Pension reforms: Longevity and retirement

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1 Introduction

Pension systems should cater to both distribution and consumption smoothing. The distribution motive is to ensure a decent living standard for life for all elderly members of society irrespective of previous savings or labour market attachment. The motive behind consumption smoothing is to ensure that consumption possibilities of retired persons remain at a reasonable level relative to their living standard while working[1].

The aim to balance these objectives has prompted a vivid debate on pensions and numerous reforms of pension systems around the world. In the first phase the focus was on the ability of public pension schemes to ensure sufficiently high replacement rates and the fact that funded pension schemes would tend to offer a higher rate of return[2]. In the second phase there has been a strong focus on ageing and the need to ensure fiscal sustainability. Life expectancy at birth has been increasing already for two centuries, first mainly due to a fall in infant mortality and later also due to reduced mortality in working years. A more recent observation is that mortality rates of elderly people are falling. Population projections have systematically underestimated this trend, and the financial viability of pensions systems has been called into question. This has been an important driver for reforms (see e.g. OECD, 2013c). The bias in projections also explains at least partly why policy makers have been slow to react. Another reason for the lag is the strong path dependency in pension politics.

Also the Nordic countries have seen significant changes in pensions systems in the last 20-25 years and more recently with a strong focus on increasing longevity. Interestingly, pension systems differ significantly across the Nordic countries, although the underlying objectives are very similar. The same applies to the way in which the increasing longevity is addressed.

In all Nordic countries (except Iceland), the link between pension benefits and earned wages has been strengthened and access to early retirement schemes has been curtailed. A common feature in three of the countries is also the adoption of flexible retirement age and adjustment of pensions to longevity. The Swedish example shows, however, that the introduction of an actuarial linkage between paid contributions and earned pensions in the earnings-related pension system has not been able to encourage people to postpone retirement as much as required to stabilize the ratio of working years and time in retirement.

The Danish solution to increasing longevity is perhaps the most striking. It aims to keep the expected number of retirement years fixed across cohorts. Statutory retirement ages are indexed (albeit with a

[1] This also includes various insurance elements in relation to events which can happen through life, including unexpectedly long lifetime.

[2] A funded pension scheme offers the market rate of return on savings, while the implicit return in a pay-as-you-go (PAYG) scheme is the growth rate of the wage sum. In a dynamically efficient economy the market rate of return exceeds the growth of the wage sum, and hence there is a return argument in favour of a funded scheme. This also holds when e.g. longevity is increasing. However, a PAYG scheme may offer more scope for risk diversification, e.g. across generations. See e.g. Barr and Diamond (2006) for a general discussion of the design of pension systems.

lag) to the life-expectancy at the age of 60 so as to ensure the same expected retirement period across generations, i.e. increases in expected longevity lead on a one-to-one basis to an increase in the statutory retirement age. A recent Swedish proposal allocates 2/3 of the increase in expected longevity at the age of 65 (relative to the life expectancy in 1997) to the age limits of the public pension system, see Pensionsåldersutredningen (2013). In both cases discretionary hikes in the statutory retirement ages precedes the introduction of the longevity link. The systems in Norway and Finland have built-in incentives for later retirement alongside increases in longevity. At the same time it is noted that this may not be sufficient to ensure fiscal sustainability (see Perspektivmeldingen (2013) and Pension Panel (2013)). In Finland, the next reform, aimed to be implemented in 2017, is very likely to increase the lowest eligibility age for old age pensions, but the details and timetable are open. There are no plans for major reforms in Norway and Iceland.

This article analyses the current methods and alternative options to adjust pensions systems to increasing longevity in the Nordic countries. Section 2 gives a short account of the demographic forecasts for the Nordic countries. Section 3 provides a brief outline of pension systems and recent reforms. Section 4 discusses some general principles and issues in relation to adaptation of pension systems to changes in longevity, and Section 5 considers various policy issues in relation to pension reforms. A few concluding remarks and policy implications are given in Section 6.

2 Some stylized facts on Nordic demographics

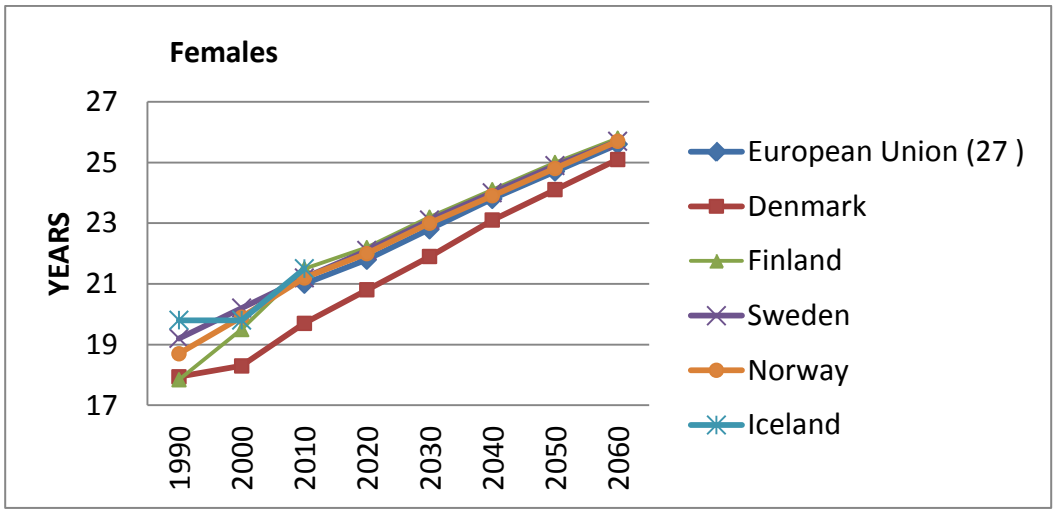
2.1 Life expectancy continues to increase

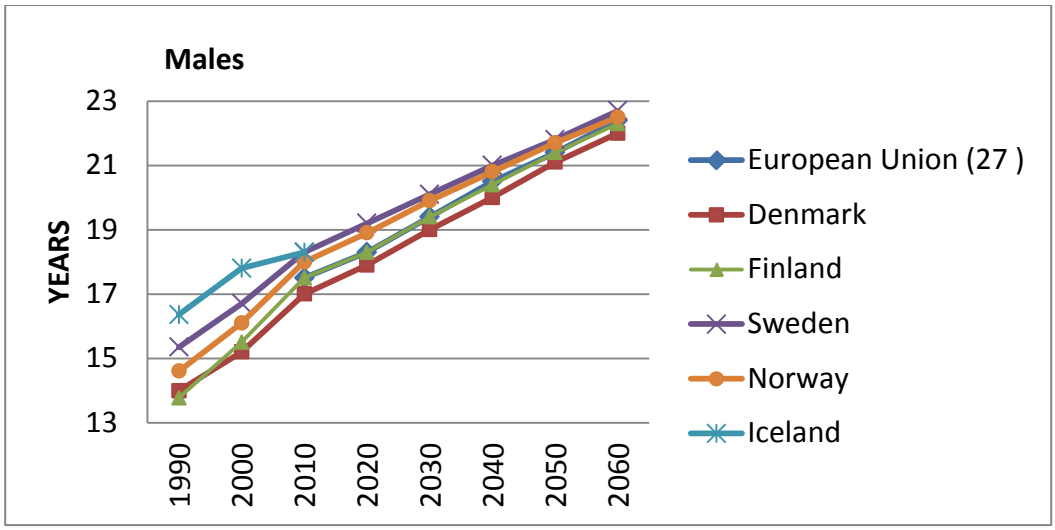
Like many other countries, the Nordics are facing large changes in the demographic structure. In particular, the old-age dependency ratio is increasing. All Nordic countries have relatively high fertility rates and long lifetimes. More variation can be observed in the amount of immigration. Recent decades have shown that future mortality rates are difficult to project and there no is reason to expect that the accuracy of the projections is improving in the future[3]. This is a major issue in the planning of pension systems.

We report here a few facts on the demographic development using the latest Eurostat 2010 population projection[4].This projection is based on the principle of convergence. It assumes that the rate at which longevity increases in top performers, such as Sweden, will slow down and the others will catch up. For the Nordics this means that the increase in longevity is projected to be the fastest in Denmark, cf. Figure 1.

Figure 1 Life expectancy at age 65

[3] Keilman (2008) shows that population projections have not become more accurate over the time.
[4] These differ from the projections made by the National Statistical Bureaus, but the overall trends are similar,



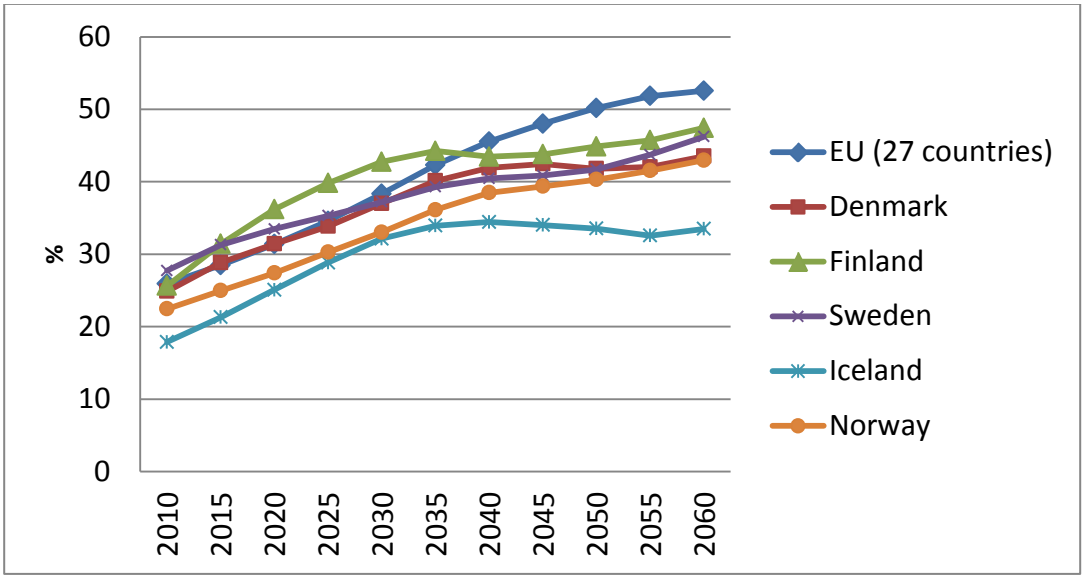


Source: Eurostat Population Projections 2010-based (Europop2010):
http://epp.eurostat.ec.europa.eu/cache/ITY_SDDS/en/proj_10c_esms.htm

The projected old age ratios (65+/15-64) show that a rather uniform change in the population structures is expected to take place during the next 25 years, cf. Figure 2. From the 2040s (2030s in the case of Iceland and Finland) the increase in the dependency rate will level off. This is at least partially related to the passing of the baby boom generations, which are of different size in the different Nordic countries. The upward trend in longevity implies that the increase in the dependency ratio has a more permanent nature.

It is notable that in 2040s the population structure in the Nordics is projected to be among the youngest in Europe due to relatively high fertility. This happens regardless of the fact that the convergence principle used in the projections implies that the projected fertility rates for Norway and Sweden decrease over time.

Figure 2 Old age dependency ratios



Note: Age group 65+ relative to age group15-64.
Source: Eurostat Population Projections 2010-based (Europop2010):
http://epp.eurostat.ec.europa.eu/cache/ITY_SDDS/en/proj_10c_esms.htm

2.2 Longer periods in retirement weaken public finances

In the past there has been a trend increase in the retirement period both due to increasing longevity and lowering of effective retirement ages (e.g. due to early retirement schemes). Table 1 calculates the average expected number of years after exit from labour force. This number is somewhat higher than the number of years that a person receives pensions, since in many cases the working career ends due to sickness leave, unemployment or voluntary retirement. In any case, the outcome shows that there are marked differences among the Nordics. For example, the early exit of the Finns gives them the highest number of years after exit, even though the life expectancy of a 60-year old Finn is among the shortest. Finns are in this respect closer to the EU average than the Nordic outperformers. A recent study indicates that in Finland the observed average time in retirement increased from around 9 years in the beginning of 1980s to more than 20 years in 2009 (Järnefelt et al. 2013). The main reason for this development was increased use of early exit routes.

Table 1 Expected years after exit from labour force, 2009

	Remaining life expectancy at 60	Total life expectancy at 60	Average exit age	Expected years after exit
European Union (27 countries)	23.2	83.2	61.4	21.8
Denmark	22.2	82.2	62.3	19.9

Finland	23.6	83.6	61.7	21.9
Sweden	24.0	84.0	64.3	19.7
Iceland	24.1	84.1	64.8	19.3
Norway	23.8	83.8	63.2	20.6

Note: Total life expectancy at age 60 is calculated by adding 60 years to period life expectancy at age 60. Expected years after exit is approximated by subtracting average exit age from total life expectancy at 60.
Source: Eurostat.

Table 2 shows the public pension expenditure projections of the Commission published in 2012. It is striking that in Sweden and Denmark public pension expenditure is not projected to increase much relative to GDP. Also in Norway and Finland the increasing expenditure rate is not so much due to increasing longevity, but variation in sizes of birth cohorts.

Table 2 Projected public pension expenditure 2010-2060, percentage points of GDP

	2010	2060	Change
Denmark	10.1	9.5	-0.6
Finland	12.0	15.2	3.2
Sweden	9.6	10.2	0.6
Norway	9.3	14.2	4.9
EU27	11.3	12.8	1.5

Source: European Commission (2012)

A main driver for the recent pension reforms has been to ensure the fiscal sustainability of the overall public finances. The reforms have reduced pension expenditure and thereby pressures to increase contribution rates. They are also expected to increase labour supply, which would boost overall tax revenues and mitigate other public expenditure.

A simple metric for fiscal sustainability is the needed permanent change in the primary budget balance to ensure that the intertemporal budget constraint of the government is satisfied. According to the most recent official assessments[5] Finland and Norway have not yet ensured fiscal sustainability. Finland and Norway would require a permanent budget improvement of 4.2 % and 3.4 % of GDP, respectively. For Denmark the condition for fiscal sustainability is exactly met, while Sweden has a fiscal space of 2.4% of GDP under this sustainability criterion. Compared to most other countries this puts Sweden and Denmark in a position as front-runners in having addressed the sustainability problem. Finland and Norway are also much further ahead than many other countries.

[5] As reported in Stability/Convergence Reports to the European Commission, see http://ec.europa.eu/europe2020/making-it-happen/country-specific-recommendations/. In the case of Norway perspektivmeldingen (2013).

3. Current and planned Nordic public pension systems and statutory retirement ages

The four largest Nordic countries have reformed their pension systems profoundly during the last 20-25 years. The following gives a brief overview of the structure of the pension systems and turns then to the recent reforms in the Nordic countries with a focus on adjustments to changes in longevity.

Pension systems can be characterized along different dimensions. One crucial distinction is between pay-as-you-go (PAYG) and fully funded systems. Another key distinction is between defined benefit (DB) and defined contribution (DC) schemes. Pensions in DC systems are determined on the basis of paid lifetime contributions, longevity and, if funded, also on the yield of the invested contributions. DB pensions define the pension which can be a flat rate pension identical for all or be dependent on last years' wages and length of working careers. A common trend has been to tighten the link between earned lifetime wages and earned pension rights and to adjust pensions to the longevity of the cohort and the individual retirement age. Therefore many DB schemes behave now much like DC schemes.

Since the influential World Bank Report (World Bank, 1994) it has been customary to make a distinction between three pillars of the pension systems; Pillar I: A public managed system with mandatory participation. This is typically a DB-PAYG scheme which may be financed via social security contributions or general taxation. Pillar II: A privately managed mandatory savings system. It can be an occupational pension scheme which may be attached to a particular firm, or it may be a general labour market pension scheme. Such schemes exists as DC or DB, and funded or PAYG schemes. Pillar III: Voluntary private savings scheme (by definition a DC scheme). The World Bank recommended that pensions schemes should be based on all three pillars, since they serve different purposes. Pillar I is in particular important for avoiding poverty among retired persons, and thus to ensure redistribution. Pillar II serves the purpose of consumption smoothing over the life time, and Pillar III allow for differences in individual preferences.

These functional differences have been the starting point in the currently used classification (OECD, 2013c), in which the systems consists of first-tier redistributive pensions, second-tier mandatory occupational/insurance pensions, and third tier voluntary pensions. Although the term "Nordic Model" is widely used, there are significant differences in the design of pension systems across the Nordic countries, which in turn also have implications for how changes in longevity are addressed. In the following we provide a short overview of the pension systems in the Nordic countries, with a particular focus on the longevity issue.

Sweden

Sweden made a major overhaul of the public pension system in the 1990s (legislated in 1994 and implemented from 1999) and moved to a so-called notional defined contribution scheme. Specifically, there are three layers in the mandatory pension scheme: the guarantee pension (base pension), income

pension and the premium pension. In addition there are quasi-mandatory individual labour market pensions and voluntary private pensions.

The first tier guarantee pension is a means-tested minimum pension offered in cases where the other pensions provide a too low income level. The second tier consists of income pensions, premium pensions and the occupational pensions. For the public old age pensions the key is the income pension which is PAYG financed, but in which the pension rights depend on the lifetime contributions to the scheme as in a funded scheme (therefore the scheme is termed a notional defined contribution scheme). The financial sustainability of the system is ensured by a balancing mechanism that lowers the pension rights and pensions in payment if the sum of the expected contribution revenues and the buffer fund is lower than pension liabilities. The contribution rate for pensions is 18.5 % of earnings, of which 16 percentage points goes to the income pension. The remaining 2.5 percentage points are going to the premium pension system which is a funded pension scheme, in which the individual can influence the investment policy.

The public pension system of Sweden does not have a single statutory retirement age, but minimum ages at which various entitlements apply. It is not possible to withdraw the income pension before the age of 61, the base pension is available at the age of 65 (an implicit norm for retirement for many), and at the age of 67 one is no longer covered by certain labour market regulations (employment protection act). The income pension includes a mechanism which rewards the individual for postponing retirement (actuarial adjustment). It is an implication that the pension available at a given age is cohort specific since pensions are adjusted for life-expectancy. It was expected that the actuarial adjustment would encourage people to retire later, but the effect has not been large enough (Pensionsåldersutredningen, 2013) .

The continuous increase in life expectancy, the insufficient response in employment rates and the consequent outlook of decreasing benefits has provoked concerns regarding the adequacy of pensions. Projections imply that the average pension per person will decline relative to wages, see e.g. Swedish Fiscal Policy Council (2008). That is, although the system includes mechanisms which make it financially viable, it may not be politically viable in the sense that the outcome is unacceptable[6]. A reform committee was established by the government and it presented its proposal in April 2013 (Pensionsåldersutredningen, 2013). One of the main suggestions was to raise the eligibility ages and link them to life expectancy using a new concept of *recommended retirement age*.

In the proposal, the recommended retirement age is 65 years plus 2/3 of the difference between the remaining life expectancy of a 65 years old cohort in question and the corresponding life expectancy observed in 1997. The consequent hike in recommended retirement age will be rounded to nearest full year. This difference is calculated in the first time in 2015 and applied in the year 2019.

[6] In 2010 pensioners were compensated by a tax relief for reductions in pensions implied by the balancing rule in the pension system.

The eligibility age for the guarantee pension is suggested to be linked to the recommended retirement age in 2019, which is likely to lead to one year's increase in that age. The lowest eligibility age for income pensions is proposed to be raised to 62 years in 2015 and linked to the recommended retirement age in 2019. The age limit in the employment protection act will be raised to 69 years in 2016 and linked also to the recommended retirement age in 2019. If the proposal is implemented and the most recent population projection is realized, the age limits of the flexible retirement age will be 64-71 years in 2022. The reform also aims to tighten the age limits of the occupational pensions.

Denmark

In Denmark the pension system has been gradually changing since 1987 via the build-up of mandatory occupational pensions. The first tier pension system consists of a universal base pension and means-tested supplements. The second tier system consists of quasi-mandatory occupational pension systems[7]. Currently the contribution rate is 12 % or higher for most parts of the labour market. These pensions are funded. There is also a voluntary early retirement scheme called "efterløn". The system is contribution based but tax subsidized.

The statutory retirement age for eligibility to public pensions is 65 years. The efterløn allows early retirement at the age of 60. The system has been reformed several times in recent years to make it less attractive. The share of users of this exit route has declined in recent years, but is still almost a third of the 60-64 year old individuals.

Recent reforms have addressed the increasing longevity and the related problem of fiscal sustainability. The so-called "welfare reform" implemented in 2006 set the path for increases in statutory retirement ages. The statutory retirement ages will also eventually be linked to longevity. The so-called "retirement reform" front-loaded the phasing in of the changes and tightened the rules of the early retirement scheme further. Specifically, the lowest eligibility age for early retirement will be increased by two years from 2014-17, and from 2018 to 2022 the period is shortened from five to three years. The statutory retirement age for public pensions will be increased by two years in steps from 2019 to 2022. After these transitions, both the lowest eligibility age for early retirement and statutory retirement age for public pensions will be indexed[8] to the development in the expected life time for a person at the age of 60.

Changes in the pension ages are announced with a lead of 15 years, implying that the first change will be implemented in 2030 (2027 for early retirement). The indexation formula is such that the expected old age pension period will be 14.5 years in the long run (plus eventual three years in early retirement). Recent population projections indicate that the statutory pension age will be 68 years in 2030. The development of life expectancy and the need for adjusting the retirement age will be checked every five

[7] These pensions are negotiated between the labour market parties and in this sense voluntary, but participation is mandatory for individuals.

[8] The system is semi-automatic, since a change has to be approved in parliament. The changes are smoothed, and the change in one year can never be below 6 months and above 12 months.

years. Occupational pensions can be withdrawn (without tax penalty) five years before the statutory pension age.

Iceland

In the Icelandic pension system the first tier is composed of residence-based means-tested basic and supplementary pensions. The second tier consists of occupational pensions and the third tier of voluntary pension saving with tax incentives.

Being a member of a second tier pension fund is obligatory. The minimum contribution rate is 12%. The law requires schemes to target a replacement rate of 56% with 40 years' contributions, giving an accrual rate of 1.4%. There are two types of funds with different risk sharing rules. Funds with employer guarantee are not required to be fully funded. Only state, municipalities and financial sector employers can, however, guarantee funds. In practice the benefits are defined in these schemes and these employers carry the investment risks. Funds without the guarantee must adjust benefit rules in case of weak investment results.

In the basic pension scheme the retirement age is 67 years, but it can be postponed until 72 years. In the earnings-related pension schemes the retirement age varies between funds, but is normally 67 years. It is possible to adjust the retirement between 65-70 years, with corresponding actuarial adjustment of benefits (Jónasdóttir, 2007).

Norway

The Norwegian pension system was reformed comprehensively in 2011. Currently the first tier consists of the guarantee pension. The second tier includes the mandatory earnings-related income pension and occupational pensions. A major share of the employees is also covered by contractual early retirement schemes (AFP). The guarantee pension is income tested against the income pension (OECD, 2013). The Income Pension rights are determined as if there were a NDC system with a fixed contribution rate of 18.1 %, but there is no explicit link between benefits and actually paid contributions. It should be noted that the new rules apply only in the private sector. A particular issue in Norway is the exceptionally high intake of disability pensions.

The public pension schemes had previously a statutory retirement age of 67 years. The AFP system provided, however, an early pension for the ages 62-66 so that the monthly pension was almost independent of the retirement age. Furthermore, postponing retirement after 67 was not rewarded (Christensen et al. 2012). In the reform, a flexible retirement between ages 62-75 was introduced. Retirement before age 67 is, however, allowed only if the pension income exceeds the full amount of basic pensions. For persons that receive only basic pensions the retirement age of 67 still applies (OECD, 2013a).

The amount of paid pensions is adjusted in an actuarial way to the retirement age of the individual and the expected lifetime of her cohort at age 61. The combination of a flexible retirement age and the actuarial adjustment is presumed to generate strong incentives to retire later (Christensen et al. 2012).

The first observations suggests that the abolishment of the generous early retirement possibilities have indeed increased the employment rates in the private sector among the low educated in the age groups at issue. Interestingly, they seem to continue to collect pensions early, which suggests that they increasingly work and collect pensions at the same time (Nordby, et al. 2013). These first reactions do not, however, tell much about the influence of the longevity adjustment on retirement age.

Also the AFP system was changed in the private sector. It now provides actuarially adjusted pensions for the rest of the lifetime with the earliest retirement age of 62. Implementing the adjustment and lowering the monthly amount of AFP pensions will weaken early retirement incentives. The government aims also to change the rules of the occupational pension system correspondingly.

The generous early retirement rules were preserved in the public sector, which is likely to distort the mobility of workers between the sectors. It also weakens the impact of the reform on the average retirement age. It is likely that the issue of higher retirement ages will pop up again within a few years in Norway.

Finland

The first tier of the Finnish pension system consists of the means-tested national pension and the complementary guarantee pension which together provide a minimum income in cases where the earnings-related pension is insufficient. In the second tier earnings-related scheme every year's earnings after age 18 directly affect the future pension. The system covers risks related to disability, long-term unemployment of workers and death of family earners. The earnings-related pension system has collected substantial funds to smoothen the contribution increases due to population ageing. There is no pension ceiling in the earnings-related scheme. This explains why third tier voluntary pensions have a very limited role in Finland.

The normal retirement age was 65 years before year 2005 both in the means-tested basic pension scheme and in the earnings-related pensions. It was, however, possible to retire earlier using several options. There were disability pensions with eased access, unemployment pensions and actuarially fair early old age pensions. The reform of 2005 introduced a flexible retirement age between 62-67 years in the earnings-related scheme and abolished gradually the above-mentioned early retirement possibilities. Extending the working career is now rewarded by yearly accrual of 4.5 per cent between ages 63-67. After age 67 no new pension rights are accrued, but a yearly increase of 4.8 per cent for deferred retirement is applied. The reform also introduced a longevity adjustment for pensions. The size of the adjustment is calculated using the observed life expectancy of the cohort at age 62 to the average of that number from years 2003-2007. The eligibility age for full basic pension was left intact.

The results so far have been contradictory. The employment rates of people at ages 60-62 have increased markedly, both due to the restrictions applied to early retirement and higher overall demand for labour. But there has been little change in the retirement behaviour of people older than 62 years old.

The programme of the current government aims to raise the expected effective retirement age from the current 60.9 years old to 62.4 years old by 2025. To reach this aim, there have already been minor adjustments in the early retirement rules. A major reform is planned to take place in year 2017. A working group that evaluated the effects of the 2005 reform and studied alternatives for a socially and financially sustainable pension system in circumstances of increasing longevity handed over its report at the end of October 2013. This report lays the foundation for detailed negotiations between the labour market parties, but does not include any suggestions for the details of the reform.

Comparative reflections

The Nordic reforms have had the same overriding objectives concerning distribution and consumption smoothing. In all Nordic countries a "minimum" pension is ensured for all. At the same time, the systems ensure an old age pension which accrues in proportion to life-time earnings. All Nordic countries (except Iceland) have tried to achieve higher employment rates and fiscal sustainability by abolishing or restricting access to early retirement schemes and adjusting pensions or eligibility ages to increasing longevity. The details of the reformed systems differ, however, leading to quite large variation in the expected outcomes.

From the point of view of labour supply incentives, the Swedish system looks most promising at first sight. The adopted defined contribution principle and the actuarial adjustments of benefits for both longevity and the retirement age link paid contributions closely to the earnings-related income pensions. But the system also aims to redistribute income with the help of a means-tested guarantee pension and a relatively low ceiling for the income pensions. With these elements the link between contributions and benefits only applies in a rather narrow income interval. This feature is striking also in Norway (Valkonen, 2012).

In Denmark, the public pension (the supplement) is means tested, and this creates a high effective tax rate on savings and labour supply. In Finland, the means-tested national pension and its supplements restrict the working incentives of the low income employees, but there is no ceiling in the earnings-related pensions.

The automatic balancing mechanism of the Swedish pensions implies that any problems with financial sustainability are accommodated by changes in pension levels. The Norwegian and Finnish public pensions apply longevity adjustment of pensions, but otherwise the imbalances in the system are settled by increasing the contribution rate.

Table 3 General eligibility ages in Nordic countries

	Current statutory eligibility age	Expected eligibility age in 2030	Link to life expectancy
Denmark	60* - 65	65* - 68	Eligibility age
Finland	63 - 68	63 – 68	Pensions
Iceland	65 - 70	65 – 70	None

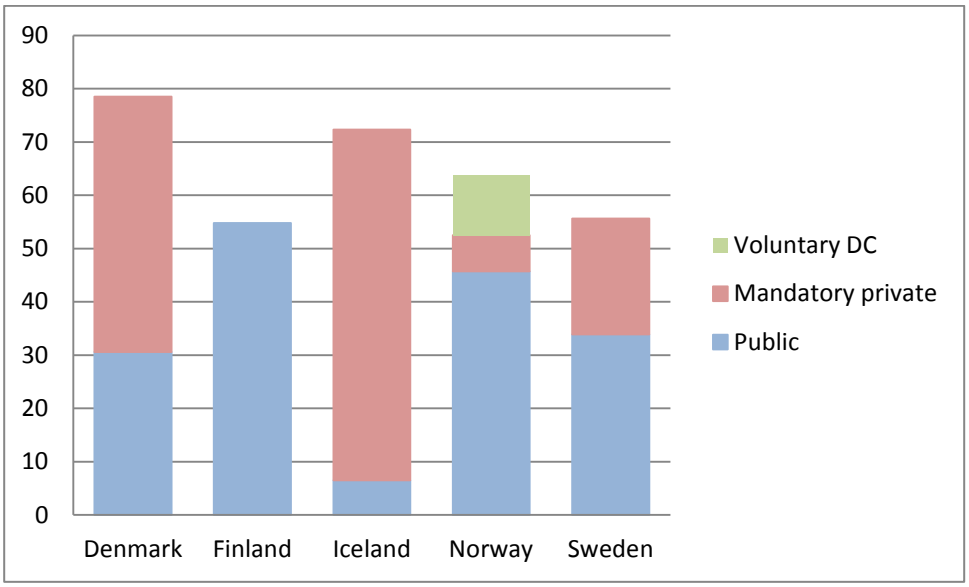
Norway	62 - 75	62 – 75	Pensions
Sweden	61 - 67	64** – 71**	Pensions/Eligibility age**

* efterlön
** suggested

Table 4 summarizes key features on statutory pension ages, expected retirement periods and how adjustments to changes in life expectancy are made. Current situations differ a lot between the countries, but it is easy to project that the public pension schemes are converging towards higher eligibility ages.

In Figure 3 the pension replacement rates of the Nordic pension systems are compared. The data describes theoretical replacement rates, calculated for a person who works from age 20 until the country-specific statutory retirement age of the public scheme and earns average wage (OECD, 2013c). These results should be considered only indicative, because the calculations include many assumptions. Public pension schemes in the figure covers both basic pensions and statutory earnings-related pensions. In Denmark and Iceland the basic pensions are the only ones in this category. Mandatory private pensions are actually quasi-mandatory, since they are mostly occupational pensions with extensive coverage.

Figure 3 Average replacement rates in Nordic countries



Note: The replacement rates are computed for a hypothetical person aged 20 who earns an average wage and retires at the country-specific statutory retirement age. Computations are based on pensions systems in 2012 including approved reforms.
Source: (OECD, 2013c)

The large variation in the relative shares shows that there is no such thing as a common Nordic pension system. Correspondingly, policies that try to achieve higher retirement ages must be designed country by country. Any policy that aims to increase the employment rates of the older workers must consider

also the rules of the private pension schemes in the countries where these schemes are significant. Governments can determine directly the rules of the public schemes, but can also affect the retirement age in the private schemes e.g. by accepting the contributions as deductible in taxation only if the retirement age follows the guidelines provided.

4. Adjusting pension systems to longevity: general principles

A common theme in recent pension reforms has been how to cope with changes in longevity. From an individual perspective the issue is to ensure an adequate living standard throughout life, and from a macro-perspective the fiscal sustainability and thus fundamentally the financial viability of welfare systems. These discussions have neglected, however, other issues, like the risk-sharing properties of the pension systems. This section aims to survey more broadly the criteria that should be used to assess the solutions offered to solve the problem of increasing longevity.

Adequacy and intra-generational redistribution

The main purpose of a pension system is to provide adequate pensions. Adequacy was often measured by replacement rates of pensions at retirement and the objective was that there should not be too large a fall in disposable incomes and consumption. When the average time in retirement has become longer, the focus has shifted to the ability of the pension system to provide reasonable living standards for the rest of the lifetime. If retirement ages are fixed and pensions are not indexed to wages, it is almost inevitable that the poverty rates of the elderly will increase when longevity increases. On the other hand, a full wage indexation would be rather expensive in a tax-financed system and endanger the fiscal sustainability of the pension scheme. Introduction of flexible retirement ages and the life expectancy adjustment was aimed at solving this problem by inducing people to compensate for this adjustment by retiring later. But there is a danger that people underestimate their consumption needs or are just too short-sighted to increase their retirement ages enough to avoid low earnings-related pensions. The very same arguments motivating why pension savings has to be mandatory can thus motivate the setting of statutory retirement ages. For intra-generational redistribution also the generosity and eligibility rules of basic pensions and disability pensions and progressivity in taxation of pensions are important.

Intergenerational sharing of the aggregate longevity risk

There are two types of longevity risks that public pension schemes must assess. The individual variation in mortality rates of a birth cohort and variation of mortality rates between birth cohorts. The latter has been described as non-diversifiable or aggregate risk. Actually, pension schemes often define implicitly who bears the risk arising from increases in the lifespan of a cohort.

In defined contribution schemes the life expectancy is evaluated at the time of retirement and an increase in expectancy results in adjustment of pensions. In traditional defined benefit systems the contribution rate adjusts to higher pension expenditure. The latter rule is often justified by noting that cutting pensions would hurt the economically vulnerable elderly. In case of constantly increasing longevity, an increasing contribution rate can also be defended by intergenerational equity.

The recent Nordic pension reforms suggest additional combinations. One of them is life expectancy adjustment of pensions[9], combined with a flexible retirement age. Flexibility provides a possibility to react in late stages of the working career to surprises in life expectancy. Another innovation is a link between life expectancy and the eligibility age for old age pensions.

These new innovations aim to adjust benefits or statutory retirement ages. Note that in a tax-financed scheme a higher retirement age implicitly implies that contributions are increased via larger tax payments (a key mechanism by which to ensure fiscal sustainability). Making retirement ages depend on longevity implies that the adjustment burden is allocated mainly to the generation which benefits from the longer lifetimes. This allocation can never be perfect, since the development of actual cohort-wise longevity is likely to differ somewhat from the expected one, but the deviation is only observable afterwards. Therefore the subsequent generations bear some of the longevity risk in any case.

Some defined benefit systems use prefunding to mitigate unwanted intergenerational transfers caused by materializing of demographic risks. But in case of longevity risks, the amount of needed prefunding is difficult to project before it is too late. Moreover this strategy also raises issues of intergenerational distribution to the extent that it implies a burden shifting across cohorts.

Insurance and incentives

Recent pension reforms have tightened the link between lifetime wages and earned pension rights. This has improved incentives to work. The efficiency of the schemes can be improved further by adjusting the pensions actuarially to the expected time of the cohort spent in retirement. This adjustment reacts both to the individually chosen retirement age and the expected longevity of the cohort. It is currently in use in Sweden and Norway.

The concerns about (re)distribution and consumption smoothing raise difficult design issues. The base or guarantee pension is targeted to elderly persons without much savings or previous work experience. In the sense it is means tested, and higher income/pension savings would imply a reduction in the base pension. This implies that the incentive to retire later or to save for pensions is reduced, in particular for low income groups. However, the means testing of base pensions also has an insurance function since variations in work over the life-span becomes less important for the total pension of an elderly person. This issue can be illustrated by the Danish pension scheme, where the mandatory occupational pension scheme implies that a large share of the population will have substantial savings in a funded scheme. Since the public pension is means tested this implies that increased pension savings is not matched one-

[9] The German pension indexation rule includes an element that considers the change in the dependency ratio, i.e. number of pensioners divided by the size of the labour force. This element limits index increases, if lifetimes become longer.

to-one in larger total pension entitlements (more labour market pension, less public pension). This increases the effective or implicit marginal tax rate on savings and postponement of retirement. On the other hand, it also implies that the total pension for a relatively large group is relatively insensitive to variation in wage, work, sickness, etc., which reduces pension risk, see Andersen et al. (2012). This is an example of a trade-off between incentives and insurance in designing the division of labour between the distribution and consumption smoothing motive in the pension system.

Financial sustainability of the pension system and overall public finances

A pension system is financially sustainable if there is no pressure to change any of its parameters or in case of a prefunded system to run down the funds below planned levels. As noted previously, the contribution rate adjusts in a defined benefit pension system if the retirement age is fixed. Even the actuarial adjustment of starting pensions is insufficient to shift the total risk of longevity increases to pensions.

Stability of the contribution rate is not a sufficient indicator for the overall fiscal sustainability effects that pension systems generate. A pension scheme can be sustainable with low retirement ages, but financial viability would then require low pensions or high contribution rates. Moreover, increasing longevity generates public expenditure due to higher health and long-term care costs. It would be reasonable to use part of the additional years to finance these costs by working longer. Higher pensions also mitigate the risk that pensioners need to rely on means-tested basic income allowances. Therefore it is not adequate that the pension system in a narrow sense is actuarially neutral with respect to longevity changes. The rules must also take into account the interaction with overall public finances.

Rules vs. discretion

An explicit indexation of pensions to life expectancy is a rule-based system. It thus has advantages compared to a discretionary setting of the retirement age in terms of potential time-inconsistency problems, and it also makes it easier for individuals to predict statutory retirement ages. Life expectancy changes relatively slowly and smoothly, but the political processes can be delayed and the outcomes are unpredictable.

5. Adjusting pension systems to longevity: some nuts and bolts

A crucial objective for reforms linking retirement ages to longevity is to increase employment for the affected age groups. The aim is to generate more tax revenue and less expenditure on transfers. In this section, we discuss various aspects relating to both the supply and the demand of labour on the relationship between retirement ages and employment.

5.1 Labour supply

While an actuarial adjustment of pensions to life expectancy can suffice to make the pension system financially sustainable, it is unlikely to induce individuals to lengthen their working lives in line with

increasing longevity so as to secure the sustainability of the overall public sector. An actuarial adjustment only takes the present value of pensions and contributions into account. However, for the public sector as a whole, the issue is also about income and consumption tax revenues. That is one reason why some Nordic countries are contemplating linking also the earliest eligibility age for old age pensions (earliest statutory retirement age) to longevity. The question is then how effective such a policy reform would be in terms of increasing employment.

It should be clear that raising the earliest eligibility age for old age pensions by, say, one year increases the average length of working life by less than one year. For one thing, a substantial fraction of individuals are disabled by the current retirement age. Increasing the retirement age is unlikely to have any effect on their decisions. Oppositely, some individuals already work beyond the current retirement age. Increasing the eligibility age for old age pensions does not necessarily affect them at all. Empirical studies typically suggest that increasing the retirement age extends working lives by 20-50% of the increase in the statutory retirement age (Sjögren Lindquist, 2011). In other words, increasing the earliest statutory retirement age by one year would extend working lives by about 2.5 to 6 months.

In many countries, various early retirement schemes have been very important in accounting for the decline in employment at older ages. Increasing the eligibility age for old age pensions is likely to make alternative routes out of the labour force even more popular. Määttänen (2014) considers alternative pension reforms using a numerical life cycle model that features a detailed description of the Finnish pension system and unemployment insurance. His results suggest that an increase in the earliest eligibility age for old age pensions may increase the use of the so-called unemployment pathway as well as part-time pensions so much that the effect on aggregate employment is close to zero. The unemployment pathway is effectively an early retirement scheme: It refers to an arrangement where the unemployed have the right to extended earnings-related unemployment benefits until they reach the earliest eligibility age for old-age retirement. This option is currently available from age 59.

In order to ensure a substantial increase in aggregate employment, an increase in the eligibility age for old age pensions should be combined with measures that restrict the access to early retirement schemes. Even then one should not expect working lives to increase one-to-one with the earliest eligibility age for old age pensions.

Since the retirement decision is critically dependent on the ability to continue working, it follows that the health status at a given age becomes crucial. It is commonly asserted that health deteriorates with age, and hence disutility from work is increasing with age. This assumption cannot be applied in an unqualified fashion in the presence of a trend increase in longevity. Empirical evidence strongly supports healthy ageing or the so-called compressed morbidity hypothesis. That is, the life extension is associated with a postponement of the age at which morbidity appears, see Payne et al. (2007) and Fries et al. (2011). Empirical research on the relationship between age and health also confirms this and finds support for the time-to-death approach[10], see e.g. Zweifel et al. (2006), OECD (2006), Werblow

[10] This approach suggests that a major part of health care costs are linked to proximity of death, not age of a person.

et al. (2009) and Lauridsen et al. (2011). Healthy ageing is thus not only pointing to the large potential welfare gains from the trend increase in longevity, but claims that labour supply capacity remains intact into higher ages alongside increases in longevity.

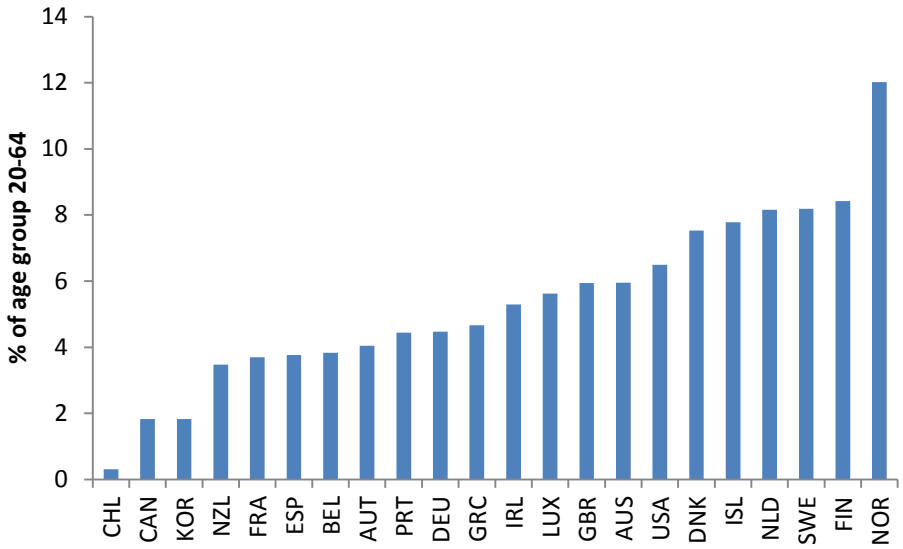
However, not all individuals experience healthy ageing and there is a significant dispersion in longevity across the population. There is a clear socioeconomic gradient in health and thus longevity. This implies that both the initial level and the changes in longevity differ across groups[11]. From a distributional perspective this is important since not all have the health to keep working to higher ages, and they may not to the same extent be able to respond to a general increase in the statutory retirement age. It is hard to solve this problem by differentiating statutory retirement ages across groups[12]. It is thus to be expected that an increase in the lowest eligibility age for old age pensions would increase demand on other parts of the social safety net, in particular disability pensions.

This raises issues in relation to disability pension systems and their eligibility criteria. On the one hand, it may be questioned whether they are flexible enough. On the other hand, it is a fact that disability pensions are already widely used in the Nordic countries. Figure 4 shows the share of the population in the age group 20-64 receiving disability pensions and it is seen that the Nordic countries stand out with high ratios. While it may be expected that the ratios are higher than in most other countries due to more extended welfare arrangements, the large number remains an issue for two reasons. One is the immediate fiscal implications. The other is that it reflects problems in the labour market. Many countries have in recent years experienced a reduced number of people receiving disability pensions due to a physical diagnosis, but an increasing number with a mental diagnosis. Disability pension systems are thus being reformed (See chapter xx in this book) A common theme in these reforms is to make the system more flexible. That implies, among other things, that disability pensions are only granted for a fixed time period to allow for a reevaluation of the situation and to have a stronger focus on labour market integration.

[11] It is contested whether inequalities in health and longevity across socio-economic groups are increasing or decreasing, see e.g. Pensionsåldersutredningen (2013).

[12] As is well-known there is a significant difference in longevity between men and women. The imposition of uni-sex conditions in retirement rules and pension schemes can be interpreted as reflecting political opposition to statutory retirement ages being differentiated across socio-economic groups.

Figure 4: Disability pension recipiency ratio, selected OECD countries, 2010



Source: www.OECDilibrary.com

A longer working life also raises questions related to knowledge, skills, productivity and life-long learning. Retirement ages tend to be higher for more educated groups. Alongside upward trends in education this may make it easier to ensure that higher statutory retirement ages translate into employment. However, it is important that the workforce develops its knowledge and other qualifications. A particular problem may be that obsolete qualifications, perhaps induced by structural changes, become a barrier for labour market participation. It is thus to be expected that more focus will be put on life-long learning[13].

Many prefer a flexible retirement path in the sense that working life is gradually phased out. This raises two policy challenges. The first one relates to the flexibility and incentives offered by pension schemes in allowing a gradual retirement as discussed above. The other one relates to the flexibility on the part of employers to offer such possibilities. Given the demographic development it must be expected that there will be pressure on employers to accept flexible working arrangements.

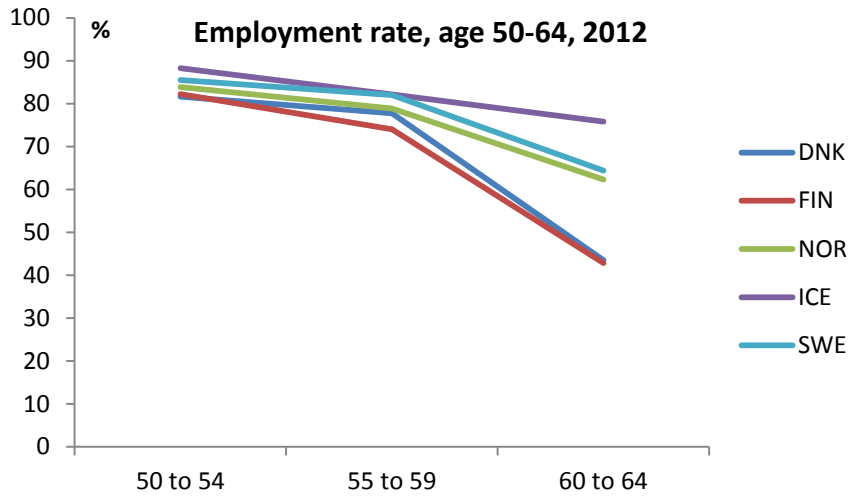
5.2 Demand for labour

The strategy taken to address the ageing problem relies critically on raising statutory retirement ages. This is largely motivated by the increase in life expectancy. A question that is very often raised is whether there will be jobs for more "old" people in the labour market.

[13] According to the ELLI-index for life-long learning in the EU, Denmark is ranked 1st, Sweden 2nd and Finland 4th in 2010, cf. www.elli.org.

Actual retirement ages are strongly dependent on statutory retirement ages. Figure 5 gives the employment rate for the elderly in the Nordic countries and there are striking differences. The countries are very similarly for the age groups 50-54 and 55-59. However, for the age-group 60-64 Denmark and Finland, the two countries with early exit possibilities, have a steep drop in employment rates. This is suggesting that restricting the access to exit routes would translate into higher employment for the elderly. In recent years there has been an increasing trend in employment rates alongside reforms of early retirement schemes. As an example the employment rate for the age group 55-59 has in Finland increased by 22 percentage points in 1998-2013 largely because of abolished early retirement possibilities.

Figure 5



Source: www.OECDilibrary.org

However, there are some concerns about how higher statutory retirement ages will affect labour markets. A classical issue is whether later retirement and thus more work for the elderly will crowd out jobs for youth. Early retirement schemes were introduced by many countries in the late 1970s and the 1980s based on the idea that retirement of older workers would leave more jobs for younger workers. This reasoning builds on the lump-of-labour argument that there is a fixed number of jobs, and hence more employment for one group will necessarily crowd out other groups. Specifically young and old workers are taken to be substitutes. This argument does not get strong support from empirical studies. In Gruber and Wise (2010) the issue is considered for 12 OECD countries both in terms of country-specific studies and cross-country analyses. None of these analyses find support that old workers crowd out younger workers. If anything, higher employment rates for older people tend to be associated with higher employment rates for younger people. OECD (2013b) finds similar results in a recent study which also includes the experience during the first few years of the financial crisis.

A related argument is that unemployment tends to be higher for older people, indicating that the labour market options for this group are weaker. It is a fact that unemployment rates tend to be higher for age groups close to retirement. The reason is not that the unemployment risk is higher than for other groups in the labour market, but that it is more difficult to regain employment if becoming unemployed. The question is, however, whether this problem can be escaped simply by holding a lower statutory retirement age, or whether this is an 'end point' problem that is difficult to avoid. For the four large Nordic countries Andersen and Pedersen (2008) show that there is "excess" unemployment for older workers, but the age at which it arises is increasing in the average retirement age. This strongly suggests that the "excess" unemployment is related to the short remaining horizon in the labour market, implying a tendency that unemployment increases for age groups that are 3-5 years below the normal retirement age. One may contemplate that this end point phenomenon can be attributed to both the demand side (employers being hesitant to hire workers close to retirement) and the supply side (workers are not searching as actively or are raising their threshold for acceptable wages and working conditions) in the labour market. The bottom-line of this finding is that the labour market adapts to the "normal" retirement age, and it may be difficult to avoid a higher unemployment rate for groups close to the retirement age irrespective of its precise level (within a reasonable interval).

5.3 Intra-generational distribution

Especially reforms that involve raising the eligibility age for old age pensions often raise distributional concerns. Perhaps the most important concern relates to differences in average life span across individuals in different income groups. It is well known that individuals with low education, who also tend to have low income, have on average a relatively short life span.

For concreteness, let us consider two imaginary groups, one of which consists of low income individuals and the other one of high income individuals. Assume that individuals in both groups start withdrawing old-age pension benefits as soon as it is possible and that low income individuals live on average 10 years and high income individuals 20 years after retirement. Increasing the lowest retirement age by, say, two years, would cut the average time on retirement by one fifth in the first group and by one tenth in the second group. As a result, in relative terms, an increase in the retirement age cuts the present value of the pension benefits of the low income individuals more than that of the high income individuals. Since differences in average life span across different socio-economic groups are substantial, this mechanism seems to be a relevant motive for the low income individuals to resist hikes in retirement ages.

However, increasing the retirement age has also other effects which go in the other direction in terms of redistribution. In particular, it is important to take into account not just old-age pensions but also unemployment insurance and disability pensions.

As noted above, not everyone works until the eligibility age for old-age pensions. Some individuals are on disability pensions and some individuals are unemployed before drawing old age pensions. Increasing the retirement age is bound to increase the number being unemployed or on disability pensions. For instance, some workers lose their job after the current retirement age and are not able to

find a new job quickly. Those individuals may see their incomes fall, at least temporarily, compared to a system where the retirement age is left unchanged. This is so if the unemployment benefit is lower than the pension benefit. However, unemployment insurance is progressive in all Nordic countries in the sense that relative to wages it provides a higher after-tax benefit to low-wage workers than for high-wage workers. Therefore, it is clear that unemployment insurance protects especially low-wage workers against the risk of unemployment at old age.

On the other hand, raising the eligibility age for old-age pensions does not limit disability pensions in any way. Instead it works to shift the focus of the overall pension system towards disability pensions, which tend to be especially important for low-income individuals because they have a high disability risk. To this it should be added that the resulting reduction in the contribution rate would benefit everyone - including individuals with low education, low wage, and high disability risk.

Taking all these effects into account, Määttänen (2014) finds that, if anything, increasing the eligibility age for old-age pensions in the Finnish statutory pension system is likely to improve equity. The life cycle model used in his analysis groups individuals according to education level and gender. In the model, wage earners face the risk of losing their jobs, the risk of becoming disabled and the risk of a surprisingly long life. These risks have been quantified based on Finnish data. For instance, people with low education have a higher disability risk and shorter average life span than others.

As discussed above, when increasing the eligibility age for old age pensions it is also important to reconsider early retirement schemes. Some of the early retirement schemes can arguably be justified on equity grounds. On the other hand, there are also early retirement schemes that mostly benefit workers that are relatively well off. The Finnish part-time pension system is an example of such a system. In order to be able to benefit from the system one must be employed in the first place. Moreover, the benefit rule is not progressive: the part-time pension is half of the difference between the full-time and part-time earnings.

As described above, the main alternative to raising the age limit for eligibility has been to adjust benefit levels. In terms of redistribution (and social insurance), the most important elements of Nordic pension systems are disability pensions as well as means-tested basic pensions providing a floor benefit. Cutting these benefits is likely to be more problematic from a distributional point of view than raising eligibility ages. In the Finnish case, for instance, the longevity adjustment applies to disability pensions. With increasing longevity, this works to lower the benefits of individuals that become disabled at a young age. In terms of life time income, they are among the poorest individuals. On the other hand, cutting only earnings-related old-age pensions should be less of a problem.

There are also gender issues involved. Women live longer than men on average. Therefore, they tend to withdraw pension benefits for a longer time than men. As a result, women should generally prefer an increase in the retirement age to cutting monthly pension benefits. To see this, notice first that in relative terms, a given increase in the retirement age lowers the time that women withdraw benefits less than the time that men withdraw benefits. The logic is the same as in the above example with low and

high income individuals. As a result, increasing the retirement age reduces the value of women's lifetime pension benefits less than that of men, again in relative terms. On the other hand, in the absence of behavioural responses, a given proportional reduction in monthly pension benefits reduces lifetime pension benefits by the same fraction independently of longevity.

5.4 Inter-generational redistribution

The basic logic motivating that retirement ages should be linked to longevity is based on inter-generational distribution concerns. Basically such a linkage ensures that those cohorts gaining from longer longevity are also to stay in the labour market for a longer period. This is particularly important in a tax-financed system since it serves to maintain the relation between the number of years the average person from a given cohort contributes to and benefits from tax-financed arrangements. In the absence of this, some cohorts may gain at the costs of other cohorts. This is most easily seen if the statutory retirement age is fixed. Increasing longevity then increases the retirement period in a one-to-one fashion. The longer retirement period has to be financed somehow and in a publicly financed PAYG system this becomes a burden on other cohorts. There is thus an equity argument that those cohorts benefitting from longer longevity are to carry the financing burden hereof[14].

In a fully funded pension scheme it could be argued that this is automatically ensured, and that there is no need to regulate retirement ages. This goes deep into the question of why there are statutory retirement ages and also why pension saving is often mandatory (as in e.g. mandatory occupational pensions). There are basically two arguments. One is myopia on the part of individuals, implying that they do not put sufficient weight on their living conditions when they are old and therefore save too little or retire too early. The other is the distributional objectives in the welfare state, which set limits on the living standard considered acceptable for older members of society. This is captured by basic pensions and to prevent individuals who "under-save" from benefitting from public provisions there is an argument for mandatory pension savings and statutory retirement ages.

5.5 Design of the link between retirement age and longevity

There are many possible elements and parameters in the indexation that can be chosen to adjust the speed and cohort wise incidence of the retirement age change. The first choice relates to the baseline life-expectancy. As an example, the Swedish proposal scheme uses the observed life expectancy of a 60 year old citizen in 1997 as the point of comparison. The earlier the chosen point is, the bigger the change in life expectancy, since lifetimes have increased continuously during last decades.

The second choice is the measure of life expectancy. Indexation in e.g. the Danish scheme is based on the life-expectancy at the age of 60. This is the so-called period life expectancy given as the average number of years a person would live if he or she experienced the age-specific mortality rates observed at the age of the calculation throughout the rest of their life. This makes no allowance for later changes

[14] Note that this not only applies to pensions but also other items like health and old-age care, which may be used more when longevity increases. The precise extent, of course, is dependent on the strength of healthy ageing, cf. above.

in (realized or expected) mortality rates. Another choice would be to use so-called cohort life expectancy at birth, which uses age-specific mortality rates allowing for known or projected changes in mortality throughout a person's/cohort's life. In a situation where longevity is increasing, this implies that the period life-expectancy falls short of the cohort-specific life expectancy. Therefore indexation based on period life-expectancy does not fully adjust to the changes in the longevity the cohorts are going to experience, see e.g. Danish Economic Council (2011).

The third design issue is the tightness of the link between longevity and eligibility age. One extreme solution is to link the eligibility age one-to-one to the increase in life expectancy. As long as longevity increases, this would reduce the years in retirement relative to average lifetime. It is quite likely that at some point in the future such a rule will become politically unsustainable. Another possibility is to try to find out a financially and socially sustainable ratio of working years and retirement years and to keep it fixed. This task is complicated by early retirement possibilities through disability pensions, unemployment allowances, occupational early pensions, etc.

The fourth issue is the lag in implementation of the adjustment in the eligibility age. In Denmark this is 15 years. The advantage of a long lag is that people know in good time the eligibility age applying for them. The weakness is that during this period there might happen opposite changes in life expectancy, which weaken the justifications for the eligibility age adjustment.

The fifth design issue is whether the link is automatic or discretionary. Discretionary decision making allows flexibility in case of unexpected situations or changing political preferences. On the other hand, rule-based adjustments avoid continuous political discussions and delays in decision-making. An automatic link allows also more easily a continuous regular adjustment in the eligibility age, which treats different birth cohorts more fairly and generates less pre-emptive actions. In both cases there is uncertainty in the outcomes. The loss of welfare due to the uncertainty can be mitigated by announcing all changes in the rules well in advance.

The sixth issue is how the level of the pension should be determined. This problem arises since a continuous increase in working years generates a continuously increasing replacement rate in a defined benefit pension system, where pensions are defined by wages, the number of working years and an accrual rate. In these schemes, either the accrual rates must be adjusted to longevity or some version of the longevity coefficient must still be applied together with the link between the eligibility age and longevity.

6 Assessing the Nordic solutions

Broadly speaking, there are three main ways to adjust pension systems in the face of increasing longevity. We may increase the contribution rates, decrease monthly pensions, or raise the eligibility age for pensions. For a long time, all Nordic countries used the first solution, although the increases in the contribution rates also reflected the maturing of the pay-as-you-go pension systems. However,

allowing the contribution rate to increase much further would be quite problematic. For one thing, the current contribution rates are already quite high. From an individual point of view, a mandatory pension system is similar to forced savings. Further increasing the required savings rate may be welfare decreasing. In addition, extending working lives is important for the overall public finances especially in the face of population ageing. Therefore all the Nordic countries are striving to ensure that retirement ages increase alongside increases in longevity. Pensions systems differ, and therefore the specific approach taken differs across counties. The underlying aim is that increases in statutory retirement ages should translate into later retirement and thus more employment, both of which would safeguard the pensions to be received when retired, and contribute to the financial sustainability of welfare arrangements.

Most Nordic countries have in recent reforms shifted to a system where monthly pensions are adjusted when life expectancy of the cohort increases. This has been done within a system of a flexible retirement age where the individuals can increase their future pensions by postponing retirement. This solution eliminates a large part of the sustainability problem of the pension systems caused by longevity increases. However, it is not without weaknesses. One issue is that so far the longevity adjustment and flexible retirement age has not induced individuals to extend their working lives to a substantial degree. As a result, the sustainability of the public economy as a whole is still an issue. Moreover the average level of pensions may become unacceptably low in the long run.

The third solution - linking the eligibility age to longevity - seems to face a lot of resistance. We have argued that some of the arguments against raising the eligibility age are not entirely valid. In particular, raising the eligibility age need not be problematic from a distributional point of view. At the same time, raising the eligibility age for old-age pensions while also restricting the access to early retirement schemes is likely to be a relatively efficient way of extending working lives especially among the relatively well-off individuals. It would also make sure that the average replacement rate remains reasonably high. All in all, we believe that the Nordic countries should eventually link the eligibility to longevity. In fact, this policy has already been adopted in Denmark and is likely to be adopted in the near future in Sweden.

There is also an issue on the political robustness of the reforms undertaken. It is important that forward-looking policy initiatives are taken so as to ensure the financial viability of pension and welfare systems. Myopia and time-inconsistency may also arise in political decision making. Although pension and retirement reforms are forward looking in nature there is thus a risk that policies may deviate from the planned trajectory. This can be prevented by rule-based policies linking e.g. retirement ages to expected longevity. This reduces the political temptation to deviate from planned policies, but there is always a political risk. The Danish indexation system brings this forth. Although there is a formal indexation rule linking statutory retirement ages to life-expectancy, it has the provisio that all changes released by the indexation rule have to be approved by parliament. There is thus a risk that the rule will not be followed. Obviously the risk of political interventions applies to all elements of the pension system.

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