

Retirement Reform in a Mature Welfare State – Danish Experience¹

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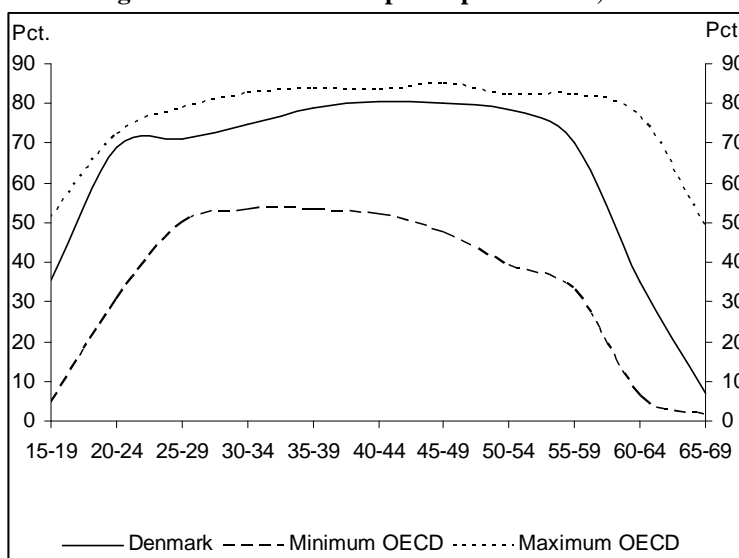
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Introduction

The Danish welfare model is extended and includes a public sector that distributes more than 50 pct. of GDP. Income transfers imply relatively high compensation rates especially for low income earners and the welfare services provided by the public sector are of relatively high standards. The welfare system is universal in the sense that entitlements to benefits and individual services are available to all inhabitants, who fulfils objective criteria. The financing of the public expenditures is collective and relies on direct and indirect taxation of earned income.

The Danish welfare model both enables and relies on high levels of labour market participation rates for both men and women.³ Labour market participation rates are therefore close to 80 percent and the potential for increasing the tax base through a larger labour force correspondingly low. In the Danish case labour market participation rates remain high until around the age of 60 years, where a significant drop in the rate is experienced, cf. Figure 1.

Figure 1. Labour market participation rates, 2002



Source: OECD and Statistics Denmark

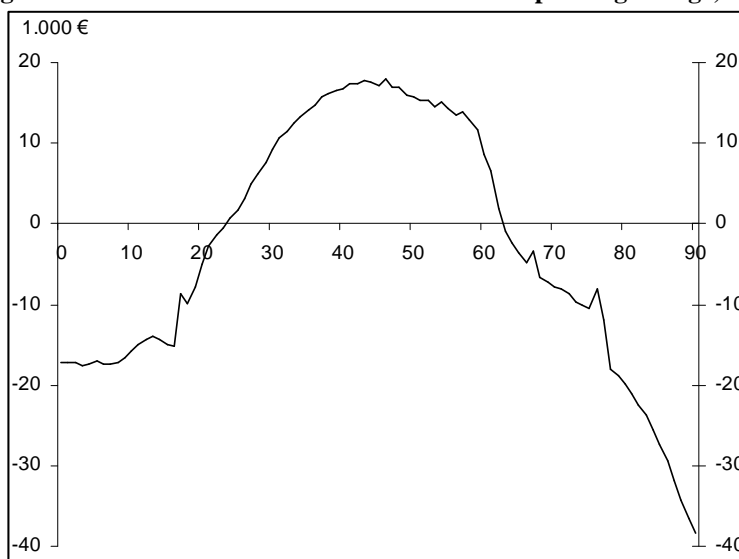
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² The analysis in this paper is based on work carried out while I was affiliated with Danish Rational Economic Agents Model (DREAM) and the Danish Welfare Commission.

³ Public provision of e.g. child care and old age care enables a high labour market participation rates for both men and women. The tax financing of most public services and transfers necessitates high labour market participations rates to generate a large tax base.

At the same time the detachment of benefits and services from the financing implies a strong intergenerational dependency in the net-contributions to the public sector. Young and old individuals are net receivers of public benefits and services whereas “middle-age groups” are net contributors to the public sector, cf. Figure 2. This age dependency in the net contributions is one reason why the Danish (Scandinavian) welfare system may be more vulnerable to changes in the demographic composition than other types of welfare models. A second reason is that the policy instruments for improving the financing of the welfare state may be more limited in Scandinavian countries due to high initial labour market participation rates.

Figure 2. Net Contribution to Public Finances Depending on Age, 2004



Source: Own calculations on the DREAM model

The possibilities of financing increased expenditures due to ageing by increasing the tax rates may also be limited. First, the tax burden is already around 50 per cent of GDP, which through the marginal tax rate on labour income generates tax distortions on the labour supply that run counter to the necessity of a large labour force. The distortionary consequences of taxation are likely to increase due to globalization even for an unchanged tax burden and therefore make further tax increases less attractive. In addition to the economic aspects, the current political willingness to increase taxes is limited both by the incumbent government and the leading parties of the opposition.

Reform strategies based on tight expenditure rules are available, but will imply a reduction in either the standards for provision of public services to individuals or reducing the income replacement ratio of social transfers. This may not in the long be compatible with maintaining the current type of welfare system.

To be able maintain the welfare model a reform strategy based on increasing the labour force and at the same time reducing the number of recipients of transfer income has been adopted by the Danish government/parliament.

The most recent reform involves a postponing of the statutory pension age in the public pension system. The general idea of the retirement reform is that the statutory pension age is to be indexed to the life expectancy of a 60 year old individual, so that the expected public pension period remains constant at approximately 19.5 years. The indexation scheme has a long announcement phase and therefore does not affect the statutory pension age until 2019.

The aim of the present paper is to provide an assessment of the long run gradual reform strategy of postponing the statutory pension age.

Projection of the Danish economy given current welfare arrangements⁴

To assess the financial consequences for the public sector of the ageing of the population and the expected permanent annual increase in longevity an economic projection is made. The projection is based on exogenous demographic projection, which is fed into the Danish OLG-CGE Model DREAM that has an overlapping generation structure and a very detailed modelling of the Danish welfare system (see e.g. Pedersen & Stephensen (1999)). In the projection it is assumed that current welfare arrangements are maintained and the fiscal sustainability is assessed given this assumption.⁵

The main implication of the assumption of unchanged welfare arrangements is that the distribution between wage income and social transfers (including social pensions) tends to be neutral with respect to growth.⁶ Similarly expenditures on public consumption are assumed to increase with the productivity growth.⁷ The projection also implies that the financing of the welfare system remains unchanged (unchanged direct and indirect tax rates) and therefore public revenues tend to increase proportional to the income in the economy.⁸ For a given age structure of population these assumptions imply that the public expenditures and revenues remain approximately a constant relative to GDP.

The question raised is therefore to which extend the ageing of population necessitates changes in either current welfare arrangements or the financing of these to ensure fiscal sustainability. This is measured as the necessary permanent reduction in collective public consumption relative to GDP. Any compensating private spending is ignored.⁹

Compared to most European economies the outset for the Danish economy is rather favourable. Unemployment is down to around 4 pct of the labour force by mid 2006. Average economic growth measured by real GDP from 1966-2005 has been 2.1 pct. with a somewhat smaller growth rate in the recent decades. There has been a current account surplus almost every year since the late 1980s and the foreign asset position has become positive by 2005. Fiscal discipline has been demonstrated by

⁴ The projection is originally published in Danish Rational Economic Agents Model (2006)

⁵ Technically, fiscal sustainability requires evaluation of primary budgets over an infinite future. The present analysis does not deviate from this. However, it is assumed that phenomenon of increased longevity stops at year 2100 and that the population becomes stationary after this point, implying that the economy is approaching a steady state after 2100. The analysis is therefore restricted to evaluating robustness of the welfare arrangements in the light of the expected ageing of population until 2100 and not of a permanently increasing life expectancy.

⁶ Current Danish legislation implies that transfers are indexed to the wage rate.

⁷ Therefore the projection does not include the well known effects of neither Baumol cost disease nor Wagner's recognition that the income elasticity for services is above one. On the other hand the projection also ignores potential cost reductions from healthy ageing.

⁸ Two major exceptions are revenues from the Danish North Sea oil production and revenues from pension payments from fully funded contribution defined the second pillar pension schemes.

⁹ Since the policy implies a permanent reduction in spending from 2011 primary surplus is increased by an almost constant amount relative to GDP from 2011. On the contrary ageing of the population is a gradual process that leads to a gradual deterioration the primary budget. The consequence of the policy is therefore that the government follows a savings strategy. This implies that the size of the necessary adjustment becomes highly sensitive to the relevant yield on savings i.e. the interest rate corrected for growth and inflation. Secondly, even if there may be efficiency gains from the "tax smoothing" that is implied by the policy, there are also large intergenerational distribution effects; cf. Andersen & Pedersen (2006). Therefore it should be stressed that these policies should only be considered way of measuring the size of the problem and not as policy recommendations

governments of different colour over the last couple of decades. Net public debt has been brought down from 89 pct. of GDP in 1986 to 28 pct. in 2005. Gross public debt to GDP amounts to 36 pct. in 2005.

The projection of future production and income in the economy depends on productivity growth and the evolution in the size of the effective labour force. The projection of the labour force is based on the demographic forecast and the assumption that current labour market participation rates remain constant for a given age, gender and country of origin. These joint assumptions imply that the labour force is gradually reduced until 2040, where the total reduction is 8.8 pct. of the 2004 level.

The reduction in the labor force reduces production – *ceteris paribus*. This has, however, only marginal effect on the long run level of real production, which almost doubles (increases by 95 pct.) until 2040, due to the assumed annual Harrod-neutral technological progress of 2 pct. which is close to the historical growth rate. The projection implies that real private consumption increases by 110 pct. from 2004 to 2040. The additional increase in real private consumption relative to production is due to the doubling of the number of retirees in the period until 2040. This demographic change also drives the increase in real public consumption that grows 124 pct. until 2040. In this case the additional growth reflects both the increased number of retirees and the fact that public consumption per individual increasing with age.

Public expenditures increase by 9 percentage point from 50.0 to 59.0 percent of GDP in the period from 2005 to 2040. The expenditure increase is almost equally divided between increase in public transfers due to increased number of pensioners and increased expenditures to public services due to increased health care and elderly care expenditures. This indicates that although the population ageing phenomenon is fairly modest in Denmark, the institutions of the Danish welfare system imply that the economic consequences are large.¹⁰ The increase in public expenditures relative to GDP of 9 percentage point over the next 35 years is comparable to the increase relative to GDP in the previous 35 years. By contrast to the assumptions of the projection the increase in public expenditures in the historical period is to a large extent due to expanding of the types welfare arrangement included in the public service.

Public revenues also increase relative to GDP.¹¹ From 2010 to 2040 revenues increase by almost 3 percentage points. This raise in revenue appear due to the taxes from pension payments from funded (second pillar) pensions. Danish legislation implies that contributions to funded pensions are deductible in the tax base of the income tax. The flip side of this deductibility is that pension payments from funded pensions are subject to income tax. Since funded pensions in Denmark are far from being mature current taxes from pension payments are based on much a lower level of contributions relative to GDP than current contributions. Danish funded pension system is not expected to mature before around 2060 and therefore the increase in tax revenue relative to GDP continues beyond 2040.

This development implies that the current Danish public budget surplus of 5 percent of GDP in 2005 is gradually reduced and turned into a deficit around 2015. From this point on deficits will be increasing and the primary deficit amounts to 4.5 percent of GDP in 2040 whereas the deficit on the

¹⁰ The increase in the dependency ratio is only due to the retiring of the large post war generations (with and echo-effects) and an expected increase in longevity. The fertility rate is expected to stabilize around the current level of 1.9 child per female.

¹¹ Large revenues from North Sea oil production and non-structural revenues from taxation of interest income of pension savings imply that the 2005 revenue relative to GDP is comparable to the 2040 ratio.

total budget becomes 7.4 percent of GDP given the assumptions of the projection, cf. Figure 3.¹² The gradual deterioration of the primary public budget over time follows the gradual change in the composition of population where relatively large generations retire and relative small generations enter the labour force. This development is enforced by the annual increases in life expectancy of the retirees.

The public expenditures need a permanent reduction of 4.0 pct. of GDP to ensure fiscal sustainability. Therefore, even the relative modest increase in the Danish dependency ratio (from 0.5 to 0.75) requires a fairly substantial permanent change in the welfare arrangements or the financing of these.

Retirement reform

To deal with the expected fiscal consequences of the ageing of the population the Danish parliament adopted a retirement reform in June 2006. The reform was supported by 90 percent of the members in the Danish Parliament, including both major parties.

The reform has two elements. First, it postpones the statutory retirement age of the Danish voluntary early retirement (VERP) scheme by 2 years from age 60 years to age 62 years in the period from 2019 to 2022. The maximum period of the VERP is maintained as 5 years per individual and the statutory pension age of the Danish social security pension is accordingly also increased by 2 years in the period from 2024 to 2027. Second, from 2025 the statutory retirement age of VERP is indexed to the life expectancy of a 60 year old individual. The statutory pension age of the social security pension follow the increased with a lag of 5 years. The indexation of the retirement age of the VERP is renewed every 5 years. Increases in the legal retirement age due to the indexation may be either 0, ½, 1 year for each indexation depending on the growth in the life expectancy of a 60 year old individual.¹³

The reform affects individuals who are currently 48 years old or younger, so that individuals close to the current retirement age are not affected by the reform. The flip side of this is that the reform cannot be expected to affect neither the size of the labour force nor the number of pensioners in the next 15 years. This is a major concern as the large post war generations are retiring in this period.

Currently less than 5 percent of the Danish population retires without entering directly into either the disability pension system, the VERP or the social security pension system. Approximately 50-55 pct. of the population retires into the VERP, 20-25 pct. involuntary retires into the disability pension system, 15 pct. retires directly into social security pension system, and approximately 5 pct. retires before the legal pension age of the social security pension without entering other types of public transfers.

A prerequisite for entering the VERP is that the individual is entitled to unemployment benefits before entering the retirement scheme. Therefore it is in principle only possible to enter the VERP for the individuals who are employed or are receiving unemployment benefits. It is not possible to retire from the labour market and enter the VERP after retiring. Since the pension from the VERP is relatively high – 50 pct. of the income of an average worker – and since 80 pct. of the pension is public transfers, incentives to remain in the labour force until retiring into the VERP is possible are very strong. This institution implies that the expected effect of the retirement reform on the effective

¹² The largest public deficit in Danish economic history is 8.5 percent of GDP in 1982.

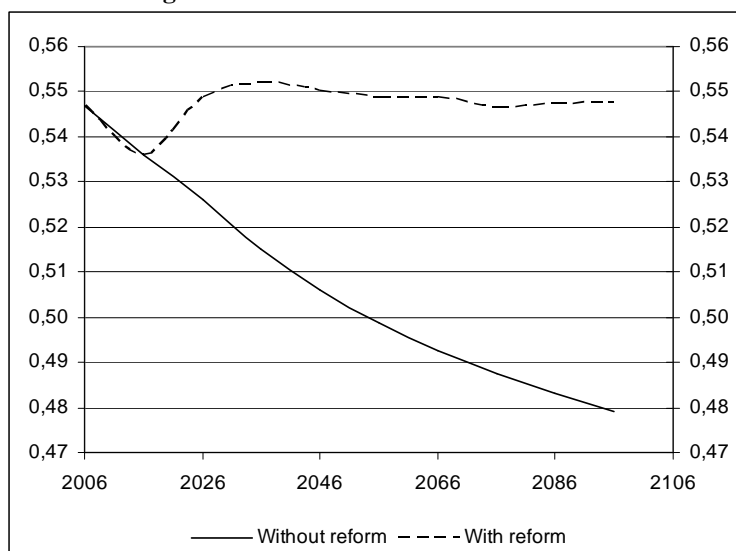
¹³ The indexation of the retirement age of the VERP is announced 10 years in advance (therefore the indexation of the social security pension is announce 15 years in advance) and based on the observed life expectancy of a 60 year old individual in the year of announcement

retirement age is high. Therefore it is assumed that only a very limited number of additional individuals retire voluntarily prior to reaching the legal pension age of the VERP and therefore exclude themselves from the pensions from the VERP.

However, it is expected that the number of individuals who involuntarily retire into the disability pension scheme will increase rather significantly due to the lack of possibilities of voluntary retirement. Figures based on questionnaires suggest that 20 pct. of individuals who retire into the VERP will be unable to remain in the labour force for health reasons (Danish Welfare Commission (2006)). Analyses based on register-data on health suggest that the figure is between 10 and 20 pct. (Danish Economic Council (2006)). The current assessment is based on the former more pessimistic assumption.

The philosophy of the indexation scheme is that the expected maximum length of the period, which is spend as retired in either the VERP or the social security pension scheme remains at the current level, i.e. approximately 19.5 years. The generations who retire in the coming years – i.e. before the indexation mechanism is initiated – will have a longer expected retirement period in these two pension systems. However since an increasing number of individuals are expected to retire into the disability pension system the expected effective retirement period is increasing through time. With the indexation rule of the reform the expected average period in retirement increases from the current 17.0 years to 19.0 years in 2040, which should be compared to an expected increase in the average expected retirement period to 22.5 years with the current retirement rules. The indexation rule in fact obtains the effect that the average share of life which is spend in the labour force remains at the current level of 55 pct. of life in the long run. However, the delay in the introduction of the indexation rule implies that generations who retire in the coming years may expect a lower share of life in the labour force and accordingly a larger share of life as retired, cf. Figure 3.

Figure 3. Share of Life in the Labour Force

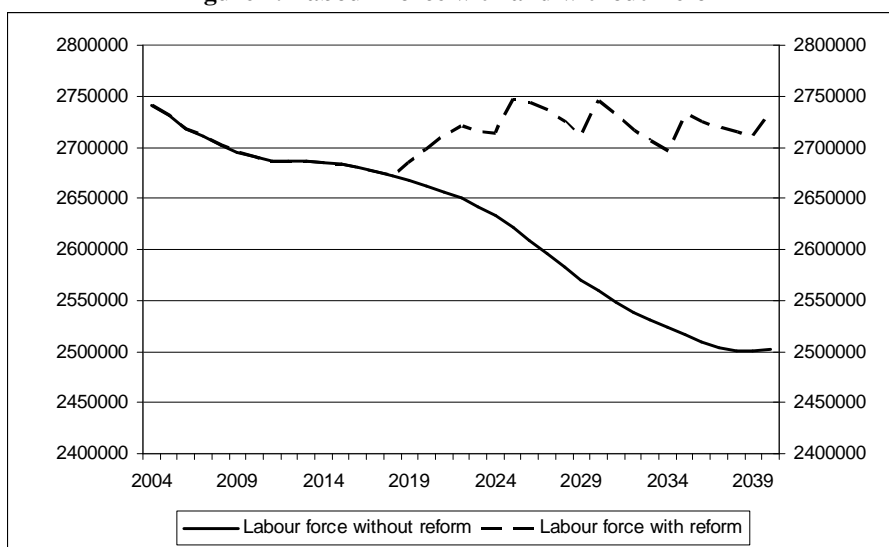


Source: Own calculations based on DREAM's demographic forecast 2006

The retirement reform has positive effects on the labour force from 2019. In the period from 2020 to 2040 the drop in the labour force that is experienced from 2004 to 2020 is redressed, so that the labour force increases by 2.0 pct. during the 20 year period until 2040, cf. Figure 4.

The effects on the labour force appear discontinuously every 5 years after 2025. This is due to the indexation mechanism that works every 5 year and increase the statutory retirement age by up one year. The first three times the mechanism works the retirement age is postponed a whole year. This give the three major peaks in Figure 4 at 2025, 2030 and 2035. In each of the three years in question the increase in the labour force is approximately 1.5 pct. Although there is a general tendency towards a tight labour market in the future due to the tendency of simultaneously decreased labour supply and increased labour demand, business cycle effect may dominate and there is a risk that the increase in the labour supply is badly timed vis a vis the business cycle, which may generate short term increases in unemployment.

Figure 4. Labour Force with and without Reform



Source: Own calculations

The macroeconomic effects of the retirement reform are due to the combined effects of increased labour force and the reduced number of recipients of public transfers. The labour force is expected to be 9 pct. higher in 2040 than without the reform. This implies that the current level of the labour force is re-established in 2040, which should be compared to a reduction of 8.8 pct. without the reform. The increase in the labour force generates an increase in production of 5 pct. and an increase in consumption of 4 pct. in 2040 compared to the situation without reform.¹⁴

The public expenditures relative to GDP are reduced by 3.4 percentage point in 2040 due to the reform. 2.0 percentage points are due to the reduction public transfers whereas the rest is due the reduction in public services. The reduction in expenditures to public services relative to GDP is partly due to the increase in GDP and partly due to an endogenous cost reduction that appears through a wage moderation effect from the less tight labour market. Since labour intensity is high in public services this tends to reduce the relative price of these services.

The public tax revenue relative to GDP is reduced by 2.5 percentage point of GDP due to the fact that public transfers in Denmark are taxed according to the income taxation scheme. Therefore increases in the labour force and reductions in the number of pensioners only affects tax revenues

¹⁴ Production functions exhibit constant returns to scale but sluggish adjustment in the capital stock due to convex cost of installation. This accounts for the observed lower increase in production in 2040 than the observed increase in employment.

through the taxation of the increase in income.¹⁵ The net increase in the primary public budget in 2040 is therefore 0.9 percentage point of GDP. The annual improvement in the public surplus is affected by the timing of the indexation and therefore cycles of 5 year periods are observed. It so happens that the improvement in 2040 is particularly low due to this cycle effect and therefore a more relevant measure of the improvement of the public budget is the effect on fiscal sustainability. The necessary permanent reduction in the public expenditures is reduced from 4.0 percentage points of GDP without the reform to 2.2 percentage points with the reform. The reform therefore solves almost half of the fiscal sustainability problem in Denmark.

The improvement in the fiscal sustainability is obtained by stabilising the ratio of public transfers to GDP at the current level. Therefore in particular the pension system is sustainable given the reform. Public revenue relative to GDP is also stabilised, which implies that the remaining unsolved part of the fiscal problem is due to the fact that public services and in particular health care and elderly care expenditures increases relative to GDP.

Time inconsistency problems

The reform has two major flaws from a political economy point of view. Both of these are concerned with time inconsistency problems. The first is due to the timing of the reform. Current politicians has abstained from indexing the statutory retirement age for generations who retire in the coming 12 years, but expect that future politicians will postpone the retirement age for the generations that are retiring in the same period where they are active politicians. In fact the reform is implemented such that the indexation is high in the initial phase because indexation has to catch up with the increase in life expectancy in the next 12 years. There is a risk that political pressure will emerge to postpone the reform further into the future.

The second time inconsistency problem is due to the design of the indexation rule as a discontinuous mechanism that postpones the statutory retirement age in intervals of 5 years and therefore potentially implies relatively large increases. A large increase in the retirement age may not be politically credible if the economy is at a trough in the business cycle. In this case political pressures to avoid increasing the legal retirement age in the specific situation may occur, since the short term effect may be an increase in unemployment.

Both these time inconsistency problems could have been avoided by altering the reform. First, the mechanic increase in the retirement age that is initiated in 2019 could have been initiated e.g. with a 5 year announcement in 2011 and indexation could have been initiated in 2015. In this way current politicians could have signalled that they are prepared to incur the potential political costs in the same way as future politicians. Second, by indexing the statutory retirement age e.g. every year or every second year and to increase legal retirement age in steps of e.g. one month the discontinuities of the labour supply might easily have been avoided. In addition such a rule may constitute a more fair mechanism as individuals who are almost the same age will have almost the same statutory retirement age.

¹⁵ The negative effect on public revenue relative to GDP also appear due to the unaffected revenues from North Sea oil production and taxation of pension payments. Furthermore it is reinforced by a reduction in private savings and therefore lower capital income tax revenue due to the reduction in the expected pension period.

Conclusion

Indexation of the statutory retirement age of voluntary retirement systems to the life expectancy of a 60 year old individual is sufficient to ensure sustainability of the pension system even with a fixed compensation ratio of the pay-as-you-go pensions. This holds even in a situation with a substantial increase in the number of individuals who retire involuntarily into the more generous disability pension system.

Indexation of the statutory retirement age is not sufficient to finance the total costs of ageing, as the potential increase in public expenditures to health care and elderly care cannot be financed without using an indexation rule that implies that the share of life in employment increased as life expectancy is increased. This may run counter to the individual desire to spend a part of the increasing wealth in a growing economy by increasing the amount of leisure.

Therefore indexation of the statutory retirement age is not a universal remedy against all financial effects of ageing, but it remains a simple and powerful tool to secure sustainability of the pay-as-you-go pension system without reducing annual pensions relative to the wage rate.

References

Andersen, T. M. & L. H. Pedersen: "Financial Restraints in a Mature Welfare State – The Case of Denmark", *Oxford Review of Economic Policy* vol. 22 no. 3 Autumn 2006, pp. 313-329

Danish Economic Council: "Dansk Økonomi, efterår 2006" (in Danish), Copenhagen 2006

Danish Rational Economic Agents Model: "Langsigtet økonomisk fremskrivning 2006 – med vurdering af velfærdsreformen", (in Danish) Copenhagen 2006

Danish Welfare Commission: "Fremtidens Velfærd – vores valg" (in Danish), Copenhagen 2006

Pedersen, L. H. & P. Stephensen: "A CGE Analysis of the Danish Ageing Problem", DREAM 1999, available on www.dreammodel.dk