Pension Reform, Retirement Ages, and Labour Supply in the United States and the European Union (EU15) 1950-2060

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Contents

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Abstract:

Reform of retirement age provisions in public policy schemes for the older population has moved to the centre of welfare state reform debate and policy during the past decades. Since the late 1980s European pension policy can be said to be in a state of permanent reform, questioning and affecting almost all dimensions of the systems that have been inherited from the past. During the most recent decade with increased European economic integration, the European Union level has also become an important actor in pension politics, stipulating targets such as the increasing of the participation rate for citizens between the ages of 55 and 64 to 50 per cent. Developments in the United States differ fundamentally from European trajectories in that the last major change to the public pension system was implemented in 1983 under the Ronald Reagan presidency. An absence of recent reforms has not meant an absence of policy initiatives and debate: Successive presidents (Clinton, Bush, Obama) have initiated reform debates yet nothing has came out of these initiatives and the 1983 reform remains a key benchmark in US public pension policy. Part of the Reagan reform scheduled an increase in the normal retirement age from 65 to 67 to be phased-in gradually between 2000 and 2027. Quite remarkably in light of European developments, this schedule has remained unaltered more than 20 years on and the raise in retirement age provisions is currently in the process of being implemented. Until the mid 2000s, European policy makers have given priority to reforming and abolishing various early retirement options but judged by current policy processes, pensionable age reform has now entered a new stage whereby it is to be anticipated that in the near future all major EU countries will have followed the U.S. example and have enacted legislation stipulating a normal pensionable age of 67 (or older).

Taking a long 60 year look at trends in pensionable age policy this chapter places current policy initiatives in a broader context and considers how the different policies in the U.S. and EU15 countries have impacted on labour supply and participation of older people and how recent policies currently being phased-in are projected to impact during the next 50 years. In the 1950s labour market participation of older people was pretty similar on both continents but since the 1970s a substantial gap developed, with EU15 as a whole and most member countries lying substantially below U.S. rates. Trends have been similar but troughs and peaks have been much more pronounced in Europe than the U.S. We argue that the substantial gap between the rates on the two continents developing until the mid 1990s can largely be explained by differences in retirement age policy and that the much stronger increase in participation in EU15 vis-à-vis the U.S. during the past 15 years is one of the fruits of the new policies that have been adopted. Indeed, projections of the impact of retirement age reform discussed in the chapter indicates that in future we can expect EU15 countries to have higher participation rates for older people than the United States, thereby turning the pattern of the past forty years on its head.

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1: Introduction

Ever since the crisis of the welfare state was announced at the beginning of the 1980s (OECD 1981) governments in the United States and Europe have been aiming to scale back the size of their public pension systems.[1] While the first part of the 1970s was a period of expanding generosity and access, by the end of the decade program growth gave way to increasing concerns about financial implications and what these might mean for the overall growth performance of the economy. In spite of being a time of much debate, many reports and numerous commissions, in Europe in the early 1980s actual changes remained modest – both with respect to pension and with respect to early retirement policy, which had been introduced during the slowdown in the 1970s with a view to reducing labour supply and unemployment, incl. youth unemployment (Mirkin 1987).[2] In fact, in defiance of overall international trends in policy philosophy, France under the Mitterrand presidency introduced in 1982 a reduction in pensionable age (Conceicao-Heldt 2007). On a broader European front and following an own policy dynamic in the face of slack labour markets, in several countries pre-retirement options located within unemployment compensation systems were refined and further expanded. However, since the late 1980s European pension policy can be said to be in a state of permanent reform, questioning and affecting almost all dimensions of the systems that have been inherited from the past (Whitehouse et al 2009). During the most recent decade with increased European economic integration, the European Union level has also become an important actor in pension politics.

Developments in the United States differ fundamentally from European trajectories in that the last major change to the public pension system was implemented in 1983 under the Ronald Reagan presidency (Martin and Weaver 2005). The public pension earnings test, stipulating how much a pensioner is allowed to earn from work without facing benefit deductions, have been modified on several occasions and was abolished altogether in April 2000 for people reaching normal retirement age (Burtless and Quinn 2002, Burtless 2004), but change has been the exception rather than the rule. An early retirement option was introduced into the pension scheme in the post-war years but has not been subjected to the same political controversies as in Europe, and has not been altered since its insertion. An absence of recent reforms has not meant an absence of policy initiatives and debate: Both under President Clinton during the 1990s and President Bush during the early 2000s government commissions and councils have deliberated reform options along lines that have been quite similar to European debates and trends, yet nothing came out of these initiatives and the 1983 reform remains a key benchmark in US public pension policy. More recently public pension reform was part of the agenda of President Obama's "National Commission on Fiscal Responsibility and Reform" but also in this case no legislation emerged from the work of that body.

From one point of view, the 1983 U.S. reform may be viewed as a minor adjustment similar to the ongoing ad hoc adaptations of contribution and benefit rates that were frequently implemented in Europe at the time, in that the immediate concern was to close a short-term financial shortfall caused by the early-1980s economic recession. The measures which on that account were adopted largely followed up on similar changes to the pension scheme that had been implemented in 1977 under the Carter administration. From a different perspective, the reform might be viewed as a watershed in that, based on a projection horizon of 75 years, it

[1] In the United States, the public pension system is usually referred to as "social security". In this chapter the conventional international terminology is used.

[2] ***Recall Lawrence and Schultze – Barriers to European Growth from 1987 – where Gary has a chapter – the volume said nothing about a looming European pension crisis. This note might be omitted in the final version.***

set the long-run financial status of the pension scheme as a key policy target and it rejuvenated the idea of reserve funding that had been dead since the 1940s (Martin and Weaver op cit). Rates of contribution and pension benefit obligations and entitlements were set in light of their long-term fiscal implications as indicated by the projections provided by the actuaries of the social security agency. In contrast to the 75 year projection horizon, the 1981 Castellino commission[3], which was one of the first to present pension expenditure projections in Italy, operated with a twenty year horizon (Ferrera and Jessoula 2007 p 422) and the same horizon was also the basis for the 1989 reform in Germany, even though, as Winfried Schmähl noted, "anybody dealing with this topic knows that most of the demographic changes will take place after year 2010" (Schmähl 1993 p 46).

As a result of the U.S. 1983 reform, rates of contribution were raised above the level required to fund immediate pay-go outlays with a view of building up a reserve fund during the medium-term favourable demographic trends. The reserve fund should then help finance outlays when the projected future demographic trends would turn more adverse, allowing for stable contribution and benefit rates also in the long term. To restrict projected future costs, an increase in the normal pension eligibility age from 65 to 67, scheduled to be phased-in gradually between 2000 and 2027, became part of the reform. This part of the reform emerged following a heated and divided debate in Congress, with the considered alternatives being cuts in benefits for the year 2000 and a tax hike to commence in 2015 as well as a more moderate increase to 66 in the retirement age (Schieber and Shoven 1999 p 194). Quite remarkably in light of the European ad hoc-ism at the time, the schedule enshrined in the 1983 legislation has remained unaltered and the raise in retirement age is currently in the process of being implemented.

A considerable amount of debate has been held on the question whether the European reforms have been "path breaking". The answer to this question depends of course on judgement and therefore on personal views and conventions. In any event, putting aside the details Europe and EU15 continue to embrace essentially two different public pension traditions, the origins of which can be traced back to reforms from the late 1950s. On the one hand, the majority of member countries comprising 78 per cent of the population making up EU15 and more than 90 per cent of the population of the Euro-countries (countries that have adopted the Euro as a common currency) have an earnings-related pension system with earnings-related contributions and benefits. On the other hand, Denmark, the United Kingdom, Ireland, and the Netherlands have a system providing a public minimum pension. Denmark and the UK have during the course of the post-war history introduced earnings-related elements but these remain comparatively modest. Most earnings-related countries also provide some kind of minimum, either through provisions in pension legislation or through their general social assistance schemes. Private provision in the Netherlands is in a category of its own in that there is an extensive system of mandatory occupational pensions negotiated by the social partners while in other countries private provision remains voluntary in nature.

Even though much has been reformed during the past decades, and several countries that in the past had monolithic earnings-related systems have now moved towards more mixed public/private systems, these two public traditions continue to prevail (see e.g. Disney 2004 among others). The U.S. public pension system can be positioned within the European earnings-related mainstream but with the major contrast that the U.S. benefit schedule is highly progressive, providing inversely-earnings related benefits and therefore higher replacement rates for low than for high earners. Average EU15 fiscal expenditure on public

[3] Named after its chairman the late Professor Onorato Castellino.

pensions stands at 8,8 per cent of GDP in contrast to the U.S. 6,0 per cent. However, levels vary considerably within the EU with the countries providing minimum pensions having outlays similar to or somewhat lower than the U.S., and the earnings-related countries having substantially higher expenditure levels – France, Germany, Italy, Greece, Portugal, and Austria have expenditure levels that are up to twice as high as the U.S. (OECD 2011 table page 155).

These figures include the costs of early retirement options within public pension systems, but they do not include expenditures on the highly controversial pre-retirement and early retirement options that in most European countries continue to operate as special provisions in unemployment compensation and disability systems. Special provisions favouring older workers do not always entail a separate expenditure category, and there is also the danger of double counting when the same expenditures are included in two programme categories. With this reservation in mind, Eurostat's social expenditure database delivers the most comprehensive estimates, indicating that currently EU15 spends about 0,7 per cent of GDP on early retirement.[4] About half of this outlay goes to pre-retirement options located within unemployment compensation and disability systems, and is therefore not included in the indicated public pension expenditure figure. The United States does not provide estimates of outlays on the early retirement component within its public pension scheme.

Europe has now entered yet a new phase of reform and the time is approaching when the U.S. will need to move beyond debate and deliberations in commissions and to engage in concrete reform initiatives. Following the logic of the system, U.S. policy makers are required to act before the trust fund becomes "insolvent" (outlay will exceed revenue and fund assets are exhausted) which under the most recent projection will occur in 2037 when a modest financing shortfall will emerge that needs to be dealt with (Munnell 2010). Having achieved much during the past two decades in terms of recalibrating the pension systems, in Europe attention has now turned to reforming the normal pension eligibility age, while early retirement and the resulting low effective retirement age continues to be a core concern. Independent of the nature of their pension systems, since 2007 several EU15 countries, notably Germany, the UK, Denmark, and most recently the Netherlands, Spain, France, Italy, and Belgium have been introducing an increase in the normal, statutory pension eligibility age along the lines introduced in the U.S. in 1983 under Reagan. In the case of the United Kingdom, an age target of 68 has been set.

Europeans have been facing much the same debates and choices between postponing retirement, increasing contributions, or reducing benefits that troubled the American Congress in 1983. With past reforms having reduced benefit generosity quite considerably and the ageing of the populations progressing, retirement age reform has become a focal point. Compared with the 1980s, debates and policy making are in the meantime better informed, in that since the early 2000s the European Commission on a regular basis has been publishing long-term projections with a 60 year horizon. Projections are of course never going to be accurate and especially assumptions about future trends in life expectancy and hence time spent in retirement have often turned out to be erroneously low (OECD 2011 chapter 5), but the shift in time horizon has turned the focus away from the short term.

Fiscal concerns remain an issue. The most recent public pensions expenditure projections – not taking account of the latest reform wave - indicate an increase by 2060 of a little more than two percentage points in EU15 countries (excluding Luxembourg and Greece) while

[4] The figure is derived as the sum of these program categories: "anticipated old age pension", "early retirement in case of reduced ability to work", and "early retirement for labour market reasons".

U.S. projections anticipate an increase by less than 0,5 percentage points (OECD 2011 table page 159). Note should be taken that outlays on occupational pensions for public sector employees are included in most EU member states' projections and these are expected to increase as a result of the ageing of public sector employees. European trends are therefore likely to be somewhat overstated vis-à-vis U.S. trends. On the other hand, likely future expenditures on early retirement are only included in the projections insofar that these are located within public pension systems. It remains however clear that in spite of the many reforms, pension expenditure growth in Europe will outpace growth in the United States, with the strongest growth being logged in those countries that already have comparatively high levels of expenditure.

European concerns do not only relate to fiscal sustainability and acceptability but also to the overall trends in labour supply which is exaggerated by current demographic trends. U.S. and European post-war population history has differed fundamentally and these differences continue to shape current and future ageing processes. Since 1950 the U.S. population has more than doubled while population growth in EU15 countries has been about one-third. Between 1975 and 2009 the U.S. population grew by about 42 per cent and EU15 by a mere 13 per cent (OECD.StatExtracts). The old-age to working-age dependency ratio – which measures how many people there are of pension age (65 plus) relative to the number of working age – has since the 1960s been consistently higher in EU15 than in the U.S., even though some countries have had a lower ratio during certain periods. Official population projections indicate that this pattern will be sustained in the foreseeable future. Most telling regarding the contrasts across the Atlantic in ageing processes is that from the mid 2000s to 2050, the U.S. and the EU15 elderly populations (65 and over) are projected to increase by 133 per cent and 75 per cent respectively while the prime age working population (age group 25-54) is projected to increase in the U.S. by 20 per cent but to decline by about 12 per cent in EU15 (calculated from Toossi 2006 table 2 and EC 2009 table A25). In other words, ageing in Europe and the comparatively high old-age dependency ratios is as much a matter of a declining work force as it is a matter of an increasing elderly population. High fertility France is projected to have a similar size working age population in future as it currently has but low fertility countries such as Germany and Italy are projected to see a decline of between twenty and thirty per cent.

Comparatively low labour force participation and employment rates for the older age groups reinforce the labour supply implications of the trends toward a decline in working age populations, a situation that has to a large extend been self-inflicted due to past retirement age policies. We see a reversal of past policy objectives of encouraging premature retirement, both at national and at the European Union policy level. In 2001 the European Council agreed specific policy targets for older workers, aiming to increase the employment rate of workers aged 55 to 64 to 50 per cent and to delay their exit from the labour market. More recently the Europe 2020 strategy replaced group specific targets with a broader employment target, aiming for an employment rate for the population aged 20-64 of 75 per cent by 2020 but the 50 per cent target for older workers continues to be a benchmark in policy debates (European Commission 2010 pp 66). These targets have been placed in the context of a strategy of Active Aging by which is meant action on four fronts combined with pension reforms: removing disincentives for workers to work longer, discouraging early retirement, stimulating lifelong learning to avoid skills obsolescence, and improving working conditions and maintaining the overall health status of the mature population (European Commission 2007 pp 58). What is more, the recent European Commission Green Paper "Towards adequate, sustainable and safe European pension systems" has set the increase in retirement age on the agenda. Noting that "currently, typically about one third of adult life is spent in retirement and

this share will increase substantially with future gains in life expectancy" (European Commission 2010 p 9) the Commission has made suggestions for reform that has widely been interpreted across Europe to imply an increase in the normal pension eligibility age to 70 years of age (Ehrlich and Hönighaus 2010, Jeory 2010). Interestingly and perhaps inspired by European debates, arguments have also been voiced in the United States favouring an increase in the normal, statutory pension age beyond the 67 "Reagan" level.

Taking a long 60 year look at trends in pensionable age policy, the succeeding chapter sections place current policy initiatives in a broader context. We consider how the different policies in the U.S. and EU15 countries since 1950 have impacted on labour supply and participation of older people and how recent policies currently being phased-in are projected to impact during the next 50 years. In the 1950s labour market participation of older people was pretty similar on both continents but since the 1970s a substantial gap developed, with EU15 as a whole and most member countries lying substantially below U.S. rates. Trends have been similar but they have been much more pronounced in Europe than in the U.S. Taking the EU target of a 50 per cent employment rate as a benchmark, the U.S. male employment rate for the age group 50-64 has never been below 63 per cent while in the 1990s in all large EU15 countries with the exception of the UK the same rates dropped well below 50 per cent. The average EU15 rate was a little above 47 per cent but has since increased by nine percentage points while the U.S. rate has only increased by a little more than one and a half percentage point (Eurostat employment data).

Drawing on and extending recent comparisons of pension systems and reforms by Whitehouse and collaborators and the investigations of the link between retirement income systems and labour market participation conducted in the late 1990s by Blöndal and Scarpetta (1999) and Gruber and Wise (1999)[5], we argue that the substantial gap between the participation rates on the two continents developing until the mid 1990s can largely be explained by differences in retirement age policy and that the much stronger increase in participation in EU15 vis-à-vis the U.S. during the past 15 years is one of the fruits of the new policies that have been adopted. Indeed, projections of the impact of retirement age reform discussed in the chapter indicates that in future we can expect EU15 countries to have higher participation rates for older people than the United States, thereby turning the pattern of the past forty years on its head. In truth, in many European countries female labour force participation began to increase much later than in the United States, but we find that pension policies not only impact on male participation but have also a substantial impact on cohorts of economically active women reaching 55 years of age and beyond.

[5] Gruber and Wise (1999) was the first publication of an ongoing project at the US National Bureau of Economic Research. An overview of the Gruber and Wise project which is still running can be found on the website of the NBER and a recent overview of the findings is provided by Wise 2006.

Section 2: Reform and trends in normal and early pension eligibility ages

In 1960 when many of the features of modern pension provision had been introduced during the great reform wave of the late 1950s, life expectancy at birth for citizens on both sides of the Atlantic was a little longer than 73 years for women and a little longer than 67 for men. By 2006, expectancy had increased by about ten years to 82.5 and 77 for women and men respectively. While in the early part of the last (the 20th) century, much of the gains in overall life expectancy were due to lower mortality at younger ages - at birth, during childhood and at working age -, in the second half of the twentieth century, the risk of mortality at retirement ages has also fallen substantially. It is to be expected that mortality will fall still further in the future. In 2006, life expectancy at 65 was more than twenty years for women and seventeen years for men but projections by the United Nations population division indicate that by 2050 women and men at age 65 can expect to live about twenty-four and twenty years respectively (OECD 2009 pp 145, 2011 p 14). As we shall demonstrate next, hand in hand with the increase in life expectancy, pension eligibility ages were falling, during a period that John Turner in a recent review has termed the "Golden Age of Retirement" lasting until about the early to mid 1990s when a reversal of the trend set in and policy makers began to increase pensionable age. We extend and expand the recent work by Turner (2007) and Chomik and Whitehouse (2010) on pension eligibility ages 1950-2050 by emphasizing more clearly the difference between normal and early eligibility ages, and by including the most recent reforms as well as the pre-retirement options implicit in unemployment compensation and disability schemes.

Normal pension eligibility ages

Pension eligibility is determined by age, contribution records, gender, and type of work, whereby the role played by these factors differ in different pension schemes and countries. In most OECD countries, a normal pension age is clearly set out in legislation. It is that age at which pension scheme members, independent of contribution record can first draw full benefits without reduction for early retirement. The United States has one concept of normal pension eligibility age applying to both men and women which since 1937 and until recently has been kept fixed at 65 years of age. In EU15 a similar pensionable age concept applies to Ireland, the Netherlands, the Iberian Peninsula, and the basic schemes in the Nordic countries. In the remaining EU15 countries there are two or more candidates for "normal pension age" in that different provisions exist for scheme members with long and members with more limited contribution records. Some countries have also had differential rules applying to men and women. We return to these issues when discussing early eligibility ages.

Up until the early 1980s, Sweden and Ireland had a somewhat higher pension eligibility age than the U.S., and Denmark has had that for almost the entire period, while from the war and until the 1990s the normal eligibility age in Italy was 60 years of age. Apart from these exceptions, 65 years of age was also the European norm. This eligibility age was also introduced in Italy during the 1990s.

We have seen only few alterations in normal eligibility ages 1950-2000 but see a wave of change after the turn of the century. Under Reagan in the early 1980s, the United States enshrined in law an increase in normal pension age from 65 to 67 to be phased in in the twenty-first century. In the new millennium, all major EU15 countries are now following the American lead and example (***figure 1***). Of the continental European countries, Germany was the first to introduce an increase in retirement age in 2007 followed by France in 2010, and

Italy and Spain 2011. In fact, in recent legislation Europeans are moving beyond a U.S. style increase, in that a number of countries notably Denmark, Italy, and Greece have instituted an explicit commitment to review on a regular basis normal eligibility age stipulations in light of developments in life expectancy. On this basis and using United Nation mortality rate projections, Whitehouse expects that by 2050 eligibility ages will be 69 years in Denmark and Italy and 67 in Greece (OECD 2012 pages 26-27).[6]

Figure 1: Early and normal pension eligibility ages in public pension schemes in the U.S. and EU15, 2002 and 2011 (long-term parameters and rules)

Pension eligibility age changes are not implemented in one go but phased in over a period of time. Americans were given some two decades to adapt to age provision changes. The current 66 years of age provision has been implemented over a six year period beginning in 2002, with the next increase to follow after a 12 year hiatus so that by 2027 the normal eligibility age will be 67 (see e.g. American Academy of Actuaries 2002). By contrast, the German phasing in process began only five years after legislation was passed in April 2007 with the 66 years mark set to be reached in 2023 and 67 in 2029, i.e. only two years later than in the U.S. (Bundesgesetzblatt, 30. April 2007). On the basis of current legislation, Ireland will have increased its state retirement age to 67 by 2021 and to 68 in 2028, while the UK increase is a more long-term project being completed only in 2046 (European Commission 2012 Annex 3). Finally, Italy is scheduled to have implemented the increase to 67 by 2021 and Spain by 2027 (OECD 2012 pages 40 & 43).

Early eligibility ages and actuarial benefit adjustments

United States has been a pioneer in introducing early retirement options, instituting an early eligibility age at 62 years of age for women in 1956 and for men in 1961 but with an annual actuarial decrement of 6.67 per cent, taking account of the fact that pension scheme members retiring earlier than the normal eligibility age would spend more time in retirement, ceteris paribus. Interestingly, the early benefit adjustment factors that were adopted in 1956 remain in effect today (Duggan and Soares 2002). In Europe, only France and Sweden had a similar rule at the time (Mirkin 1987, Bozio 2006, Wadensjö 2011). Spain also introduced an early age option with actuarial deductions in 1967, but with these exceptions and until recent reforms, the European norm has been to include early eligibility age provisions without actuarial decrements. Indeed, in some instances early retirement benefits were higher than the old age pension, and part of the early retirement package was the accrual of further pension rights during the early retirement period, similar to the rights accrued if claimants had been working and paying contributions.

In the public pension systems emerging in the late 1950s, a number of countries had a special early eligibility age for women allowing women to retire five years earlier than men without actuarial benefit adjustments. Austria, Belgium, Germany, Greece, Italy, and the United Kingdom have had such a provision for almost the entire period 1950-2010 while a few countries have had special rules favouring women for some of the period. Since 1957 long-term unemployed workers in Germany could retire at age sixty on a full pension and more

[6] European Commission 2012 pages 28 & 32 suggests that in 2060 the normal eligibility age in Greece will be 69 years and 4 months and in Italy 70 years and 3 months.

restricted schemes concerned with particular sectors undergoing industrial restructuring were in place in Austria and France during the 1960s.

Italian developments constitute a case on its own both with regard to the overall development and with regard to the frequency of recent reforms and changes. In the post-war years pensionable age was set at 60 for men and at 55 for women. However, in 1956 so-called seniority pensions (pensione di anzianità) were introduced for public sector employees, allowing them to retire with a full pension after twenty five years of service (twenty years for women) without any minimum age restrictions. From 1965 onwards private sector workers could retire at any age after 35 years of service and in 1973 contribution requirements for public sector workers were reduced to 20 years of service (fifteen for women) (Lynch 2006 pp 160-161). E.g a female teacher could retire on a pension before turning 40 years of age.[7] In Italian discourse these people were often referred to as "baby pensioners" because of their young ages. In 1992, in the same reform that increased the normal eligibility age, the contribution requirement for retiring at any age was set to be gradually increased to 40 years by 2008, while an age restriction was introduced for the interval of 35 to 40 contribution years, stipulating that pension claimants with this type of contribution history needed to be at least 52 years of age before they could claim a pension. Scheme members with less than 35 contribution years would only be able to claim a pension when they had reached the normal eligibility age of 65. The 1992 law foresaw an increase in the age restriction to 57 years of age to be achieved by 2008, while subsequent legislation has increased the requirement further still.

Notwithstanding these precedents, only in the 1970s were universal early retirement provisions introduced on a wide scale in Europe (Mirkin 1987, Ebbinghaus 2006). In the countries with early age provisions for women, the new early retirement rules were designed for the male work force, leading to gender specific early retirement structures. In contrast to the U.S. approach, but in line with the rules applying to women, none of these new measures included actuarial deductions. Changes were however also undertaken in the three countries where early retirement with deductions had already been incorporated in pension legislation pre-1970. Germany introduced a new early age option for long-service employees in 1973 allowing retirement at 63 years of age for people with a 35 years contribution record. Belgium and France introduced a sequence of special temporary pre-retirement schemes which in France under Mitterrand in 1982 led to the introduction of retirement at 60 for people having contributed to the pension fund for at least 37,5 years. Technically speaking, the Mitterrand reform removed the early retirement penalty for long service employees in the age interval 60-65 (Bozio 2006). An "unemployment pension" was introduced in Finland in 1971 (OECD 1996 Table 5.4)[8] and Sweden reduced its early eligibility age from 63 to 60 in 1976 together with a reduction in the normal age from 67 to 65 (Wadensjö op cit pp 12-13).

Not all European pension schemes developed and currently have an early age option. Schemes aiming to secure a social minimum tend not to have an early age option because it is presupposed that people younger than retirement age are eligible for general social assistance if in need. Hence, Denmark, Ireland, the Netherlands, and the United Kingdom – where social minimum type schemes play a prominent role in the pension package – have no early pension eligibility age provisions in the state pension scheme (putting aside the early eligibility age for UK women). Yet both Denmark and the Netherlands developed extensive early retirement

[7] In fact, several wives of ministers in the recent Berlusconi government are reported to have retired on a full pension at that age or even younger.

[8] Mirkin op cit exhibit 1 indicates that the Finnish "unemployment pension" was introduced in 1961 but that is mistaken.

packages during the 1970s that were closely interlinked with the state pension system. In both countries, the new schemes were formally private plans, but their expansion were strongly supported by government revenue and tax incentives.

In Denmark, early retirement emerged in 1979 as an adjunct to unemployment insurance, allowing members of the insurance scheme to withdraw from the labour market at 60 years of age with "retirement pay" (*efterløn*) similar to unemployment insurance benefits. Even though membership is voluntary, the new early retirement plan was soon integrated into overall pension politics, and the plan's age condition can be viewed as a Danish type early pension eligibility age. The Dutch approach to early retirement developed from 1977 onwards as an adjunct to its extensive occupational pension system. As a result, a large number of early retirement plans developed with highly heterogeneous rules and provisions. A universal, national plan was never instituted but typically plan members could retire at 60 years of age or even earlier, receiving a percentage of the final salary in benefits. Claimants continued to accrue old age pension rights during early retirement.

Reforms since the early- and mid-1990s have considerably changed early eligibility age structures, moving the European norm closer to the type of system introduced in the United States around 1960. First, spurred on by European Union legislation relating to gender equality, special early eligibility ages for women are being phased out.[9] Belgium, Germany and Greece have largely completed equalisation while Italy and the United Kingdom will have done so by 2018. In 2020 only Austria will have differential treatment of men and women but differences will be phased out in the years that follow (European Commission 2012 Annex).

Second, countries such as Germany, Finland, and Austria have abolished special provisions for the unemployed. On a broader front, concurrent with the increase in the normal eligibility age, during 2002-2012 the early eligibility ages have been set up in many countries (***see figure 1***). Some countries, notably Italy and Austria, began increasing the early eligibility age in the 1990s in which cases figure 1 underestimate the degree of change. In any event, while in the past, and in contrast to the U.S. 62 year eligibility age, most EU15 countries had set the early age to 60, under the new legislation the typical early age in Europe will be 62 with Germany, Italy, and Spain having higher and a few countries having lower ages. [The increase of one year for Germany in figure 1 is composed of a legislated decline to 62 that was reversed before it was ever phased in]. In most instances, the phasing in of the new early eligibility ages follows the schedules described for the increase in normal eligibility ages.

Third, beginning with Finland in 1986, countries that did not already have it (e.g. France, Sweden, Spain) have implemented actuarial reductions for early retirement, and the required numbers of contribution years have also been increased in a several countries. By the mid-2000s and with the exception of Belgium, all EU15 countries with contributory, earnings-related state pension systems included actuarial reductions in their early retirement provisions (see Queisser and Whitehouse 2006 and the update in OECD 2011 table pages 113-114). Similarly, Denmark has introduced incentives to delay take-up and has also more recently introduced incentives for younger members to actually withdraw from the early retirement plan, and in the Netherlands early retirement benefits have been linked to a worker's occupational old age savings and, hence, future pension payments, introducing an element of actuarial adjustment into Dutch early retirement. The practice of awarding contribution credits during the early retirement period was abolished during the late 1990s and early 2000s and

9

more recently tax incentives have also come to an end. Yet in EU15 long service employees will still be able to retire early without actuarial adjustments in some countries but the practice has been much curtailed. Most so in Germany and Spain where claimants in future would need to be 65 years of age or older and have 45 years' and 38.5 years' contribution, respectively. Less so in France where claimants will be able to retire without reductions at 62 years of age with 41 years' contribution. On current legislation, Italians will continue to be able to retire at any age without reductions provided a minimum contribution requirement is met, but the current requirement – recently raised to 41 years' contribution - has now been indexed to changes in life expectancy in keeping with other parameters in the Italian system and is therefore expected to become more stringent in future.

Pre-retirement options

In addition to changes in pension policy, in Europe during the 1970s onwards and especially during the 1980s early withdrawal from the labour market became increasingly facilitated by the insertion of different pre-retirement options in unemployment compensation and disability systems. The options were in part opened in parallel with the new early retirement options described above, allowing claimants to choose between options provided by the different parts of the social security system, for example to escape actuarial deductions. Furthermore, a sequence of options were created, giving claimants the chance to combine benefits longitudinally with a view of moving the earliest age of labour market withdrawal further forward.

Not surprisingly in light of the early eligibility ages in the Italian pension scheme, pre-retirement never developed on a substantial scale in Italy. On the other hand, when taking account of and including pre-retirement, early withdrawal options in most European countries were in fact similar to the "extraordinary" low early pension eligibility ages found in Italian public pensions. Until the change in policy direction in the mid-1990s, with few exceptions Europeans in their mid-fifties could withdraw from the labour market, claiming some form of public income support over and above universal, basic means-tested assistance. Eligibility to unemployment compensation and disability benefits require documentation of involuntary unemployment and documentation of disability, respectively, but these requirements were softened to such a degree turning the policy measures into "de facto early retirement" schemes (Blöndal and Scarpetta 1999 p 9).[10]

We first discuss unemployment compensation. Similar to the early age provisions in public pensions, U.S. unemployment insurance underwent very little modification between the war and the 1980s while most European countries undertook substantial reforms and expansion of provisions in the late 1960s and the early 1970s. In a comparative survey Burtless (1987) concludes that the most significant differences between the U.S. and European unemployment compensation to emerge in the 1980s concerned firstly, the maximum permitted duration of insurance, which in the U.S. as a rule was restricted to six and in Europe to twelve months, and secondly, the existence in Europe of follow-on assistance payments once insurance benefits were exhausted. Assistance is as a rule means-tested and less generous than insurance but also more generous than basic income support (welfare). Burtless only includes four European countries in his survey, but his conclusion appears to apply to the full assembly of EU15 countries, with the exception of Italy, which has never developed an extensive unemployment insurance.

[10] This might need a little elaboration – in both instances employers are important and street-level bureaucrats (labour administration, sickness insurance administration, medical profession). Gatekeeping.

Looking beyond the Burtless 1987 discussion, a third point of U.S.-EU15 difference – often overlooked in the labour economic literature discussing unemployment compensation - concerns special provisions for older workers. In several countries, the early retirement options for the age group 60-64 had their origins not in pension schemes but in temporary or special schemes relating to unemployment insurance. Developments often caused discrepancies and complex interactions between programs. For example in the case of France, Guillemard (1991) argues that the introduction of a full career option in 1982/83, allowing people to claim a full pension at the age of 60, was in fact part of a cost-cutting exercise aiming to move claimants from generous unemployment compensation to less generous pension schemes. Having largely removed by the early 1980s the age group 60-64 from the realms of the employment service and unemployment compensation policy, European policy makers began to implement special provisions for the older age groups aged just under the sixty years of age minimum.

Beginning with the Netherlands in 1982 and Spain in 1984, older claimants of unemployment compensation were freed from the standard availability and job search requirements. Duration of insurance benefits was extended, stretching the period before older claimants needed to transfer to less generous and means-tested follow-on assistance benefits. For example, Germany introduced in 1986-87 an age-graded duration structure, whereby claimants aged 49 years of age could claim insurance benefits for 26 and those aged 54 years of age could claim insurance benefits for 32 rather than for the standard 12 months. At the same time, older claimants were no longer offered activation and places on job creation measures. Hand in hand with recent pension reforms, from the mid-2000s onwards availability and job search requirements for older claimants have been reintroduced in most European unemployment compensation systems, most recently in France.[11] In general, older claimants continue to enjoy longer insurance benefit durations than younger age groups but benefit duration has been restricted in steps since the late 1990s. In Germany since 2008 unemployed aged 50 can now claim insurance benefits for up to 15 months, 18 months if aged 55, and 24 months if aged 58 and older (Eichhorst 2011).

The way in which pre-retirement and pension policy is interlinked and mutually complement each other varies between countries depending on their institutional history and tradition. France and Belgium developed a collection of special pre-retirement schemes whereby in Belgium one scheme tends to be applied in the Flanders and another in Wallonia.[12] As already indicated, gendered structures are found in countries with a special early eligibility age for women. For example, in the UK women could retire at 60 but a special provision in unemployment compensation legislation freed male unemployment benefit claimants older than 60 years of age from documenting availability and job seeking, thereby, in effect, allowing them to retire on unemployment benefits at the same age as women retiring on a state pension.

Finnish developments conveniently illustrate in a simplified manner the essential features of a broader European trend. What has become known as the "unemployment pipeline to retirement" consists of one sequence of schemes that applies to all localities, all industries,

[11] Not being a French speaker, the information on this aspect of recent French reforms is from MISSOC 2012 page 27. In general, a full overview of eligibility criteria for unemployment benefits for older workers is not available. The recent OECD survey of eligibility criteria does not ask for age specific criteria, thereby in effect focusing on the criteria applying to the prime working age (25-55) working population (Venn 2012) while much of the literature is concerned with eligibility of younger and older claimants.

[12] We thank Alain Jousten for this insight.

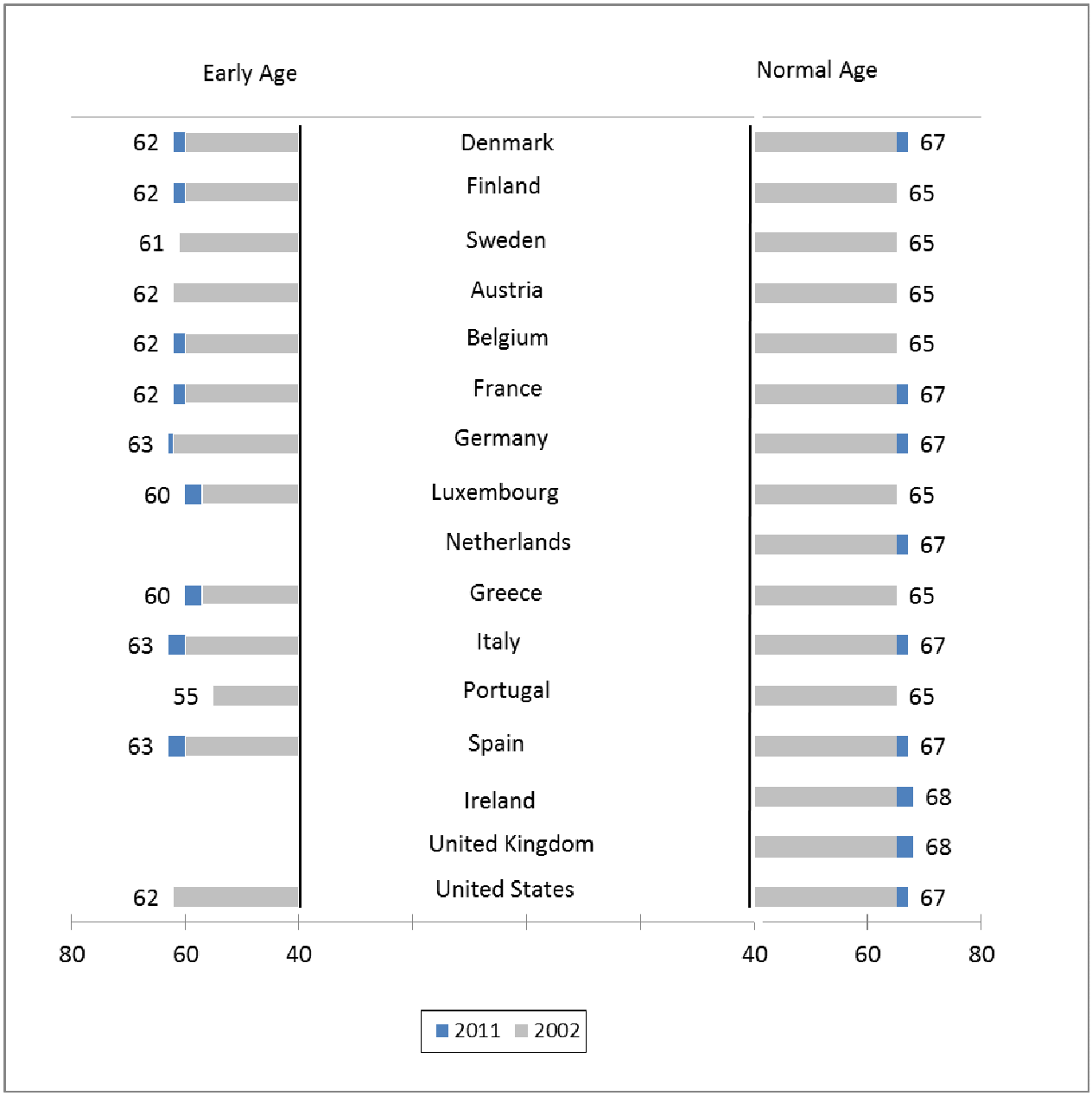
and both sexes. In institutional terms, Finland is the polar case to Italy. While in Italy almost all early withdrawal options have been a result of general rules embedded in the regular pension scheme, in Finland almost all withdrawal options have been based on special provisions in pension, unemployment compensation, and disability legislation. A general early retirement option was inserted in the regular pension scheme in 1986 but has had limited relevance in practice because of more attractive alternative special provisions being available. In any case, while structures may be more complex in other countries, the general trend in Europe has been closer to the Finnish than to the Italian example.

Figure 2: Development of the "unemployment pipeline" out of the labour market in Finland

Similar to the situation in other European countries, the Finnish "unemployment pipeline to retirement" has its origin in the early 1970s (for details on Finland see OECD 1996, Hytti 2004). In the pre-reform years, unemployment insurance was provided for 200 days and the pension scheme contained no early retirement option. In 1971 an "unemployment pension" was introduced for claimants about to exhaust unemployment benefit entitlements at the age of 60. Pension benefits were determined analogue to the old age pension – in Finland known as the "employment pension" – and related to past earnings and contribution records, but with imputed earnings and contribution years that would have been earned up to retirement age in the absence of unemployment. Once instituted, the policy expanded up until the early 1990s (figure 2). By the mid-1980s, the length of the "unemployment pension" had been increased from its original five to ten years. A major overhaul of social security in 1986 gradually increased the minimum age back to 60. Ordinary unemployment insurance was however expanded to 500 days, with an extended period available for older workers. A modification in 1991 implied that upon reaching the age of 55, an unemployment insurance claimant would get an automatic benefit extension to the age of 60, whereupon he/she could then transfer to the "unemployment pension". In the context of a 2005 reform of the regular earnings-related pension scheme, the "unemployment pension" was abolished and replaced with a longer period of extended unemployment insurance benefits. Income replacement rates were largely similar in both schemes, so the interchange of one type of benefit for another did not imply a general reduction in generosity, but the concept of an "unemployment pension" did not fit easily into the reformed pension scheme, introducing new incentive structures for working longer (the new scheme and incentives is described in OECD 2011 among other places). Since the mid-1990s, the early retirement window has been gradually narrowed in keeping with trends in a number of other countries. Taking account of the ordinary insurance benefit period, the early entry age to the "unemployment pipeline" was a little more than 53 years of age in the early 1990s. Following a number of reforms and increases, the current entry age is 58 but is scheduled to increase further to 59 years of age (figure 2). Pension rights continue to be accrued during unemployment but since around 2000 at a lower rate than in the past. Job-search and availability requirements also seem to have been strengthened as a result of a stronger activation policy that has been reinforced further in the wake of the 2005 reform since unemployment pensioners were not required to demonstrate labour market participation in contrast to unemployment benefit recipients.

We now turn to disability

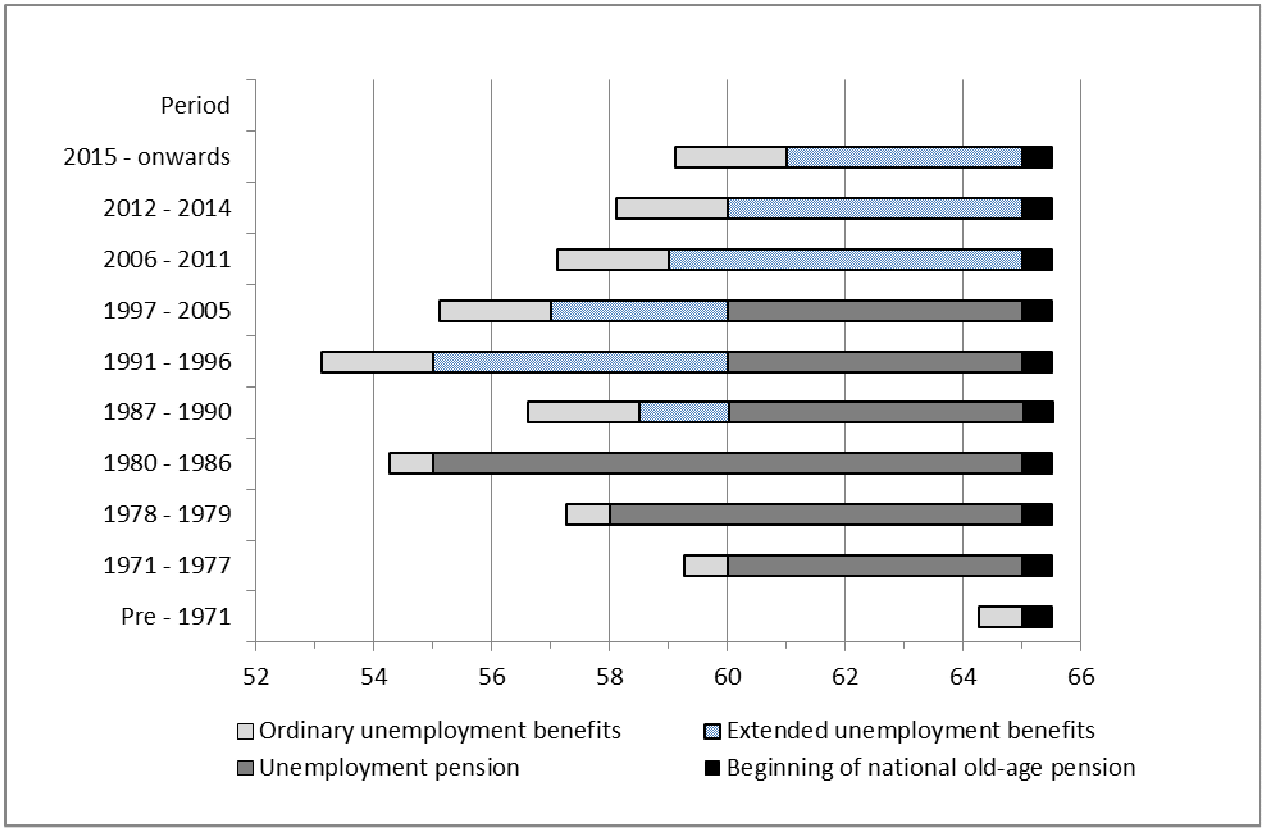
Figure 1: Early and normal pension eligibility ages in public pension schemes in the U.S. and EU15, 2002 and 2011 (long-term parameters and rules)



Note: For the EU15 countries, the figure describes legislated eligibility ages with all changes included even if they are still to be phased in. In the US case, the 2002 bar refers to pre-1983 legislation.

Sources: OECD 2005 and 2011; European Commission 2012; US Social Security Administration 2010, 2011a, 2011b, Government of the Netherlands 2011.

Figure 2: Development of the "unemployment pipeline" out of the labour market in Finland



Sources: OECD 1996, Hytti 2004, information provided by Juha Rantala Finnish Centre of Pensions

3: Pre- and post-reform incentives to retire

Individuals' decisions about work and retirement depend on the financial incentives embedded in retirement-income and social safety systems. A multiple of systemic factors affect pension entitlements, and comparisons across time and space can therefore only be carried out on the basis of a number of simplifying, stylized assumptions. This section presents summary measures of the incentive to retire on both sides of the Atlantic, and discusses how these have changed since the 1960s with special emphasis on the impact of recent reforms. We first look at old-age pension systems and then turn to programs that have acted and still act as quasi-retirement income systems.

Many studies of incentives to work use a simple generosity indicator – the replacement rate – which measures the relationship between incomes in and out of work. This has been widely used to look at the effects of unemployment benefits and social assistance on people's labour-market behaviour. In pension policy studies, the replacement rate is defined as the ratio of annual pension or early-retirement benefits to earnings just prior to retiring. Indeed, discussing pre- and post-reform replacement rates for a number of OECD countries incl. nine EU15 countries Whitehouse et al (2009 table 2) found an overall decline in pension replacement rates in Europe of around 10 percentage points as a result of reform. But there were considerable variations in trends, largely reflecting differences in pre-reform levels and goals of the reforms. Rates actually increased somewhat in the United Kingdom but from a very low pre-reform base while Italian reforms implied a decline of more than twenty percentage points dropping from 90 to 68 per cent.

Replacement rates are a familiar metric, but they do not capture the impact of many changes to pension systems nor tell the whole story of how pension systems affect people's work decisions. Since the seminal work of Burkhauser (1980) more complete and dynamic summary measures of retirement incentives have therefore been developed based around the concept of "pension wealth". This measure shows the lifetime value of benefits at the time of retirement and can be thought of as the ''stock'' of the future ''flow'' of pension benefits until death. In addition to the replacement rate, life expectancy, pension eligibility age and indexation of pensions are also taken into account. Together, these determine for how long the pension benefit is paid, and how its value evolves over time.

To indicate pension incentives to retire, consideration of pension wealth is extended to the change in pension wealth from working an additional year (OECD 2011 chapter 3, Burtless 2004). We compare directly two flows of income: one from retiring immediately, the other from working an additional year and then claiming the pension. This measure can be interpreted as an implicit tax or subsidy on continuing in work: If deferred retirement leads to a decline in pension wealth we observe a tax on work and vice versa. Change in pension wealth taken as a share of earnings yields implicit tax and subsidy rates. A change in pension wealth can be thought of as a "substitution effect": leisure becomes more attractive as the implicit subsidy to continuing working declines or turns into an implicit tax and positive incentives to work an extra year turn negative. The level of pension wealth on the other hand is akin to an "income effect". If people have a high level of pension wealth already at age 60, they may not wish to add to this by working an additional year, even if this results in a large increment in their pension entitlements. Similarly, if pension wealth is low, people might wish to postpone retirement and continue working even when this would only imply a marginal increase in wealth.

In summary, working a year longer has three effects, all leading to a change in pension wealth. i) In contributory pension schemes, a longer working period may imply an extra year's contribution which usually brings some extra pension entitlement. ii) A longer work period implies a shorter duration of retirement. In every kind of pension scheme, individuals must, of course, forgo a year's benefits if they retire a year later. However, there are often adjustments to the value of benefits to reflect this and an important part of recent pension reform has been to change these adjustments. iii) The final elements of the pension incentive to retire reflect further costs to the worker of delaying the pension claim. The worker might die during the year, and so receive nothing from the pension system. Different workers might also have different time preferences, with some having particularly strong preferences for current rather than future consumption.

In addition to these features, which largely captures what scholars mean when they talk about "retirement incentives" and construct summary incentive measures, three further factors are important when comparing incentives across time and space. First, pension payment may not be conditional on the full withdrawal from the labour market as people may be able to combine work and pension receipt. Pension systems shape decisions relating to the extent of labour market withdrawal by including rules concerning "earnings disregards", that is how much earnings is disregarded before they have an effect on pension eligibility, and "benefit reduction rates", that is how much pension in payment is reduced when people have earnings in addition to a pension. Second, pension eligibility ages embodied in pension systems may shape retirement decisions by way of a "customary retirement age" effect, exerting influence beyond or in interaction with financial incentives (Gruber and Wise 2002 NBER version page 11). Finally, in addition to public systems, private and occupational pension plans influence retirement decisions. Defined-benefit occupational pension plans are structured similarly to standard public pensions while defined contribution plans are age-neutral by design, and therefore they have few of the age-specific retirement incentives that are common in traditional defined-benefit plans (see e.g. Burtless 2004 p 17).

Table three displays estimates of implicit tax rates from Blöndal and Scarpetta (1999) for 1967 and 1995 and our own estimates based on the OECD pension model. Together with the first volume of the ongoing Gruber and Wise project at the US National Bureau of Economic Research, the Blöndal and Scarpetta study spurred a wide ranging debate about comparative retirement incentive structures and what these might imply for labour market participation in the different countries included in their study. Concerning their incentive indicators, Blöndal and Scarpetta and Gruber and Wise (1999) disagree on the magnitude of the implicit tax rates for a number of cases especially Japan but agree on the overall pattern concerning the US and European comparison (for a comparison of the studies see Burtless 2004). The advantage of the Blöndal and Scarpetta estimates for our purpose is that they include more relevant countries, the include figures back in time, and include more detailed disaggregated estimates for the wider social programmes that are generally thought to be relevant for retirement incentive discussions.

Our estimates based on the OECD pension model differ from Blöndal and Scarpetta and similar studies in that they are *prospective*. They do not concern incentives faced by older workers at a specific date, but aims to evaluate the current pension-policy stance as it affects workers retiring in the future. Changes in policy rules that have already been legislated, but are being phased-in gradually, are taken into account and assumed to be fully in place from the start. Parameter values are those for 2008 and from that basis we apply a standard set of assumptions for variables such as price inflation, wage growth and investment returns on defined-contribution schemes (see OECD 2011 for details).

Similar to Blöndal and Scarpetta implicit tax rates are calculated for average private sector workers who enter the labour force at age 20 and contribute to the pension system each year until the varying country-specific ages of exit from the labour market. However, while Blöndal and Scarpetta look at a retirement window between age 55 and 65 our estimates concern ages 60 to 65. We also include private mandatory schemes while Blöndal and Scarpetta only model public schemes, a point that affects Denmark, Sweden, and the Netherlands. Estimates of pension wealth and of changes in pension wealth are highly sensitive to the choice of discount rate. In the various issues of "Pensions at a Glance" and related publications a discount rate of two per cent is assumed but for this table and discussion a rate of three per cent has been chosen in keeping with Blöndal and Scarpetta. Changes in pension eligibility ages, discussed in the previous section, are included except for the most recent policy changes in Finland, France, the Netherlands, Spain, and Italy.

Table 1: Implicit tax and "subsidy" rates on continued work embedded in benefits for the elderly, 1967, 1995, and prospective rates

While it would be mistaken to place too much emphasis on the concrete numbers of two stylized studies utilizing different frameworks and applying numerous modelling assumptions, each of which could be questioned, a broad pattern of development is apparent from the figures displayed in table 1.[13] The figures mirror and quantify the policy trends that we discussed in the previous section. With Austria and Italy being clear outliers and estimates missing for Greece and Spain, in 1967 pension systems in our countries were close to being neutral with respect to retirement decisions. Only Austria, Italy and the Netherlands had implicit tax rates that were higher than the US rate. By 1995, at the close of the "age of retirement", the picture had radically changed. Implicit tax rates had increased in most countries but more so in Europe than in the United States; 10 out of 13 EU15 countries had higher rates than the US. In the wake of the pension policy reforms of the 1990s and 2000s most countries have fixed any major problems of incentives to retire early, as indicated by our "prospective rates".

We see an overall return to incentive neutrality similar to the 1960s and a "rank-reversal" vis-à-vis our United States and EU15 comparison in that most EU15 countries will have lower implicit tax rates and therefore better incentives than the United States once all reform induced changes have been phased in. On this measure, only Southern Europe (except Spain) has worse incentives than the US. This said, safety-net provisions in the retirement-income systems mean that in a number of European countries including Finland, Germany, and Sweden, low-income workers who will be entitled to minimum pensions or resource-tested benefits have incentives to retire early that are not shared by average (and high) earners (right hand column). The comparatively high implicit rate in the United States arises because of a 35 years limit on the number of years that accrue a pension entitlement. In our example of a full-career working from age 20, the full benefit is already reached before age 60, which limits the return to continuing in work relative to other countries. Similar rules apply in the Greek and Spanish systems. In more detailed work Whitehouse and collaborators include consideration of levels of pension wealth in the discussion of incentives (D'Addio et al 2010, OECD 2011). With the exception of the UK, the United States' public retirement income system generates a lower level of pension wealth than any European system. The income effect, discussed above,

[13] In the table, signs are derived from the tax literature. Plus 10 imply a tax and a reduction in pension wealth equal to 10% of earnings. Minus 10 imply a negative tax (= subsidy) and an increase in pension wealth equal to 10% of earnings.

will therefore tend to be stronger in the US than in Europe, at least when the US' rather large private pension system is ignored.

Unemployment benefit and disability systems have their own complexities. As discussed in the previous section, from the comparative perspective unemployment and disability insurance programs are in many cases close substitutes in that in some countries the disability and in other countries the unemployment pathway into early retirement dominates. The Scandinavian countries are in this respect interesting in that in Sweden disability, in Finland unemployment, and in Denmark special early retirement schemes have dominated. The basis for their inclusion in the Blöndal and Scarpetta study and their treatment as a de factor retirement systems was the insertion in the late 1960s and early 1970s of labour market conditions. The OECD pension model is not designed to analyze these programs.

OECD 2010 "Sickness, Disability and Work: breaking the barriers" includes two disability policy indicators: the first covers compensation measures or benefit programmes, and the second employment or integration measures (page 85). Between 1990 and 2007 all countries have tended to move away from a passive to a more active orientation (page 87). The Netherlands has moved the longest distance from a position well above average in the compensation index to below average and from below average according to the integration index to above average.

Table 1: Implicit tax and "subsidy" rates on continued work embedded in benefits for the elderly, 1967, 1995, and prospective rates

	Blöndal and Scarpetta (1999)					Pensions at a Glance 2011	
	Old-age pensions	**Old-age pensions**	**Old-age pensions plus** Unemployment related benefits	Disability benefits	Special early-retirement	**Old-age pensions**	**Old-age pensions**
	Average earnings					100% of average male earnings	50% of average male earnings
	1967	**1995**				**Prospective**	
Denmark	0	0	51	37	22	-8	-8
Finland	0	22	42	71		-12	1
Sweden	–9	18		76		-4	11
Austria	31	34	34	64		-15	-15
Belgium	–2	23	37	44	56	21	25
France	2	14	49		57	-10	-8
Germany	4	14	37	46		-14	16
Netherlands	9	13	57	41		-24	-14
Greece						90	90
Italy	30	79				11	11
Portugal	5	4	33	66		29	62
Spain		18	33	53		-9	-9
Ireland	5	14	32	32		-4	-7
United Kingdom	6	5	15			-3	4
United States	8	12				1	1

Note: See text for discussion of similarities and differences between the frameworks of Blöndal and Scarpetta (1999) and OECD (2011)

Sources: Blöndal and Scarpetta 1999 tables 5 and 7 and OECD 2011 table 3.2.

Section 3 New computations by Andrew Reilly for the table

Changes in pension wealth with 3% discount rate, men & Women
Datum: 14December 2011 Andrew

Men at average earnings				**Women at average earnings**			
entry at age 20				**entry at age 20**			
country	55-59	60-64	65-67	country	55-59	60-64	65-67
Austria	17,1	16,8	7,1	Austria	18,2	26,2	15,0
Belgium	13,6	-14,5	-30,4	Belgium	15,6	-10,2	-28,4
Denmark	7,0	7,3	7,7	Denmark	8,4	8,7	9,0
Finland	17,9	14,1	-10,6	Finland	21,2	22,1	-1,9
France	44,9	13,2	-5,1	France	51,5	21,3	3,2
Germany	13,2	10,5	-0,1	Germany	15,6	14,7	7,1
Greece	70,1	-71,8	-35,1	Greece	79,6	-69,2	-27,8
Ireland	9,9	3,3	-16,8	Ireland	12,2	4,0	-17,2
Italy	25,0	-3,8	-37,5	Italy	24,5	4,3	-33,7
Netherlands	19,1	21,6	-28,2	Netherlands	22,2	24,7	-19,6
Portugal	33,2	-26,4	36,1	Portugal	38,9	-24,1	45,7
Spain	10,2	14,3	-47,1	Spain	11,4	22,5	-43,7
Sweden	10,2	6,2	-6,6	Sweden	12,3	12,6	0,4
United Kingdom	2,4	2,7	3,0	United Kingdom	2,9	3,2	3,5
United States	0,0	0,8	-0,6	United States	0,0	3,5	4,4

4: Pension reform and labour market participation

There is now a mountain of evidence showing that retirement behaviour responds strongly to the incentives embedded in pension systems. Much of this involves analysis of a single country but as already noted, there have been two major cross-country studies comparing labour-force withdrawal rates for older workers with the "implicit tax" from remaining in work exerted by the pension system (and alternative pathways out of work, such as unemployment and disability benefits) (for a detailed discussion see Burtless 2004).

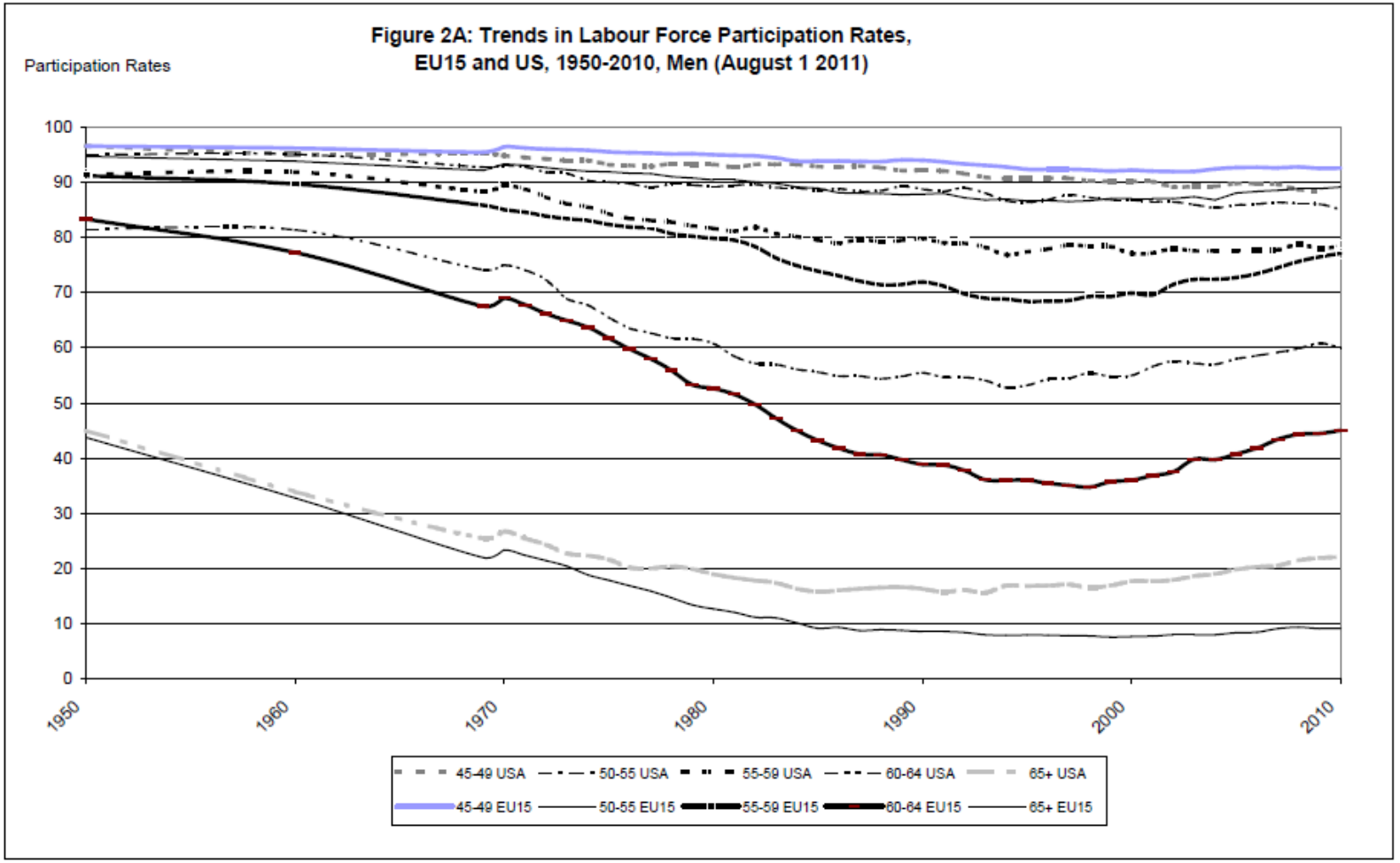
Gruber and Wise (1998, 1999) found an elasticity of labour-force withdrawal with the implicit tax of 0.41. Japan had both the lowest withdrawal rate and the lowest implicit tax, whilst Belgium, Italy and the Netherlands had the highest withdrawal rates and among the highest implicit taxes. An OECD study – Blöndal and Scarpetta (1999) – found a smaller elasticity of 0.28 in their study of 20 countries. Nevertheless, there was still a strong and statistically significant relationship between retirement incentives and retirement behaviour. The different size of the effect does not reflect differences in the countries included in the two studies Rather, the cause is that estimates of the "implicit tax on remaining in work" vary between the two studies, in part because they look at different years.

Moving to an actuarially neutral system could significantly increase the labour supply of older workers in the OECD countries. The cross-country variability of the participation rates of males aged 55-64 would also be markedly reduced, with most countries reaching a participation rate of at least 60 per cent (France, Finland and the Netherlands being notable exceptions). The largest increase would be in Italy, where the move towards a neutral system could bring the participation rate back to its levels of the 1950s and 1960s. France, Finland, the Netherlands and Portugal would also experience marked increases in their participation rates, especially if unemployment-related benefit systems were to be included in the reform package.

Figures 2A and 2B show trends in participation rates 1950 to 2010 in the U.S. and the EU15 for men and women, respectively. The figures are based on the data sets that we have put together and that are described in the appendix. Looking at males 60-64, the US and the EU participation rates were pretty similar until 1970 whereupon a large gap emerges. Concerning males 55-59, the gap only emerged in the 1980s during a period with disparate growth rates and further expansion of early retirement provision and pathways in Europe through the unemployment compensation system.

Concerning females a clear cohort effect is apparent. The US-EU gap has narrowed considerably for most age groups and in the age group 45-49 participation in EU15 is now higher than in the US. However, there is also a clear evidence of a strong ceiling that European get up against: In contrast to younger age groups, participation of women in the age group 60-64 continue to be 20 percentage points higher in the U.S. than in Europe.

Figure 2A: Trends in Labour Force Participation Rates, EU15 and US, 1950-2010, Men (August 1 2011)



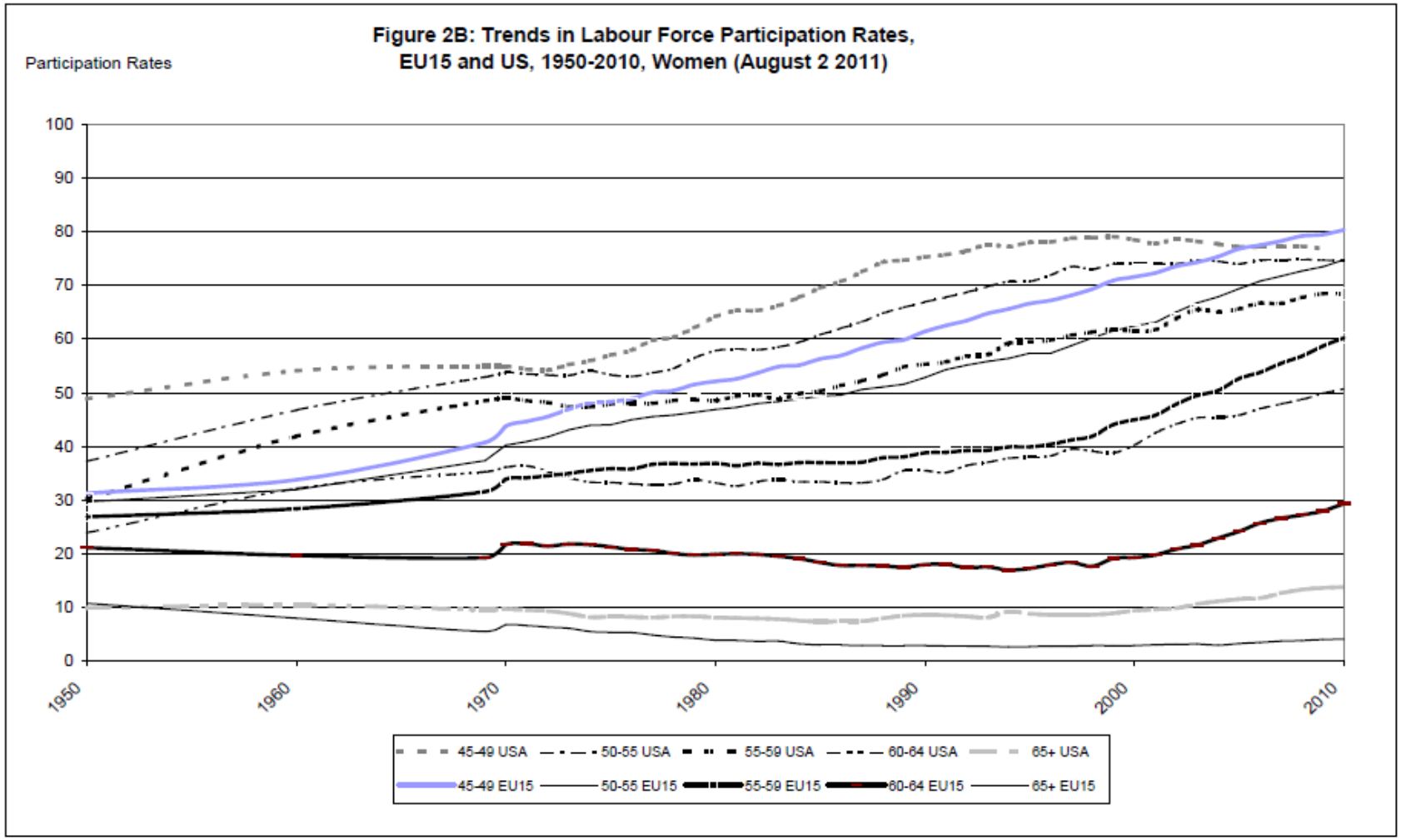


Figure 2B: Trends in Labour Force Participation Rates,
EU15 and US, 1950-2010, Women (August 2 2011)
Participation Rates
100
90
80
70
60
50
40
30
20
10
0
1950
1960
1970
1980
1990
2000
2010
45-49 USA
50-55 USA
55-59 USA
60-64 USA
65+ USA
45-49 EU15
50-55 EU15
55-59 EU15
60-64 EU15
65+ EU15

5: Reform and future labour supply

As we have seen, pension reform needs to be judged on its long-term implications since important reform elements are gradually phased in over a period of time. A policy enacted at a certain point in time will in most instances only exhibit an impact later following a certain time-lag. The pension policy field is therefore highly informed by expectations about an uncertain future development. In the 1980s pension reform and policy developments in many European countries suffered under the lack of understanding of the need to think about the long-term but matters have since improved immensely. In recent work by the OECD and the EC Ageing Working Group (AWG) scholars have extended the traditional concern with the future fiscal implications of pension systems and reform in that they include assessments of pension reform impacts in their projections of future labour force participation and labour supply until 2060 (Burniaux et al 2003, Carone 2005, European Commission 2008, 2009). Notwithstanding the uncertainties surrounding projections, this work allows us to gain a more complete view of the links between pension reform and labour market participation.

Projection methodology has so far often been based on assumptions of constant future participation rates. Projected changes in aggregate participation rates then result only from a shift in the population age structure. Not surprisingly, on this view with an ageing population composition aggregate participation is projected to decline. In contrast the OECD and EC groups aim to capture that in recent years labour force participation has undergone visible changes especially for women and the elderly. Furthermore, since for many years it has been an explicit policy goal to influence participation rates of women and the elderly as well as to delay the entry of young people into the labour market by an expanding emphasis on education, projections based on a constant future participation assumption would be somewhat paradoxical.

The idea of the OECD/EC "cohort component methodology" is to extrapolate into the future the observed recent shifts in the level of participation and recent changes in rates of entry into and exit from the labour market.[14] In the EC version two base line scenarios are elaborated. In the "no-policy change" scenario entry and exit rates by age and sex are calculated on the basis of the participation rates observed in the European labour force survey over the period 1998-2007. These age and gender specific entry/exit rates, which are kept constant over the whole projection period 2007-2060, are used to determine future lifetime participation profiles for each age and gender cohort as well as cross-sectional profiles for each year until 2060.

For the established labour force around the age of 30 and over, the lifetime participation profile of a cohort (say women born in 1977 and aged 30 in 2007) is determined jointly by the observed level of participation in the base year (i.e. 2007) and the said exit rates. Since entry rates are calculated on the basis of the most recent participation profile, in the youngest age brackets the methodology tends to reproduce in the future the participation rates that could be observed in the base year of 2007. However, in carrying out the projection the recent large

[14] The interrelationships between labour force entry and exit rates and participation rates as well as the overall projection methodology are described in Burniaux et al 2003 annexes 2 and 3 and in Carone 2005 annexes 1 and 2. Carone also delivers an overview of the projection methodologies applied by a number of bodes, incl. the ILO and the US Bureau of Labor Statistics. Briefly stated the OECD (Burniaux et al) and EC (Carone) methodology consists of a dynamic specification of a method developed by Denis Latulippe at the ILO in the mid 1990s. We wish to thank Giuseppe Carone from the European Commission Directorate-General for Economic and Financial Affairs for answering questions relating to the projection methodology applied by the directorate and especially the assessment of pension reform impacts. EC 2008 table 2.5 turned out to contain a number of mistakes. We are grateful to Mr. Carone's department for forwarding the correct numbers to us.

increase in rates of education enrolments and the corresponding decline in labour market participation amongst persons younger than twenty-four years of age are taken into account under the assumption that the decline only implies a delay in labour market entry. By the end of the projection horizon in 2060 a person aged 20 in 2007 will be 73 years of age and almost the entire 2007 labour force will have attrited to be replaced by people with the simulated life-time attributes.

Pension reform is included in a more extended baseline scenario and involves a departure from the assumption of constant exit rates. The modelling strategy is to consider the likely impact of different reform aspects on the probability of withdrawing from the labour market – as measured by the exit rates. From this basis the impact of reform on labour market participation can be calculated. Not all aspects of pension reform are captured equally much in the analysis. Changes in normal and early pension age eligibility provisions are more central in the analysis than are reforms of the rules governing overall pension generosity (replacement rates, pension wealth). What is more, only changes in pension programmes are modelled, but it is assumed that pension system changes do not lead to a broadening of early retirement access to other social security systems such as disability and unemployment benefits. The timing of the impact is determined by the phasing-in stipulations in the different reforms.

From a methodological viewpoint, the analysis can be described as a simplified version of a recent micro-simulation study of the U.S., Canada, Japan, and a number of European countries conducted by Jonathan Gruber and David Wise (eds. 2004) together with a team of international collaborators. Based on micro-data from the 1990s, the Gruber/Wise team simulates the likely impact of different types of reform and find among other things that a reform implying a three year delay in normal and early pension eligibility ages would increase the participation rate of the older age groups by about twenty percentage points in most of the European countries that are included in the study while in the U.S. the impact would be much smaller. Both the Gruber/Wise and the EC study take their point of departure in the observation that retirement and exit rates exhibit large jumps at the ages when legislation allows people to begin claiming pension benefits (see also the previous section of this chapter). The impact of reform of pensionable ages is then assessed quite mechanically by shifting the distribution of exit rates (probabilities) in proportion to changes in eligibility ages. In the Gruber/Wise project the same hypothetical “three-year-delay” scenario is simulated for all countries that are included in the study while the EC scholars offer an assessment of the likely future impact of reforms that have actually been legislated but not yet fully phased in in the various countries. At the time when the projection was made, no reform had been enacted in the Netherlands, Greece and Ireland and some of the most recent reforms described in section two of this chapter are not included in the exercise.

Figure 3 displays the participation rates in the United States and EU15 in the 2007 base year and the main results of the projection exercise but in our discussion we will also draw on the break down of the figures according to gender and on estimates of participation rates for five year intervals until 2060 that is provided in the Ageing Reports. In contrast to the decline in aggregate participation indicated by a projection scenario assuming constant future age and gender specific participation rates, the new EC projection indicates an overall increase in EU15 in the aggregate rate (age group 15-64) of about 3,7 percentage points with the major increase occurring in the years until 2020 (Figure 3 panel B). At that point EU15 participation is projected to be largely similar to the current U.S. rate with only Belgium, France, Greece, and Italy having lower rates.

Figure 3: Participation rates in 2007, projected changes in overall participation rates and estimated impact of pension reform, 2020 & 2060.

Trends differ between genders and age groups. Not surprisingly in light of the methodology, young people are projected to exhibit largely stable participation rates in the future. Differences occur in the prime age (25-54) and the older (55-64) groups. Due to the increase in female labour force participation in recent decades, in the base year younger females have higher participation rates than the older generation of females had at the same age (thirty year old women in 2007 have higher participation rates than thirty year old women in 1990). The projection methodology therefore produces an "autonomous" increase in women's labour market participation – known as a "positive cohort shift" - as an older generation of women is successively being replaced by a new generation with a higher level of participation (even if in consequence of the constant exit rate assumption it is assumed that the younger generation exhibits the same exit pattern as the older generation). Males, by contrast, are set to experience a "negative cohort shift" as a generation of men with high levels of participation is successively being replaced by a new generation displaying lower levels. Because of these dynamics, prime aged females are projected to experience an increase of close to five percentage points and prime aged males a small decline in participation.

The largest increase is projected to materialise in the older, 55-64 age group whereby pension reform is the major driving force behind this change. The overall rate is projected to increase by a little more than 16 percentage points whereby 13 percentage points are due to pension reform (Figure 3 Panel A). Taking a long view and assuming the projection holds, the rate of the 55-64 age group will have increased from the low point of 39 per cent in the mid 1990s, to 48,6 per cent in the mid 2000s and further to 65 per cent in 2060 surpassing the current U.S. rate and returning to levels not found since the 1970s. In the absence of reform, male participation rates would have exhibited a decline of about 5 percentage points due to the negative cohort effect but reform more than compensates for that, leading to a projected increase to 67 per cent which, however, is not quite the level currently found in the U.S. In the case of females, we see an interaction between the positive cohort effect and pension reform in that the increase in female participation of the younger generation of women will extend to the older age groups leading to a rate of almost 61 per cent, which is somewhat higher than the current U.S. rate. In the absence of reform, the female rate would increase by twelve percentage points less, settling on a rate of around 49 per cent. All in all, in EU15 the percentage point impact of reform on male participation is a little higher than on female participation which is mainly due to the pattern in Southern Europe and France dominating. In the other EU15 countries the impact on females is higher than on males. Finally, pension reform is projected to lead to a certain convergence in the participation rates of the older age group between EU15 countries – measured by the standard deviation – while in the absence of reform male divergence would have increased further and female participation would only have converged modestly.

The largest impact of pension reform on participation is projected to occur in Italy, Germany and Austria (in that order). In these countries the EC projection suggests levels of impact that are similar to the twenty percentage points increase estimated in the Gruber and Wise simulation exercise relating to the "three-year-delay" reform scenario. It might surprise that Denmark does not belong to this group in light of the most recent reform implementing a two year delay in its major early retirement scheme together with an increase of two years in normal pension age but in this context it needs to be recalled that the Danish increase in normal pensionable age constitutes a return to levels that were in place as recently as the early

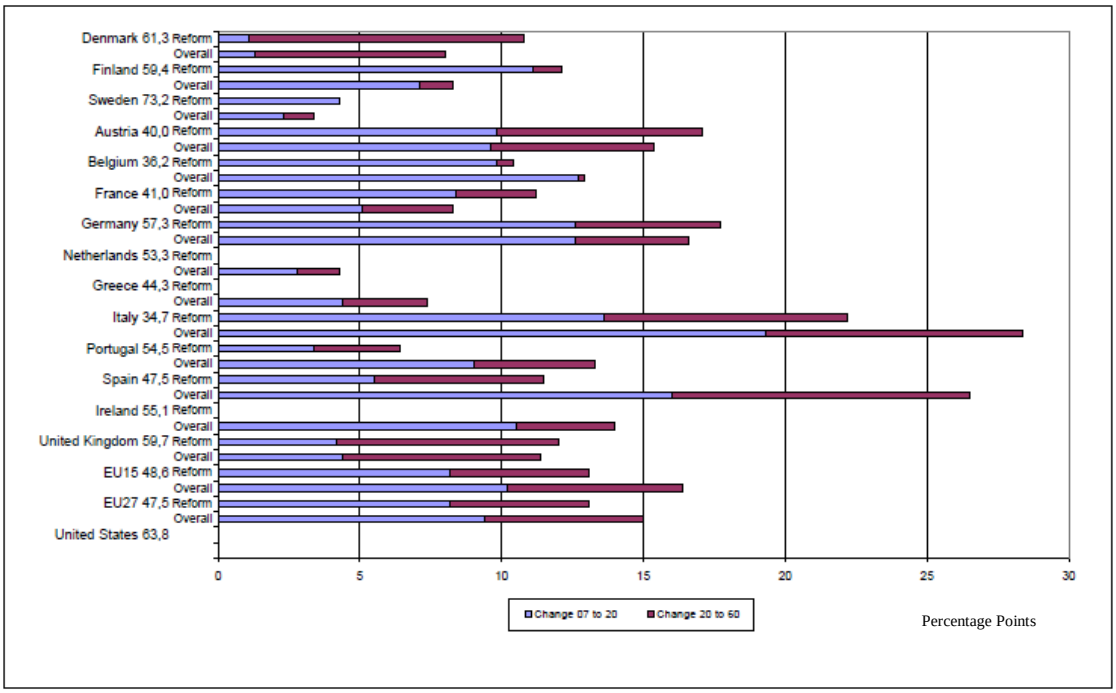
2000s. As discussed in section four, Germany and Austria belong to the group of countries that have experienced a large increase in participation during the past 15 years or so while Italy is one of the countries that have only experienced a moderate increase in the age group below 60 years of age and no increase for the over 60s. Many of the Italian reforms have had extremely long phasing-in periods and according to the EC projections these will have an impact as we are heading toward 2020 and 2060.

As discussed in section two of this chapter, in Italy pensionable age is set to increase in the period until 2030 while in Austria normal retirement age for women will be increased gradually between 2019 and 2034 to reach the retirement age for men at 65 (see also appendix tables). Germany continues during the early part of the projection period to phase out various early age provisions but a further factor determining participation rates of the elderly population is the increase to 67 of the normal retirement age (even though people can continue to retire at 63 with reductions). If the projected increase indeed materialises, Germany will have seen an increase in labour market participation of the elderly population (55-64) from less than 43 per cent at the beginning of the millennium to 70 per cent in 2020.

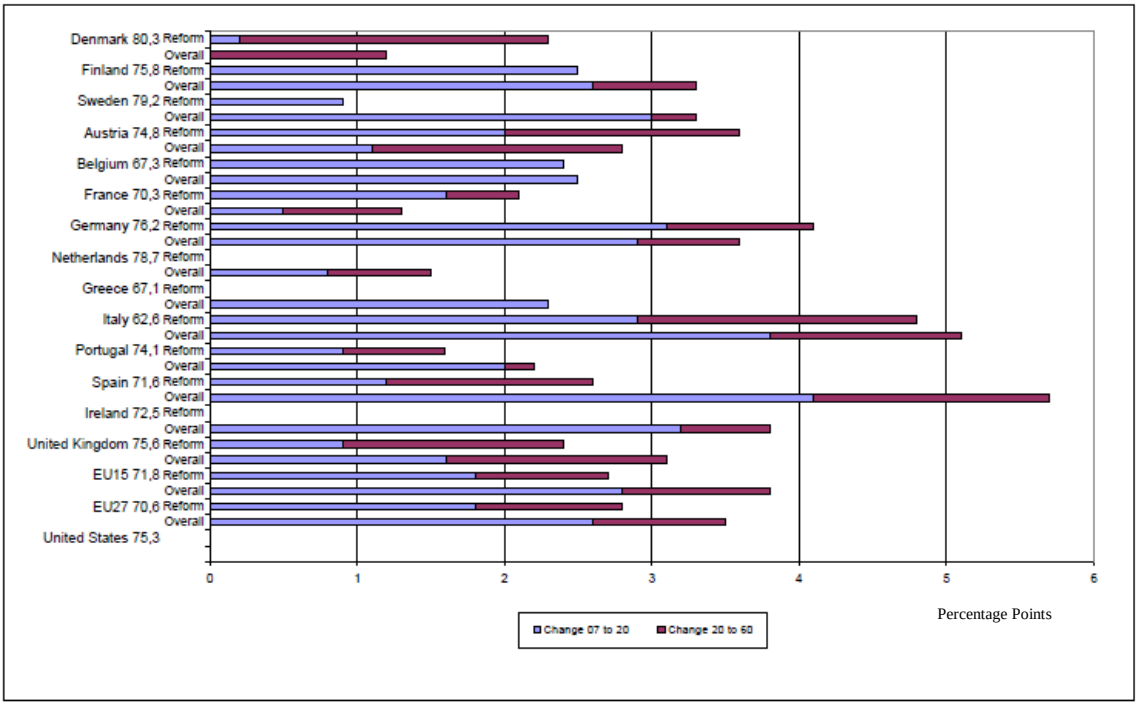
It may of course be open to question the extend to which a projection of such a magnitude displays a too optimistic scenario. As noted, the Gruber and Wise study found a similar impact but they based their country studies on data from the 1990s and simulated hypothetical reform scenarios. However, a micro-simulation study from the Mannheim Research Institute for the Economics of Aging (Bucher-Koenen and Wilke 2009) and a projection from the Federal Institute for Employment Research (Fuchs 2006) focusing more explicitly on the increase in the normal retirement age from 65 to 67 draws similar conclusions regarding the German case. The Fuchs-study considers two different scenarios with the difference between them being assumptions relating to the number of people that would be prepared to claim benefits with deductions for early retirement and assumptions relating to the effects of reform on the number of claimants of disability benefits. Depending on how these factors unfold the projected increase in participation by 2030, when the retirement age changes are fully phased in, lies between 15,5 and 38,6 percentage points for the age group 60 to 64 years old over and above the increase that is projected in the reference scenario due to cohort and other effects. The low case scenario would imply a participation rate of 61,5 per cent which would largely be consistent with the rate of around 70 per cent for the broader 55 to 64 age group considered in the discussion in this section.

Figure 3: Participation rates in 2007, projected changes in overall participation rates and estimated impact of pension reform, 2020 & 2060.

Panel A: Age Group 55-64



Panel B: Age Group 15-64



Sources: EC 2008 Table 2.5 and updates supplied by the EC.

6: Conclusion

Europe and the United States are facing different ageing prospects providing different contexts for pension policy. Even though the U.S. will see a substantially stronger increase in the number of people of retirement age (65 plus), EU15 have and will continue to have a higher dependency ratio due to a different trend in the size of the population of working age. Over the next few years EU15 will see a slightly increasing population of working age whereupon decline will set in. In 2050 EU15 will have 16 million fewer people of working age while the U.S. is projected to have close to 50 million more. Relations between the countries within EU15 will change in that the largest decline will be concentrated in Germany and Southern Europe while high fertility France and the United Kingdom will have stable or perhaps even growing populations. Projections are based on assumptions. If inward migration turns out to be more in line with the projections in the 2006 EC Ageing Report, the working populations in Italy, Spain and the UK will be much smaller than the latest 2009 projection indicates. If German fertility in the years to come would shift to the level that is currently found in France, the decline in the working age population would be about forty per cent less than current projections suggest (Fuchs and Söhnlein 2006).

Overall we will see a substantial change in the age composition of the population with a strong decline in the "prime age working population" (25-54) and a strong increase in the "older population of working age" (55-64). In the mid 2000s the relation of the two groups was three percentage points higher in EU15 than in the U.S. (calculated from Toossi 2006 table 2 and data from the EC 2009 Ageing Report). Until 2020 we see an increase in both places leading to a certain convergence so that there will be a little more than 33 "old" working age persons for every 100 "prime aged" persons in EU15 and the U.S. But from 2020 onwards the two continents will undergo diverging trajectories. While the U.S. is projected to experience a certain rejuvenation of the working age population, a process of accelerated obsolescence sets in in EU15. By the mid 2020s EU15 is projected to have 37 "old" persons for every 100 prime aged with Germany and Italy leading the way with a ratio of 44 and 40, respectively.

The age group 55-64 is of course exactly the group that European policy makers in the past have strongly encouraged to leave the work force. Allowing a fraction of the older working population to withdraw from the labour market may have been feasible at a time when there were 100 prime aged workers for a limited number of old workers but with the prospect of a simultaneously declining and ageing working age population as well as an increase in life expectancy, policies aiming to reduce the potential work force are no longer deemed sustainable. Since the 1990s policy makers have therefore increasingly aimed to prolong rather than to shorten the labour market attachment of older workers. At the European Union level and in the different member states, increasing the participation and employment rates of older workers have moved to the center of policy priorities. In the past few years European pension politics has entered a new phase extending the upper age boundary of the working population to including the 65 and 66 olds.

Following the example of the 1983 Reagan pension reform Europeans have increased or are in the process of increasing the normal retirement age to 67, with Germany being one of the first countries to follow the American example. In Germany, increasing the retirement age to 67 will increase the 2030 working age population by 2,6 million people (Bomsdorf 2008) which will be equivalent to an increase in the working age population of almost 5,5 per cent. If the projections conducted by the European Commission team materialize pension reform will add about 4,5 million labour market participants by 2020 and a further 1,9 million that

otherwise would have joined the ranks of the economically inactive (calculated on the basis of data in the 2009 Ageing reports). That would help increase labour supply in the 11 countries that have implemented reform.

With some modification in the details, the general assumption on unemployment was the projection that structural unemployment rate should remain unchanged over the projection period. On this basis projections of employment can be derived from the projections of participation. In 2007 the EU target of an employment rate of 50 per cent for older workers was not achieved by the EU15 area and only by eight EU15 countries. Further increases in those countries that have already passed the threshold and with further countries reaching the threshold, by 2015 a rate of 53 and by 2020 a rate of 56 per cent are projected to be achieved. Only Belgium, Greece, France and Austria are projected to have rates below 50 per cent by 2020 (EC 2009 Table A130).

Annex: US and EU15 data on labour market participation 1950 to 2010

This annex briefly describes the sources of the estimates of labour market participation 1950 to 2010 that forms the basis of our discussion in section four of the chapter. In contrast to the United States, Europe does not have a long time series providing estimates of age and sex specific participation rates on a consistent basis. A systematic inter-European labour force survey only began in 1983 based on new 1982 ILO recommendations. Concerning only EU countries, a full EU15 data set is only been available from 1995 onwards. A long view of trends in labour market participation – or any other labour market issue – therefore needs to consult and draw on a variety of different sources. Prior to the EU initiative a number of individual European countries carried out their own surveys based on national definitions. Population censuses are a further source of information on labour market participation. These have the advantage of large sample sizes but more often than not are questions pertaining to labour market participation not as clearly specified as in modern labour force surveys.

ILO, OECD, and Eurostat have data bases containing estimates of labour market participation. While Eurostat only contains estimates based on it's own survey, ILO and OECD also publish estimates back in time based on country-source data that have been submitted by national statistical authorities. Our data set – covering three periods - draws on information from all three institutions and in a number of instances when estimates have been missing and/or different sources gave different information national sources, authorities and experts have also been consulted. Figures 2A & 2B in the text and annex tables 1A & 1B and 2A & 2B display the main trends in participation based on our data but our discussion draws on the full data set that we have put together.

A: 1950, 1960, 1970. Data for these years are from ILO (2004) whereby the primary sources in most instances appear to have been population censuses.

B: 1970-1983. The estimates for these years are based on a number of different sources. In several instances, we have also needed to impute missing values and to split age groups when published estimates have only been available for broader age bands. Briefly summarized we have taken these steps: First, for Finland, France, Germany, Ireland, Italy, the Netherlands, Portugal, Sweden, and the US estimates have been obtained from the OECD online labour force data base. With the revision/update of the data base in June 2011, OECD removed the French estimates from its online facility. Second, United Kingdom data were obtained from OECD (1990). This publication also contains the estimates from the OECD online data base, incl. the French data that have now been removed. Third, Austrian estimates have been obtained from national sources (Mitterndorfer 2008; Bundesanstalt Statistik Österreich 2010) with an adjustment having been made on the basis of the estimates in ILO (2004). Fourth, Danish estimates have been obtained from original, country-source tabulations available online on the ILO website (ILO 2011). Fifth, we have not succeeded in finding LFS estimates for Belgium and Greece. In order to be able to present aggregate EU15 estimates (e.g. figures 2A & 2B in the main text and the EU15 rows in annex tables 1A & 1B), we have computed annual rates for Belgium and Greece by way of linear interpolation using the estimates for 1980 and 1970 presented in ILO (2004). Austria, Denmark, and Portugal only began their labour force surveys in 1974. For these countries for the years 1970-1973 we have followed the same procedure as for Belgium and Greece but with a base in the 1974 estimates. In summary, discounting Belgium and Greece, from 1974 onwards we have labour force participation estimates for twelve out of fourteen EU15 countries in addition to the US. In 11 instances, the estimates are from labour force surveys. Irish estimates are from population censuses but since they are included in the online OECD data base and in OECD (1990), we

assume that the survey questions on which they are based are in keeping with the questions asked in the contemporary labour force surveys in other countries.

1984-2010. Our estimates for these years have as a starting point been taken from the ILO dataset "Labour Force Participation Rates 1980 to 2009" (obtained 10 June 2010). The ILO estimates have been checked against the estimates displayed in the OECD and the Eurostat data bases (OECD 2011, Eurostat 2011). Differences have been discussed with Jean-Michel Pasteels from the ILO Department of Statistics and with Pascal Marianna from the OECD as well as a number of national experts. The ILO dataset contains estimates for all years while coverage of the early years is more limited in the Eurostat and OECD data bases. US estimates are the same in both ILO and OECD; Eurostat does not include US data. Eurostat only gives estimates for 1983 onwards with gaps for Portugal and Spain (1983-1985), for Austria, Finland, and Sweden (1983-1994) and the Netherlands (1984 & 1986). While the switch to the EU based survey only meant a rather limited break in the frameworks of the established surveys in Finland and Sweden, the switch put Austrian data on a completely new conceptual footing, in that the traditional Austrian survey had been based on social status rather than participation. A survey respondent indicating that he/she was a student/housewife/pensioner would be classified as being out of the labour force no matter how many hours he/she would work. With the exception of Austria and Ireland, OECD provides estimates for all countries from 1984 onwards and for some countries 1980-1983 (see also point B above). ILO data are largely identical to Eurostat data for those years where Eurostat provides data with some outliers in individual years when the estimates from the two sources then differ (taken account of in our discussion of trough and peak years). For those years where there are no Eurostat data, ILO appears to have estimated rates based on conventional national surveys, but linking these rates with the Eurostat data. OECD estimates differ somewhat more, especially for the Netherlands, where more or less entirely different estimates are presented.

Annex Table 1A: Changes in participation rates, men, 1970 to 1982

		Age Group 55-59			Age Group 60-64			Age Group 65 plus		
	Base Year	Rate in base year	Change 70-82	Change 74-82	Rate in base year	Change 70-82	Change 74-82	Rate in base year	Change 70-82	Change 74-82
Denmark	1974	88,1	-3,6	-1,3	76,3	-25,9	-24,5	21,9	-8,7	-8,9
Finland	1970	80,2	-11,6	-10,0	67,0	-23,5	-15,5	41,0	-25,8	-18,9
Sweden	1970	90,8	-3,6	-2,0	79,5	-11,2	-6,3	28,9	-15,7	-8,9
Austria	1974	83,1	-8,8	-6,3	39,2	-22,9	-14,3	5,8	-3,3	-1,9
Belgium										
France	1970	82,9	-7,3	-6,8	68,0	-28,0	-23,0	19,5	-13,5	-8,8
Germany	1970	88,5	-6,5	-3,7	71,9	-28,1	-19,5	17,2	-11,1	-6,2
Netherlands	1971	91,5	-16,8	-12,6	73,7	-36,1	-28,6	11,3	-7,5	-5,0
Greece										
Italy	1970	75,1	-2,5	-2,4	48,2	-11,4	-6,0	12,9	-4,5	-2,0
Portugal	1974	85,0	-10,9	-7,5	77,8	-23,0	-15,7	41,1	-27,7	-18,3
Spain	1972	90,4	-7,1	-4,6	77,7	-16,4	-13,2	25,9	-17,0	-6,1
Ireland*	1971	94,0	-9,2		87,6	-14,5		43,9	-20,1	
UK	1970	95,3	-8,7	-6,4	86,7	-22,5	-18,2	20,1	-10,8	-7,3
USA	1970	89,5	-7,6	-3,7	75,0	-17,8	-10,6	26,7	-8,9	-4,5
EU15**	1970	85,1	-6,9	-4,9	69,0	-19,5	-14,2	23,3	-12,2	-7,7
Std. Dev:**	1970	7,6	-0,4	0,2	14,9	0,2	-0,4	13,3	-6,5	-4,4

Note: All data are from LFSs except for Ireland (*) that is based on population census information.
Different sources give inconsistent information about Belgium and Greece (ILO 2004, ILO 2011 census tabulations).
Base year = first year with LFS-Data or year of first census (Ireland). Ireland covers 1971-1981.
** Unweighted averages of EU15 countries, excl. Luxembourg. Missing values incl. values relating to years prior to the different base years and to Belgium and Greece have been imputed.

Annex Table 1B: Changes in participation rates, women, 1970 to 1982

		Age Group 55-59			Age Group 60-64			Age Group 65 plus		
	Base Year	Rate in base year	Change 70-82	Change 74-82	Rate in base year	Change 70-82	Change 74-82	Rate in base year	Change 70-82	Change 74-82
Denmark	1974	50,0	7,0	2,7	32,6	-0,9	-3,6	5,4	-2,1	-1,9
Finland	1970	58,3	3,0	1,9	31,3	-0,8	1,6	11,0	-5,8	-3,5
Sweden	1970	52,8	19,3	12,8	35,8	10,4	10,1	8,7	-4,4	-2,1
Austria	1974	31,6	-6,7	-5,3	12,3	-5,1	-3,6	1,8	-0,6	-0,3
Belgium										
France	1970	46,0	0,0	2,2	34,3	-10,9	-8,3	8,6	-6,2	-3,8
Germany	1970	36,4	4,3	2,8	20,4	-7,8	-4,3	6,1	-3,1	-2,2
Netherlands	1971	17,7	0,3	0,0	11,8	-4,1	-3,5	2,2	-1,5	-1,1
Greece										
Italy	1970	16,4	3,4	2,4	10,6	3,6	5,2	2,6	0,6	1,1
Portugal	1974	34,7	8,3	0,3	27,4	3,0	-3,4	11,7	-5,2	-4,6
Spain	1972	24,8	-2,7	-4,0	19,1	-1,8	-4,9	7,7	-4,7	-1,3
Ireland*	1971	21,8	-0,3		20,7	-3,4		11,3	-6,5	
UK	1970	50,1	3,6	1,8	27,9	-6,0	-6,8	6,4	-2,9	-1,7
USA	1970	49,0	0,6	2,2	36,1	-2,7	0,0	9,7	-1,8	-0,3
EU15**	1970	33,9	3,0	1,4	21,7	-1,8	-1,7	6,8	-3,1	-1,9
Std.Dev:**	1970	14,4	3,4	2,5	8,9	1,7	1,2	3,5	-1,5	-1,0

Note: All data are from LFSs except for Ireland (*) that is based on population census information.
Different sources give inconsistent information about Belgium and Greece (ILO 2004, ILO 2011 census tabulations).
Base year = first year with LFS-Data or year of first census (Ireland). Ireland covers 1971-1981.
** Unweighted averages of EU15 countries, excl. Luxembourg. Missing values incl. values relating to years prior to the different base years and to Belgium and Greece have been imputed.

Annex Table 2A: Changes in participation rates, men, 1984 to 2010

	Age Group 55-59				Age Group 60-64				Age Group 65 plus			
	Year of Minimum	1984	1984 to minimum	Minimum to 2010	Year of Minimum	1984	1984 to minimum	Minimum to 2010	Year of Minimum	1984	1984 to minimum	Minimum to 2010
Denmark	1996	83,1	-4,2	6,8	2000	49,9	-10,6	10,1	1999	13,3	-10,4	7,0
Finland	1996	65,1	-7,0	17,9	1995	38,0	-16,3	22,7	2002 / 2004	12,0	-8,0	7,0
Sweden	1994	87,4	-4,7	5,6	2000	65,7	-12,3	17,4	1985	11,3	-0,1	5,5
Austria	1994	72,9	-11,2	11,6	1998	19,5	-7,8	19,0	1988	2,5	-0,7	5,9
Belgium	1993	63,6	-14,8	17,4	1998 / 2002	26,8	-10,2	10,6	1998	3,0	-1,5	1,7
France	2000	62,6	-4,1	10,7	1998 / 1999	26,6	-15,7	9,3	2001	4,8	-3,3	0,9
Germany	1993	79,4	-8,6	14,0	1994	35,1	-6,8	25,4	2003	5,7	-1,6	1,6
Netherlands	1996	65,8	-5,7	24,9	1996	29,3	-9,1	29,5	2000	6,6	-2,3	5,1
Greece	2002	77,8	-6,5	3,7	2004	56,8	-13,8	1,3	2009	17,2	-10,7	-0,2
Italy	2001	70,2	-17,9	16,1	2005	37,7	-8,9	1,8	1998 / 2000	9,2	-3,6	0,1
Portugal	1995	75,3	-4,9	2,9	2005/2010	60,7	-11,2	0,0	1986	23,5	-4,7	3,4
Spain	1995	79,3	-7,9	8,2	1999	57,0	-17,4	7,0	1997 / 1998	7,2	-4,9	0,4
Ireland	1998	83,0	-11,2	2,4	1997	68,1	-16,1	3,2	2004	19,9	-6,2	0,2
UK	1995	82,0	-8,3	7,2	1996 / 1998	56,4	-6,9	8,4	2001	8,3	-1,1	4,1
USA	1994	80,2	-3,3	1,6	1994	56,1	-3,3	7,2	1993	16,3	-0,7	6,5
EU15 Av		74,8	-8,4	10,7		44,8	-11,8	11,8		10,3	-4,2	3,1

Note: Age group 65 plus includes the age group 65-99 for all countries except for Sweden and Finland where the data concern the age group 65-74 year of age.
Sources: ILO (2010) and OECD (2011).

Annex Table 2B: Changes in participation rates, women, 1984 to 2010

	Age Group 50-55			**Age Group 55-59**			**Age Group 60-64**		
	1984	**1984 to 1997**	**1997 to 2010**	**1984**	**1984 to year with male "minimum"**	**Year with "minimum" to 2010**	**1984**	**1984 to year with male "minimum"**	**Year with "minimum" to 2010**
Denmark	66,9	6,1	12,3	56,2	-0,5	22,2	26,7	-3,0	8,6
Finland	79,5	3,1	5,2	61,0	-4,6	23,5	32,6	-14,7	24,1
Sweden	85,3	2,9	-0,2	73,6	4,1	4,3	47,1	-0,6	12,3
Austria	50,0	9,5	18,0	29,7	-2,7	25,3	6,5	1,8	6,5
Belgium	32,0	12,1	25,7	16,3	3,3	26,1	6,5	-1,8	10,3
France	56,6	13,7	11,0	40,3	5,9	15,2	15,9	-5,2	7,0
Germany	49,2	19,4	12,3	39,6	1,9	28,8	11,5	-2,5	26,5
Netherlands	35,5	16,1	24,7	21,4	9,2	30,6	7,7	1,7	18,4
Greece	38,1	1,1	17,4	28,9	1,5	10,7	22,0	-2,5	1,7
Italy	31,2	5,2	21,4	19,8	4,5	17,5	10,6	-1,2	2,9
Portugal	46,4	13,5	15,1	38,5	3,6	14,2	26,9	11,0	-0,3
Spain	25,1	12,4	29,2	22,3	2,3	24,4	16,5	-1,3	12,1
Ireland	28,7	10,9	26,2	21,8	8,8	25,4	15,3	2,2	15,8
UK	65,7	12,6	2,6	50,7	5,1	12,0	21,1	4,0	9,0
USA	59,4	14,1	1,1	49,8	9,4	9,2	33,4	4,4	12,9
EU15 Average	49,3	9,5	16,0	37,2	3,0	20,0	19,1	-0,9	11,1

Note: The different years with male „minimums“ are displayed in annex table 2A.
Note US: 1984 – 19**95**: 11,3 ; 19**95** to 2010: 3,9

References

Adema, W. and M. Ladaique (2009), "How Expensive is the Welfare State?: Gross and Net Indicators in the OECD Social Expenditure Database (SOCX)", OECD Social, Employment and Migration Working Papers, No. 92, OECD Publishing, © OECD.

Anderson, Patricia M., Alan L. Gustman, and Thomas L. Steinmeier (1999): Trends in Male Labor Force Participation and Retirement: Some Evidence on the Role of Pensions and Social Security in the 1970s and 1980s; Journal of Labor Economics 17(4) pp 757-83.

Autor, David and Mark G. Duggan (2006): The Growth in the Social Security Disability Rolls: A Fiscal Crisis Unfolding; *Journal of Economic Perspectives—Volume 20, Number 3—Summer 2006—Pages 71–96*

Berkowitz, Edward D. (1987): Disabled Policy. America's Programs for the Handicapped. A Twentieth Century Fund Report. Cambridge University Press.

Blöndal, Sveinbjörn and Stefano Scarpetta (1999a): The Retirement Decision in OECD Countries. Economics Department Working Paper No. 202. [updated version of a 1998 paper] Paris: OECD.

Blöndal, Sveinbjörn and Stefano Scarpetta (1999b): Early Retirement in OECD Countries: The Role of Social Security Systems; OECD Economic Studies, pp 7-54.

Bomsdorf, Eckart (2008): Höhere Erwerbsbeteiligung der Frauen und Rente mit 67 können Arbeitskräfteangebot stabilisieren – Modellberechnungen für die Bundesrepublik Deutschland bis 2050; Ifo-Schnelldienst, 13, pp 11-21.

Bosworth, Barry and Gary Burtless (2004): The Supply-Side Consequences of Social Security Reform: Impacts on Saving and Employment Working paper. (Washington, DC: Brookings).

Bosworth, Barry and Gary Burtless (2011): Recessions, Wealth Destruction, and the Timing of Retirement. Working paper. (Washington, DC: Brookings).

Bozio, Antoine (2006): Reformes des retraites : estimations sur données françaises, PhD Thesis; Ecole des Hautes Etudes en Sciences Sociales. Paris. France.

Bucher-Koenen, Tabea and Christina Wilke (2009): Zur Anhebung der Altersgrenzen; Sozialer Fortschritt, 4, pp 69-79.

Burtless, Gary (1987): Jobless Pay and High European Unemployment; in

Börsch-Supan, Axel H. and Christina B. Wilke (2006): The German Public Pension System: How it Will Become an NDC System Look-Alike; in Robert Holzmann and Edward Palmer (eds.): Pension Reform. Issues and Prospects for Non-Financial Defined Contribution (NDC) Schemes. The World Bank. Washington D. C.

Bundesanstalt Statistik Österreich (2010): Arbeitskräfteerhebung – Ergebnisse des Mikrozensus. Verlag Österreich. Wien.

Bundesregierung Deutschland (2010): Aufbruch in die altersgerechte Arbeitswelt. Bericht der Bundesregierung gemäß § 154 Absatz 4 des Sechsten Buches Sozialgesetzbuch zur Anhebung der Regelaltersgrenze auf 67 Jahre. www.BMAS.de.

Burkhauser, Richard (1980): The early acceptance of social security: An asset maximization approach; Industrial and Labor Relations Review, 33:4, pp 484-492.

Burniaux, Jean Marc, Romain Duval and Florence Jaumotte (2003): Coping with Ageing: a Dynamic Approach to Quantify the Impact of Alternative Policy Options on Future Labour Supply in OECD Countries. OECD Economics Department Working Paper No. 371. Paris.

Burtless, Gary (1986): Social Security, Unanticipated Benefit Increases, and the Timing of Retirement; Review of Economic Studies, 53(5), pp 781-805.

Burtless, Gary (2004): Pension Reform and Labor Force Exit: Cross-National Evidence. Paper prepared for the "International Forum of the Collaboration Projects" meetings in Tokyo, Japan, February 2004, sponsored by the Economic and Social Research Institute (ESRI).

Burtless, Gary (2008): The Rising Age at Retirement in Industrial Countries, Brookings Institution. Washington D.C.

Burtless, Gary and Joseph F. Quinn (2001): Retirement Trends and Policies to Encourage Work among Older Americans; In Peter Budetti et al., eds. Ensuring Health and Income Security for an Aging Workforce. (Kalamazoo: W.E. Upjohn Institute for Employment Research).

Burtless, Gary and Joseph F. Quinn (2002): Is Working Longer the Answer for an Aging Workforce? Center for Retirement Research *Issue in Brief #11*. Chestnut Hill, MA: Boston College.

Burtless, Gary and Robert A. Moffitt (1985): The Joint Choice of Retirement Age and Postretirement Hours of Work, Journal of Labor Economics 3(2) pp 209-236.

Carone, Giuseppe (2005): Long-term labour force projections for the 25 EU Member States: A set of data for assessing the economic impact of ageing. European Economy, No. 235.

Casey, Bernard, Howard Oxley, Edward Whitehouse, Pablo Antolin, Romain Duval and Willi Leibfritz (2003): Policies for an ageing society: recent measures and areas for further reform; OECD Economics Department Working Papers No.369. Paris

Conceicao-Heldt, Eugenia Da (2007): France: The importance of the electoral cycle; in Ellen Immergut, Karen Anderson and Isabelle Schulze (eds.): Handbook of West European Pension Politics. Oxford University Press.

Chomik, R. and E.R. Whitehouse (2010): Trends in Pension Eligibility Ages and Life Expectancy, 1950-2050, Social, Employment and Migration Working Paper, OECD.

D'Addio, Anna C. and Edward R. Whitehouse (2010), Pension Incentives to Retire, Social, Employment and Migration Working Paper, OECD, forthcoming.

Diamond, Peter, and Jonathan Gruber. 1999. “Social Security and Retirement in the United States” in Jonathan Gruber and David A. Wise, eds., *Social Security and Retirement Around the World* (Chicago: University of Chicago Press).

Disney, Richard (2004): Are contributions to public pension programmes a tax on employment? Economic Policy, July, pp 267-311.

Disney, Richard, and Edward Whitehouse. 1999. “Pension Plans and Retirement Incentives” Social Protection Discussion Paper Series No. 9924 (Washington: World Bank).

Duval, Romain. 2003. “The Retirement Effects of Old-Age Pension and Early Retirement Schemes in OECD Countries.” Economics Department Working Paper No. 370 (Paris: OECD).

Ebbinghaus, Bernhard (2006): Reforming Early Retirement in Europe, Japan, and the USA, Oxford University Press, Oxford.

Ehrlich, Peter and Reinhard Hönighaus (2010): Empfehlung aus Brüssel - EU-Bürger sollen später in Rente gehen; Financial Times Deutschland. Published 28.05.2010; Visited: 30.05.2010.

Eichhorst, Werner (2011): The Transition from Work to Retirement, German Policy Studies, Vol. 7, pp 1ß7-133.

European Commission (2003): Employment in Europe 2003 Chapter 5 Labour market trends and characteristics of older workers; Directorate-General for Employment, Social Affairs and Equal Opportunities. Office for Official Publications of the European Communities. Luxembourg

European Commission (2006): The impact of ageing on public expenditure: projections for the EU25 Member States on pensions, health care, long-term care, education and unemployment transfers (2004-2050). European Economy Special Report Number 1 2006. Brussels.

European Commission (2007): Employment in Europe 2007 Chapter 2 Active ageing and labour market trends for older workers; Directorate-General for Employment, Social Affairs and Equal Opportunities. Office for Official Publications of the European Communities. Luxembourg.

European Commission (2008): The 2009 Ageing Report: Underlying Assumptions and Projection Methodologies for the EU-27 Member States (2007-2060). Joint Report prepared by the European Commission (DG ECFIN) and the Economic Policy Committee (AWG). European Economy No 7. Office for Official Publications of the European Communities. Luxembourg.

European Commission (2009): The 2009 Ageing Report: Economic and budgetary projections for the EU-27 Member States (2008-2060). European Economy No 2. Office for Official Publications of the European Communities. Luxembourg.

European Commission (2010): Green Paper: Towards adequate, sustainable and safe European pension systems. Brussels 7. July. COM(2010)365Final.

European Commission (2012): White Paper - An Agenda for Adequate, Safe and Sustainable Pensions**.** COM(2012) 55 final.

European Commission (2012): Employment and Social Developments in Europe 2011 (Chapter 5: Active ageing). Luxembourg: Publications Office of the European Union.

Eurostat (2003): The European Union labour force survey - Methods and definitions – 2001. Luxembourg.

Eurostat (2011): Labour Force Survey Database (detailed annual survey results), obtained September 2011, (Last Eurostat update 16 September 2011) http://epp.eurostat.ec.europa.eu/portal/page/portal/employment_unemployment_lfs/data/database

Eurostat (2011): Labour force survey in the EU, candidate and EFTA countries. Main characteristics of national surveys, 2009. Eurostat Methodologies and Working Papers. Luxembourg.

Ferrera, Maurizio and Matteo Jessoula (2007): Italy: A narrow gate for path-shift; in Ellen Immergut, Karen Anderson and Isabelle Schulze (eds.): Handbook of West European Pension Politics. Oxford University Press.

Fuchs, Johann (2006): Rente mit 67: Neue Herausforderungen für die Beschäftigungspolitik, IAB-Kurzbericht 16/2006.

Fuchs, Johann and Doris Söhnlein (2006): Effekte alternativer Annahmen auf die prognostizierte Erwerbsbevölkerung; IAB Discussion Paper No. 19. Nürnberg.

Gendell, Murray (1998): Trends in Retirement Age in Four Countries, 1965-95; Monthly Labor Review (August) pp 20-30.

Gendell, Murray (2001): Retirement Age Declines Again in 1990s; Monthly Labor Review (October): 12-21.

Gendell, Murray, and Jacob S. Siegel. (1992): Trends in Retirement Age by Sex, 1950-2005; Monthly Labor Review (July) pp 22-29.

Gruber, Jonathan and David A. Wise (1998): Social security and retirement: an international comparison, American Economic Review, vol. 88 no. 2.

Gruber, Jonathan, and David A. Wise (1999): Introduction in Jonathan Gruber and David A. Wise, eds., Social Security and Retirement Around the World Chicago: University of Chicago Press.

Gruber, Jonathan, and David A. Wise (2004): Social Security Programs and Retirement around the World: Micro-Estimation. University of Chicago Press.

Gruber, Jonathan and David A. Wise (eds.) (2007): Social Security Programs and Retirement around the World: Fiscal Implications of Reform. University of Chicago Press.

Guillemand, Anne-Marie (1991): France: Massive exit through unemployment compensation; in Martin Kohli, Martin Rein, Anne-Marie Guillemard, and Herman van Gunsteren (eds): Time for Retirement. Comparative Studies of Early Exit from the Labor Force. Cambridge University Press.

Guillemard, Anne-Marie and Dominique Argoud (2004): A Country with a Deep Early Exit Culture; in Tony Maltby et al (eds.): Ageing and the Transition to Retirement. A Comparative Analysis of European Welfare States. Ashgate.

Hytti, Heika (2006): Why are Swedes sick but Finns unemployed?; International Journal of Social Welfare, 15, pp 131-141.

Ilmakunnas, Seija and Mervi Takala (2005): Promoting Employment among Ageing Workers: Lessons from Successful Policy Changes in Finland; The Geneva Papers on Risk and Insurance, Vol. 30, pp 674–692.

ILO (2004): Labour Force Participation Rates 1950 to 2000; obtained January 2004: http://laborsta.ilo.org/STP/guest.

ILO (2010): Labour Force Participation Rates 1980 to 2009; obtained 10 June 2010: http://laborsta.ilo.org/STP/guest.

ILO (2011): Total and Economically Active Population – Main Statistics (annual) – site containing "original", unprocessed tabulations from population censuses and labour force surveys carried out in ILO member countries from 1945 onwards; accessed February 2011; http://laborsta.ilo.org/STP/guest

Immervoll, Herwig and Linda Richardson (2011): Changes in Redistribution in OECD Countries Over Two Decades; in OECD (ed.): Divided We Stand: Why Inequality Keeps Rising, OECD Publishing, Paris.

Jeory, Ted (2010): EU bid to raise retirement to 70; Daily Express. Published 30.05.2010; Visited: 31.05.2010.

Kalisch, David W., and Tetsuya Aman. 1998. "Retirement Income Systems: The Reform Process across OECD Countries." Ageing Working Paper 3.4 (May) (Paris: OECD).

Kohli, Martin, Martin Rein, Anne-Marie Guillemard, and Herman van Gunsteren (eds) (1991): Time for Retirement. Comparative Studies of Early Exit from the Labor Force. Cambridge University Press.

Krueger, Alan, and Bruce D. Meyer. 2002. "Labor Supply Effects of Social Insurance." NBER Working Paper No. 9014 (Cambridge, MA: National Bureau of Economic Research).

Krueger, Alan, and Jörn-Steffen Pischke. 1992. "The Effect of Social Security on Labor Supply: A Cohort Analysis of the Notch Generation." *Journal of Labor Economics* 10(4): 412-437.

Latulippe, Denis. 1996. "Effective Retirement Age and the Duration of Retirement in the Industrial Countries between 1950 and 1990." Issues in Social Protection, Discussion Paper 2 (Geneva: ILO).

Lawrence, Robert Z. and Charles L. Schultze (eds.) (1987): Barriers to European growth. A transatlantic view. The Brookings Institution. Washington D.C.

Lumsdaine, Robin, and Olivia S. Mitchell. 1999. "New Developments in the Economics of Retirement," Orley Ashenfelter and David Card, eds., *Handbook of Labor Economics, Volume 3*. (Amsterdam: North Holland, 3261-3308).

Lynch, Julia (2006): Age in the Welfare State. The Origins of Social Spending on Pensioners, Workers, and Children in Italy and the Netherlands. Cambridge University Press.

Martin, Patricia P. and David A. Weaver (2005): Social Security: A Program and Policy History; Social Security Bulletin, Vol. 66 • No. 1, pp 1-15.

Milligan, Kevin S., and David A. Wise. forthcoming. "Social Security and Retirement around the World: Mortality and Health, Employment, and Disability Insurance Participation and Reforms. Introduction and Summary". (Chicago: University of Chicago Press)

Mirkin, Barry Alan (1987): Early retirement as a labor force policy: an international overview; Monthly Labor Review, pp 19-33.

Mitterndorfer Brigitte (2008): Daten des Mikrozensus ab 1974; Statistische Nachrichten 9, pp 804-815.

Munnell, Alicia H. (2010): Social Security's financial outlook: the 2010 update in perspective; Issue in Brief 10-15. Center for Retirement Research at Boston College.

Munnell, Alicia H., Mauricio Soto, and Natalia A. Zhivan (2008): Why do more older men work in some states? *Issue in Brief* 8-6. Center for Retirement Research at Boston College.

Moffitt, Robert A. 1987. "Life-Cycle Labor Supply and Social Security: A Time-Series Analysis." In *Work, Health, and Income Among the Elderly*, Gary Burtless, ed. Washington, DC: Brookings, pp. 183-219.

Mulligan, Casey B. and Xavier Sala-i-Martin. 2003. "Social Security, Retirement, and the Single-Mindedness of the Electorate." Discussion paper 0203-16. New York: Columbia University, Department of Economics.

OECD (1981): The Welfare State in Crisis. OECD. Paris.

OECD (1985): Labour Force Statistics 1963 – 1983. Paris.

OECD (1990): Labour Force Statistics 1968 – 1988. Paris.

OECD (1996): The Public Employment Service in Denmark, Finland and Italy. OECD Paris.

OECD (2004-2006), Ageing and Employment Policies, series of 21 country reviews, OECD, Paris.

OECD (2004): Ageing and Employment Policies: Finland, OECD, Paris.

OECD (2005): Ageing and Employment Policies: Germany, OECD, Paris.

OECD (2005): Pensions at a Glance: Public Policies across OECD Countries. Paris.

OECD (2006a), Ageing and Employment Policies: Live Longer, Work Longer, OECD, Paris.

OECD (2006b), Employment Outlook, OECD, Paris.

OECD (2006): Live Longer, Work Longer. Paris.

OECD (2007a): Pensions at a Glance: Public Policies across OECD Countries. Paris.

OECD (2007b), "Public Sector Pensions and the Challenge of an Ageing Public Service", Working Paper on Public Governance, No. 2, OECD, Paris.

OECD (2008), Employment Outlook, Paris.

OECD (2009): Pensions at a Glance 2009: Retirement-Income Systems in OECD countries, OECD Paris.

OECD (2010): Sickness, Disability and Work: Breaking the Barriers. A Synthesis of Findings across OECD Countries. OECD Paris.

OECD (2011): Labour Force Participation Rates by Age and Sex, obtained February 2011 from OECD.Stat.Extracts: http://stats.oecd.org/Index.aspx and July 2011 (excel file) (Last OECD update 16 June 2011)

OECD (2011): Pensions at a Glance 2011: Retirement-Income Systems in OECD and G20 countries, OECD Paris.

Palacios, R.J. and Edward R. Whitehouse (2006), "Civil-service Pension Schemes Around the World", Pension Reform Primer Series, Social Protection Discussion Paper No. 06/02, World Bank, Washington, D.C.

Peracchi, Franco, and Finis Welch. 1994. "Trends in Labor Force Transitions of Older Men and Women," *Journal of Labor Economics* 12(2), 210-242.

Queisser, M. and Edward R. Whitehouse (2006) 'Neutral or fair? Actuarial concepts and pension system design', OECD Social, Employment and Migration Working Paper no.40, OECD.

Quinn, Joseph F. 1999. "Has the Early Retirement Trend Reversed?" Paper presented at the First Annual Joint Conference for the Retirement Research Consortium, "New Developments in Retirement Research," May 20–21, 1999. (Chestnut Hill, MA: Center for Retirement Research at Boston College).
http://escholarship.bc.edu/cgi/viewcontent.cgi?article=1206&context=econ_papers.

Scherer, Peter. (2002): Age of Withdrawal from the Labor Force in OECD Countries. Labour Market and Social Policy Occasional Paper (Paris: OECD).

Schieber, Sylvester J. and John B. Shoven (1999): The Real Deal. The History and Future of Social Security. New Haven, CT: Yale University Press.

Schmähl, Winfried (1992): Changing the Retirement Age in Germany; Geneva Papers on Risk and Insurance, vol. 17, pp. 81-104.

Schmähl, Winfried (1993): The "1992 Reform" of public pensions in Germany: Mail elements and some effects; Journal of European Social Policy, Vol. 3, pp 39-51.

Toossi, Mitra (2006): A new look at long-term labor force projections to 2050; Monthly Labor Review, November, pp 19-39.

Toossi, Mitra (2008): Labor force projections to 2018: older workers staying more active; Monthly Labor Review, November, pp 30-51.

Turner, John (2007): Social Security Pensionable Ages in OECD Countries: 1949-2035, International Social Security Review, Vol. 60, No. 1, pp. 81-99.

U.S. Census Bureau, Department of Commerce (1975): *Historical Statistics of the United States: Colonial Times to 1970* (Washington: Government Printing Office).

Venn, D. (2012), "Eligibility Criteria for Unemployment Benefits: Quantitative Indicators for OECD and EU Countries", *OECD Social, Employment and Migration Working Papers*, No. 131, OECD Publishing.
http://dx.doi.org/10.1787/5k9h43kgkvr4-en

Wadensjö, Eskil (2011): De äldres återkomst till arbetsmarknaden – ett långsiktigt perspektiv; in Statistics Sweden (ed): Arbetskraftsundersökningarna (AKU) 50 år. Statistics Sweden Publishing. Stockholm.

Whitehouse, Edward R. (2002): Pension Systems in Fifteen Countries Compared: The Value of Entitlements, Discussion Paper 02/04 (Sydney: University of New South Wales Centre for Pensions and Superannuation).

Whitehouse, Edward R. (2007), "Life-Expectancy Risk and Pensions: Who Bears the Burden?", Social, Employment and Migration Working Paper, No. 60, OECD, Paris.

Whitehouse, Edward R. and A. Zaidi (2008): Socio-Economic Differences in Mortality: Implications for Pension Policy, Social, Employment and Migration Working Paper, No. 71, OECD, Paris.

Whitehouse, Edward R., Anna C. D'Addio, R. Chomik and Andrew Reilly (2009): Two decades of pension reform: What has been achieved and what remains to be done? Geneva Papers on Risk and Insurance, vol. 34, pp. 515-535.

Wise, David A. (2006): Early Retirement; in Gordon Clark, Alicia Munnell, Michael Orszag, and Kate Williams (eds.): Oxford Handbook of Pensions and Retirement Income. Oxford University Press.