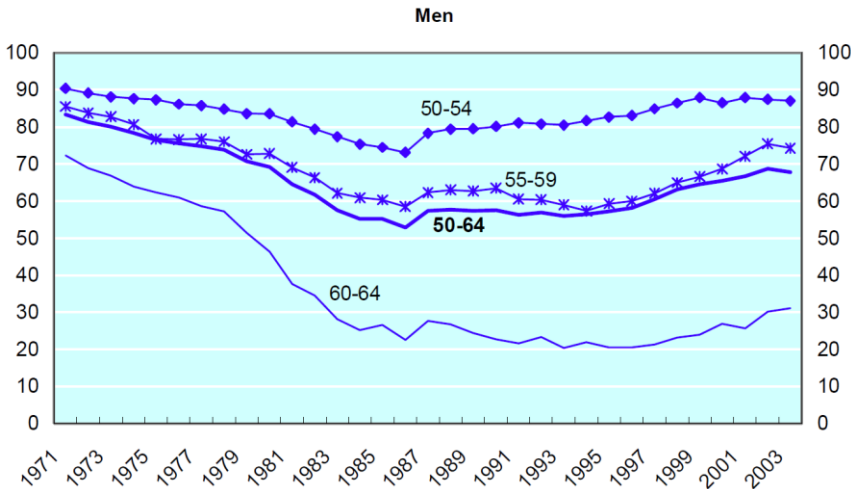
Source: Ageing and employment policies, OECD, 2005

2.3 Disability and unemployment benefits

Another way to retire early was through the disability insurance scheme (WAO) in the Netherlands. The duration of this scheme depended on a person's age. People with an age of 58 could receive 6 years of disability insurance which was an easy way into retirement. This made disability insurance especially popular among the elderly. During the period someone received these benefits, pension rights continued to increase. In 1995 reforms were made in the disability benefit schemes. The replacement ratio was reduced from 80 to 70% and the disability criteria were tightened. In 2006 the WAO was replace by the WIA, which makes a distinction between fully disabled, partially disabled and temporarily disabled (v. Oorschot, 2007). Despite the fact that unemployment benefits (WW) are a less preferable alternative then disability benefits, it still functioned as an early exit. Compared to disability benefits, pension rights where not accrued during unemployment which made unemployment benefits less attractive. Older workers were able to extend their 5 year unemployment benefits by another 3.5 because the period of benefits depended on ones work record (v. Oorschot, 2007).

2.4 Literature

The effect of the changes in the Dutch early retirement schemes on the effective pension age have been a subject of interest for the last decades. A lot of literature is written about this topic and probably will be written in the future.

The relation between the amount of social security that workers receive and the number of working elderly is a relation which affects everybody eventually. This relation was part of the research done by Jonathan Gruber and David Wise (1997). For their research they used 11 OECD countries, and concluded that a larger social security system results in lower participation of elderly on the labour market. They did this by looking at the 11 countries and order them by their unused productive capacity among men between 55 and 65. The top countries where Belgium, France, Italy and the Netherlands and had the highest unused productive labour capacity. The bottom countries where the US, Sweden and Japan and had the lowest unused productive labour capacity. The so called ''implicit tax on work'' which is the pre-pension income, non-working elderly miss if they kept working until they turn 65. This implicit tax-rate is extremely high in the top countries, and especially in the top 4 countries with the highest unused labour capacity. The replacement rates are the largest in countries with the greatest unused labour capacity as well. These 2 relations suggest there is a strong relationship between the unused labour capacity and the implicit tax rate on continued work (Gruber, Wise, 1997).

To investigate the effect of financial incentives on the retirement behaviour of the elderly, Inge Groot and Arjen Heyma (2004) use Gruber and Wise implicit tax on work to calculate the implicit tax rate of the VUT and pre-pensions. They use the implicit tax rate of pre-pension from Nelissen (2001). They use the implicit tax rate on the VUT and pre-pension scheme and look at the effect on the participation rate among elderly. The results show that the implicit tax rate under the pre-pension system is much lower than under the VUT system. The unused labour capacity decreased strongly as well (Figure 2.3). According to Gruber and Wise, lowering the implicit tax-rate would result in a reduction of unused labour capacity according to the solid line in Figure 2.3. The decrease in the Netherlands shown in Figure 2.3 is much greater than the average predicted by Gruber and Wise. Groot and Heyma (2004) conclude that this result cannot be explained by the implicit tax-rate on continued work alone. According to Groot and Heyma (2004) financial stimulations play a big role in decreasing unused labour capacity but other factors are responsible for this large decrease as well. A possible explanation for this phenomenon is that disability regulations are tightened in the period between VUT and pre-pensions. Another reason for this strong decrease in unused labour capacity could be the shortage on the labour market which resulted in increased demand for human capital. Important as well are the views on early retirement by employers and employees, which resulted in different early retirement behaviour. According to Groot and Heyma (2004) there are 4 important implications that will result in higher participation among the elderly. First, it is important to award people who retire later. The second important implication is to take substitutes into account. If one way of early retirement becomes less attractive, other possible ways to retire become more attractive. The policy needs to be interdependent. The third and fourth implications are to increase the retirement age and to stimulate the labour participation among women at younger ages.

Figure 2.3: Relation implicit tax-rate and non-working men: change for the Netherlands when pre-pensions replaced VUT
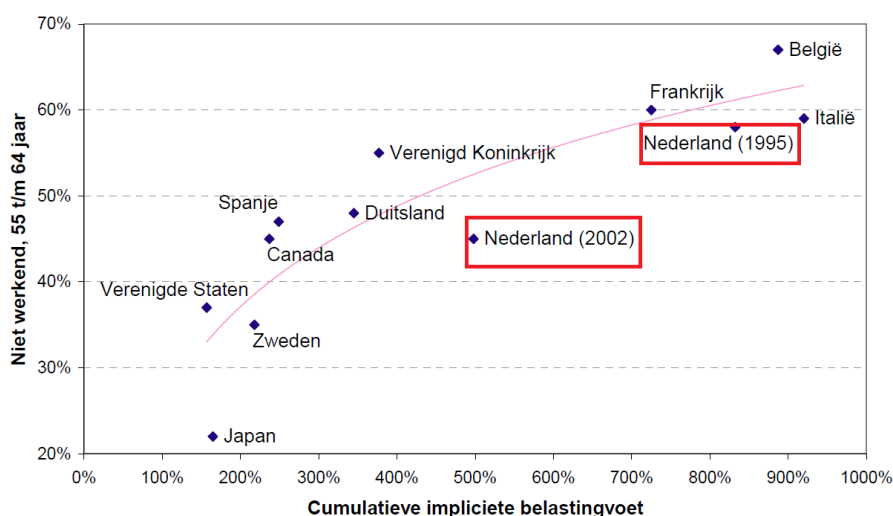
Source: Groot, Heyma, 2004

Trudie Schils (2008) investigated the early retirement behaviour for different population groups within the working population in the UK, Germany and the Netherlands. She looks at the role of institutions and social security to explain early retirement behaviour. This was done by a reduced form regression model. Findings suggest that the UK, where the options to retire early are limited and participation on the labour market is encouraged, would have the lowest number of early retirees. In the UK early retirement is mostly organized by private organisations. In the Netherlands and Germany the incentive to retire early is higher than in the UK. Results of the regression also show that early retirement through unemployment and disability benefits are more common in the Netherlands and Germany as well. The lowest replacement rates are found in the UK as well, which is an explanation for the fact that the incentive to retire is the smallest. According to Schils (2008), higher replacement rates and more generous social security do give older workers the incentive to retire earlier. A policy implication to discourage workers to retire early might be to shift from public to private early retirement schemes. In this way people save for their own pension. This might result in selection, which will make early retirement more attractive for high-paid workers but also results in older workers being pushed into social security for their early retirement (Schils, 2008).

Ron Euwals, Daniel van Vuuren and Ronald Wolthoff (2010) research the impact of policy reforms on the early retirement behaviour in the Netherlands. They do this by looking at the transition from the actuarially unfair VUT schemes to the actuarially fair pre-pension schemes. A mixed proportional hazard rate model is used, because hazard rate models take people that still work at older ages into account. The reform from VUT to pre-pensions does result in large changes in the early retirement rights for individuals. The actuarial adjustment will result in price and wealth effects according to Euwels, van Vuuren and Wolfhoff. Postponing retirement will be financially rewarded with higher benefits which results in a higher price of leisure at an early age. There will be a wealth effect as well, which will result in people postponing retirement because of lower early retirement wealth. An increase in retirement wealth by 100.000 euros will result in an extension in ones career by 8 months. This result is due to a price effect according to financial stimulation for people that work at older age. A decrease in retirement wealth by 100.000 euros will result in an extension of ones career by 5 months. This increase is due to a wealth effect because of lower retirement wealth (Euwals, van Vuurren, Wolthoff, 2010).

The effect of private wealth on early retirement behaviour in the Netherlands was researched by Hans Bloemen (2010). A multinomial logit model is used to see if private wealth affects early retirement behaviour for male workers between 48 and 64. The age at which most male workers between the year 1995 and 2001 go into early retirement is at the age of 60. Two different ways of retirement are distinguished. These are involuntary retirement through disability, illness and unemployment and early

retirement through retiring early, live on investment and to retire at the official retirement age. Within the analysis, different forms of wealth are taken into account. The forms used are liquid wealth, illiquid wealth, total assets and total depts. Different ways of measurement are used which are liquid wealth including the value of mortgage and house and without these values. Both different ways of measurement show that men with higher levels of wealth have an increased probability to go into early retirement. There is no significant effect found on the effect of wealth on involuntarily retirement. Bloemen makes a distinction between assets and debt as well. A positive significant result is found for the effect of assets on the probability to retire early. There is a negative significant effect for debt on the probability to retire early. The effect of assets and debt on involuntarily retirement is not significant. Between the years 1995 and 2001, private wealth played a very big role in the choice of male workers to retire early. Males with high levels of private wealth have a higher probability to retire at an earlier age as well as people with assets (Bloemen, 2011).

3 The effect of demographic developments on the Dutch pension system

In this chapter the effects of demographic developments in the Netherlands will be analysed. First, there will be an explanation about what the demographic developments are and how they will develop in the Netherlands in the future. Secondly, the effect of the economic crisis on the pension funds will be discussed. The third section is about the effect demographic developments have on the importance of labour participation among the elderly. And the section discusses the costs and the sustainability of the current system.

3.1 Demographic developments

The upcoming decades, the composition of the Dutch population will drastically change. The factors responsible for these changes are the increase in life expectancy and the decrease in fertility rates. According to v.d Horst, Bettendorf, Draper, Ewijk, de Mooij and ter Rele from the Central Planning Office (CPB), life expectancy in the Netherlands will increase the upcoming decades. The life expectancy in 2010 was around 85, but will increase to 87.5 in 2060 (v.d Horst et al., 2010). Fertility rates in the Netherlands declined since 1970. The decrease in fertility rates will result in an increasing old-age dependency ratio. While women in the Netherlands gave birth to 3 children in 1960, the number of children born declined to 1.75 in 1970 (v.d Horst et al., 2010). The strong decrease in fertility is related to an increasing emancipation movement of women and increasing use of contraceptives. The fertility rate in the Netherlands is still higher than the average fertility rate in Europe because of high fertility rates among immigrants. In the Netherlands Moroccans and Turks for example, have fertility rates of 3.3 and 2.3 (Sinn, 2005).

There will be major changes in the old-age dependency ratio[1] in the future. While the old-age dependency ratio in 2010 was 1 to 4, the ratio will be 1 to 2 in 2038. The ageing of the population will reach its top in 2038 according to v.d Grift (2008). In this year 4 million people will be retired and have the right to a pension in the Netherlands. Ageing results in a decreasing amount of workers who pay taxes and premiums for an increasing group of retired people (v.d Grift, 2008). Figure 3.1 shows how the population composition changed in the past and will change in the future. For the government the old-age dependency ratio is of great importance, because an increasing old-age dependency ratio will result in higher AOW-expenses.

---

[1] The number of retired people compared to the number of people between 20 and 64.

Figure 3.1: Population pyramid by age, 1950, 2008, 2050, Netherlands
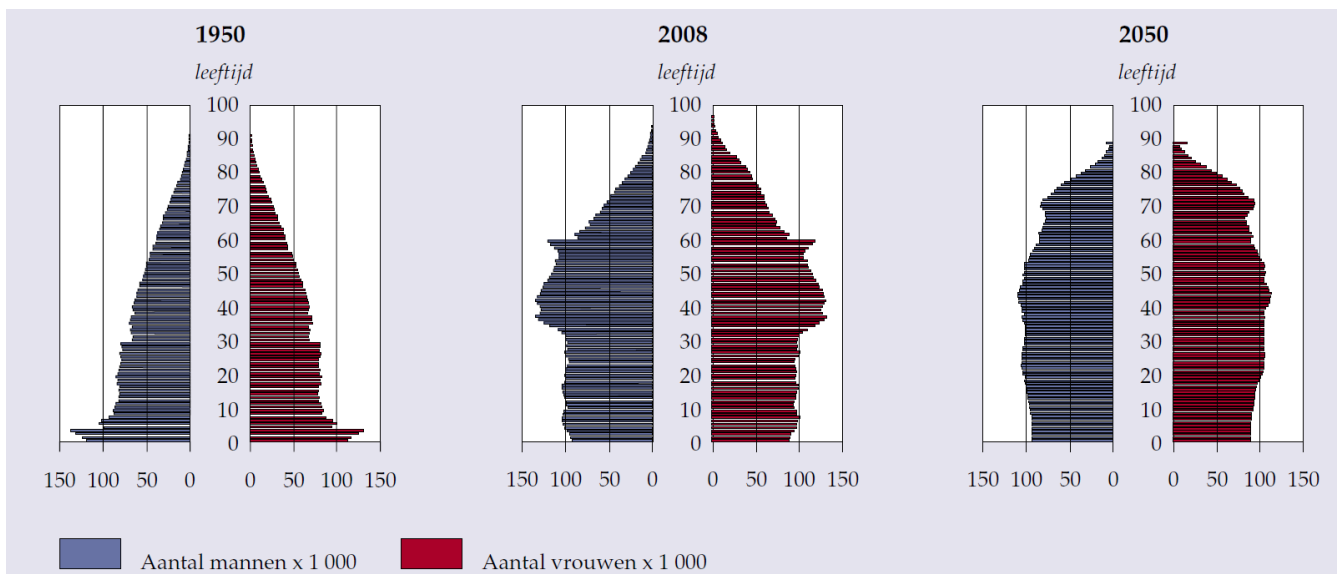
Source: CBS data, taken from article by v.d Grift, 2008

Because the AOW pensions are financed through a PAYG system, an increased old-age dependency ratio will result in an increased contribution ratio paid by the workers, or a reduced replacement ratio received by the retired. A fixed AOW age of 65 will increase this burden, because of the increasing life expectancy, which results in longer periods of payment.

3.2 Economic crisis

The economic crisis especially affected the buffer of the pension funds. Pension funds invest roughly 40% in stocks, which resulted in a substantial decrease in their market value as a result of the economic crisis. Pension funds also suffered from low interest rates (PCOB, 2009).

While the coverage level[2] of the average pension fund was 144% before the crisis in 2007, it reduced to only 92% in March 2009 while the minimum mandatory coverage level is 105%. In the second half of 2009 financial markets recovered which resulted in a coverage level of 109% in the first quarter of 2010 (v.d Horst et al., 2010). To increase the scope of the pension funds, changes need to be made to increase the sustainability. In 2009, pension funds did not compensate for wage increases and price inflation, and increased the premium for both employees and employers by a small amount (v.d Horst et al., 2010).

---

[2] Assets divided by liabilities.

3.3 Labour participation among the elderly

Because of the ageing population, the size of the age group 55-64 compared to the age group 20-64 will be 25% in 2025 (Euwals, Mooij, v Vuuren, 2009). This makes the labour market participation for elderly an important factor in the future. According to a study by Euwals and Folmer (2009) participation rates for people between the age of 60 and 64 will increase from 45% in 2007 to 60% in 2040. An important factor for this increase is the labour participation among elderly women. When the current generation elderly women are replaced by the new generation, labour participation will increase. This is because it is more common for the new generation is to work on the labour market. An increase is expected from 30% in 2007 to 50% in 2040 for women between ages 60 and 65 (Euwals, Folmer, 2009). There will be an increase in labour participation from 60% in 2007 to 75% in 2040 for men of ages between 60 and 65 (Euwals, Folmer, 2009). Despite the increasing participation rate, the number of worked hours is expected to decrease in future. The participation rate among women and the elderly is expected to increase up to 2040, but this is mostly because of part-time jobs. This increase in part-time jobs will result in a negative growth in actual worked hours (v.d Horst et al., 2010).

To see how employment looks like in 2040, there are three developments to take into account. These are the increase in the dependency ratio, the increase in participation among elderly and the increase in part-time jobs. Until 2040 the growth of the Dutch labour force will stay behind compared to population growth (v.d Horst et al., 2010).

3.4 Financial consequences

The costs of the AOW were 4.7% of GDP in 2006, and will increase to 8.8% of GDP in 2040 (Figure 3.2). This increase is due to the increase in the number of elderly in 2040 (Bovenberg, Gradus, 2008). The costs in the care sector will increase from 10% of GDP in 2015 to 14% of GDP in 2040. This increase is mostly due to the increased life expectancy. The total government expenses will increase with 6% in 2040 compared to 2011, and with 7% if you include increased interest costs due to a higher deficit (v.d Horst et al., 2010). The total governmental benefits will also increase. These higher benefits are mostly due to an increase in income-tax, social premiums and VAT income among elderly and result in a 4% increase of GDP in 2040 compared to 2015 (v.d Horst et al., 2010).
Ageing will result in a bigger increase in costs than it will increase the benefits for the governmental sector. This will result in a structural deficit and an increase in public debt. If no measures are taken, the public debt will increase from 74% in 2015 to 134% in 2040 (Figure 3.3) (v.d Horst et al., 2010). This increase in debt will result in great pressure on public finance and result in an unsustainable situation. Without countermeasures, demographic developments will make the current pension system

too expensive in the future. According to the v.d Horst et al.(2010) the sustainability deficit will be 4.5% of GDP. A sustainability increase of 4.5% of GDP per year from the year 2015 is needed to keep governmental finances sustainable in the future (v.d Horst et al., 2010).

Figure 3.2: AOW-expenses as a % of GDP
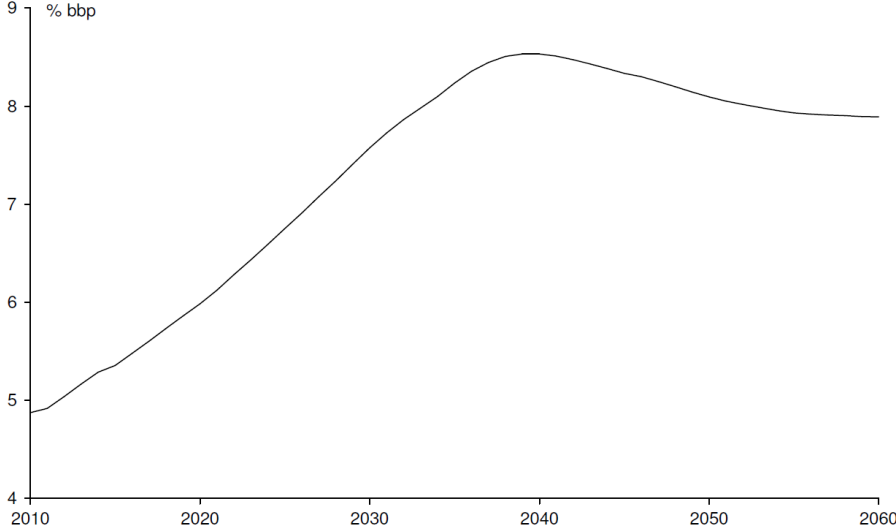
Source: v.d Horst et al., 2010

Figure 3.3: public debt as % of GDP

Source: v.d Horst et al., 2010

14
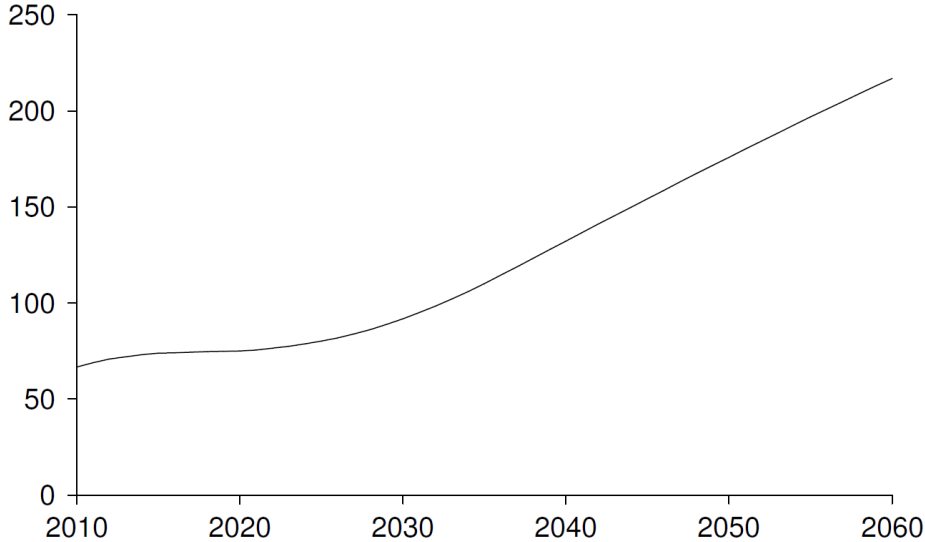
4 Demographic developments in the OECD

In this chapter, the demographic developments in 7 OECD countries will be analysed. In the OECD, demographic developments put heavy pressure on current pension systems. Older workers retire earlier, life expectancy increase, fertility rates decrease, and participation rates change. While all OECD countries cope with these problems, there are large differences between the countries. In this chapter a comparison will be made between 7 OECD countries. The countries are Japan, Iceland, United States, Netherlands, Germany, France and Austria. These countries were chosen because there are large differences between then, what makes them useful for a comparison. A comparison is made for official and effective retirement ages, pension systems, life expectancy, fertility rates and public pension costs. Official and effective retirement ages and a countries pension system have a large effect on retirement behaviour as well, while life expectancy and fertility rates have an effect on the old-age dependency ratio and public pension costs.

4.1 Increasing life expectancy and decreasing fertility

Table 4.1 shows the median age in 1950 and 2010 for 7 OECD countries. Median age means, the age which divides the population into two equally sized group, with one half younger and one half older than the median age. The table clearly shows that Japan has the highest median age of 44.6 in 2010, followed by Germany and Austria. The lowest median age of 35.4 is found in Iceland, followed by the United States. The Netherlands and France are in between, both with a median age of around 40 in 2010. In all countries the age has increased but there are large differences between the countries. The increase in the median age between 1950 and 2010 is largest in Japan. While Japan had the lowest median age of 22.3 in 1950, it has the highest in 2010.

One explanation for this increase in median age is the increase in life-expectancy which is shown in Table 4.2. There is a clear increase in life expectancy in all countries between 1970 and 2007. This age will continue to increase. According to future predictions, the life expectancy will increase by 4 years between 2007 and 2050. This increase in life expectancy will result in higher pension costs and in higher social security costs. Table 4.2 shows that the increase between 1960 and 2007 is the highest in Japan, followed by Iceland. All European countries are following the same trend with life expectancies around 70 in 1960 and life expectancies of 80 around 2007. The life expectancy in the United States was comparable with the European countries in 1970, but falls behind in 2007 and 2050. Life expectancy in Iceland has been high in the past, with an age of 73 in 1970, and will be high in the future with an age of 86.

Table 4.1

Median Age in 1950 and 2010					
Country	Year 1950	Year 2010	Country	Year 1950	Year 2010
Japan	22.3	44.6	Germany	35.4	44.3
Iceland	26.5	35.4	France	34.5	39.7
United States	30	36.8	Austria	35.8	42.6
Netherlands	28	40.8			

Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat (2007) and CIA World Factbook (2010-08-04)

Table 4.2

Life expectancy at birth in 1960, 2007 and 2050							
Country	Year 1960	Year 2007	Year 2050	Country	Year 1960	Year 2007	Year 2050
Japan	67.8	82.6	87.1	Germany	69.1	80	84.4
Iceland	72.9	81.2	86.1	France	70.3	81	85.1
United States	69.9	78.1	83.1	Austria	68.7	80.1	84.4
Netherlands	73.5	80.2	84				

Source: OECD Factbook 2010, Environmental and Social statistics and Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, 2007

Another important reason for the increase in median age is the decrease in fertility rates. Figure 4.2 shows the fertility rates between 1960 and 2008. The fertility rate has decreased in every country the last decades. This decrease is smallest in Iceland, the United States and France, with rates around 2. The Netherlands has a slightly lower fertility rate of 1.80. Fertility rates are the lowest in Japan, Germany and Austria, with rates around 1.40. To keep the population constant, a fertility rate of 2.08 to 2.1 is needed (Sinn, 2005)

Figure 4.2
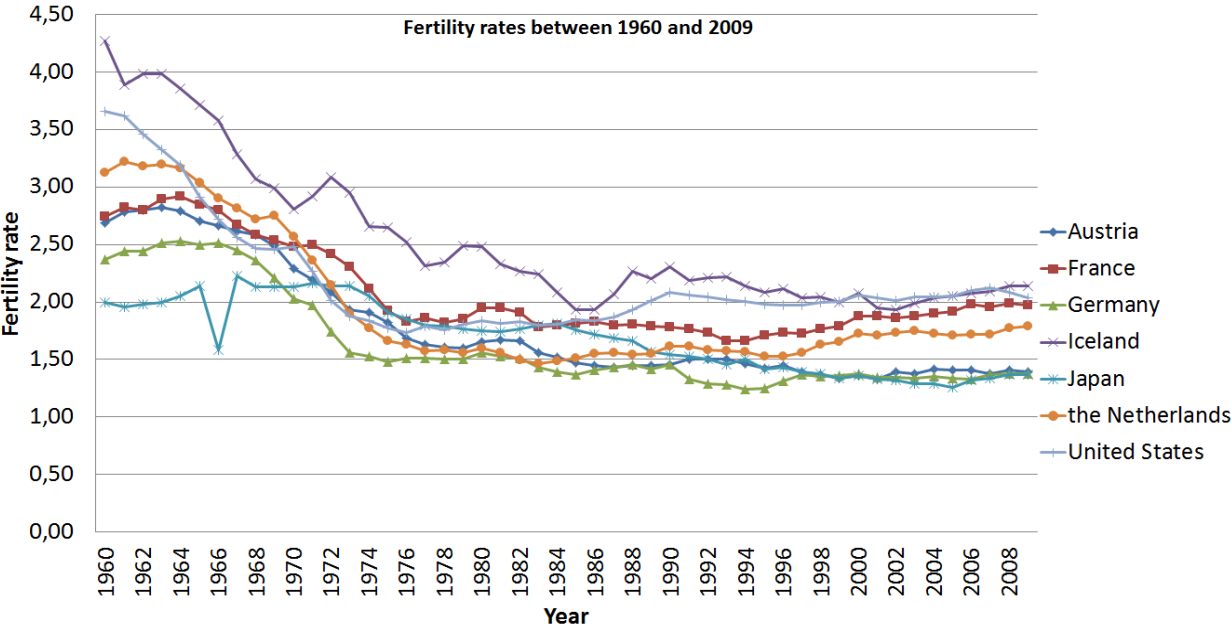
Source: Eurostat demographic statistics, 2010

What is remarkable to see, is that among the European countries, France and the Netherlands have an exceptionally high fertility rate compared to Germany, Austria and other European countries not showed in the table. This difference could be the result of better child care and tax benefits for having children in France. In the Netherlands high fertility is due to good child care and the high fertility among immigrants (Sinn, 2005).

Overall, fertility rates have decreased the last decades. Explanations given by Sleebos (2003) are that due to higher employment and education among women, fertility decreased. Also, the increased social security systems make children less important due to fact that they are no longer needed to support their parents at old-age. Youngsters marry at later ages as well because they take longer to finish their education. According to Sinn (2005), the peak of the pension crisis will be in 2035. To solve the pension crisis a PAYG system should be combined with a partially funded system that reestablishes fertility incentives (Sinn, 2005). Ageing will increase the burden of public pension systems for younger workers and future generations. According to Fenge and Werding (2004), a reduction in the burden for younger workers at the cost of older workers will have a major effect on burden of public

pension schemes. The reason for this is that he thinks there is a possibility that future generations will not co-operate in paying the increasing unfunded burden for current generations. Policies that will redistribute the burden from the future generation to current generation will be a valid idea according to Fenge and Werding (2004). Older generations are interested in a more balanced distribution as well because they care about the well-being of their children and grandchildren. Implementing these policies will be a lot harder if the median voter is from an older generation, is self-interested and will not agree with policies that imply inter-generational redistribution. Redistributing taxes will be a defensive policy to prevent potential conflicts and improve long-run sustainability of public pension systems (Fenge, Werding, 2004).

According to Sleebos (2003), most studies suggest a weak positive relationship between fertility rates and a variety of policies. According to some studies, there was a strong positive relation between fertility and child care and a weak mixed relation between maternity and divorce on fertility. These studies also suggest there is no single policy which can reverse the overall decrease in fertility. Despite the fact that no strong relations have been found there are a few conclusions Sleebos (2003) draws. The first one is that policy measures to increase fertility only influence reproductive behaviour in the long run. Her second conclusion is that an approach to make the combination of employment and fertility easier through childcare and flexible working hours can be an effective policy to increase fertility. The aim of these policies should not be on individuals but at society as a whole. This way the chance of changing the fundamentals is bigger. Overall, it is hard to say if these policies could work according to Sleebos (2003) because it is still not entirely clear why birth rates in OECD countries decreased so heavily the past three decades (Sleebos, 2003)

Higher life expectancy and lower fertility rates do result in higher old-age dependency ratios. Figure 4.3 shows the old-age dependency ratio's between 1950 and 2040. It is clear that ageing in these countries will have severe effects due to the fact that dependency ratios will almost double for all countries in 2040 compared to 2009. Especially in Japan and Germany, the old-age dependency ratios will increase from 38.4% and 33.7% in 2009 to 71.9% and 59.4% in 2050. Iceland and the United States, have relatively low old-age dependency ratios. The increase will be from 19.9% and 21.5% in 2009 to 37.7% and 37% in 2040. France and Austria both have ratios of 28% in 2009 and these ratios will both increase to about 50 % in 2040. The Netherlands has ratios of 25% in 2009 and 47% in 2040 which is lower than France and Austria.

It is clear that especially countries like Japan with low fertility rates (Figure 4.2) and high life expectancies (Table 4.2) will have the highest old-age dependency in 2040. In Table 4.2, the life expectancy in Japan and Iceland are 82.6 and 81.2 in 2007, which are the two highest life expectancies among the countries. The fertility rates however are fairly different with of 1.37 for Japan and 2.14 for Iceland in 2009. While life expectancy in these two countries is almost the same, the difference in fertility results

in an old-age dependency ratio which is two times higher in Japan in 2009, and will be two times as high in 2040 as in Iceland.

Figure 4.3 shows the old-age dependency ratios for the 7 OECD countries between 1950 and 2040. The increase in old-age dependency ratio is especially large in Japan. This can be partly explained by the fact that the life expectancy was the lowest in 1960, but the highest in 2007 and 2050. And that Japan has the lowest fertility rate in 2009. In Japan the old-age dependency ratio is expected to be 7 times as high in 2040 compared to 1950. In Germany it will be 3 times as high, and in Austria, France and the Netherlands about 2.5 times. In Iceland and the United States the old-age dependency ratio will be 2.5 times as high as well, but it is still expected to be 10% lower in 2040 than the European countries except Germany.

Figure 4.3
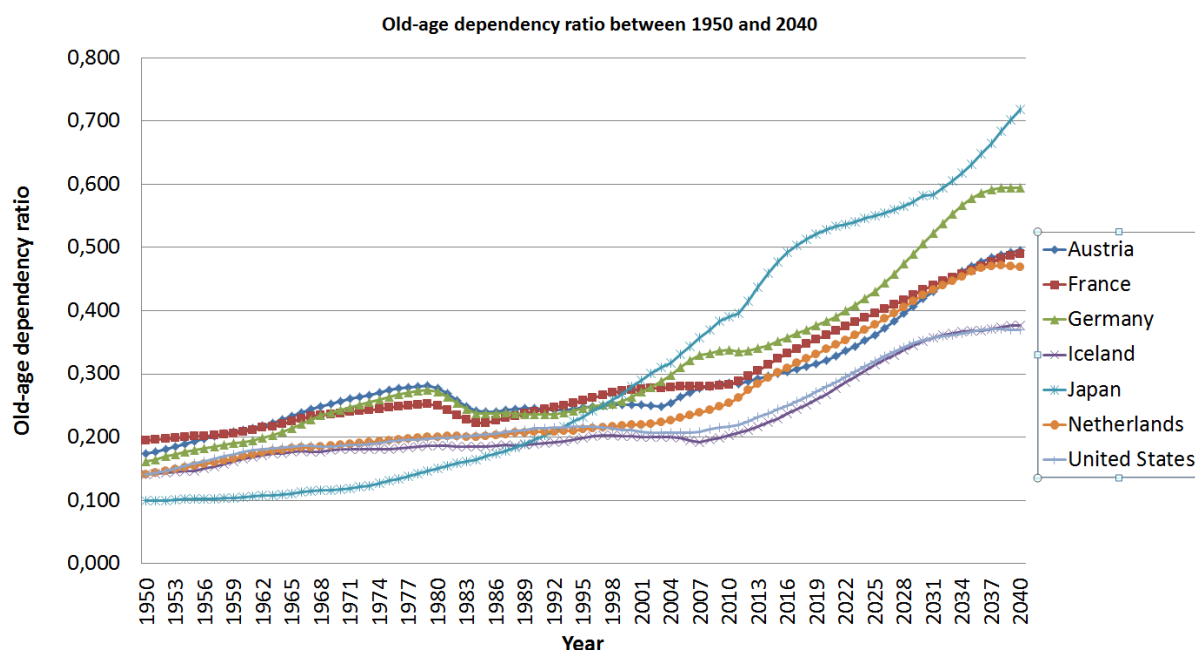
Source: data from OECD, Pensions at a Glance 2009, Retirement-Income Systems
in OECD countries

4.2 Official and effective retirement age

There has been a significant change in the effective retirement age behaviour the last decades. Table 4.3 shows the official retirement age and the average effective retirement age in periods 1966-1971 and 2004-2009. There is a large difference between the official retirement age and the age people actually retire. All countries official retirement age for males is near 65 except for Iceland in which it is 67. The strange retirement age for men in the United States is due to an official retirement age increase to 66 in 2008. Because it is an average retirement age in the period 2004-2009, the average became

65.83. For women the official retirement age differs strongly among the 7 countries. The age is between 67 in Iceland and 60 in the United States, France and Austria.

There is however, a clear difference in the effective retirement age between the countries. People in Japan and Iceland retire later than their official retirement age, especially compared to continental European countries, in which people retire much earlier. People in the United States retire close to their official retirement age. Women retire earlier than men except for the Netherlands. In Japan and the United States women retire later then their official retirement age. In Austria and France women retire the earliest close to their official age of 60 while women in the United States work till they are 64.8.

Table 4.3

Average official retirement age and effective retirement age, 1969-1974 and 2004-2009													
Country	Official retirement age Men/woman 2004-2009		Effective retirement age men/woman 1969-1974		Effective retirement age men/woman 2004-2009		Country	Official retirement age Men/woman 2004-2009		Effective retirement age Men/woman 1969-1974		Effective retirement age men/woman 2004-2009	
Japan	64	62	71.6	65.9	69.7	67.3	Germany	65	65	-	-	61.9	60.5
Iceland	67	67	-	-	69.3	65.4	France	65	60	65.7	65.3	61.8	59.7
United States	65,83	62	67.2	66.3	65.5	64.8	Austria	65	60	66	65.4	58.9	57.5
Netherlands	65	65	64.4	65.8	62.1	62.8							

Source: OECD estimates derived from the European and national labour force surveys

4.3 Labour participation among the elderly

Figure 4.4 shows the participation rate of older workers between the age of 55 and 64 in 1980 until 2000. Iceland and Japan clearly have the highest participation rate among the elderly, with 93% and 84% in 2000. The United States is next with a participation rate of 68% in 2000. The participation rate in France, Germany and the Netherland is the lowest. From 1980 there was a strong decrease in participation in France, Germany and the Netherlands. This decrease was the strongest in France and the

Netherlands due to early retirement schemes. In both countries heavy restrictions were made in the mid-1990s to discourage these publicly funded early retirement schemes.

The relation between the effective retirement age and the participation rate among elderly is very clear. Countries with a high effective retirement age have a higher participation rate among elderly. This relation is researched in the literature as well.

According to Duval (2003) there is a wide dispersion in implicit tax rates on continued work among OECD countries. Especially in Europe the social transfer programs are more generous than in Japan and the United States. These implicit taxes affect the retirement decision of older males. The social transfers have a significant effect on the retirement decision. Especially men between the age of 55 and 59 search for ways to exit the labour market through social security, like unemployment or disability, rather than the retirement system itself. According to Duval (2003) this phenomenon indicates a possible discouraged worker effect, which could be reduced by policies that reduce structural unemployment and policies towards more actuarial neutrality (Duval, 2003).

Policy instruments on pension systems have a significant effect on the labour participation and unemployment rate of the elderly. Differences in participation rates can be explained by differences in old-age pension systems, like replacement rates and the official retirement age. Unemployment benefits are related to the participation rate as well. European countries can increase participation by 4 percentage points, and Japan and the United States by less than 4 percentage points (Blondal and Scarpetta, 1999).

According to the analysis of Herbertsonn and Orszag, the average cost of early retirement in the OECD countries is 7.5% of GDP. These costs are higher in Europe. Their analysis also shows that if the labour participation remains on the same level, the burden from early retirement will significantly increase (Herbertsonn and Orszag, 2003).

Figure 4.4: Labour participation rate for men between 55 and 64
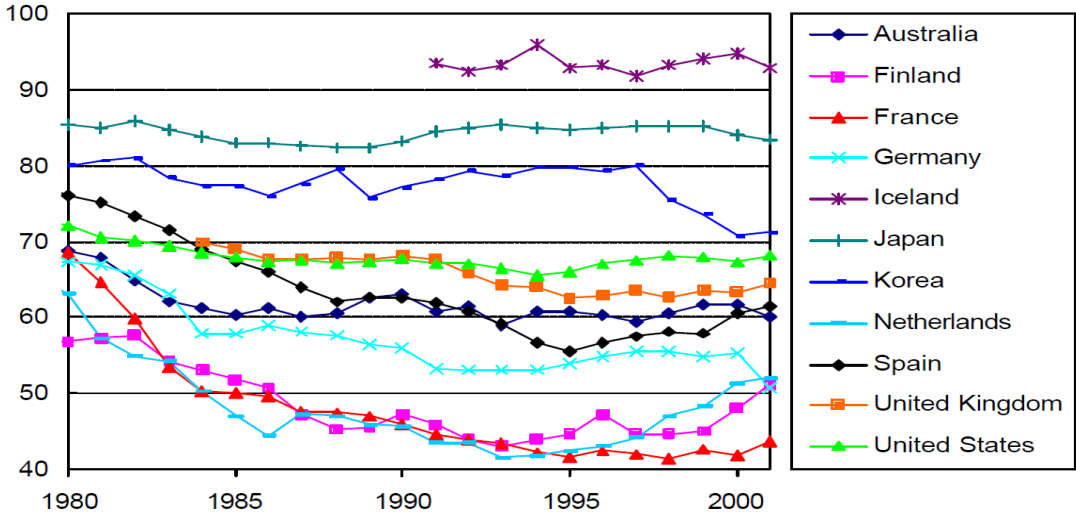
Herbertsonn and Orszag (2003)

4.4 Pension system per country

In this section a description will be given about certain OECD countries. These countries are Iceland, Japan, the United States, Germany, France and Austria. A description of the pension system in these countries will be given. The attractiveness of late and early retirement will be analysed through early-retirement schemes and accrual rates. The attractiveness of early and late retirement and the effects of the pension system on the effective retirement age will be shown.

Iceland

The old-age pension system in Iceland is based on 3 pillars. The three pillars are a basic tax-based pension scheme, a mandatory funded occupational pension scheme and a voluntary pension scheme. The most important pillar in Iceland is the mandatory funded occupational pension scheme, which pays 50 to 60% of average earnings. Together with the basic public pension scheme this will result in a gross replacement rate of 56%. Both schemes will pay fully, if one has been in the labour-force for 40 years (OECD, 2011). For both schemes the official retirement age is 67, but early retirement is possible. The occupational pension schemes can be claimed at age 65. This will however result in a reduction of 7% per year (OECD, 2011). Postponing the occupational pension retirement scheme is possible until 70. This will result in a yearly increase of 9%. In January 2007, the late retirement age has been increased to 72 (OECD, 2011). The fact that the accrual rate for late retirement is higher than the accrual rate for early retirement might be an explanation why the effective retirement age is really high compared to the other countries and especially European countries. Because of this high accrual rate of 9%, older workers are stimulated to postpone retirement.

Japan

The Japanese pension system consists of 3 pillars as well. The first pillar is a basic pension, which provides about 15% of the average earnings in Japan. The second pillar is an income-related pension scheme. A full pension is paid after 40 years of work, and the accrual rate is 0.5481 per year. This is 28.5% of average earnings after 40 years of work. The gross replacement rate of a median earner is around 36% (OECD, 2011). Both these pillars operate as a PAYG system. Because of the deficits, pressure increases to add another pillar. In 2001, Japan added a defined contribution plan which was funded. Savings were invested and benefits depended on returns. Early retirement with full benefits before the age of 65 is not possible in Japan. The basic pension can be gained from age 60, but the benefits will be reduced with 6% per year. The possibility to retire later than 65 is possible as well. Both the pension benefits of the basic and the earning related pillars will be increased by 8.4% per year. Since 2006, there is also the possibility to combine a pension with work after the age of 65. This

22

measure was taken to improve the participation rate among elderly (OECD, 2011). Just like in Iceland, Japan has higher accrual rates for late retirement. This might be an explanation for the high effective retirement age in Japan.

United States

The United States has a redistributive social security scheme. The first 711 USD earned per month have a replacement rate of 90%. Monthly income between 711 and 4288 USD is replaced at a rate of 32% and everything above 4288 USD is replaced at 15%. The gross replacement rate for a median earner is 42% (OECD, 2011). In 1983, the United States increased the contribution ratio to increase the social security trust fund. In this way a buffer would be created to prepare for demographic ageing (Fenge, Werding, 2003). Early retirement in the United States is possible from the age of 62, but benefits are reduced by 6.67% per year for the first 3 years. After these 3 years, the reduction is decreased to 5% per year. Late retirement is possible. People born in 1943 and later can increase their pension with 8% per year up to the age of 70. Just as in Iceland and Japan, the accrual rate for late retirement is higher than the accrual rate for early retirement which indicates that late retirement is stimulated.

Germany

In Germany, the statutory pension scheme provides retirement income. The old-age pension is calculated by the number of pension points, gained every year. The statutory pension scheme is a PAYG scheme, which covers a gross replacement rate of 42% of the average life-time income for a median earner. The second pillar consists of occupational pensions, but is not mandatory. Early retirement is possible from the age of 63, with a contribution of 35 years in the labour force. Per year, 3.6% of retirement benefits are reduced. Late retirement will increase the pension benefits by 6% per year of work (OECD, 2011). Germany has different accrual rates for early and late retirement, only the rates are lower than in Iceland, Japan and the United States. The 3.6% reduction for early retirement is relatively small if you compare this to the 7, 6 and 5% reduction of Iceland, Japan and the United States. The accrual rates for late retirement in Germany are lower as well. Germany has an accrual rate for late retirement of 6%, which is low compared to the 9, 8.4 and 8% in Iceland, Japan and the United States. The fact that the effective retirement age in Germany is relatively low might be a result of these low accrual rates.

France

In France the old-age pension system is more fragmented than the German system. People in the private sector make use of 2 pillars, an earnings-related public pension and an occupational scheme. The

public pension scheme offers a 50% replacement rate, if one worked for 40 years. In 2012, they plan to increase the years of contribution to 41 years, due to population ageing. Since 2008, the average life-time income is based on the best 25 years in ones working period (OECD, 2011).

Combined with one of the 2 mandatory occupational schemes the net replacement rate is about 60% for a median earner. Lower income groups gain higher replacement rates (Fenge, Werding, 2003). People in France can receive full retirement benefits at the age of 60 if they have worked 40 years. Early-retirement is possible from the age of 56 under special conditions. It depends on the number of missing years how much the retirement benefits are reduced. If someone worked 37 to 39 years, the reduction is 4 % per year and 5% if 35 or 36 years are worked (OECD, 2011). If people reach the conditions for full retirement at the age of 60 and defer retirement, benefits increase with 5% per year for the public scheme and increase as well for the occupational scheme (OECD, 2011). In France the accrual rates for early and late retirement are the same, which is different from the countries treated before. The same accrual rate combined with the high replacement rate and the low amount of years needed for early retirement might result in the low effective retirement age in France.

Austria

Austria has a defined-benefit public retirement scheme with a top-up for people with a low income. Between 2024 and 2033, the retirement age for women will increase from 60 to 65. The gross replacement rate is around 77% for the median earner (OECD, 2011). The average life-time income is based on the best 20 years earnings. This averaging period will increase to the best 40 years in 2028. Early retirement for men is possible from the age of 62 and for woman from the age of 57. To qualify for early retirement, 37.5 years of contributions are required. Every year of retirement before the age of 65 decreases the pension by 4.2% per year.

Late retirement is possible until the age of 68. Each year of additional work will result in a 4.2% increase in retirement benefits (OECD, 2011). In Austria there is, just like in France, no difference between accrual rates for early and late retirement, which does not stimulate late retirement. The requirement of 37.5 years of work to qualify for early-retirement is an easy way into early-retirement as well. The high replacement rate of 77% is as well.

The differences between these countries pension systems are large. The financing methods differ from a full PAYG system to a combination between PAYG and a large portion which is funded. There are large differences in the accrual rates as well. Iceland, Japan, the United States and Germany have higher accrual rates for late retirement than for early retirement, which stimulates people to postpone their retirement. In France and Austria these accrual rates for early and later retirement are the same. There are large differences in the replacement rates per country and early-retirement requirements as well. The highest public pension replacement rates are found in France and Austria. Accrual rates,

replacement rates and early-retirement requirements might have an effect on the effective retirement age. As shown in Table 4.5, countries with high and different accrual rates for early and late retirement, low replacement rates and strict to no early-retirement policies have high effective retirement age.

4.5 Public pension costs:

High old-age dependency ratios will especially affect countries with large PAYG pension schemes, which are Germany, France, Japan, Austria and the United States. The effects of increasing old-age dependency ratios will be much higher in Europe because they have fairly generous PAYG pension systems. The Netherlands and Iceland rely more heavily on funded pensions. Because of the rising old-age dependency ratios, the amount of retired people increases, while the number of contributors decreases. To keep this system working, either the contribution rate has to be increased or the replacement rate has to be decreased. Table 4.4 shows the costs of public spending as a percentage of GDP in 2007 and in 2050. Austria, France and Germany have the highest public pension costs. The Netherlands and Iceland public pension costs are lower because they rely more on occupational mandatory pension schemes instead of public pension schemes. Also interesting to note is that countries where people's effective retirement age (Table 4.3) is relatively low, have higher public pension costs. People in Europe, especially in Germany, France and Austria, retire earlier, which might have an effect on the public pension costs. People in the Netherlands retire relatively early as well, but they save for their own early retirement through a funded system. This might be an explanation why the public pension costs in the Netherlands are lower than the other continental European countries. The public pension system in the Netherlands has a relatively small first pillar, which works as a PAYG scheme. The second funded pillar is larger than in the other countries which explain the low public pension costs in the Netherlands. Public pension costs in Japan are lower than in Europe as well, despite the fact that Japan has the highest old-age dependency ratio (Figure 4.3). A possible explanation for this could be the fact that pensions are much less generous in Japan then they are in Europe. The public pension costs in Iceland and the United States are relatively low as well, which might be a result of the relatively low old-age dependency ratio (Figure 4.3) and the fact that the effective retirement age is much higher than in continental Europe (Table 4.3).

Table 4.4

Public Pension Spending as % of GDP					
Country	Year 2007	Year 2050	Country	Year 2007	Year 2050
Japan	9.8	-	Germany	10.4	12.3
Iceland	4	6.9	France	13	14.2
United States	4.3	4.8	Austria	12.8	14
Netherlands	6.6	10.3			

Source: Pension at a Glance 2011, Retirement-income systems in OECD and G20 countries, pp 158-159

5 Effects of an increased official pension age in the Netherlands

At the beginning of 2011, a bill was sent to the Dutch parliament about the increase in the official retirement age in the Netherlands. The main aim of this bill is to increase the official retirement age in two steps. First, the pension age is increased to 66 in 2020. The next increase to the age of 67 will be performed in 2025. After this increase, the official retirement will increase accordingly to the life expectancy. Predictions forecast an official retirement age of 68 in 2040. The main goal of this policy is to increase labour participation among the elderly to make the Dutch pension system more resistant to future conditions. The AOW will become partly flexible because it is now possible to continue working up to 5 years after ones official retirement age. It will be possible to benefit from AOW before the age of 65. The accrual rate for early retirement as well as late retirement will be 6.5% per year. Pension benefits will increase by 0.6% per year on top of the yearly indexation from 2013 to 2028.

The official retirement age is increased in the second pillar as well. An increase to 66 will be active in 2020and 67 in 2025. This results in a lower build up for pension rights per year, but does not affect the pension rights that are already build up. This increase in retirement age will be beneficial for pension funds because employees pay premiums for a longer period of time and the funds can postpone payment. In this way the discontinuity risk will decrease and buffers can be used to invest. This is possible because an increase in retirement age works as a safety net for pension funds. Pension funds use human capital of the current labour force as a form of equity (Bovenberg, 2004).

5.1 Effect on sustainability

According to Ewijk, Lever and Mehlkopf who wrote CPB notitie 2011, this policy measure will improve the sustainability of the governmental expenses with 0.7% and governmental income by 0.2% of GDP, which is just over 4 billion euros. The increase in labour participation is predicted to increase labour participation by 1%. The increase in sustainability is due to a decrease in AOW. Another decrease in expenses is because of lower pension premiums in the second pillar which results in lower subsidies for the government. An increase in savings, which will results in higher tax income over saving, will also increase the sustainability. An increase in social security costs however, has a negative effect on the sustainability (CPB notitie, 2011). In 2040, the EMU-balance will improve by 1.4% and the debt will be 16% lower because of an increase in the official pension age to 67 (v.d Horst et al., 2010).

5.2 Effect on workers prosperity

People born before January, 1955 can still benefit from the AOW at the age of 65, but people born between 1995 and 1958 will have this right at the age of 66. This will result in a yearly benefit loss of 300 euro. This loss will be compensated by additional years of labour, which will result in a maximal loss per remaining life year of 100 euros. People born between 1959 and 1973 will have to too work until they are 67 and will have a yearly loss of around 200 euros. If you are born later in this life-cohort, the yearly loss becomes smaller because you are younger and have more years to live. The last life-cohort consists of people are born in 1973 and later, who will have to work until they are 68. The yearly loss for this life cohort will be 400 per year (CPB notitie, 2011). These numbers are according to average income per life-cohort, which means that on individual level these losses can be a lot bigger or smaller. The increase in official retirement age in the second pillar does not affect people born in and before 1948. People born after 1948 will be negatively affected because it takes longer to build up their pension (CPB notitie, 2011).

5.3 Effect on effective retirement age

An important question about the increase in the official retirement age is how it affects the retirement behaviour of people. As we have seen in Chapter 4, the official retirement age can be totally different from the effective retirement age in certain countries. In the case of early-retirement behaviour, especially pension schemes and social security schemes have a large effect on people's retirement behaviour. In this section, the effect of an increased official retirement age on the effective retirement age will be analyzed.

In 1983, the United States passed several reforms to increase the labour force participation and to cut expenses. An increase in the official retirement age for people born after 1938 was implemented. The official retirement age increased with two months per year. Mastrobuoni (2009) studies the effect of this increase in official retirement on the effective retirement behaviour. The focus is on the retirement behaviour of workers in the birth cohorts 1938, 1939 and 1940, which are compared to workers from earlier birth cohorts. The data used in this study is called the Current Population Survey (CPS) and shows the retirement behaviour between 1989 and 2006. A cumulative distribution function is used to show the retirement age by year of birth of each cohort. After comparing the results between the birth cohorts, Mastrobuoni (2009) concludes that for every two month increase in the official retirement age, the effective retirement age, both for men and women, increases by one month. This is a 50% increase in effective retirement age for people born after the increase in official retirement age (Mastobuoni, 2009).

Gustman and Steinmeijer (2006) have used a dynamic, stochastic model to analyse the effect of various changes in the social security system on the retirement behaviour of people in the United States. The model takes different forms of retirement and time preferences of individuals into account. The data they used is a panel study, which started in 1992 and consists of 7600 household with at least one individual aged between 51 and 61 old at that time. The information used by Gustman, Steinmeijer (2006) is from 2002. The results suggest that an increase in the early retirement age from 62 to 64 and a reduction in social security by 25% would have the largest effect on workers early retirement behaviour. These policy changes would result in higher participation rates among the elderly. The increase in early retirement age would result in a 5% increase of full-time jobs among people between 62 and 63. There will be a 4% increase among retirees that work full-time after their retirement as well. When the early retirement age is increased to 64, partial retirement among people between 62 and 63 will increase with 3% points compared to an early retirement age of 62. Complete retirement is about 6% points lower among 62 and 63 year olds with an increased early retirement age as well as 2% points lower among people that are 64 (Gustman, Steinmeijer, 2006). Based on the numbers calculated by Gustman and Steinmeijer (2006), Euwals, van Erp, de Hek and ter Rele from the CPB (2008) calculated the effect of a two year increase in the official pension age to 67. According to the authors these results have a high level of uncertainty. A two year increase in the official retirement age would result in a two month increase in the effective retirement age. An 8% increase in the effective retirement age will be the result of this policy, which is a fairly small increase. This increase is so small because rational behaviour is assumed. Rational workers react to this increase in official retirement age by saving money to finance early retirement themselves (Euwals et al., 2008).

A study about the effects of social security on the retirement decision for older married couples was done by Mitchell (1991). She does this by examining four different social security reforms which are: an increase in the official retirement age, an increase in the late retirement credit, a rise in early retirement penalty and a delay in the early retirement penalty. The results about the increase in the official retirement are most relevant for this paper, therefore the other three reforms will be neglected. The increase in official retirement age is from 65 to 67. The effects on the effective retirement age are calculated by looking at the utility a person gets from retirement at a certain age and associate this with the discounted income and the remaining time of leisure. This logit model shows the utility older workers gain from income and leisure at a certain age. The results show that if the official retirement age increases with 2 years, the effective retirement age for men increases with 2 months and for women with half a month. The increase in effective retirement age for men is 8%. For women the increase is 2% (Mitchell, 1991).

A study about an increase in official retirement age in the Netherlands was done by de Nederlandsche Bank (DNB) in 2008. The question asked in the survey was: how long people would postpone their retirement if the official retirement increased from 65 to 67 and the collective pension age increased with two years as well. This study consisted of a survey among employees in the Netherlands. 882 of the 1316 surveys were fulfilled, which is 70% of the total number of surveys. The results showed that 40% of the employees would postpone retirement by at least 1 year. The total survey showed that with this 2 year increase, people would work 0.8 years long on average. This is a 40% increase in the effective retirement age (DNB, 2008).

It is hard to draw any conclusions from these results about the effect of a two year increase in official retirement age on the effective retirement age in the Netherlands. The changes in the effective retirement age differ a lot per study. Mastrobuoni (2009) and DNB (2008) predict a 50% and 40% increase in effective retirement, while Gustman, Steinmeijer (2006) and Mitchell (1991) only predict an 8% increase. What also makes these results hard to analyse is the fact that three of these studies are done in the United States. It is hard to use these results for the Netherlands because these two countries are very different from each other. There are institutional differences between the Netherlands and the United States, which makes it obvious that these results cannot just been taken over. The study done by the DNB (2008) is a nice indicator of what people might do in the Netherlands, but the sample size is too small to give real reliable results. There is no information about the distribution in the sample what makes it hard to use the results. There is no distinction between men and women, rich or poor and old or young, which are factors that might influence the outcome of the survey a lot. Despite the fact that it is impossible to give a numeric answer, it is possible to say that according to these studies there will be an increase in the effective retirement age to some extent.

The CPB (2008) made a note in 2008 about the effect of an increased official pension age on the labour participation. They used three different increases in the effective retirement age. These were increases of 25, 50 and 75% which resulted in 0.9, 1.0, and 1.2% of GDP increases in the sustainability (CPB notitie, 2008). While the predictions of the CPB (2009) and CPB (2011) show that the increase in labour participation will result in a 0.2% increase in sustainability (CPB notitie, 2009) (CPB notitie, 2011). In an article written by the CPB, called ''vergrijzing verdeeld'' (v.d Horst et al., 2010) a 1% of GDP increase in the sustainability is calculated. This pretty much shows that it is very hard to calculate the effect of an increase in the official retirement age from 65 to 67 on the increase in labour participation. A lot of different outcomes are predicted over the years by the CPB.
What can be said about the increase in the official retirement age is that it results in a decrease in AOW expenses by about 0.7% of GDP. This value will be positively affected by higher tax income over savings, an increased labour participation rate and lower governmental subsidies in the second pillar. Negatively affected however, by higher social security costs, lower indirect taxes because of a

decrease in consumption and the gradually implementation of the increased official pension age. If the effect on the labour participation should be 0.2% the total sustainability should increase by 0.7%, which is a little more than 4 billion euros (CPB notitie, 2011).

6. Policy measures to increase sustainability

As shown in Chapter 3, the current Dutch pension system is not sustainable if no policy measures are taken. According to the CPB (2010) a 4.5% increase in sustainability per year from the year 2015 is needed to keep the Dutch pension system sustainable in the future. Chapter 5 shows that an increased official retirement to 67 increases the sustainability by 0.7% (CPB notitie, 2011). This is a start, but this by far not enough to keep the current Dutch pension system sustainable in the future. Additional measures to increase the sustainability will be inevitable. In this chapter several policy measures and their effects will be discussed. Policy measures that will be discussed in this chapter will be a tax increase, taxation of the AOW, flexible AOW and a reduction in notional rental value.

6.1 Tax increase

A tax increase could be a possible policy measure to increase the sustainability. In a study of the CPB, van der Horst, Bettendorf, Draper, van Ewijk, de Mooij and ter Rele calculated the effect of an increase in the direct or indirect tax. The results will be measured for a tax increase of 1% of GDP from the year 2011. An increase in direct tax will result in a 0.9% increase in the sustainability from the year 2015. The deficit and the debt will be 1.6 and 22.3% lower in 2040. GDP, labour participation and consumption however, will be negatively affected by this measure with values of 0.6, 0.6 and 2.9% of GDP (v.d Horst et al., 2010). An indirect tax increase will increase the sustainability by 0.8% of GDP from the year 2015. The deficit and the total debt will be 1.5 and 20.9% lower in 2040. GDP, labour participation and consumption will decrease by 0.4, 0.4 and 2.4% of GDP in 2040 (v.d Horst et al., 2010).

6.2 Taxation of the AOW

In the Netherlands, older worker do not pay AOW-premiums. This results in a 17.9% lower tax-rate in the first and second tax bracket compared to people younger than 65. In 1997, the level of AOW-premiums was maximised at 17.9% which results in a shortage of premiums. To pay the full AOW-expenses, a part must be paid out of the public treasury. This maximisation is a start of the taxation because the elderly pay the AOW-expenses themselves through taxes. The effect of a gradual discharge of the AOW-premiums is measured between 2011 and 2028. This would result in a discharge of 1% point per year, which would be replaced by a 1% point tax increase. This tax would affect the elderly above 65 in the first and the second tax bracket and will result in a 1% point tax increase per year. This study takes the net net indexation into account as well. This will result in higher AOW-

expenses because social benefits are linked to the minimum wage and increase with the same percentage. Taxation of the AOW will result in two behavioural changes. People start saving at a younger age because their net AOW pension will be smaller in the future and the taxation will have a discouraging effect on the labour-supply (v.d Horst et al., 2010). Taxation of the AOW will result in a decrease in GDP by 0.1% in 2040. The effect on sustainability up to 2015 will increase by 0.1% per year. Between 2016 and 2040 and after 2040 this profit will however decrease by 0.2% and 0.4% of GDP per year on average. In 2040, the public debt will be 5.5% lower because of the AOW-taxation. This decrease will be the result of the gradual taxation because the increasing tax burden will result in lower indirect taxes and lower employment (v.d Horst et al., 2010). The effect of the taxation will be the largest among people born between 1945 and 1950, because it affects the rest of their entire life. Younger generations will pay the full burden as well, but in the future. It does not affect them before they start receiving pension, which makes the average effect smaller.

6.3 Flexible AOW

A widely discussed subject in the Netherlands in 2009 was the flexible AOW. The labour union FNV is strongly against an increase in official retirement and preferred flexible AOW. Two types of flexible AOW will be discussed in this chapter: the part-time pension and the work-history dependent AOW.

6.3.1   Part-time pension

On 18 November, 2008, a policy proposal was submitted to the house of deputies to make the AOW more flexible. Implementation of a flexible AOW gives people the opportunity to postpone a part or the entire AOW between the age of 65 and 70. Every year AOW is postponed, the benefits increase by a certain amount. This amount is actuarially fair, which results in a constant present value. There is no progressive increase in AOW-benefits to stimulate postponement (den Butter, van Sonsbeek, 2008). This policy implication would have two main goals. The first one is to change the idea that the age of 65 was the end of one's working career, which would increase the labour participation among the elderly. The second goal was to give individuals the possibility to act according to their physic and financial situation (PCOB, 2009). When people choose to postpone their AOW until after they are 65, this will result in a decrease in AOW expenditure at first. But when these people eventually retire, they have the right to increased AOW benefits. As long as a steady stream of people postpones AOW-benefits, this will result in a sole budgetary advantage (den Butter, van Sonsbeek, 2008). Empirical research showed that higher educated people have an above average life expectancy and that most people working after 65 are high-educated (Monden, 2008). This could result in a possible financial risk for the government because people that tend to work longer are benefiting from AOW for a longer period due to higher life expectancy. Unfair distribution also increases because AOW premiums do

not increase with higher levels of income. Older people live longer and benefit from AOW for a longer period, but do not pay higher AOW-premiums (den Butter, van Sonsbeek, 2008). According to a study by the CPB, the effect of a more flexible AOW is much smaller than the effect of an increased AOW age to 67. The first main goal of a flexible AOW was to change the idea that 65 was the end of one's working career. This effect is smaller with flexible AOW than when an increase in official retirement age to 67 is implemented. Where a higher AOW-age will increase the sustainability by 0.7% of GDP, the flexible-AOW will increase the sustainability by less than 0.2% (CPB notitie, 2009).

6.3.1   Work-history dependent AOW

In 2006, Sap, Nijssen and Schippers plead for a more flexible AOW by making the AOW work-history dependent. This way, the AOW becomes dependent to work-history instead of age. One reason for this change is to create solidarity between people that live long, and people that live short. The last decades, this difference in life-expectancy increased because of changes in people's education. This means that people with low levels of education, start working at a younger age and die at a lower age as well. According to Sap, Nijssen and Schippers (2008), low educated men live 5 years shorter than high educated people. Woman live 2.5 years shorter if they are low educated. Lower educated people have a much higher chance on physical constraints as well, because of the fact that their work is mostly physical. According to Sap and Schippers this perverted solidarity needs to be changed into an AOW scheme which is more fair. In their opinion the work-history dependent AOW is the perfect way to do this. People that start working at a younger age can benefit from an AOW at an earlier age this way as well. The number of years of work that are required to benefit from a full AOW should be 40 years and could be increased further if the life expectancy increases (Sap, Nijssen, Schippers, 2008). Besides a more solidary AOW scheme, work-history dependent AOW will increase the labour-participation among the elderly as well, because it connects better to the actual possibilities of people to continue working. It will increase the labour participation among women as well, because years of work determine the level of AOW benefits. This way, women are stimulated to find a full or part-time job. A negative effect of this policy would be that a more traditional way of life with women in the household will result in a lower AOW for couples. According to Sap, Nijssen and Schippers, work-history dependent AOW is better than an increased pension age because you do not move the pension costs to disability benefits. An increased pension age will increase the amount of low educated people that exit the labour force through disability benefits (Sap, Nijssen, Schippers, 2008).

6.4 Notional rental value

The deductible interest costs for ones mortgage are higher than ones income because of notional rental value. A reduction in the deductible interest will result in a broader tax base for the government.

According to van der Horst, Bettendorf, Draper, van Ewijk, de Mooij and ter Rele from the CPB, this policy will be implemented in 2015 and the maximum amount of notional rental value and interest that can be deducted will, in 22 years, decrease from 52% to 41%. This measure will increase the tax burden, which will have a positive effect on governmental income and a negative effect on labour-participation (v.d Horst et al., 2010). This policy will also result in a decrease in house value, which will be a negative side-effect for house owners and a positive side-effect for future buyers. The house prices will decrease with 6% according to the v.d Horst et al. (2010). This policy will increase the sustainability by 0.5% of GDP in 2040 because of a higher implicit tax. The deficit will decrease with 1.2% of GDP, and the public debt will decrease with 13.5% of GDP in 2040. Labour supply, GDP, and consumption however, will be negatively affected by this tax increase and will decrease by 0.4, 0.4 and 2.1% of GDP in 2040. The sustainability will increase with 0.6% of GDP (v.d Horst et al., 2010).

These measures all have serious consequences for the Dutch economy. The negative effects of most of these measures are pretty severe, especially for labour participation, GDP and consumption. They are however, needed to increase the sustainability in the future. Increasing the official pension age from 65 to 67 will not be enough to accomplish this on its own. The implementation of policy measures in the future to increase the sustainability will be hard because it affects a lot of people in a negative way. Most policy measures in the Netherlands take a lot of time and discussion to implement. It will take a lot of sacrifice to keep the governmental expenses sustainable in the future. Table 6.1 shows an overview of possible policy measures and their effect on sustainability, deficit and public debt.

Table 6.1: Policy measures and their effect on sustainability, deficit and public debt

Policy measure	Effect on sustain-ability from the year 2015	Effect on deficit in 2040	Effect on public debt in 2040
Increase in official retirement age	-0.7%	-1.4%	-16%
Tax increase	-0.8%	-1.5%	-20.9%
Taxation of the AOW	-0.1%	-0.4%	-5.5%
Part-time pension	-0.2%	?	?
Work history dependent AOW	?	?	?
Notional rental value	-0.6%	-1.2%	-13.5%

7. Conclusion

Demographic developments will become a serious threat to the governmental finances in the future. If no counter measures are taken large deficits will result from an increasing old-age dependency ratio. In the Netherlands the old-age dependency ratio will increase from 1 to 4 to 1 to 2, which will result in an increasing burden for the working generation. The AOW expenses and social security will severely increase and result in an unsustainable situation. A structural deficit will result in an increase in debt from 74% in 2015 to 134% in 2040 if no counter measures are taken. According to the CPB (2010) an annual increase of 4.5% of GDP is needed to keep governmental expenses sustainable in the future. The Netherlands is not the only country with sustainability problems. In the OECD, and especially in Japan and the continental European countries, demographic developments will strike hard. Countries with a low effective retirement age, low fertility rates and high life-expectancy will have the largest problems. The different pension systems in each country have a big effect on workers retirement behaviour. Especially European countries with low accrual rates, high replacement ratios and large social security and early retirement schemes have low effective retirement ages. This results in high public pension costs in the present and higher public pension costs in the future. The lower public pension costs in the Netherlands compared to the continental European countries are due to the fact that the Netherlands has a large funded part in its pension system and a relatively high fertility rate. Despite the Netherlands acceptable position compared to some other OECD countries, policy measures still need to be taken to keep the governmental finances sustainable in the future. One of these measures is an increase in the official retirement from 65 to 67. This measure will increase the labour participation among the elderly and decrease the AOW expenses due to the two year increase in the retirement age. According to the CPB (2010), this increase will result in a 0.7% increase in the sustainability. This forecast is a nice indicator of what the effect of this policy measure will be. It is however very hard to predict the effect of an increase in the official retirement age on the increase in effective retirement age. therefore it is hard to give a reliable forecast on the increase in labour participation among the elderly. If we assume that this policy measure will increase the sustainability by 0.7, it is a nice start and will be absolutely necessary. Other policy measures need to be taken as well if we assume that the total increase in sustainability needs to be 4.5%. Other policy measures that decrease government expenses are to increase taxes. Make the AOW age flexible is another possibility. This could be done by creating part time pensions or by work-history dependent AOW. Another possible policy measure could be the taxation of the AOW, which will result in a higher tax burden for people that receive AOW-benefits. A broader tax base could be created by decreasing the interest and notional rental value that can be deducted. This is another possibility of increasing the sustainability. The increase in the official retirement age, as well as other policy measures needs to be taken to keep the governmental expenses sustainable.

8. Reference List:

Berendsen, E., P. Rijnsburger. 2009. Eerste globale verkenning van de gevolgen van een verhoging van de pensioenleeftijd, *UWV Kennismemo* 09/08.

Bloemen, H. G. 2011. The Effect of Private Wealth on the Retirement Rate: An Empirical Analysis, *Economica*, doi: 10.1111/j.1468-0335.2010.00845.x.

Blöndal, S., S. Scarpetta . 1999. The Retirement Decision in OECD Countries, *OECD Economics Department Working Papers*, No 202.

Bovenberg, A.L. 2004. Naar nieuwe pensioencontracten, *OCFEB Research Memorandum* 0401.

Bovenberg, A. L., R. H. J. M. Gradus. 2008. Dutch policies towards ageing, *European View,* No. 2: 265-275.

Butter, F. den, J. M. van Sonsbeek. 2008. Opties voor flexibilisering van de AOW, *ESB*, No. 93(4549): 742-745.

CPB, 2008. Effecten van participatiebeleid, *CPB notitie 6 juni 2008.*

CPB, 2009. Houdbaarheidseffect voorstel verhoging AOW-leeftijd, *CPB Notitie 4 December 2009.*

CPB, 2011. Pensioenakkoord juni 2011, *CPB notitie 4 juni 2011.*

De Nederlandsche Bank (DNB). 2008. Vroegpensioen, de levensloopregeling en het vermogen van Nederlandse huishoudens, *DNB kwartaalbericht,* maart 2008: 33- 37.

Duval, R. 2003. Retirement behaviour in OECD countries: impact of old-age pension schemes and other social transfer programmes, *OECD Economic Studies*, No. 37.

Euwals, R., F. van Erp, P. de Hek, H. ter Rele. 2008. Effect van verhogen pensioengerechtigde leeftijd op bruto participatie, CPB Memorandum.

Euwals, R., D. van Vuuren, R. Wolthoff. 2010. Early retirement in the Netherlands: Evidence from a Policy Reform, *De Economist*, No. 158(3): 209-236.

Euwals, R., R. de Mooij, D. van Vuuren. 2009. Rethinking Retirement, CPB Special Publication 80.

Euwals, R., C. Folmer. 2009. Arbeidsaanbod en gewerkte uren tot 2050: een beleidsneutraal scenario, CPB Memorandum.

Ewijk, C. van. 2002. Maastricht voorbij, Economische aspecten van vergrijzing in Europa, *Bevolking en Gezin*: 25-51.

Fenge, R., M. Werding. 2004. Ageing and the tax implied in public pension schemes: simulations for selected OECD countries. *Fiscal Studies*, No. 25: 159–200.

Grift, M. van de. 2008. Pensioenaanspraken en vergrijzing, *De Nederlandse economie 2008,* 155-172.

Groot, I., A. Heyma. 2004. Financiële prikkels voor werknemers bij uittreding, SEO, Position paper in order of the Raad voor Maatschappelijke Ontwikkeling (RMO), No. 3.

Gruber, J., D. Wise (1997), Social Security programs and retirement around the world, NBER Working Paper, 6134, National Bureau of Economic Research.

Gustman, A.L., T. L. Steinmeier. 2006. Social Security and Retirement Dynamics, Working paper, University of Michigan, Michigan Retirement Research Center, No. wp121.

Herbertsson, T. T., J. M. Orszag. 2003. The Early Retirement Burden: Assessing the Costs of the Continued Prevalence of Early Retirement in OECD Countries, IZA Discussion Paper No. 816; Watson Wyatt Technical Paper No. 2003-8.

Horst, A. van der, L. Bettendorf, N. Draper, C. van Ewijk, R. de Mooij,
H. ter Rele. 2010. vergrijzing verdeeld, CPB special publication 86.

Mastrobuoni, G. 2009. Labor supply effects of the recent social security benefit cuts: Empirical estimates using cohort discontinuities, *Journal of Public Economics*, No. 93, Issues 11-12: 1224-1233.

Mitchell, O.S. 1991. Social Security reforms and Poverty among older dual-earner couples, *Journal of Population Economics*, No. 4(4): 281-293.

Monden, C. 2008. Grote verschillen in de groep werkende 65+ -mannen, *ESB*, No. 93: 183-185.

Nelissen, J. H. M. 2001. Bevordering arbeidsparticipatie ouderen; Het effect van wijzigingen in ver-vroegde uittredingsregelingen op de arbeidsparticipatie van oudere werknemers, Tilburg: Center.

OECD. 2005. Ageing and employment policies: Netherlands, Paris: OECD.

OECD. 2009. Pensions at a Glance 2009: Retirement-Income Systems in OECD countries.

OECD. 2011. Pensions at a Glance 2011: Retirement-Income Systems in OECD and G20 Countries.

Oorschot, W. van. 2007. Narrowing pathways to early retirement in
the Netherlands, *the Policy Press*, No. 15(3): 247-255.

PCOB, Protestants christelijke ouderen bond. 2009. Achtergrondinformatie inhoudelijke positionering PCOB.

Sap, J., J. Nijssen, J. Schippers. 2008. Maak de AOW afhankelijk van Arbeidsverleden, *ESB*, No. 93(4547): 678-681.

Schils T. 2008. Early retirement in Germany, the Netherlands and the United Kingdom: A Longitudinal analysis of individual factors and institutional regimes, *European Socialogical Review,* No. 24(3): 315-329.

Sinn, H.W. 2005. Europe's demographic deficit: A plea for a child pension system, *De Economist*, No. 153: 1-45.

Sleebos J. E. 2003. Low Fertility Rates in OECD Countries: Facts and Policy Responses, Working paper, OECD Social, Employment and Migration, No. 15.