CeRP
CENTER FOR RESEARCH ON PENSIONS AND WELFARE POLICIES

Flexibility in Retirement[*]
A framework for the analysis and a survey of European countries

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Table of contents

1. Introduction

This report provides a general overview of the main aspects concerning the subject "flexibility of retirement" and describes the current situation, and likely future developments, of flexible retirement provisions within selected European Member States, based on a review of selected published works.

The report is organised as follows. *Section 1* introduces the topic and the appropriate framework. *Section 2* provides information on the key steps and the current normative framework concerning both flexibility in the retirement age and the possibility of partial retirement. *Section 3* contains a short description of the elements of evaluation of the reforms introducing or enhancing flexibility, with a focus on reforms which introduced the NDC system, as in Italy, Sweden and Latvia. Finally, *the appendix* provides quantitative information on the sources of income of older people and their employment status, both disaggregated by a number of relevant dimensions.

Looking for a definition. The starting point in sketching a conceptual framework for an analysis of flexibility of retirement is to find a definition accommodating both *flexible* and *partial* (*gradual*) retirement. Apart from the very broad definitions given by the International Labour Organization[1], a commonly accepted one does not seem to be available. This state of the art reflects a long standing tradition of public intervention in the definition of the retirement procedure. Indeed, the expression of "legal retirement age" – quite common in Europe – testifies the limited discretionary choice that workers can exert in this area. Consequently, at an empirical level, both flexible and partial/gradual retirement can only be defined in relative terms.

Moreover, while in principle it should be just appropriate to consider flexibility both in the age of retirement and in the way the accumulated pension wealth is drawn down (partial/gradual retirement) as two faces of the same medal, the European perspective testifies of two different circumstances, differently motivated and thus normally differently legislated. This is why, in this report, we propose and use *relative* definitions of a flexible pension system, based on "legal definitions", which are generally country specific.

Desirability and Effectiveness of flexible retirement. Although flexibility can, in general, be considered a good feature of a pension system, it is certainly not an absolute value. In general, flexibility is introduced as a means to grant workers some degree of choice with respect to an important aspect of their life, but also as an instrument to achieve an increase in the average retirement age, in order to improve the financial sustainability of present PAYG systems.

All features of a flexible pension system have implications for individuals – in terms of both adequacy and fairness – as well as consequences for the financial sustainability of the system. As for the latter, the introduction, in combination with some degree of flexibility in retirement age, of an actuarially fair method of calculating benefits can be seen as a safeguard against the financial stress caused by the possibility of "too young" retirement ages. On the other hand, adequacy concerns can arise in case retirement at the "minimum" possible age should leave individuals with unacceptably low benefits. In relation to this issue, the importance of an "appropriate" minimum retirement age – the lower bound of the retirement window – is often underlined in the literature (a comprehensive discussion of this and other "optimal retirement rules" is provided in Diamond, 2005).

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[1] The ILO report (2005) refers to "the option given to retirees to choose the age at which they retire (usually within certain limits)" for flexible retirement and to "combining of part time employment with receipt of a reduced pension" for partial retirement.

Moreover, the definition of unique mortality rates across individuals with different working histories and different life expectancies poses equity problems. For instance Brown (2000) discusses how to incorporate into the pension *formulae* the heterogeneity in mortality probabilities as well as the evolution of mortality rates over time and cohorts.

Benchmarking. Although flexibility in the choice of the age of retirement is sometimes introduced in defined benefit schemes, as we will see in the next sections it typically characterizes (Notional) Defined Contribution ones (Palmer, 1999). As of 2006, in the enlarged Europe, Italy, Latvia, Poland and Sweden have adopted a Notional Defined Contribution formula (NDC).

The flexibility in the choice of the retirement age is thus generally coupled with an actuarial correction in the pension benefit. Therefore, particular attention is paid in the literature to the characteristics of actuarial fairness and actuarial neutrality of NDC pension systems, as well as to the definition of a benchmark for their actuarial features (see Disney, 1999 for a discussion and an evaluation of the features of these systems).

However flexible, a system has to be characterised by a minimum and (usually) also a maximum age of exit from the labour market, or, if an upper bound is missing, by at least an age above which permanence on the job is discouraged. Workers can typically retire at any age within this 'window'. The key element to consider between these two age limits is the accrual rate (see Section 3.3). This determines the pension benefits and whether workers are encouraged or not to a longer permanence in the labor market. When the accrual rate is more than actuarially neutral, workers retiring at the low ages of the retirement window are penalized, whereas those choosing to retire at the upper end receive a more than actuarially neutral benefit; vice versa, in the case of accrual rates, less than actuarially neutral.

Flexibility in retirement and work of the elderly. Among the issues related to the reforms introducing elements of flexibility, particular attention deserve the participation rates of older workers. Many empirical studies agree on the quite low efficiency of the reforms on the average retirement age (see e.g. Brugiavini and Peracchi, 2004, for an application to the Italian pension system). As for the impact of the payroll tax rate on employment, Disney (2004) shows the different impact of its tax component and saving component, concluding that the first reduces economic activity rates among women while the second has the opposite effect. The economic activity rates of men, however, are little affected by the composition of payroll tax rates.

In comparing these reforms with those introducing mandatory provisions, however, the welfare-improving capabilities of pension schemes which do not distort individual choices is to be taken into account (Disney, 2004).

Concerning gradual retirement, the evaluation of its effects on labor supply is the main topic of discussion. The possibility of partial or gradual exit from the labor force can be allowed in the years before or after the 'normal' retirement age. This is an important factor in determining the likely impact on participation rates of older workers, as only in the second case it has the clear aim of extending individual working careers. In most of the European countries adopting it, however, partial pension is not possible after the standard retirement age; in these cases its main objective is reducing the number of workers resorting to full early retirement and cutting in this way social security expenses.

Unfortunately, most of the literature on partial retirement is relative to the United States, as partial retirement schemes in Europe are only chosen by a very small fraction of workers, possibly because this choice is not adequately encouraged.

The objective of increasing the activity rate of older workers can be hindered by legal and institutional obstacles to its take up, e.g. the fact that pension benefits may be determined by earnings in the final years of the career (Casey, 1998; European Commission, 2004). On the whole, phased retirement does not appear to be associated with early exit from the workforce and

it may indeed extend the workers' careers (Chen and Scott, 2006, based on the HRS; Wadensjö, 2005).

On the labour demand side, the most important issues concern the negotiation of short-term part-time contracts to allow for a partial withdrawal from work of older workers, considering the evolution of their productivity with age (Lumsdaine and Mitchell, 1999; OECD, 1998).

2. Country analyses

2.1 Reforms introducing flexibility in the choice of retirement age

During the last decade different reforms have been introduced in many European countries with the aim of improving flexibility in retirement age. The rules of each country differ from one another with respect to several aspects, such as the provision of – actuarially neutral or not – correction mechanisms of the pension amount drawn at different ages; the provision of eligibility requirements based on insurance seniority; the existence and the effectiveness of specific incentives/disincentives to earlier or later retirement, and so on.

After a brief overview on the main features of the pension schemes in each country, the county-specific analyses will focus on the recent reform process as well as the existing rules concerning flexibility in retirement age and highlight the main features that characterize each national pension system.

The countries described in this and in the following sections are grouped according to a classification by typologies of pension systems (Soede *et. al.*, 2004) where Sweden, Finland and Denmark represent the Nordic countries, France and Germany the continental ones; Italy and Spain stand for Mediterranean countries and the UK for the Anglo-Saxons; the Netherlands are, as usual, classified as a hybrid country, and, finally, Latvia and Poland represent Eastern European ones.

Sweden

The current structure of the Swedish pension system comes from a reform – approved in 1999 but in force since 2003 – that radically modified the former rules, by changing the previous PAYG defined benefits pension scheme into a notional defined contribution one. The new system is composed by a minimum guaranteed pension and an earnings-related one, that in turn consists of a NDC component and a defined-contribution pre-funded one. The amount of benefits has also changed: while according to the pre-reform rules benefits were based on the 15 years of work with the highest earnings out of the minimum 30 of work, under the new scheme they are actuarially neutral, so they depend on the whole lifetime contributions, on the number of years worked and on life expectancy at the moment of retirement.

In accordance with the principle of actuarial neutrality, the 1999 reform also modified the existing rules about retirement age. Until that date the statutory retirement age was fixed at 65 years, but pension benefits could be drawn from age 61 – with a reduction in the amount – up to the age of 70 – with a lifelong increase. In particular, the pension was decreased by 0.5 per cent – up to a maximum reduction of 24 per cent – for each month of withdrawal between 61 and 65; on the other hand, the amount of benefits was increased by 0.7 per cent – up to a maximum rise of 42 per cent – for each month of deferment up to the age of 70 (OECD, 2003b). Similarly, the post-reform Swedish pension system is characterized by great flexibility: retirement can begin between the ages of 61 and 67, and in addition people can work thereafter with the employer's consent (European Commission, 2006a; OECD, 2003b; Swedish National Social Insurance Board, 2003).

Denmark

Denmark has a three-pillar pension system. The first pillar consists of two tiers: a flat-rate PAYG social pension (*folkepension*) and a labour market supplementary pension (ATP).

The *folkepension* is a universal PAYG scheme, where the only eligibility requirement is Danish citizenship and the amount of benefit is proportional to the length of residence in the country (40 years of residence in order to obtain the full pension). This pension is income-tested: people who have an additional income source (e.g. labour income) that exceeds an established threshold will undergo a reduction in the pension benefit by 30 per cent of that additional income.

The second tier of the first pillar – the supplementary pension, ATP – involves people in paid employments[2]. Benefits are based on the duration of the membership in the scheme and on the amount of contributions paid, that does not depend on labour earnings but on the number of hours worked.

The second pillar consists mainly of occupational schemes and the third of individual savings schemes (Bingley *et al.*, 2005; Bingley *et al.*, 2002; EIRO, 2005; Herbertsson *et al.*, 2000 and OECD, 2005d).

Relating to the age of retirement, a reform approved in 1999 – effective since July 1st, 2004 – reduced the retirement age from 67 to 65 for people born after the 1st July 1939. This cut seems almost paradoxical in a moment in which most European countries are rising their retirement age. Yet, this reform was motivated by the aim of increasing a low effective average retirement age. As a matter of fact, the 1999 reform along with reducing the retirement age restricted the access to the generous early retirement payments.

A new reform is being gradually introduced with the aim to reintroduce the 67-year requirement (both in old age and early retirement schemes).

The current legislation sets up the minimum retirement age at 65 years without any possibility of early retirement[3] but allows for deferment with an actuarial adjustment of benefits up to the age of 70. Similarly, the ATP pension increases by a fixed percentage for each month of deferment (European Commission, 2006a).

Finland

The Finnish public old-age pension system consists of two main parts: an earnings-related component that covers all economically active workers – self-employed, employees and farmers – and a national pension that guarantees to all residents a minimum pension, that is earnings-tested with respect to the earnings-related pension. The former scheme – that provides a defined benefit pension – is partly funded and partly financed by a pay-as-you-go mechanism; the amount of pension benefits is related to the whole lifetime earnings.

The latest main reform of the Finnish pension scheme was legislated in 2001-2002 and took effect in 2005. Its goals were not only to guarantee sustainability and equity to the system, but also to increase the participation of the elderly in the labour market and make retirement rules more transparent and actuarial. Its focused on the reform of the earnings-related pension scheme, while leaving the national pension essentially unchanged: the normal retirement age remained 65 years, without possibility of partial retirement and rules about early retirement remain almost the same[4].

As for the earnings-related scheme, before 2005 the normal retirement age was fixed at 65 but the possibility of early retirement was available for private sector employees aged between 60 and 64. In case of early retirement, the amount of the pension was reduced by 0.4 percentage points

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[2] People that worked more than 9 hours per week.
[3] A way to retire earlier than 65 years is the Voluntary Early Retirement Pay – VERP. It entitles members of an unemployment insurance fund to retire – under some eligibility conditions – between 60 and 64 years and receive a state pension computed as a share of the unemployment benefits (European Commission, 2003 and OECD, 2005d).
[4] For this reason the description of Finnish pension reform will be mainly focused on the earnings-related scheme.

for each month of early withdrawal. On the other hand, deferred retirement was also possible, with a benefit increase of 0.6 per cent for each month of postponement, but without additional pension rights accruing from the extended career. In order to compute the amount of pension benefits, pensionable earnings (indexed to today's level) were multiplied by an age-dependent accrual rate. This was quite flat: 1.5 percentage points per year for earnings until the age of 59 and 2.5 percentage points for earnings between 60 and 65 years (Lassila and Valkonen, 2006).

Generally, incentives to work longer – in term of replacement rates – are low in Finland: a deferment by 7 years – from 63 to 70 – causes an increase of the replacement rate by only 5 percentage points (OECD, 2004c).

The 2005 reform changed the rules about retirement age by introducing a "window" of flexible retirement between ages 63 and 68 and the possibility of early retirement at the age of 62. Within the window of flexible age incentives to later retirement are given by higher accrual rates and, with regard to deferred retirement, by actuarial adjustments. In particular the reform established the values for the accrual rates at 1.5 per cent until the age of 52, 1.9 per cent between the ages of 53 and 62 and 4.5[5] per cent from the age of 63 onwards. During the period (12 months) in which early retirement is still possible, the earnings-related pension is reduced by 0.6 percent for each month. The Finnish pension system also allows for unlimited deferment: when people retire after the retirement window an actuarial adjustment of 0.4 per cent per months (4.8 per cent per year) is applied (European Commission, 2006a and Lassila and Valkonen, 2006).

Spain

The Spanish public pension system consists of a compulsory pay-as-you-go scheme and a non-contributory one, that provides flat-rate benefits to persons over age 65 or disabled who are not entitled to a contributory pension. In the first component, pension benefits are earnings-related and depend on the number of years of contribution. The normal retirement age in Spain is 65, with a minimum seniority requirement of 15 years, becoming 35 in order to receive a full pension.

The major recent reform process in Spain occurred in 2002, when a new "flexible retirement" system came into force with the aim of extending the working life of older people. The introduction of this scheme was one of the results of a process which started in 1996 with the implementation of the "Toledo Pact" (1995). Among other things, this process brought to an agreement in April 2001 between government, employers' representatives and trade unions, that came into force on January 1st 2002.

With regard to retirement age, the 2002 law introduced some measures of flexibility. Even if the normal retirement age is set at 65, there is the possibility to retire earlier. In particular, workers who started contributing before 1967 can retire from the age of 60 as well as those who have contributed for at least 30 years and have been unemployed for at least 6 months for reasons outside their control can retire from the age of 61. In both these cases early retirement is penalized by a reduction rate for each year before 65.

Moreover, the Spanish pension system provides an incentive to retire later for those working over the age of 65, provided they have 35 years of insurance seniority. An additional incentive to lengthen one's working life is the exemption from paying social security contributions for employees older than 65 and their employers, as well as for the self-employed (European Commission, 2006a; OECD, 2003a and Spanish Minister of Labour, 2006).

Italy

Since 1992 the Italian pension system has undergone a series of major changes directed at correcting its main structural problems: a systematic insufficiency of contributions to cover outlays, a strong redistribution and relatively young effective retirement ages, induced by

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[5] It is 1.5 per cent if the worker withdraws the old age pension.

generous eligibility requirements. Two major reforms were enacted in 1992 and in 1995, followed by other measures in 1997 and 2004.

Until 1992 the pension formula was a defined benefit one. The amount of pension was based on the wage level of the last 5 years for private sector employee, of the last year for public sector employees and of the last 10 years for the self-employed. The minimum age for retirement was 60 years for men and 55 for women, with a working career of at least 15 years[6].

With the 1992 reform the formula remained a DB one, but the link between benefits and contribution was strengthened and the eligibility requirements for both old age and seniority pensions were increased.

The 1995 reform changed the previous defined benefit formula into a NDC one. The uniformity of treatment was made transparent by the actuarial correspondence between contributions and benefits[7]. The NDC pension was complemented by flexible retirement conditions: the law established a minimum and maximum age at which retirement was possible, i.e. 57 – 65 years for both men and women; a minimum period of contribution (5 years); the condition that accrued pension benefit be at least equal to 1.2 times the social allowance (if the test is not met, retirement can only take place at age 65, when at least the social minimum is paid); adjustment of the transformation coefficients (i.e. the annuity coefficients to convert the contributions at retirement into pension benefits) only up to 65, after which the worker is allowed to continue working but the coefficient is no longer increased. Since this reform did not immediately come into force, its effects will be postponed after a long transition phase.

While the 1997 reform anticipated the coming into force of the tighter requirements concerning the old-age pensions[8], the 2004 one strengthened the eligibility requirements for old-age pension both during the transition and in the steady-state.

The 2004 reform increased the minimum requisites for old-age pension. Starting from 2008, private employees will be able to retire at 60 years of age[9] with 35 years of seniority, or with 40 years of contributions at any age. In addition, workers whose pension will be entirely computed according to the DC method can choose to retire at 65 (men)/60(women) with any seniority.

Until 2015, women may decide to retire at 57 with 35 years of seniority provided they are willing to receive pension benefits computed with the NDC formula.

The 2004 reform introduced a *bonus* to incentive retirement deferral for private sector employees: up to 31st December 2007 eligible workers who decide to continue working – without any increase in contributions – receive a wage increase equal to the amount of the payroll tax, i.e. 32.7 percent of their gross wage (Fornero and Castellino, 2001; Italian National Social Security Institute).

France

The French pension system is pay-as-you-go, characterized by a great heterogeneity between schemes concerning different categories of workers. A reform process in 2003 – the major one in the last decade[10] – considerably modified the existing rules on retirement, harmonizing the

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[6] A "seniority pension" also existed; the only eligibility requirement was an insurance seniority of 35 years in the private sector and of 20 in the public sector.

[7] Exceptions are motivated by explicit *ex ante* redistribution in favour of workers with poor and/or more intermittent careers.

[8] In particular it established that the requirement of "35 years of contributions and the age of 57 years" should come into force in 2002 instead of 2006.

[9] Increasing to 61 from 2010, and 62 from 2014.

[10] A previous reform, which took place in 1993, progressively increased the number of years of contribution required to reach full retirement, from 37.5 for cohorts born before 1943 to 40 years for cohorts born after 1943. At the same time the rules for computation of pension benefits increased from 10 to 25 years. Moreover, the 1993 reform established that the revaluation of past wages should be based on past prices instead of wages (Aubert*, et al.*, 2005)

different pension schemes, in particular those concerning private and public sectors employees[11], to realign the pension rules with the demographic changes and to encourage a greater flexibility in retirement choices. The 2003 law did not change the minimum retirement age, that remains 60 years[12]; however, the seniority requirement for full pension eligibility was set at 40 years (160 quarters)[13].

Within this provision, the main channels introduced by the legislator to allow for a greater flexibility in retirement age are the "*surcote*" and "*décote*" mechanisms.

The first one concerns people older than 60 years who satisfy the insurance conditions for a full rate pension. They will receive a pension increase by 3 per cent for each supplementary year of work (or by 0.75 per cent for each successive quarter).

On the other hand, the law of 2003 reformed the so called "*décote*", that is the possibility of retiring between 60 and 65 at a reduced rate, for those who do not fulfil the requirement for a full pension. Before 2003 there was a large difference between private and public sector: while private sector employees could retire between 60 and 65 but with a very high reduction – 10 percentage points for each missing year – for civil servants this possibility did not exist. The 2003 reform set up a gradual convergence of these different rules towards a more actuarially neutral value of the *décote* coefficient of 5 per cent for each missing year for both private and public sector employees in 2015[14] (COR, 2004; European Commission, 2006a and Service Public web page).

Germany

The core part of the German pension system is the "public retirement insurance" that covers private sector employees and public sector employees that are not civil servants, i.e. about 85 per cent of the workforce. Starting from the Nineties, various reforms modified the structure of the German pension system, determining its gradual evolution from a monolithic pension scheme – as it was built up in 1972 – towards a more flexible multi-pillars system. The main reforms occurred in 1992, 1999 and 2001.

Even though before 1992 the normal retirement age was 65 years for men and 60 for women and unemployed, numerous early exit ways enabled workers to retire before that age. Both the 1992 and 1999 reforms tried to simplify the system in order to discourage early exits from the workforce.

The core innovation of the 1992 reform was the introduction of an explicit adjustment factor – that nevertheless was not actuarially neutral – for retirement before the normal retirement age, i.e. 65 years. According to this reform the amount of the pension benefit was reduced by 0.3 percentage points (maximum 10.8 per cent) for each month of earlier retirement and increased by 0.5 per cent for each month of deferment (Berkel and Börsch-Supan, 2003).

Even though a government change caused the repeal of some of its proposals, the 1999 reform set up a gradual increase – that should be fully implemented by 2017 – of retirement age also for women and unemployed up to 65 years.

In 2001 the German Government approved the so-called Riester Reform – in force since 2002 – that turned the German system into a multi-pillar one: the core feature of this reform was, indeed, the introduction and development of supplementary funded pensions, individual or

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[11] This reforms concerns the majority of private and public pension schemes; however it does not concern the "*Regimes Speciaux de Retraites*", an heterogeneous category that includes some important public firms (SNCF, RATP).
[12] It is however possible for some categories of workers – for example, those who started work when they were very young, i.e. before the age of 17 – to receive a pension before this standard age..
[13] The contribution period for retirement at full rate has been increased by 37.5 to 40 years during the period 1994 – 2003 for private sector employees. With the 2003 reform it will increase to 40 years also for public sector employees in 2008. It will still increase up to 42 years for both private and public sector in 2012 (Benallah *et al.*, 2003).
[14] For private sector employees the target value of 5 per cent will be achieved in 2013; for a more detailed description of the gradual process of alignment see COR (2004).

occupational, to fill the gap created by the reduction of replacement rates (Börsch-Supan and Wilke, 2004).

However, the financial disequilibrium of the pension system stressed the need for a further reform. In 2003 a Commission (called "Rürup Commission") was created with the aim of elaborating a reform proposal. Many of the Commission's suggestions became law: among them, one of the main changes was the introduction – in 2004 – of the "sustainability factor" (depending on the dependency ratio) into the benefit indexation formula. On the contrary, the proposal of increasing retirement age from 65 to 67 did not become law. Recently, it has been planned to increase the eligibility age for state pension from 65 to 67 between 2012 and 2029 (Börsch-Supan and Wilke, 2006, European Commission, 2006c and Hinrichs, 2003).

The current legislation fixes normal retirement age at 65. The possibility of early retirement – even if subject to some seniority requirements – is available to some categories of workers, i.e. women, unemployed and disabled, after the age of 60. In this case the amount of lifelong benefits is reduced by 0.3 per cent for each month of anticipated retirement. On the other hand unlimited deferment of retirement is possible with an increase of benefits of 0.5 per cent for each month of postponement.

United Kingdom

The British social security system is composed of a public pension scheme made by a contributory flat-rate *Basic State Pension* and an earnings-related component called *State Second Pension*. The latter substituted the State Earnings-Related Pension Scheme (SERPS) in 2002, introducing more redistributive features.

The State Pension Age is now fixed at 65 for men and 60 for women, but women's retirement age will gradually increase between 2010 and 2020 up to men's State Pension Age. In order to be entitled to a full rate pension men must have contributed to National Insurance for 44 years and women for 39 years, progressively increasing to 44 between 2010 and 2020.

Since 1989 it has been possible to receive a State Pension and continue working without any financial penalty. Moreover, pension benefits payment can be deferred: until 2005 both Basic State Pension and State Second Pension could be deferred up to the age of 70, with an increase of the pension benefit by 1 per cent for each 7 weeks of deferment. Starting from April 2005, the pension increases by 1 per cent for each 5 weeks of deferment with the possibility of unlimited deferment[15]. Moreover, workers who postpone retirement for at least 12 months can choose to get the deferred benefit as a lump-sum rather than as an increase in future pension payments; the deferred benefit accrues interests at 2 per cent above the Bank of England Base Interest Rate (Cooper, 2002; Euopean Commission, 2006a; OECD 2004b; PPI, 2006).

United Kingdom's legislation does not provide any form of partial retirement, even if it is planned to introduce the possibility of cumulating labour income and occupational pension (OECD, 2006a).

A high degree of flexibility in the retirement age is possible in private third-pillar pensions, such as Personal pensions and Stakeholder pensions. Concerning the first, benefits may consist of an annuity or income withdrawal. A person can buy an annuity between her 60th and 75th birthday. From 2010, the starting age to buy annuities will gradually increase to 65 in line with the increase of women's State Pension age. Similarly, income can be withdrawn from the fund between the 60th (gradually rising to 65th from 2010 to 2020) and 75th birthday.

Stakeholder pensions are flexible and can be easily transferred, with a limit on the management costs that can be charged each year. These are paid through an annuity, that can be bought between the 50th (55th from 2010) and 75th birthday, using the money contributed into the pension fund.

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[15] Worker must postpone both Basic State Pension and State Second Pension: it is not possible to defer only one of them.

The Netherlands

The first pillar of the Dutch pension system is a pay-as-you-go flat-rate pension (AOW) paid to all residents from the age of 65, regardless of withdrawal from the labour force. It is not means-tested and does not depend on earned income or contributions but on household composition and on the length of residence in the country: a couple aged 65 or older receives an amount equal to the minimum net wage (e.g. 55 per cent of the average wage), while a pensioner living alone draws 70 per cent of that amount. The condition for eligibility to a full pension is 50 years of insurance (residence) between 15 and 65; for each year without insurance 2 per cent is deducted from the full pension. The pension age is fixed at 65, even if there is an open public debate about increasing it up to 67 or establishing a window of flexible retirement age.

A greater level of flexibility in retirement age is provided by occupational pension schemes (second pillar). In general, almost all (96 per cent, OECD, 2005a) the Dutch occupational pension schemes are defined benefit and most of them have the aim of providing, together with the AOW pension, a replacement rate of 70 per cent for 40 years of contributions.

The age at which occupational pensions can be drawn is generally 65. In the early 1990s, the Dutch government and social partners (trade unions and employer organisations) recognised the adverse incentive effects of the prevailing early retirement schemes. They decided to transform the PAYG schemes into less generous and actuarially fair pre-funded schemes. The starting dates and the implementation period of the transitional arrangements varied by industry sector. In general, under the new schemes employees have the possibility to retire at a much younger ages, but the actuarial neutrality should not discourage labour participation (Euwals *et al.*, 2006; van de Ven, 2001).

Occupational pension schemes allow to continue working after the age of 65, but without any increase in pension entitlements. Like the AOW pension, occupational pensions can be combined with labour income without any limitation. Moreover, some of these schemes allow workers at the end of their career to reduce their working hours and receive a partial pension.

Poland

During the period of centrally planned economy the Polish pension system substantially balanced. A pension debt under control and an effective retirement age close to the legal one made pension benefit close to actuarial neutrality. In 1991, however, the shift to the free market made changes necessary. The so-called Revaluation Act changed the rules of calculation of pensions by strengthening the link between contributions and benefits and by increasing the value of the pension in order to compensate for high inflation[16].

The increasing deficit that followed the 1991 reform opened a public debate – that became more intense during the second half of the Nineties – on the possible options in reforming Polish pension system. The debate brought to the approval, in 1998, of the reform plan "Security through Diversity". This reform, that came into force on 1st January 1999, only involved the insured workers who were younger than 50 when the reform came into force, i.e. those born after 31 December 1948. This reform changed the old defined benefit pension system into a notional defined contribution scheme, that tightened the link between paid contribution and pension benefits. Indeed, the amount of the new pension depends on the indexed pension contributions paid after 1st January 1999 and, as far as the insured of the old system are concerned, on the so-called "indexed initial capital: for each person insured with the old scheme a hypothetical pension – corresponding to what she would have received on 1st January 1999 – has been calculated; that hypothetical pension is multiplied by the average life expectancy of women and men aged 62 and gives the value of the initial capital. Then the pension amount is

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[16] This reform also modified some other aspect of the previous legislation: for example, it restricted the possibility of combining pension and labour earnings, introduced new indexation principles and a minimum level of benefit guarantee.

computed by dividing the sum of initial capital and contributions paid within the new pension scheme by the average life expectancy at retirement.

The Polish pension scheme does not fix a normal retirement age but only the minimum one, that is 60 years for women and 65 years for men[17], without any possibility of early retirement. No requirement of insurance seniority is necessary to receive the old-age pension; however, the strong link between paid contributions and earned benefits is an incentive to work longer and postpone retirement in order to obtain higher benefits (Chlon-Dominczak and Góra, 2006; Góra and Rutkowski, 2000; Perek Bialas *et al.*, 2001; ZUS, 2004).

Latvia

The main process reforming the Latvian pension system – after the independence in 1991 – started in 1994: after the request of help by the Latvian Government to the World Bank, a Swedish and Latvian team of experts was formed with the aim of developing a new pension system. This effort resulted in 1995 in a reform – taking effect in January 1996 – that radically changed the previous rules, providing Latvia with a multilevel pension system, where the first tier is a PAYG system with a strong link between pension benefits and contribution, in line with the NDC rules.

The minimum retirement age has been gradually augmented to 60 for both men and women[18]. At the same time some degree of flexibility was introduced. The pension calculation formula encourages the postponement of retirement while early retirement – with an actuarially reduced pension – was possible only for women with a seniority higher than 10 years (Bite, 2003; Casey, 2004 and Fox and Palmer 1999).

In 1999 another reform of retirement rules came into force. It established a further increase in minimum retirement age to 62 years for both men and women[19]: for men the age increased by 6 months each year starting from 2000 and so the target of 62 has already been achieved in 2003, while for women it increased by one year in 1996 and by 6 months each following year so that the minimum retirement age for women will become 62 only in 2008 (it is 61 in 2006) (Latvian Ministry of Welfare, 2006; National report, 2005 and Vanovska, 2006).

The same reforming act extended the right to early retirement to men, so that, up to July 2008, people can retire up to 2 years early. The pension benefit in this case is actuarially diminished and it is reduced by 20 percentage point up to the statutory retirement age.

The Latvian pension system does not allow for any provision of partial retirement, while only the possibility of combining work with (full) pension is admitted, provided that the amount of pension does not exceed an established threshold based on the state social security benefit . In this case the worker continues to pay contributions and accumulates additional pension wealth. Pensions can be recalculated every 3 years in order to take into account these extra contributions (Vanovska, 2006).

2.2 Reforms introducing flexibility in partial retirement

Along with flexible retirement age, the main instrument used to guarantee flexibility of the pension system is partial / gradual retirement. The first country that introduced this possibility in its regulations was Sweden – in 1976. This experience has been followed by other European countries and currently is an important matter of debate in many others.

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[17] The proposal of setting a minimum retirement age at the same level for men and women (62 years) was already advanced in 1998, but it did not get political approval. At present the question of whether to increase the minimum retirement age for women at 65 years is object of an open debate.

[18] Before 1994 retirement age was 60 for men and 55 for women.

[19] A minimum contribution of 10 years is also required.

This section describes the main features of partial retirement and the gradual exit paths from labour market available to workers in Sweden, Spain, Denmark, Finland, France and Germany. The other countries object of this report do not allow for partial retirement.

Sweden

As already said, Sweden has been one of the first countries to introduce – in 1976 – a partial pension (*delpension*) scheme, allowing wage earners to work part-time before full retirement while receiving a fraction of old-age pension. The purpose of the Swedish legislator was to improve the flexibility of the pension system, by providing an incentive to a smoother transition from work to retirement and by easing the working conditions during the last years of work.

Workers aged between 60 and 64 (the normal retirement age was 65) received a pension equivalent to 65 per cent of lost income, up to a certain limit. The minimum reduction of working time was set at 5 hours per week and the remaining working time had to be at least 17 hours. In addition, workers must have had pensionable earnings for at least 10 years after the age of 45 and have been employed for at least 5 out of the last 12 months (Ginsburg, 1985).

During the Eighties two reforms changed the replacement rate of partial pension with respect to earnings loss: in 1981 they were reduced to 50 per cent and in 1987 raised to 65.

In the context of the Swedish economic crisis of the Nineties, the government decided to cut the welfare expenditure and reformed in 1994 the partial retirement scheme so as to make it less generous. The age limit for eligibility was risen from 60 to 61, the upper limit of reduction of working hours was fixed at 10 and the replacement rate of lost earnings was reduced to 55 per cent.

Since the provision of partial pensions was considered too expensive in a system that already offered great flexibility in terms of options to combine work and retirement, in 2001 the gradual retirement was abolished.

As a result of a collective agreement, however, a partial retirement scheme has been reintroduced on 1st January 2003. It entitles workers older than 61 (and also beyond the age of 67) to reduce their working hours by as much as one half. Current legislation allows workers to choose whether to withdraw the full amount, three-quarters, half or one-quarter of the monthly pension. The percentage of the pension can be increased at any time but it can be cut only every 6 months (Anderson, 2005; Wadensjö, 2005).

Denmark

A partial pension (*delpension*) scheme was introduced for the first time in the Danish pension system in 1987. This scheme entitled workers aged between 60 and 66 to gradual retirement before becoming full-time pensioners. Before the statutory retirement age (67) they could reduce their working time to a part-time job and, at the same time, receive a partial public pension.

The partial pension scheme is currently regulated by the Partial Pension Act (*Lov om Delpension*) that regards both employees and self-employed. In order to be eligible for partial retirement workers must be aged between 60 and 65[20], must be Danish citizens and reduce their working hours by at least 7 hours or at least one quarter of the average weekly hours, with the remaining number of hours between 12 and 30 per week. Moreover, employees must have participated to the supplementary pension scheme (ATP) for at least 10 out of the last 20 years and must have worked 18 out of the last 24 months in Denmark. Similarly, self-employed must have worked full-time during the past 5 years, must have been self-employed in Denmark for at least 4 out of the last 5 years and must have been self-employed for at least 9 months in the past year. In addition, they must have made some profit in their activity and must reduce their working hours to 18.5 per week on average.

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[20] 67 for those who reached the age of 60 before 1st July 1999.

The amount of the partial pension paid is proportional to the reduction of the working time and is calculated according to the "basic amount" (*grund-beløb*), equivalent to 82 per cent of the maximum annual amount of the unemployment benefits[21].

Precisely, partial pension pays to employees 1/37 of the basic amount for each hour by which the weekly working time is reduced. Instead, the self-employed receive a partial pension corresponding to 18.5 working hours per week on average, equivalent to DKK 68 286 (€ 9 153) per year in 2005 (European Commission, 2006a and Ministry of Foreign Affair, 2003).

Finland

As in the other Nordic countries, Finnish workers have the possibility to apply for partial retirement. In this country the part-time pension has been introduced– as a part of a flexible retirement system – at the end of Eighties. It became effective in the private sector in 1987 and in the public sector in 1989, with different age eligibility conditions. The minimum eligibility age for partial retirement was 60 in the private sector and 58 in the public one. However, these thresholds have been changing during the Nineties: in 1994 the minimum age became 58 years also for private workers and was then progressively reduced– from July 1998 up to December 2002 – to 56 years, again for both private and public workers. Starting from 2003, the minimum eligibility age for partial retirement has been increased again to 58 years (European Commission, 2003 and Hakola, 2002).

In summary, at present: to be eligible for a partial pension employees must be aged between 58 and 67; must substantially reduce their working hours (to 16-28 hours per week); and have to reduce their labour income to 35-70 per cent of earlier earnings. The pension amounts to 50 per cent of the lost income caused by the decrease in working time[22] (European Commission, 2006a; Lassila and Valkonen, 2006; Ministry of Finance, 2006; OECD, 2004c).

Spain

Partial retirement (*jubilación parcial)* was introduced in Spain in the 1960s. It initially aimed at job creation, while only later it became an instrument to increase retirement age.

In 1984 a "substitution contract" condition was incorporated in partial retirement rules, imposing the hiring of an unemployed worker in order to replace the hours not worked by the partial retiree. Partial retirement was possible within the 62-64 age window and had to be accompanied by a reduction of 50 percent in working hours.

In 1999 the eligibility criterion was extended to workers aged 60-64 and the reduction in hours became more flexible (between 30 – 67 percent).

The current regulation was established in 2001 and came into force on 1st January 2002. Eligibility rules to partial retirement were slightly modified: the age of access increased from 60 to 61 for the affiliated after 1967, the working time reduction became 25-75% of full-time employment with a consequent pension benefit set at 75-25% of the full pension. The main innovation was the possibility to receive a partial pension even beyond 65 years of age (*jubilación flexible*) and the abolition of the "substitution contract" beyond that age.

Moreover, this new rule constitutes a loosening of the prohibition of cumulating pension and working income: job prosecution is still prohibited in case of full retirement, but the combination of partial pension and part-time work is now possible after the age 65, with the additional advantage that the future pension amount increases with the contributions paid after 65 and employer's contributions are no longer required for people working after 65 (OECD, 2003a and Spanish Minister of Labour web page).

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[21] Before 1995 the basic amount was 100% during the first 2 ½ years and 80% after (Statistic Denmark web page).
[22] Prior to 1994 the rate applied to earning loss to compute pension benefits was between 44 and 64 per cent, increasing with respect to the pensioner's age.

France

Partial retirement (*retraite progressive*) has been introduced in the French pension system at the end of the Eighties. Since 1988, workers can continue their activity part-time and at the same time receive the payment of a fraction of their pension, while accumulating pension rights based on their labor income.

In order to be eligible for partial retirement, workers must satisfy requirements about age, insurance duration and type of job: they must be older than 60; have contributed to one or more regimes for at least 150 quarters[23]; have a salaried part-time activity and their working hours must be reduced by at least 1/5 of the full working time for that firm.

The amount of partial pension is paid in different percentages in accordance to the reduction of working time. Specifically, 30 per cent of the full pension is paid in case of part-time activity between 80 and 60 per cent of full-time employment; 50 per cent of full pension for a part-time activity between 60 and 40 per cent and 70 per cent with a part-time activity below 40 per cent of full-time employment (Buffeteau and Godefroy, 2005; Caisse Nationale d'Assurance e Veillesse, 2006; European Commission, 2006a and OECD, 2005c).

Germany

The German pension system admits the possibility of partial retirement since 1992. The 1992 reform – following the reunification with Eastern Germany – has been one of the main steps in the development of retirement rules in the last 15 years. Its main goals were the simplification and the tightening of the rules about early retirement, as well as the introduction of an explicit– even if not actuarially neutral – adjustment factor to correct the amount of pension in case of advance or postponement of retirement with respect to normal retirement age, i.e. 65 years.

At present, workers are eligible to partial retirement from the age of 60, in the share of one third, one half or two thirds of the full pension with a corresponding cut of the working hours. At the same time, the contributions workers pay from their earned wage increase the pension they will receive when fully retired. However, only about 4,000 people drew a partial pension in recent years, possibly because of another similar scheme that is more attractive to workers and employers: since 1996, employees can take old-age part-time work arrangements with their employers, receiving a pension while working part-time from the age of 55. One of the attractive features of these arrangement is the possibility of working full-time for two and a half years (and then do not work for another 2.5 years), instead of working part-time for 5 years (Antolin and Scarpetta, 1998; Börsch-Supan, 2000; European Commission 2006a; Mandin, 2003 and OECD 2005b).

3. Evaluation of reforms

This section is devoted to outline the main elements of evaluation of recent reforms that introduced or modified provisions of flexible and/or partial retirement. The main elements of evaluation include the effectiveness of the reform and the sustainability and equity of the reformed system.

The effectiveness of the reform in increasing retirement age and labour force participation of older workers depends both on the transparency of the formula and on workers' understanding of the mechanism implemented. The sustainability of the system is closely linked to its actuarially fairness. However, sustainability should not be achieved at the expenses of equity. If flexibility is based upon actuarial fairness – as it should – equity problems remain open, as the actuarial

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[23] The requirement is 150 quarters for people born in 1934. This limit gradually increases and becomes 160 quarter for people born in 1943 or after.

principle cannot itself adequately cope with disadvantaged working conditions and histories (i.e. shorter life expectancy connected to certain types of jobs, shorter and more discontinuous careers of women, and so on).

In this section, national reform processes are analyzed from different points of view in order to highlight how specific measures can affect labour supply and retirement behaviour. This evaluation is focused on a number of specific elements for each country considered.

The impact of recent reforms on the adequacy of replacement rates and the effective retirement age will be considered for France and Germany, whereas the impact on employment will be the main issue of interest for Finland. The following analysis will consider both micro and macro aspects. In the case of Italy, the analysis takes a macroeconomic perspective, whereas a microeconomic approach will be adopted in the analysis carried out in section 3.3.

3.1 Elements of evaluation of flexibility in the choice of retirement age

France: Replacement Rates and Effective Retirement Age

As already mentioned in section 2.1, the French pension system underwent two major reforms during the last decades, in 1993 and in 2003. The 1993 reform involved only private sector employees, whereas the 2003 reform (gradually) extended to public sector employees the main rules of the private sector scheme.

The evaluation for this country is based on the analyses proposed by Benallah *et al.* (2003), and by Aubert *et al.* (2005).

The first study focuses on the adequacy of pension benefits and carries out simulations of the gross replacement rates under different legislative frameworks, since both reforms were implemented with a period of gradual phasing in. In order to evaluate both the differences and the total effect of the reforms, the following case are considered: the pre-1993 situation, the fully phased in 1993 reform and 2003 one.

Figure 1 shows the gross replacement rates for a representative worker – an employee who retires at 60 after at 100 per cent full time employee average wage – in the public and private sector, for different durations of working careers and under different legislative scenarios.

Considering the pre-reforms situation, the replacement rates for private and public sector employees were very close – around 75 percent – for an insurance period of at least 37.5 years, required to be eligible to a full pension. Instead, pensioners with shorter careers had very different replacement rates: in particular, private sector employees were subject to a strong reduction in benefits induced by the *décote* mechanism (10 percentage points subtracted for each missing year), while such a mechanism did not exist in the public sector.

Focusing on the private sector, a parallel shift of the path of replacement rates can be noticed after the 1993 reform, mainly due to the increase in the duration of working career necessary to be eligible to full pension from 37.5 to 40 years. Moreover, replacement rates substantially decreased because of the rise in the number of years considered to compute the reference wage (increased from 10 to 25 in 1993).

The 2003 reform radically changed the mechanism of incentive/disincentive (*surcote/décote*) for deferred or early retirement. In particular, by the time the reform will be fully phased in (2010), the *décote* coefficient for private sector employees will be halved (from 10 to 5 per cent). With respect to the post-1993 situation, this change will increase the level of replacement rates for people with working careers between 32 and 35 years.

The 2003 reform also concerned public sector employees, as one of the goals of this law was the progressive harmonization of the rules among different categories. The results of this reform in terms of replacement rates can be seen again in Figure 1, that shows how the path for civil servants noticeably changes after 2003, becoming closer to that of private sector workers.

Figure 1- Pensions before and after reforms in the private and the public sector
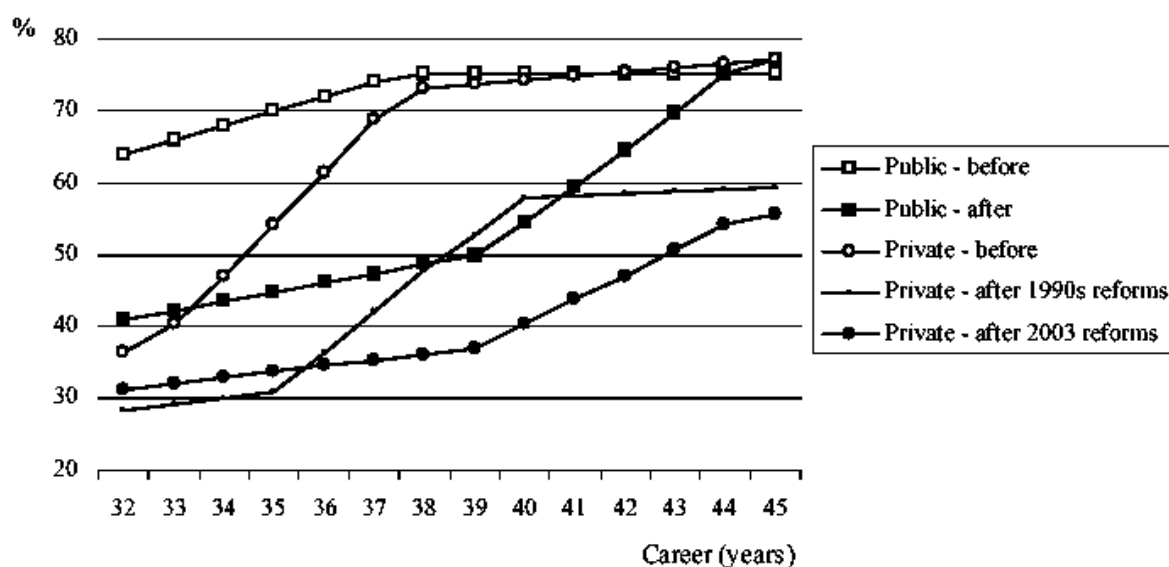
Another perspective for the evaluation of the French reforms concerns their effects on labour supply and on retirement age. The results of a simulation of the effects of 1993 and 2003 reforms on the average effective retirement age are summed up in Tables 1 and 2, respectively (Aubert *et al.*, 2005).

Looking at the first table, two causes of the change in retirement age can be distinguished. The first one – implying the rise in retirement age also before the 1993 reform – is the increase in the age of entry into the labour force. The second one is the change in the legislative framework, whose effects are presented in the last column. The total effects of the reform are stronger with respect to the age of birth and amount to a rise of more than 7 months (0.6 years) in retirement age of the cohorts born between 1965 and 1974 with respect to the cohort 1935-40.

Table 1 - Impact of 1993 reform on average effective retirement age, private sector employees

Cohort	Before 1993 reform		After 1993 reform		Average change due to reform	
	Men	Women	Men	Women	Men	Women
1935-40	60.4	61.9	60.8	62.1	0.4	0.2
1940-44	60.4	62.2	60.6	62.5	0.2	0.3
1945-54	60.5	61.8	60.9	62.2	0.4	0.4
1955-64	60.7	61.4	61.1	61.9	0.4	0.5
1965-74	61.2	61.7	61.9	62.2	0.7	0.5

Table 2 shows the impact of the 2003 reform on average retirement age. The considerably lower effects of this reform on private sector employees – with respect to 1993 reform – could be also due to the cut of the *décote* coefficient, that implicitly reduces the magnitude of the disincentive to earlier retirement. On the other hand, the impact of the last reform on public sector workers is notably higher.

Table 2 - Impact of 2003 reform on average effective retirement age

Cohort	Before 2003 reform	After 2003 reform	Average change due to reform
	Private sector employees		
1945-54	61.5	61.6	0.0
1955-64	61.5	61.9	0.4
1965-74	62.1	62.3	0.2
	Public sector employees		
1945-54	58.6	60.2	1.6
1955-64	57.9	60.1	2.2
1965-74	58.6	60.8	2.2

Source: Aubert *et al.* (2005).

Finland: Employment and Expenditure Sustainability

As already mentioned (see section 2.1), the Finnish pension system has been radically modified in 2005. The 2005 reform concerns various aspects, such as changes in accrual rates, longevity adjustment of benefits, and incentives to postpone retirement, i.e. limited eligibility to early pension schemes. Lassila and Valkonen (2006) propose a simulation to evaluate the effects of the measures introduced by the reform[24]. The macroeconomic results of the simulation are presented in Table 3. We can see that the employment rate will increase by almost 5 percentage points in 2050, mostly because of the measures designed to that purpose. As for the sustainability of the system, the ratio between pension expenditures and wage bill will decrease by almost 4 percentage points over the same horizon, as a consequence of the reduction in expenditures and of the increase in the wage bill, both in turn due to the increase in retirement age.

Table 3 - Effects of the 2005 Reform: employment rate and expenditures (percentage values)

	2005	2010	2020	2030	2040	2050
	Employment Rate					
Changes in accrual rates	0.07	0.04	-0.07	-0.14	-0.06	0.06
Incentives to postpone retirement	0.19	1.86	4.66	4.17	4.36	4.67
Whole Reform	0.26	1.87	4.61	4.07	4.32	4.75
	Expenditures/wage bill					
Changes in accrual rates	0.0	0.4	1.9	2.4	1.8	1.4
Incentives to postpone retirement	-0.8	-1.9	-3.4	-2.4	-2.2	-3.1
Whole Reform	-0.8	-1.7	-2.2	-1.7	-2.6	-3.9

Source: Lassila and Valkonen (2006)

Another study evaluating the impact of 2005 reform (Börsch-Supan, 2005) looks at the variation in the net Present Discounted Value (PDV) of pension benefits[25], to assess the impact on labour force participation among the elderly of the introduction of three measures: a window

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[24] The simulation is based on an overlapping generation model. The main assumption of the model is that the 2005 reform postpones retirement. According to the authors, this is a plausible assumption, since the reform rewards fiscally longer working careers and make early retirement is less easy (Lassila and Valkonen, 2006).
[25] The PDV sums up all discounted pension benefits after retirement and subtracts discounted contributions paid from 55 years up to retirement age. The discount rate is assumed to be 3 per cent.

of flexible retirement, a rise in accrual rates at older ages and an increase of the actuarial adjustment of early retirement pensions.

The analysis is based on a simulation model that allows to compute the PDV of net benefits for an individual aged 55 before and after the 2005 reform. In order to isolate the impact of the three above mentioned measures from the other aspects of the reform, in both frameworks the representative worker is assumed to take the unemployment scheme between 55 (57 under the new system), then the early old-age retirement pension, and finally the old-age pension. The simulation's results (Figure 2) show a PDV path after the 2005 reform that – after a decreasing phase during the unemployment tunnel – starts to increase from the age of 62, when early retirement becomes possible, and continues increasing until the age of 63, because of the actuarial adjustment. The Finnish pension system provides a window of flexible retirement between 63 and 68, during which there is no actuarial adjustment but only a higher accrual[26] (4.5 percent). This higher accrual, however, is not enough to compensate the lack of actuarial adjustment: that is the reason of a declining PDV after the age of 63.

Figure 2 - Net Present Discounted Value (PDV) of pension benefits by retirement age
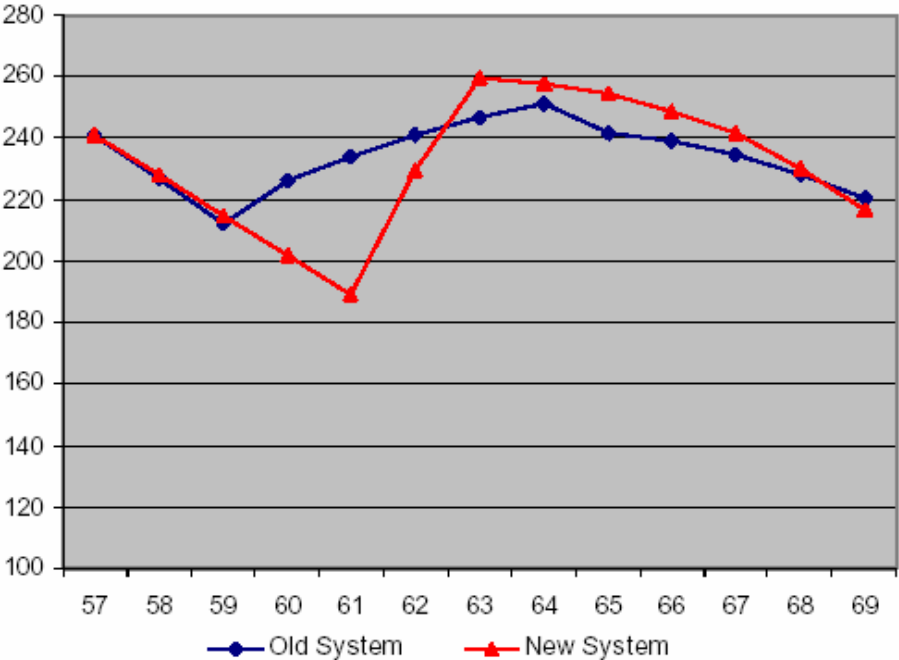
Source: Börsch-Supan (2005).

Under the assumption that individuals measure retirement benefits with PDV – and therefore postpone retirement when PDV decreases – the comparison of the two paths of PDV before and after the reform allows to understand the impact of the reform on retirement decisions. The postponement of the minimum retirement age delays early retirement of 2-3 years as well. On the other hand, Figure 2 indicates that the maximum in net PDV is achieved one year earlier than in the old system, meaning that people can be expected to retire one year before and suggesting the need for a steeper actuarial adjustment within the retirement window.

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[26] Benefits are computed by multiplying pensionable earnings with the accrual rate. In the old system, the accrual rate was 1.5 percent p.a. for earnings until age 59, and 2.5 percent for earnings between age 60 and 65. In the new system the lower rate will only apply until age 52, and a higher rate of 1.9 percent applies to ages 53 through 62. From age 63 onwards, the accrual rate increases sharply to 4.5 percent. This means that earnings in later life are valued more than earlier earnings.

Germany: Effects on Retirement Age

Before 1992 the German retirement system did not provide any mechanism of adjustment of pension benefits to the age of retirement, even though there was a link between benefits and contributions. A retirement age adjustment factor was only introduced in 1992, but it was not actuarially neutral.

In order to give a complete picture of the impact of the 1992 reform, its effects should be evaluated with respect both to the previous state-of-art and to the benchmark, represented by an actuarially neutral scheme. Table 4 shows the adjustment factors in force before 1992, after the 1992 reform and the benchmark of actuarially fair values (Börsch-Supan, 2000).

Table 4 - Pension benefits as a percentage of pension benefit at 65 years, by retirement age and different effective adjustment factors

Adjustment factor	Retirement age										
	60	61	62	63	64	65	66	67	68	69	70
Fair*	66.0	71.5	77.6	84.3	91.7	100	109.2	119.6	131.2	144.4	159.4
Before 1992	87.5	90.0	92.5	95.0	97.5	100	109.9	120.1	123.0	125.8	128.7
Reform 1992	69.5	75.6	81.7	87.8	93.9	100	108.5	117.0	125.5	134.0	142.5

* Calculation are made assuming a 3 per cent discount rate.
Source: Börsch-Supan (2000).

Börsch-Supan (2000) estimates that the effects of the 1992 reform could lead to an increase in the effective retirement age by only about six months and reduce the probability of retirement before 60 from 32 to 28 percent. On the contrary, an actuarially neutral scheme could shift retirement age by about two years. Moreover, the failure to adjust benefits in an actuarially neutral way creates a loss in term of Social Security Wealth when a worker decides to defer retirement, that can be interpreted as an implicit tax on earnings caused by retirement deferment. Even if the 1992 reform remarkably reduced the level of this implicit tax (up to 1992 it was close to 50 per cent for retirements between the ages of 60 and 65 and over 66), it was still supposed to be above 20 per cent in the steady state.

The analysis of the German reforms can be supplemented with the evaluation of the joint effects – in terms of actual retirement age and probability to retire before a certain age level – of the 1992 and 1999 reforms. The results of Berkel and Börsch-Supan (2003)'s work on the effects of the two reforms (when fully implemented, in 2017) are summed up in Table 5, comparing simulations of the actual reform and of a hypothetical NDC one.

According to their results, the average retirement age is expected to increase by almost two years, up to 63, when the two reforms will be fully phased in. Furthermore, there is a reduction in the probability to retire before the three age thresholds of 60, 62 and 65 years. However, these positive effects could be achieved at an even higher extent by the introduction of a NDC scheme, as the last line of the table points out: the average retirement age should increase beyond 65 years and the probability to retire before 65 should decrease to less than 20 percent.

Table 5 - The impact of 1992 and 1999 reforms and NDC scheme (men only)

	Mean retirement age	Percentage of retired before 60	Percentage of retired before 62	Percentage of retired before 65
Before 1992	61,2	17.2 %	58.2 %	81.9%
Pension reforms 1992 + 1999	63.0	4.7 %	42.4%	51.7%
NDC System	65.3	2.3%	19.2%	19.4%

Source: Berkel and Börsch-Supan (2003).

Italy: Pension Expenditure

As already mentioned in section 2.1, the Italian pension system has been radically changed by a reform process that began in 1992 with the so-called "Riforma Amato". In order to evaluate the impact of these changes on the sustainability of the system, a macroeconomic analysis is developed in this section[27], examining the ratio between public expenditure on pensions and GDP.

A forecast of the future path of the ratio between public pension expenditure and GDP is offered by the National Report of the Italian Ministry of Economy and Finance (Italian Ministry of Economics and Finance, 2005) and is represented in Figure 3. This path is determined – along with demographic variables – by the changes in the legislation induced by the reforms of the last fourteen years.

The pathway of the ratio between pension public expenditure and GDP between 2006 and 2015 is heavily influenced by the reduction in pension expenditure resulting by the reform approved in 2004 (Berlusconi reform). In particular the reduction between 2008 and 2012 is caused by the immediate effect of the tightening of the eligibility conditions. This effect, however, only partially contrasts the demographic transition in 2012-2015, when the ratio slowly increases.

During the following period (2016-2038) that ratio shows an increasing trend, with an acceleration after 2025 mainly due to the contemporaneous decrease in the number of workers – a consequence of the reduction in the population in working ages – and increase in the number of retired – caused both by demographic factors and by the reduction of the impact of the cut in expenditure that followed the rise in eligibility conditions.

The deterioration of demographic factors is only partially compensated by the reduction of pension benefits' dynamics with respect to productivity growth, due to the gradual phasing in of the NDC formula.

The high reduction in the ratio during the last period of this forecast (2039-2050) is mainly due to the transition from the "mixed regime"[28] to a fully (notional) defined contribution one, that causes a considerable reduction of the amount of pension benefits with respect to the old regime. Moreover, in the same period the ratio between the number of pensions and number of workers is more stable and its growth is expected to be zero in 2046.

Figure 3 - Pension expenditure/ GDP
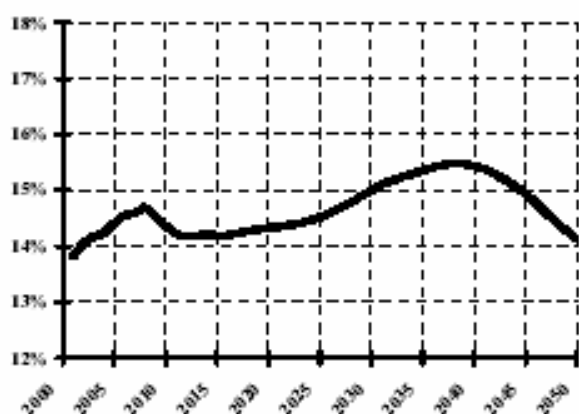
Source: Italian Ministry of Economics and Finance (2005).

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[27] A microeconomic analysis will be developed in section 3.3.
[28] Pension paid under the "mixed regime" are calculated in part with the old DB formula and partly with the new NDC one, according to a *pro rata temporis* mechanism.

3.2 Elements of evaluation of flexibility in partial retirement

The main issues to consider in order to evaluate the effects of partial retirement provision on labour supply, are whether it encourages people to keep working instead of fully leaving the labour market, and whether it subsidizes a reduction in working time of people that otherwise would be fully employed. The crucial point is then to see whether partial pensions cause an increase or a decrease in the total amount of working hours and if this increase is enough to compensate for the costs of the scheme. Therefore, the total effect of partial pensions on labour supply can be decomposed into the impact on the number of employed and on the amount of working hours of each active individual.

Even if there is a great and growing interest in partial pensions in many countries, there has not been a substantial development of research on this topic. The following analysis will be focused on the Swedish and Dutch experiences, in order to point out the effects on labour supply and on workers preferences.

Sweden: Effects on Labour Supply

To evaluate the impact of partial pensions on labour supply – measured by the total amount of hours worked in the Swedish economy – a simulation has been proposed by Wadensjö (2005).

The average weekly working time before and after claiming partial retirement decreases from almost 40, for full-time workers not receiving partial pension, to 24 in 1993 and 25 in 2004, for workers receiving a partial pension.

Starting from these data and considering studies on the alternative employment status of partial pensioners if the part-time pension system had not existed [29], Wadensjö (2005) estimates the impact of partial pensions on Swedish labour supply. Table 6 summarizes these results.

Looking at the individual labour supply, an increase by more than 4 hours per week can be noticed – both in 1991 and in 1994 – with respect to the hypothetical situation where no partial pension existed. This net positive effect incorporates the positive effect of working part-time instead of being fully retired and the negative one of the reduction in working time with respect to full-time employment.

Moreover, that average value can be decomposed into a smaller effect on male working time – by 1-2 hours – and a greater impact on female weekly labour supply by 8-9 hours. The total impact on the labour supply of the whole economy is summed up in the last column of Table 6: it was close to 6.5 million working hours during 1991 and 10.5 millions in 1994. The difference in the magnitude of this impact on total annual worked hours in absolute value is also due to the sizeable increase in the number of partial retirees in 1994 with respect to 1991.

Table 6 - Estimated effect on the numbers of working hours worked per person with part-time pension

	1991			1994		
	Men	Women	All	Men	Women	All
Estimated working hours effect per week per part-time pensioner	1.39	8.15	4.12	2.22	9.00	4.97
Total effect in thousands of hours during the year	1,310	5,198	6,507	2,758	7,646	10,404

Source: Wadensjö (2005).

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[29] Wadensjö (2005) used parameters proposed by Sundén (1994) about the alternative employment status if partial retirement had not existed. The assumption is that 56.59 per cent of the male and 42.39 per cent of the female part-time pensioners would have continued to work the same number of hours (in most times full-time work) before withdrawing the pension and otherwise would not have worked.

Another perspective to look at the effects of partial retirement on labour supply is proposed in OECD (2003b) and focuses on the relationship between partial pension, employment and participation rates. The data shown in Table 7 seem to suggest a negative relationship between employment rates or participation rates and the share of people with partial pension. However, these data cover a period of high recession and also the participation rate of people aged between 25 and 54, not directly influenced by partial pension scheme, decreases. Therefore it is difficult to conclude from these data that partial pensions has a negative impact on employment.

Table 7 - Partial pensions and work status for person aged 60-64, years 1990-1998 (percentage values)

Year	Share of people with partial pension	Employment rate	Participation rate	Participation rate (age group 25-54)
1990	15.3	57.0	58.2	92.8
1991	14.8	57.6	59.1	92.2
1992	20.4	54.2	56.4	91.3
1993	22.1	49.8	53.4	90.3
1994	24.2	47.2	51.4	89.2
1995	17.9	47.7	52.4	89.6
1996	11.8	49.2	54.5	89.4
1997	6.4	47.3	52.5	88.6
1998	2.8	46.2	49.7	88.0
Change in total number 1990-94*	12 505 (32.8%)	-51 700 (-21.2%)	-3 869 (-15.6%)	18 100 (0.6%)
Change in total number 1990-98*	-44 893 (-88.8%)	-800 (-0.4%)	-3 800 (-1.8%)	-5 500 (-0.2%)

*Absolute values.
Source: OECD (2003b).

The Netherlands: Workers' Preferences for Partial Retirement

Many of the occupation pension schemes in the Netherlands offer workers the possibility to receive a partial pension while reducing their working time. Van Soest *et al.* (2006) look at data on current and former employees' perception of retirement flexibility at their current or former employer and analyze their preferences for early, late and gradual retirement.

In order to collect data on preferences, that authors asked respondents of the CentERpanel to rate how attractive they found hypothetical and simplified retirement paths, with corresponding income paths. For instance, the benchmark trajectory is working full-time until 65 and then retiring full time with a pension income corresponding to 70% of last earnings; similarly, one of the partial retirement paths entails working full-time until 65, then working part-time between 65 and 70 with a disposable income 90% of past earnings and finally retiring completely with a 90% replacement rate. The ratings attached to retirement trajectories are used to estimate a stylized structural model of retirement behaviour. One of the findings points at a general aversion for working full-time after the age of 65.

Also, the authors perform simulations based on the previous estimates. They find that the majority of respondents would choose phased rather than full retirement, even in the presence of a flexible retirement age window. According to the simulations, many of the potential partial retirees were choosing early retirement in the scenario where partial retirement was not an option. This would imply a substantial labor supply increase due to the availability of gradual retirement.

3.3 Country-specific developments

In this section we focus on pension reforms in Italy, Sweden and Latvia. These countries have recently introduced a NDC pension system, characterized by a flexible retirement age. Given the recent debate on the desirable characteristics of the pension systems and the NDC schemes, it is of particular interest to describe their actual degree of actuarial neutrality and fairness. We do it by means of a short literature review on the incentives to retire ("money's worth measures", see Geanakoplos, Mitchell and Zeldes, 2000) provided by the pension systems in these countries.

The money's worth measures (MWM henceforth) we consider are: social security wealth, net present value ratio, internal rate of return, accrual and implicit tax rate. In box 1 we show their *formulae*, as in Belloni, Borella and Fornero (2005) and Ferraresi and Fornero (2000). Computations in other studies follow a very similar approach. The first three are measures of global incentives, i.e. measures of the generosity of the pension system,[30] while the last two evaluate marginal incentives, i.e. the financial changes that a worker has to face in case she postpones retirement. Under the hypothesis that leisure, even in retirement, is a normal good, global incentives provide a useful proxy to evaluate "income effects", while marginal incentives capture the "substitution effect". In this perspective, a "generous" system would be characterised, with respect to a less generous system, by a lower average retirement age. The same would be true of a system entailing a high implicit tax rate.

Box 1 – Money's worth measures *formulae*

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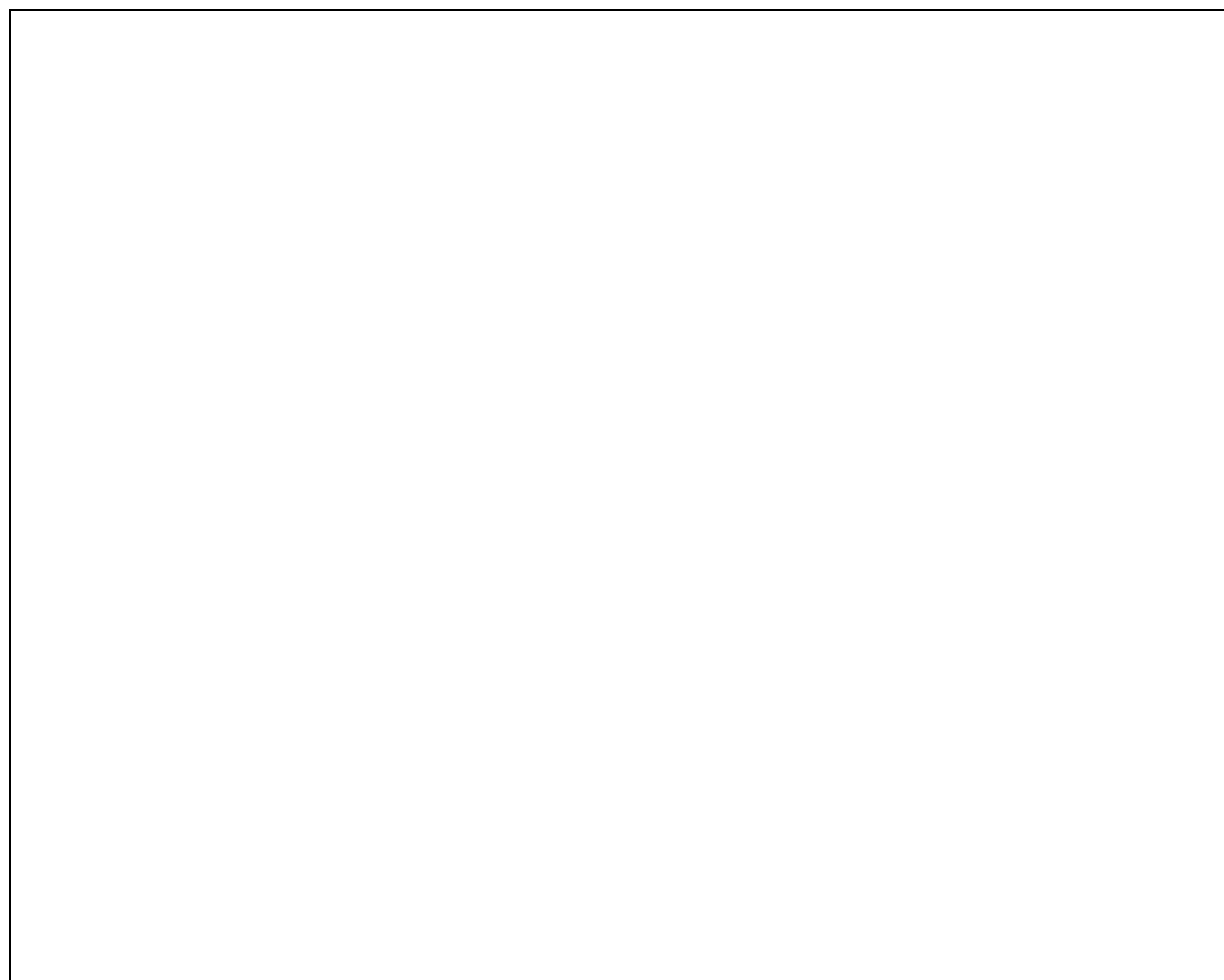
[30] MWM for Latvia, to our knowledge, are not available. We instead found some evidence on the replacement rates. For an evaluation of the appropriateness of this indicator when analyzing individual choices, see e.g. Ferraresi and Fornero (2000).

contributions, all due to the additional year of work. A negative *accrual* means that the increase in the pension benefit is insufficient to offset the costs of postponement, thus inflicting an implicit tax on the continuation of work.

Consequently, the *tax rate* is defined as follows:

$$T_A = \frac{-Accr_A}{\overline{w}_A}$$

that is, minus the ratio of the accrual to labour income.

Italy

Fornero and Castellino (2001) and Ferraresi and Fornero (2000) compute MWM for the Italian pension system after the reform of 1995 for some representative (private and public) employees, assuming constant mortality. They consider the cohorts born between 1942 and 1988 who, under the assumptions of the model, retire in the period 2000-2051. Therefore, their study provides an evaluation of how the financial incentives change throughout the transitional period from the DB to the DC system, as well as in the future steady state.

Table 8 presents simulated global incentives (NPVR and internal rate of return) for a male private employee, retiring at age 57, having accrued a seniority of 35 years. For the years up to 1997, the macroeconomic environment is defined by the historical growth rates of wages and, for subsequent years, by a constant rate of growth of productivity equal to 1.5 per cent. The rate of interest used to calculate the present value of contributions and benefits is the same for all cohorts and is equal to 2 per cent.

The table shows a progressive, continuous reduction of money's worth from the oldest cohorts to the youngest up to the attainment of a steady state. While all cohorts prior to that of 1967 still benefit from "gifts" from the favorable legislation of the past (NPVR higher than one hundred), participation in the public system begins to generate a "loss" from the subsequent cohorts. The imperfect actuarial neutrality in steady state reflects both the macroeconomic assumptions used in the simulations, which assume dynamic efficiency in the long run, and the way the pension formula incorporates changes in life expectancy. Legal transformation coefficients used to convert the accrued fund at retirement into the pension, in fact, assume unisex mortality rates. Given the sizeable differences in longevity between genders, this mechanism redistributes toward women.

Table 8 - Money's worth measures by cohort (global incentives): Italy

	Cohorts	NPVR	IRR
defined benefit	1943	143	3.25
	1948	136	3.06
	1953	127	2.83
Pro rata	1958	109	2.31
	1963	102	2.07
	1968	95	1.85
	1973	88	1.58
defined contribution	1978	87	1.57
	1983	87	1.57
	1988	87	1.57

Notes: percentage values, males, private employees, discount rate 2 percent, productivity growth 1.5 percent, retirement at age 57 with 35 years of seniority.
Source: Ferraresi and Fornero (2000).

Analogous considerations apply to the analysis of the internal rate of return. The trend of this indicator shows a strong decrease: from values around 3.2 per cent for cohorts close to

retirement in 2000, it converges to the value of 1.5 per cent characteristic of the steady state, this being the hypothesis for the growth of productivity. MWM results for other retirement ages (not shown) highlight how the DB system is even less generous in case of postponed retirement, while the generosity of the DC is almost independent on the retirement age.

Table 9 shows marginal incentives (accrual and tax rate) for the same representative agents and under the same assumptions of Table 8. In addition to the retirement at age 57, however, it also considers retirement at age 59 and 62 (to which correspond seniorities of 37 and 40 years respectively).

The figures reveal an especially sharp taxation (up to 70 percent of the expected wage, for workers retiring with a seniority of 40 years) for the oldest cohorts, whose pension is determined exclusively using the DB formula. For the *pro rata* cohorts, however, the taxation of pension wealth is far from negligible. It may be traced back to the poor link between contributions and benefits, typical of the DB formula, which incorporates no actuarial correction for different life expectancy at retirement. The disincentive drops as the contribution-based component grows progressively in the pension calculation. For the cohorts of steady state the taxation is almost zero (a slight taxation is motivated by the dynamic efficiency assumptions).

Table 9 – Money's worth measures by cohort and seniority (marginal incentives): Italy

Cohorts		*Accrual* (thousand of euro 2000)			Tax rate (% values)		
		Seniority					
		35	37	40	35	37	40
defined benefit	1943	-10.21	-12.20	-16.04	43	52	72
	1948	-12.80	-14.34	-16.98	52	59	72
	1953	-13.25	-14.92	-17.01	53	61	72
Pro rata	1958	-7.38	-7.36	-7.19	29	29	29
	1963	-5.16	-5.09	-4.91	20	20	20
	1968	-3.00	-2.87	-2.66	11	11	10
	1973	-0.99	-0.84	-0.64	4	3	2
defined contribution	1978	-1.00	-0.85	-0.64	4	3	2
	1983	-1.07	-0.92	-0.70	4	3	2
	1988	-1.16	-0.98	-0.74	4	3	2

Notes: males, private employees, discount rate 2 percent, productivity growth 1.5 percent.
Source: Ferraresi and Fornero (2000).

Belloni and Maccheroni (2006) evaluate actuarial features of the Italian pension system in presence of longevity increases. They extend the model in Ferraresi and Fornero (2000) by having endogenous (i.e. mortality-related) transformation coefficients. Two different mortality projections, developed *ad hoc* for the paper, are exploited. The first one, more standard, is cross-sectional, while the second, which disentangles cohort and time effects in the evolution of mortality, is longitudinal. The first one is used in a scenario which represents the present legislation, while the second is used to simulate a more actuarially neutral system, which is taken as a benchmark of actuarial fairness and neutrality. For each representative agent they compute MWM in both of the scenarios, and they quantify how much the system departs from the benchmark by comparing the two sets of results.

Simulated tax rates for a private employee, retiring at age 57 (having accrued a seniority of 35 years) are shown in Figure 4 for the two scenarios. Scenario 2 shows results very similar to Ferraresi and Fornero (2000), because cohort-and-gender specific longevity changes are offset by changes in the transformation coefficients. Scenario 1 highlights instead huge spikes of taxation, equal to 30-40 percent. They are the consequence of the fact that transformation coefficients are updated to longevity changes only every ten year. A worker who has to decide whether to retire or to continue to work in the year before the revision of the transformation coefficients faces a very strong constraint. Her pension and her SSW, in fact, would be considerably cut if she decided to continue to work.

Figure 4 – Tax rate by cohort in different scenarios: Italy
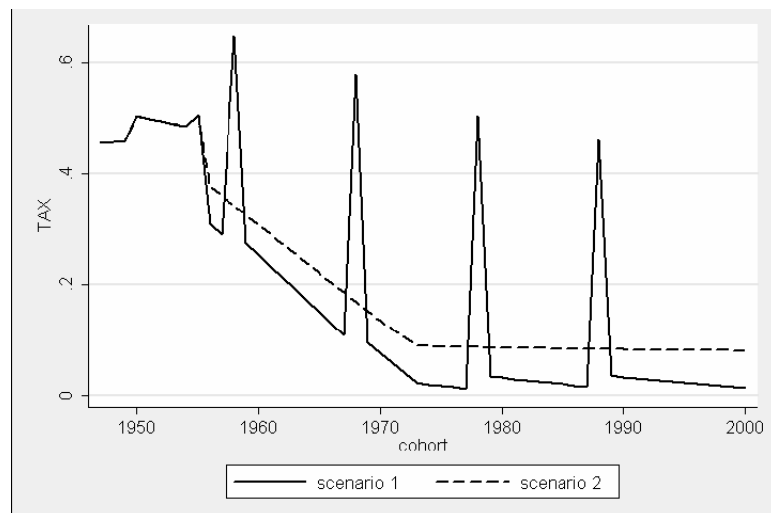
Notes: scenario 1 is the actuarial benchmark (i.e. an hypothetical pension system in which transformation coefficients are computed according to cohort-and-gender specific mortality rates and are updated to mortality changes every year; scenario 2 represents the current legislation; males, private employees, discount rate 2 percent, productivity growth 1.5 percent.
Source: Belloni and Maccheroni (2006).

Sweden

MWM for Sweden *before* the 1999 reform are described in Palme and Svensson (2004). Computations include both the income security system (disability, sickness and unemployment insurances) and the compulsory old-age pension (basic pension, STP[31] and the part-time retirement pension). They estimate retirement probabilities using as explanatory variables various MWM. Financial incentives are computed for the sample used in the estimation, which is given by the workers born between 1927 and 1940. Thus, only few of them are partly affected by the reform.

We present some selected results in Table 10. It shows, for each possible retirement age between 55 and 70, median SSW, median, 10th and 90th percentiles of accrual, standard deviation and median tax rate. Both the analysis of the accrual and the tax rate reveals a quite high level of taxation of the old DB scheme. Median accrual exhibits a marked increase at age 57. This is due to the rule that requires at least three years of work between age 55 and 59 to be eligible for the STP pension. A second discontinuity is at age 59. According to the authors, this can be due to the way pensions for central and local government employees are computed.

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[31] Occupational pension scheme for blue-collar workers.

26

Table 10 – Money's worth measures by age: Sweden, DB scheme

Last Age of Work	SSW Median	Accrual				
		Median	10th Percentile	90th Percentile	SD	Tax Subsidy Rate Median
55	1,067,750	14,863	−14,914	47,384	71,558	0.225
56	1,103,079	15,260	−15,693	53,690	72,946	0.220
57	1,145,999	38,432	−8,627	127,339	86,832	0.072
58	1,230,600	10,210	−18,052	45,075	76,746	0.250
59	1,278,554	11,004	−20,526	109,772	100,362	0.249
60	1,332,801	−2,452	−31,416	39,160	77,248	0.330
61	1,369,422	−11,171	−37,200	26,246	˙72,601	0.392
62	1,402,465	−19,918	−46,657	13,460	59,917	0.457
63	1,427,187	−28,814	−63,317	−5,090	58,197	0.520
64	1,447,386	−24,106	−59,611	−4,044	53,811	0.478
65	1,471,473	−23,631	−90,149	−7,890	58,009	0.177
66	1,500,672	−31,293	−72,891	−19,904	39,608	0.232
67	1,525,269	−39,412	−74,802	−29,946	27,395	0.291
68	1,545,787	−47,679	−83,300	−38,275	25,987	0.359
69	1,561,635	−56,298	−100,704	−46,628	24,605	0.440
70	1,571,791					

Notes: sample statistics; SD is standard deviation; SSW and accrual are in 1995 SKr, tax rate are in percentage points.
Source: Palme and Svensson (2004).

MWM for Sweden which are more comparable with those shown for Italy are provided in Palme and Svensson (1999). They consider a representative agent, born in 1930 and assigned to the STP occupational scheme. In the base case, the individual earns a lifetime income equal to the median income of the population and cannot access the disability insurance scheme. Computations include housing allowances and take into account income taxation. Flows are discounted at 3 percent.

Results for the base case are shown in Table 11. It shows replacement rates[32], SSW, accrual and two kinds of tax rates. The system provides a tax rate throughout the entire range of ages considered. Taxation is quite low up to age 59 because those who retire before age 60 cannot claim the old-age pension (and thus the number of years for which the pension can be obtained do not diminish postponing retirement by one year). Taxation is much higher between age 60 and 64, and is lower again after age 64. The difference in taxation between these two age brackets can be explained by the fact that employers do not pay contributions for workers above age 65.

To facilitate detecting which components of the institutional system generate the variations in the tax rate (especially in the age bracket 60-64), the authors present additional simulations in which an element – income taxes, housing allowances and STP pension – are in turn excluded. In the last column of Table 11 we add a column which describes the tax rate of a simulation in which only the gross-of-taxes old-age pension is considered. We can see how taxation is dramatically reduced if income taxes and housing allowances are not included into the computations. The classification of the results in three age brackets (55-59, 60-64 and 65 and older) is even clearer here. The old-age system is almost actuarially neutral up to age 59. After that, and up to age 64, taxation becomes positive, and increases. At age 65 the system is actuarially neutral, but after that age taxation is present again. The 0.5 percent reduction in the monthly pension payments for each month of withdrawal before age 65 and the 0.7 percent increase for each month of delayed withdrawal after age 65 are not enough to offset the pensions given up and the contributions paid in the additional years of work.

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[32] Replacement rates start from age 59 because those who retire before age 60 cannot claim the old-age pension.

Table 11 – Money's worth measures by age: Sweden DB scheme

Last Age of Work	Replacement Rate	SSW	Accrual	Tax/ subsidy	Tax/subsidy: Gross Public Pension only
54	…	1,168,183	…	…	
55	…	1,137,465	-30.717	.231	-.006
56	…	1.106.826	-30,640	.221	-.017
57	…	1,098,951	-7,874	.056	-.035
58	…	1,077,393	-21,558	.153	-.044
59	.459	1,056,086	-21.307	.146	-.066
60	.485	1,004,338	-51,749	.350	.055
61	.545	953,215	-51,123	.358	.130
62	.572	916,429	-36,786	.253	.173
63	.620	874,964	-41,465	.290	.233
64	.729	829,879	-45,086	.313	.280
65	.785	824,727	-5,152	.036	-.006
66	.841	812,515	-12,212	.085	.062
67	.897	794,014	-18,501	.128	.123
68	.953	769,662	-24,353	.169	.178
69	1.011	741,892	-27,769	.193	.227

Notes: SSW and accrual are in 1995 SKr, tax rate in percentage points.
Source: Palme and Svensson (1999): table 9.3 and table 9.5.

Simulations of MWM for the *new NDC* Swedish pension system can be found in Fenge and Werding (2004). They follow a macro-based approach which takes into account the projected demographic changes in the next decades, and accordingly imposes financial constraints to the public pension budget. In their computations, they consider some male representative workers – one worker for each cohort born from 1940 to 2000 – who start to work at age 20 and have a full-time career up to age 65, when they retire. In the last part of their career, they have some positive probabilities to become disable and thus to reduce the hours worked as well as to benefit from a disability pension. Survivor's benefit in favour of their wives is also incorporated into the computations.

Results are presented in terms of an indicator – not included in box 1 because it is not of a standard use in micro-based computations – which they call "implicit tax rate". It is given by the social security wealth computed at the beginning of the working career divided by the lifetime earnings, and has nothing to do with the tax rate we show in the rest of the section. Given that all the contributions paid and all the pensions received along the career are incorporated into the computation, it measures the generosity of the pension system, and thus has a similar meaning to the NPVR. Flows are discounted at 4 percent, while productivity constantly grows at 1.75 percent in each year.

Results are shown in Figure 5 both for the old and the new pension system. In the old system, the tax would have increased from less than 3 percent for those born in 1940 to more than 20 percent for those born in 2000. After the recent reform, taxation levels at about 12 percent for individuals born in 1954 or later, completely subject to the new rules. This results reflects both the good actuarial features of the Swedish NDC system, and the fact that both the current pension levels and contributions are financially compatible with demographic projections in the long run.

Figure 5 – Tax rate by cohort: Sweden, pre and post reform
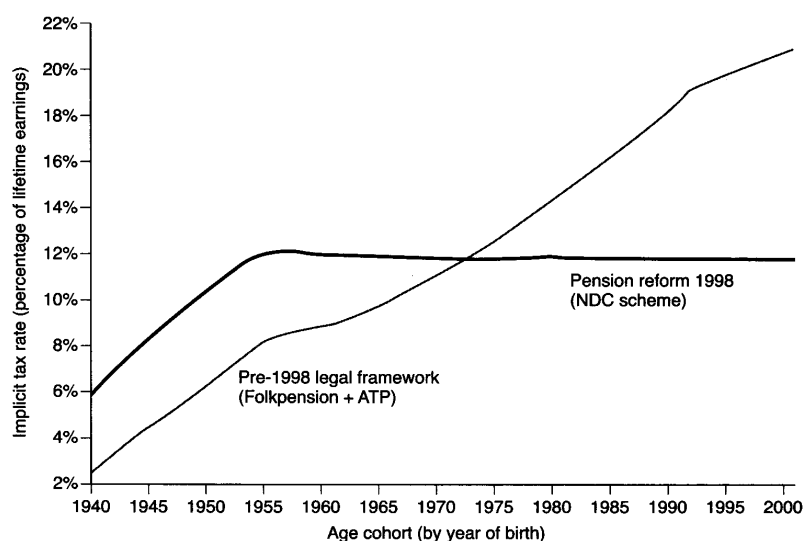
Notes: "implicit tax rate" is given by the SSW computed at the beginning of the working career divided by the lifetime earnings; males, retirement at age 65 with 45 years of seniority, discount rate 4 percent, productivity growth 1.75 percent.
Source: Fenge and Werding (2004).

Latvia

Money's worth measures for Latvia, at least to our knowledge, are not available. However, a first rough indication of the generosity of the Latvian pension system can be obtained by looking at the replacement rates. Fox and Palmer (1999) simulate replacement rates under both the old and the new system and compare the generosity of the two schemes. They exclude from the analysis both the transition to the new rules and the effects of the second funded pillar. The workers are assumed to earn a lifetime wage equal to the following proportion of the 1996 average wage: 1, ½ and 1.5. We show the results in Table 12.

Table 12 – Pension as a share of average wage: Latvia, pre and post reform

	Age at Retirement				
	50	55	60	65	70
New System*			*(Share of average wage)*		
Low wage	13	17	23	31	43
Average Wage	25	34	46	63	85
High wage	38	51	69	94	128
Old System**					
Low Wage	42	44	46	48	50
Average Wage	42	44	46	48	50
High Wage	42	44	46	48	50
New/old			*(Percent)*		
Low Wage	30	38	50	66	85
Average Wage	59	77	98	129	170
High Wage	58	115	148	195	255

* New system benefits calculated on the basis of an average life time wage of 120 real 1998 lats (average wage).
** Old system benefits assumes national average wage used to index pensions in 1998 would be 120 lats.
+ The guaranteed minimum is not included. It is about 26 % of the average wage in the new system. The minimum for those who have the right to retire under 60 and choose to exercise this right is 80% of normal guarantee minimum.

Source: Fox and Palmer (1999).

The table shows that most new pensioners with full years of service retiring after 60 (with a seniority of at least 42 years) do not suffer a benefit decline compared with the old system, while early retirees are penalised. Benefits are larger for those with higher lifetime income, and lower for the poorest. This result is an immediate consequence of the contribution-based formula, which has a more limited redistributive impact.

Replacement rates, also including the second pillar (FDC), under different assumptions on retirement age and on market return for different cohorts, are shown in Vanovska (2006). Although results widely vary from one scenario to the other, they globally provide a picture in which the generosity of the new pension scheme is extremely low, and thus "global" incentives to early retirement are extremely low as well. According to Casey (2004), both the early and the late retirement provisions (retirement above the normal retirement age) are likely to be "very close to actuarial neutrality", but computations of marginal incentives are not provided. In circumstances of unsatisfactory adequacy, however, retirement choices plausibly cannot be driven by considerations at margin, and the lack of analytical information on actuarial fairness does not represent a severe limit for the analysis.

Appendix: descriptive tables

Sources of income of older people

Data are mainly drawn from the SHARE database. However, since SHARE does not contain information about the United Kingdom and Finland, data for these two countries come instead from the ECHP. Information about Latvia is derived – when available – from national sources.

Table 13 – Sources of income, by age brackets, 2000, percentages

| | Age group | Income sources | | | | | |
		Work income	Non-work income	Social security income	of which: old-age pension	Total	N
Finland	50-54	86.1	5.1	8.8	0.7	100	575
	55-59	77.3	9.5	13.3	2.4	100	452
	60-64	43.5	12.1	44.3	13.7	100	374
	65-69	16.2	4.2	79.6	66.1	100	307
	70+	6.0	5.2	88.8	79.7	100	455
United Kingdom	50-54	84.8	4.8	10.5	3.2	100	698
	55-59	75.7	6.4	17.9	8.2	100	658
	60-64	46.0	9.0	45.0	32.9	100	459
	65-69	18.0	10.5	71.5	62.5	100	398
	70+	2.5	9.8	87.7	74.2	100	1,124

Source: ECHP, own elaboration.

Table 14 – Sources of income, by age brackets, 2003, percentages

	Age groups	Sources of income				TOTAL	N
		Self-employment	Employment	Old-age pensions	Total pensions		
Austria	50 - 54	95.10	2.77	0.33	1.82	100	290
	55 - 59	5.19	31.65	29.83	61.26	100	338
	60 - 64	1.08	4.87	74.98	89.64	100	418
	65 - 69	1.03	2.36	83.68	94.84	100	292
	70+	0.56	3.12	75.20	91.69	100	551
Germany	50 - 54	14.23	81.45	0.43	4.11	100	608
	55 - 59	18.61	70.02	1.40	11.20	100	461
	60 - 64	11.48	40.59	30.47	41.94	100	587
	65 - 69	6.34	9.73	66.46	80.24	100	527
	70+	1.33	7.78	71.00	88.06	100	715
Sweden	50 - 54	8.10	78.57	0.00	12.81	100	496
	55 - 59	5.91	79.22	0.21	13.52	100	621
	60 - 64	11.66	43.75	2.06	41.08	100	521
	65 - 69	3.42	6.03	55.09	84.21	100	426
	70+	1.09	1.26	73.07	94.65	100	873
Netherlands	50 - 54	11.09	69.00	0.00	18.86	100	581
	55 - 59	4.41	50.48	0.31	36.41	100	646
	60 - 64	1.59	9.89	0.24	82.83	100	476
	65 - 69	3.34	4.21	41.64	77.90	100	374
	70+	0.11	0.13	4.19	99.42	100	711
Spain	50 - 54	15.90	70.82	2.76	13.26	100	380
	55 - 59	39.04	46.93	7.37	13.93	100	362
	60 - 64	25.55	53.38	7.77	21.03	100	335
	65 - 69	35.87	6.23	45.82	57.37	100	361
	70+	9.40	3.73	48.36	86.83	100	866
Italy	50 - 54	27.00	60.87	0.53	12.07	100	362
	55 - 59	20.53	38.25	5.55	40.99	100	517
	60 - 64	95.07	0.78	0.74	4.13	100	514
	65 - 69	7.13	8.08	15.88	84.55	100	406
	70+	4.52	2.67	31.25	92.76	100	657
France	50 - 54	9.06	83.71	1.60	7.04	100	371
	55 - 59	12.96	65.72	5.55	21.27	100	294
	60 - 64	4.05	28.04	53.06	67.64	100	240
	65 - 69	0.03	0.62	63.46	99.15	100	230
	70+	0.08	0.38	59.44	99.15	100	541
Denmark	50 - 54	0.86	98.02	0.00	0.78	100	322
	55 - 59	12.87	75.48	0.08	11.40	100	319
	60 - 64	6.83	50.16	0.00	41.82	100	252
	65 - 69	4.01	17.40	23.07	75.78	100	184
	70+	0.39	0.58	12.79	98.46	100	487

Source: SHARE, own elaboration.

Table 15 – Sources of income of individuals aged 50+, by employment status, 2003, percentages

	Employment Status	Sources of income				TOTAL	N
		Self - employment	Employment	Old-age pensions	Total pensions		
Austria	Retired	0.38	4.36	74.67	92.18	100	1263
	Employed / Self-empl	97.40	2.37	0.00	0.07	100	356
	Unemployed	1.60	29.05	0.00	69.36	100	45
	Sick /disabled	0.00	26.48	0.00	68.92	100	26
	Homemaker	0.18	3.69	19.51	76.30	100	233
Germany	Retired	0.58	13.58	67.06	83.15	100	1532
	Employed / Self-empl	20.78	76.12	0.45	1.10	100	884
	Unemployed	0.33	50.17	0.05	48.45	100	159
	Sick /disabled	1.21	9.17	5.36	87.82	100	74
	Homemaker	2.77	19.96	29.94	73.30	100	303
Sweden	Retired	1.50	6.26	51.68	88.11	100	1602
	Employed / Self-empl	10.48	82.97	0.64	5.71	100	1229
	Unemployed	1.65	53.61	0.00	40.49	100	64
	Sick /disabled	0.90	34.77	1.54	61.69	100	80
	Homemaker	1.36	1.08	58.69	77.79	100	26
Netherlands	Retired	0.20	0.73	3.66	98.11	100	959
	Employed / Self-empl	11.00	79.48	0.24	9.03	100	897
	Unemployed	0.22	18.63	0.00	20.36	100	55
	Sick /disabled	0.56	13.21	8.32	77.88	100	219
	Homemaker	1.08	5.84	50.54	88.50	100	691
Spain	Retired	6.64	6.90	60.90	86.25	100	833
	Employed / Self-empl	37.72	61.09	0.03	1.18	100	472
	Unemployed	1.90	60.73	0.00	36.25	100	74
	Sick /disabled	3.54	7.60	5.99	88.60	100	90
	Homemaker	22.97	26.22	3.25	50.69	100	806
Italy	Retired	77.08	1.34	4.93	21.54	100	1384
	Employed / Self-empl	90.24	8.86	0.10	0.89	100	471
	Unemployed	32.34	62.53	0.00	5.13	100	42
	Sick /disabled	0.00	4.12	9.06	95.88	100	24
	Homemaker	1.40	1.42	27.58	96.40	100	591
France	Retired	0.18	4.85	62.29	94.65	100	888
	Employed / Self-empl	12.14	86.73	0.31	1.04	100	542
	Unemployed	0.38	54.38	0.00	45.17	100	63
	Sick /disabled	0.00	11.72	1.13	87.34	100	41
	Homemaker	4.75	9.66	28.63	84.97	100	189
Denmark	Retired	0.78	3.02	12.40	95.42	100	864
	Employed / Self-empl	2.23	97.30	0.03	0.26	100	663
	Unemployed	3.18	57.32	0.00	39.50	100	72
	Sick /disabled	2.50	15.38	6.00	78.15	100	52
	Homemaker	2.17	40.52	33.14	50.64	100	25

Source: SHARE, own elaboration.

Table 16 – Sources of income of individuals aged 50+, by employment status, 2000, percentages

| | Employment status | Sources of income | | | | | |
		Work income	Non-work income	Social security income	of which: Old-age pension	Total	N
Finland	Employed	66.37	8.11	25.52	9.26	100	925
	Unemployed	46.02	5.85	48.14	2.55	100	112
	Retired	13.53	8.11	78.36	53.60	100	1101
	Other inactive	40.16	27.08	32.76	0.00	100	24
	Missing	0.00	27.90	72.10	0.00	100	1
United Kingdom	Employed	84.63	5.96	9.42	5.61	100	1107
	Unemployed	57.54	10.67	31.79	1.92	100	34
	Retired	6.62	10.35	83.03	69.69	100	1715
	Other inactive	34.98	11.60	53.43	19.39	100	481

Source: ECHP, own elaboration.

Table 17 – Latvian households' disposable income, monthly average per household member, 2000 – 2005, percentages

	2002	2003	2004	2005
Wage and salary	50.70	50.66	54.97	55.37
Net income from self-employment	7.83	8.38	7.96	8.36
Transfers	23.59	22.81	21.32	20.44
…of which pensions	17.06	16.19	15.01	15.28
Other income	0.83	1.96	0.74	0.54
Total	100	100	100	100

Source: Central Statistical Bureau of Latvia.

Employment status of older people

Data are mainly drawn from the SHARE database. However, since SHARE does not contain information about the United Kingdom and Finland, data for these two countries come instead from the ECHP. Information about Latvia is derived – when available – from national sources.

Table 18 – Employment status, by age brackets, 2001, percentages

	Age groups	Employment status				
		Employed	Unemployed	Retired	Other inactive	Total
Finland	50 - 54	85.22	6.09	6.96	1.74	100
	55 - 59	69.18	12.64	15.30	2.88	100
	60 - 64	25.13	4.28	70.32	0.27	100
	65 - 69	7.17	0.65	92.18	0.00	100
	70+	1.54	0.44	98.02	0.00	100
United Kingdom	50 - 54	70.92	2.44	3.72	22.92	100
	55 - 59	62.16	1.52	12.16	24.16	100
	60 - 64	32.24	1.53	48.15	18.08	100
	65 - 69	9.30	0.00	82.91	7.79	100
	70+	1.60	0.00	94.13	4.27	100

Source: ECHP, own elaboration.

Table 19 – Employment status, by age brackets, 2004, percentages

	Age groups	Employment status						Total
		Retired	Working	Unemployed	Disabled	Homemaker	Other	
Austria	50 - 54	15.03	60.49	8.74	3.15	8.74	3.85	100
	55 - 59	46.87	29.25	4.48	3.58	13.13	2.69	100
	60 - 64	83.45	3.89	0.24	0.24	11.19	0.97	100
	65 - 69	87.63	1.37	0.00	0.00	11.00	0.00	100
	70+	85.34	0.19	0.00	0.37	13.17	0.93	100
Germany	50 - 54	1.32	73.88	10.25	3.14	9.75	1.65	100
	55 - 59	10.46	53.59	13.94	5.45	12.42	3.92	100
	60 - 64	61.96	16.70	3.44	4.13	11.53	2.24	100
	65 - 69	91.62	3.05	0.19	0.38	4.76	0.00	100
	70+	88.61	0.84	0.00	0.14	10.13	0.14	100
Sweden	50 - 54	6.48	82.79	3.64	4.25	0.61	2.02	100
	55 - 59	11.97	75.08	4.37	4.53	1.13	2.91	100
	60 - 64	45.05	43.88	2.91	4.66	1.36	2.14	100
	65 - 69	95.51	3.78	0.00	0.00	0.00	0.47	100
	70+	98.05	0.46	0.00	0.11	0.92	0.11	100
Netherlands	50 - 54	0.52	65.62	4.01	10.47	17.45	1.92	100
	55 - 59	6.90	50.00	2.35	9.87	25.71	5.17	100
	60 - 64	30.43	13.83	2.34	11.70	30.00	11.70	100
	65 - 69	72.43	1.35	0.00	1.35	23.51	1.35	100
	70+	70.82	0.99	0.00	2.97	21.95	3.26	100
Spain	50 - 54	4.01	54.01	6.95	4.81	26.47	3.74	100
	55 - 59	9.60	39.27	8.19	6.78	33.05	3.11	100
	60 - 64	30.42	20.48	4.22	3.92	36.14	4.82	100
	65 - 69	59.49	1.13	0.00	1.13	36.26	1.98	100
	70+	55.28	0.23	0.00	3.05	35.09	6.34	100
Italy	50 - 54	10.61	58.66	2.79	0.28	26.26	1.40	100
	55 - 59	34.24	27.63	2.92	1.75	31.71	1.75	100
	60 - 64	67.84	10.20	2.16	0.78	18.04	0.98	100
	65 - 69	75.74	2.97	0.00	0.99	20.30	0.00	100
	70+	78.96	0.92	0.00	0.77	18.43	0.92	100
France	50 - 54	4.01	73.93	5.44	5.73	9.74	1.15	100
	55 - 59	18.95	50.18	9.12	4.56	13.33	3.86	100
	60 - 64	77.06	7.79	3.46	0.43	9.96	1.30	100
	65 - 69	92.24	0.46	0.00	0.00	5.48	1.37	100
	70+	85.91	0.00	0.00	0.59	12.52	0.98	100
Denmark	50 - 54	7.26	78.55	7.89	2.84	0.63	2.52	100
	55 - 59	13.23	66.13	10.65	6.13	1.61	2.26	100
	60 - 64	67.20	23.60	0.40	5.60	2.40	0.80	100
	65 - 69	87.29	7.18	0.55	1.66	2.21	1.10	100
	70+	96.86	0.84	0.00	0.63	1.05	0.42	100

Source: SHARE, own elaboration.

Table 20 – Employment rates, by age groups and gender, Latvia, 2000 – 2005

	Males	Females	Total
		2000	
50 - 54	68	71.3	69.8
55 - 59	62.7	38.2	48.9
60 - 64	33.3	16.1	23.3
65+	10.2	5	6.7
Total	54.6	42.9	48.2
		2005	
50 - 54	74.8	73.7	74.2
55 - 59	70	60.1	64.5
60 - 64	41.3	30.8	35.2
65+	21.3	9.9	14.1
Total	62.9	52.1	57.1

Source: Central Statistical Bureau of Latvia.

Table 21 – Employment status of individuals aged 50+, by gender, 2004, percentages

	Gender	Employment status						
		Retired	Working	Unemployed	Disabled	Homemaker	Other	Total
Austria	Male	44.50	54.21	51.11	61.54	1.72	37.14	41.42
	Female	55.50	45.79	48.89	38.46	98.28	62.86	58.58
	Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Germany	Male	50.20	52.04	53.46	60.81	0.66	34.78	45.90
	Female	49.80	47.96	46.54	39.19	99.34	65.22	54.10
	Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Sweden	Male	47.50	46.14	51.56	43.75	0.00	31.82	46.31
	Female	52.50	53.86	48.44	56.25	100.00	68.18	53.69
	Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Netherlands	Male	67.15	54.96	58.18	46.58	1.88	55.47	45.95
	Female	32.85	45.04	41.82	53.42	98.12	44.53	54.05
	Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Spain	Male	73.59	57.63	43.24	42.22	0.87	23.53	41.48
	Female	26.41	42.37	56.76	57.78	99.13	76.47	58.52
	Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Italy	Male	57.08	58.60	71.43	54.17	0.17	40.74	44.15
	Female	42.92	41.40	28.57	45.83	99.83	59.26	55.85
	Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00
France	Male	50.90	44.65	41.27	48.78	3.17	29.63	43.12
	Female	49.10	55.35	58.73	51.22	96.83	70.37	56.88
	Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Denmark	Male	43.63	48.57	51.39	34.62	4.00	39.13	45.03
	Female	56.37	51.43	48.61	65.38	96.00	60.87	54.97
	Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Source: SHARE, own elaboration.

Table 22 – Employment status of individuals aged 50+, by gender, 2001, percentages

	Gender	Employment status				
		Employed	Unemployed	Retired	Other inactive	Total
Finland	Male	51.03	47.32	47.59	20.83	48.75
	Female	48.97	52.68	52.41	79.17	51.25
	Total	100.00	100.00	100.00	100.00	100.00
United Kingdom	Male	55.28	61.76	40.99	28.07	44.08
	Female	44.72	38.24	59.01	71.93	55.92
	Total	100.00	100.00	100.00	100.00	100.00

Source: ECHP, own elaboration.

Table 23 – Working time of individuals aged 50+, by gender and age bracket, 2003, percentages

		50 – 54		55 – 59		60 – 64		65 – 69		70+	
		Full-time	Part-time	Full-time	Part-time	Full-time	Part-time	Full-time	Part-time	Full-time	Part-time
Austria	Male	97.2	2.8	97.1	2.9	83.3	16.7	80.0	20.0	88.9	11.1
	Female	73.2	26.8	67.9	32.1	47.6	52.4	30.8	69.2	81.8	18.2
	Total	86.8	13.2	84.4	15.6	66.7	33.3	44.4	55.6	85.0	15.0
Germany	Male	95.5	4.5	94.7	5.3	78.3	21.7	47.8	52.2	30.0	70.0
	Female	61.0	39.0	50.0	50.0	46.2	53.8	7.1	92.9	18.2	81.8
	Total	77.0	23.0	75.4	24.6	65.9	34.1	32.4	67.6	23.8	76.2
Sweden	Male	97.1	2.9	92.2	7.8	73.2	26.8	28.1	71.9	32.0	68.0
	Female	79.3	20.7	81.1	18.9	63.2	36.8	31.8	68.2	37.5	62.5
	Total	88.0	12.0	86.1	13.9	68.4	31.6	29.6	70.4	33.3	66.7
Netherlands	Male	92.0	8.0	85.2	14.8	66.0	34.0	30.0	70.0	33.3	66.7
	Female	42.6	57.4	31.7	68.3	23.5	76.5	0.0	100.0	66.7	33.3
	Total	68.7	31.3	63.5	36.5	49.4	50.6	18.8	81.3	38.1	61.9
Spain	Male	95.8	4.2	87.6	12.4	81.6	18.4	80.0	20.0	77.8	22.2
	Female	80.8	19.2	76.1	23.9	57.1	42.9	0.0	100.0	33.3	66.7
	Total	89.0	11.0	82.7	17.3	74.3	25.7	40.0	60.0	66.7	33.3
Italy	Male	81.4	18.6	88.3	11.7	75.4	24.6	52.9	47.1	62.5	37.5
	Female	80.2	19.8	55.6	44.4	47.4	52.6	81.8	18.2	57.1	42.9
	Total	80.9	19.1	77.1	22.9	68.4	31.6	64.3	35.7	60.9	39.1
France	Male	95.9	4.1	95.1	4.9	70.0	30.0	100.0	0.0	50.0	50.0
	Female	77.6	22.4	61.0	39.0	83.3	16.7	0.0	100.0		
	Total	87.8	12.2	75.5	24.5	77.3	22.7	50.0	50.0	50.0	50.0
Denmark	Male	96.2	3.8	91.5	8.5	69.1	30.9	35.0	65.0	8.3	91.7
	Female	80.2	19.8	78.4	21.6	57.7	42.3	55.6	44.4	80.0	20.0
	Total	88.4	11.6	84.8	15.2	65.4	34.6	41.4	58.6	29.4	70.6

Note: following Börsch-Supan *et. al* (2005), a weekly working time of 30 hours and more is defined as full-time, whereas a working time of less than 30 hours is defined as part-time. *Source*: SHARE, own elaboration.

Table 24 – Working time, by gender and age bracket, 2000, percentages

		50 – 54		55 – 59		60 – 64		65 – 69		70+	
		Full-time	Part-time	Full-time	Part-time	Full-time	Part-time	Full-time	Part-time	Full-time	Part-time
Finland	Male	96.4	3.6	93.9	6.1	81.4	18.6	74.5	25.5	41.5	58.5
	Female	93.2	6.8	86.5	13.5	74.0	26.0	54.5	45.5	66.7	33.3
	Total	94.8	5.2	90.2	9.8	78.0	22.0	69.9	30.1	44.7	55.3
United Kingdom	Male	97.4	2.6	95.2	4.8	86.2	13.8	60.8	39.2	44.9	55.1
	Female	67.2	32.8	59.4	40.6	47.5	52.5	38.4	61.6	32.1	67.9
	Total	82.5	17.5	79.3	20.7	72.6	27.4	52.7	47.3	42.8	57.2

Note: following Börsch-Supan *et. al* (2005), a weekly working time of 30 hours and more is defined as full-time, whereas a working time of less than 30 hours is defined as part-time.
Source: ECHP, own elaboration.

Partial pensions

These tables provide an overview of participation to partial pensions in the relevant countries, based on national sources.

<u>Finland</u>

Table 25 - Number of part-time pensioners and as a share of total pensioners, by sex, 1989 – 2004

Year	Both sexes			Males			Females		
	All pensions	Part-time pensions	%	All pensions	Part-time pensions	%	All pensions	Part-time pensions	%
1989	1149211	254	0.02	461306	141	0.03	687905	113	0.02
1990	1160983	427	0.04	467828	199	0.04	693155	228	0.03
1991	1171324	699	0.06	474592	330	0.07	696732	369	0.05
1992	1182934	1213	0.10	482313	516	0.11	700621	697	0.10
1993	1198607	2257	0.19	492864	1029	0.21	705743	1228	0.17
1994	1210986	4467	0.37	501340	2030	0.40	709646	2437	0.34
1995	1219747	5437	0.45	506703	2252	0.44	713044	2912	0.41
1996	1232653	6104	0.50	513840	2861	0.56	718813	3243	0.45
1997	1244233	6932	0.56	519307	3172	0.61	724926	3760	0.52
1998	1254866	10924	0.87	524764	4945	0.94	730102	5979	0.82
1999	1269981	18284	1.44	532765	8301	1.56	737216	9983	1.35
2000	1284145	24533	1.91	540883	11167	2.06	743262	13366	1.80
2001	1296478	29073	2.24	548030	13577	2.48	748448	15496	2.07
2002	1317300	39542	3.00	560228	18524	3.31	757072	21018	2.78
2003	1329988	41195	3.10	568673	19361	3.40	761315	21834	2.87
2004	1338002	36438	2.72	573769	17191	3.00	764233	19247	2.52

Source: Statistical Yearbook of Pensioners in Finland 2004, http://www.etk.fi/page.asp?Section=13063

Table 26 - Number of part-time pensioners, by sex and age brackets, 2004

Age	Both sexes		Males		Females	
	All	Part-time pension	All	Part-time pension	All	Part-time pension
Up to 19	24 560	-	12 406	-	12 154	-
20 - 44	46 922	-	25 283	-	21 639	-
45 - 54	80 559	-	40 790	-	39 769	-
55 - 59	113 199	17 061	54 731	7 864	58 468	9 197
60 - 64	207 770	19 377	96 714	9 327	111 056	10 050
65 and over	864 992	-	343 845	-	521 147	-
All ages	1 338 002	36 438	573 769	17 191	764 233	19 247

Source: Statistical Yearbook of Pensioners in Finland 2004, http://www.etk.fi/page.asp?Section=13063
Note: One person may receive several pension benefits at the same time. For this reason, the figures of the tables cannot be summed up.

<u>Sweden</u>

Table 27 – Number of pensioners receiving partial pension (delpension) and as a share of recipients of old-age pension, 1996 – 2003

Year	Partial pensions	Old-age pensions	% Partial pension / old-age pensions
1996	27000	1587866	1.70
1997	18000	1592023	1.13
1998	11000	1593845	0.69
1999	8000	1596254	0.50
2000	13000	1600918	0.81
2001	10000	1589933	0.63
2002	6000	1589206	0.38
2003	2600		

Source: Statistical yearbook of Sweden 2006, downloaded from:
http://www.scb.se/templates/Product_____30937.asp, own calculations.

<u>Denmark</u>

Table 28 – Number of pensioners receiving partial pension (delpension) and as a share of recipients of old-age pensions, by sex and employment status

	Men				Women				Total	
	Employees	Self – empl.	Total	% old-age	Employees	Self – empl.	Total	% old-age	Total	% old-age
1997	1,754	1,747	3,501	1.22	506	469	975	0.23	4476	0.63
1998	1,723	1,588	3,311	1.15	462	428	890	0.21	4201	0.59
1999	1,687	1,403	3,090	1.07	413	366	779	0.19	3869	0.55
2000	1,494	1,176	2,670	0.92	346	312	658	0.16	3328	0.47
2001	1,282	972	2,254	0.78	286	269	555	0.13	2809	0.40

Source:
1. partial pensions: Modtagere af delpension, various years, downloaded from:
http://www.dst.dk/Statistik/Nyt/Emneopdelt.aspx?si=15&msi=5.
2. old-age pensions: Source: Statistics Denmark, downloaded from :
http://www.statbank.dk/statbank5a/default.asp?w=1024
Note: Total pensioners include: recipients of old-age pensions, Highest early retirement pension, Increased ordinary, early retirement pension, Ordinary early retirement pension, Disability or temporary supplement, Intermediate early retirement pension, New scheme for early retirement pension.

France

Table 29 – Number of pensioners receiving partial pension(retraite progressive)

	Fraction receiving 30 % (1)[a]	Fraction receiving 50 % (2)	Fraction receiving 70 % (3)	Total (4)	% (1)/(4)	% (2)/(4)	% (3)/(4)
1989	112	289	257	658	17,02	43,92	39,06
1990	139	386	398	923	15,06	41,82	43,12
1991	160	423	440	1 023	15,64	41,35	43,01
1992	157	553	495	1 205	13,03	45,89	41,08
1993	137	577	573	1 287	10,64	44,83	44,52
1994	113	544	559	1 216	9,29	44,74	45,97
1995	92	516	533	1 141	8,06	45,22	46,71
1996	72	465	513	1 050	6,86	44,29	48,86
1997	63	457	485	1 005	6,27	45,47	48,26
1998	61	406	457	924	6,60	43,94	49,46
1999	61	347	436	844	7,23	41,11	51,66
2000	73	316	383	772	9,46	40,93	49,61
2001	68	298	357	723	9,41	41,22	49,38
2002	73	276	367	716	10,20	38,55	51,26
2003	82	242	349	673	12,18	35,96	51,86
2004	59	177	288	524	11,26	33,78	54,96
2005	44	128	245	417	10,55	30,70	58,75

Source: Caisse Nationale D'assurance Vieillesse, Direction Actuariat Statistique – 93, Retraite Progressive Année 2005
[a] Partial pension can be drawn as 30%, 50% or 70% of full pension depending on the number of hours worked.

Germany

Table 30 – Number of pensioners receiving full and partial pension (teilrente), as of 2004

Age	Men						Women						Men and women					
	Full pension	Partial pensions					Full pension	Partial pensions					Full pension	Partial pensions				
		1/3	1/2	2/3	Total	% partial over full		1/3	1/2	2/3	Total	% partial over full		1/3	1/2	2/3	Total	% partial over full
60	79228	12	13	20	45	0.06	106983	27	42	36	105	0.10	186211	39	55	56	150	0.08
61	112020	26	34	32	92	0.08	150972	51	67	87	205	0.14	262992	77	101	119	297	0.11
62	141623	45	42	62	149	0.11	196083	77	97	75	249	0.13	337706	122	139	137	398	0.12
63	278558	52	93	146	291	0.10	300812	137	251	156	544	0.18	579370	189	344	302	835	0.14
64	360498	80	153	208	441	0.12	325429	176	249	196	621	0.19	685927	256	402	404	1062	0.15
65	535214	31	61	76	168	0.03	534773	44	78	67	189	0.04	1069987	75	139	143	357	0.03
66	519587	18	19	45	82	0.02	521774	17	38	28	83	0.02	1041361	35	57	73	165	0.02
67	484596	16	25	35	76	0.02	492206	24	31	26	81	0.02	976802	40	56	61	157	0.02
68	465777	7	25	32	64	0.01	482888	20	23	27	70	0.01	948665	27	48	59	134	0.01
69	444861	11	28	37	76	0.02	468926	17	26	23	66	0.01	913787	28	54	60	142	0.02
70+	3831841	54	68	121	243	0.01	5809219	41	50	49	140	0.00	9641060	95	118	170	383	0.00
Total	7253803	352	561	814	1727	0.02	9390065	631	952	770	2353	0.03	16643868	983	1513	1584	4080	0.02

Source: VDR – Statistick Rentenbestand, http://www.deutsche-rentenversicherung.de/

Table 31 – Number of pensioners receiving full and partial pension (teilrente), as of 2005

| | Men | | | | | | Women | | | | | | Men and women | | | | | |
| | Full pension | Partial pensions | | | | | Full pension | Partial pension | | | | | Full pension | Partial pension | | | | |
Age		1/3	1/2	2/3	Total	% partial over full		1/3	1/2	2/3	Total	% partial over full		1/3	1/2	2/3	Total	% partial over full
60	61200	11	16	22	49	0.08	78590	22	31	34	87	0.11	139790	33	47	56	136	0.10
61	112698	19	30	46	95	0.08	145864	54	82	94	230	0.16	258562	73	112	140	325	0.13
62	143639	32	50	64	146	0.10	178881	53	88	94	235	0.13	322520	85	138	158	381	0.12
63	204830	68	88	122	278	0.14	238993	121	144	104	369	0.15	443823	189	232	226	647	0.15
64	322834	69	133	186	388	0.12	309508	134	236	161	531	0.17	632342	203	369	347	919	0.15
65	542990	32	53	98	183	0.03	541008	47	59	77	183	0.03	1083998	79	112	175	366	0.03
66	552601	27	46	56	129	0.02	557202	31	46	38	115	0.02	1109803	58	92	94	244	0.02
67	512728	16	16	42	74	0.01	520366	16	35	28	79	0.02	1033094	32	51	70	153	0.01
68	475687	16	23	32	71	0.01	488837	24	30	24	78	0.02	964524	40	53	56	149	0.02
69	455594	6	26	30	62	0.01	478567	19	23	23	65	0.01	934161	25	49	53	127	0.01
70+	4025392	64	89	153	306	0.01	5978764	52	74	66	192	0.00	10004156	116	163	219	498	0.00
Total	7410193	360	570	851	1781	0.02	9516580	573	848	743	2164	0.02	16926773	933	1418	1594	3945	0.02

Source: VDR – Statistick Rentenbestand, http://www.deutsche-rentenversicherung.de/

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