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DENMARK

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This Survey is published on the responsibility of the Economic and Development Review Committee (EDRC) of the OECD, which is charged with the examination of the economic situation of member countries.

The economic situation and policies of Denmark were reviewed by the Committee on 9 January 2008. The draft report was then revised in the light of the discussions and given final approval as the agreed report of the whole Committee on Tuesday 22 January 2008.

The Secretariat's draft report was prepared for the Committee by Jens Lundsgaard and David Turvey under the supervision of Stefano Scarpetta.

The previous Survey of Denmark was issued in May 2006.

Information about the latest as well as previous Surveys and more information about how Surveys are prepared is available at www.oecd.org/eco/surveys.

BASIC STATISTICS OF DENMARK

THE LAND

Area (sq. km)	43 094
Agricultural area (sq. km)	25 890

Population of major urban areas, 2007, thousands

Copenhagen	1 146
Århus	228
Odense	159
Ålborg	101

THE PEOPLE

Population, January 2007, thousands	5 447
Number of inhabitants per sq. km	125
Population, annual net natural increase (average 2000-2006, thousands)	8
Natural increase rate, 2006 (per 1 000 inhabitants)	1.8

Total employment, 2006, thousands: 2 808

By sector :

Agriculture	83
Manufacturing	404
Construction	180
Market services	1 140
Community, social and personal services	1 001

THE PRODUCTION

Gross domestic product, 2006

Kr billion	1 642
Per capita (USD)	50 825

Gross fixed capital formation, 2006

Kr billion	355
Per cent of GDP	21.6
Per capita (USD)	10 985

THE GOVERNMENT

Public consumption, 2006 Per cent of GDP	25.7
General government current revenue Per cent of GDP	55.2
Public gross fixed capital investment Per cent of GDP	1.9

Composition of Parliament	Number of seats
Liberals	46
Social Democrats	45
Danish People's Party	25
Socialist People's Party	23
Conservatives	18
Social Liberals	9
New Alliance	5
Unity List – Red-Green Alliance	4
North Atlantic	4
Total	179

Last general elections: 13 November 2007

Next general elections : 13 November 2011 (at the latest)

THE FOREIGN TRADE

Exports, 2006

Exports of goods and services

Per cent of GDP	51.9

Decomposition of merchandise exports, 2005 (% of total)

Agricultural products	9.0
Manufactured products	73.5
of which : Machinery and instruments	26.6
Other manufactured products	46.9
Fuels, etc.	17.5

Imports, 2006

Imports of goods and services

Per cent of GDP	49.1

Decomposition of merchandise imports, 2005 (% of total)

Intermediate goods for agriculture	2.1
Intermediate goods for other sectors	39.1
Fuels and lubricants	6.6
Capital goods	14.1
Transport equipment	6.9
Consumer goods	28.4

THE CURRENCY

Monetary unit: Krone

January 2008, monthly average of spot rate

DKK per $	5.06
DKK per €	7.45

Executive summary

The Danish economy has been performing well over the past decade and combines a relatively high level of GDP per capita with a narrow income distribution. Strong growth in recent years has brought the economy to its capacity constraints. A strong positive output gap has emerged; unemployment reached a 30-year low already by mid-2006, and it has fallen further since then. Avoiding overheating is an urgent challenge. Private-sector agreements from spring 2007 avoided unsustainable wage hikes, but local agreements now show some acceleration, and with yet higher demands in the public sector, a general wage spiral could be set in motion. Given these risks, fiscal policy should not add stimulus: priority initiatives should be offset by savings elsewhere; and excessive public-sector wage growth and continued spending slippages in municipalities and regional authorities should be avoided.

Over the past decade, an increasing share of GDP has been channelled towards public services like health, education and care for the elderly and children. But looking ahead, the room for additional spending in these areas is limited by demographic changes and early retirement. At present, more than half of those aged 60-64 leave the labour market through the voluntary early retirement scheme, and this five year scheme will be maintained even after 2019, when the general retirement age is gradually raised. Denmark faces a strategic choice: either promoting employment-oriented reforms or developing mechanisms for private funding for services that are publicly funded today. The first option is probably the best, as it goes hand-in-hand with the ambitious – but costly – priorities in Danish social and welfare policies. And effectively the government's 2015 Strategy takes this direction by positing higher structural employment and no reduction in average hours worked in a context where demographics would imply a decline in both.

Ensuring that the sound fiscal position is sustained. *The targets in the 2015 Strategy are sensible, but clearer mechanisms are needed to ensure they are met. In particular, adherence to the stipulated annual growth rates for public consumption is vital, as experience shows that it is very hard to reverse overruns.*

Helping marginal groups to secure a foothold in the labour market. *Strong demand as well as activation and benefit reforms have successfully brought down unemployment, but more than one in five working age adults still live from passive income benefits – substantially more than in other countries. Activation could be more cost effective and benefits could be adjusted to give participants clearer incentives to get the most out of activation.*

Promoting labour supply and skill acquisition through tax reforms. *With one of the highest tax-to-GDP ratios in the OECD, Denmark should constantly consider how to refine the tax structure to reduce distortions. Social security contributions, income and consumption taxes combined create a marginal tax wedge of over 70% for four out of ten full-time employed. Reducing the top tax would help stimulate labour supply and it would cost relatively little.*

Sustaining generous public insurance for healthcare is feasible if clear priorities are set and efficiency continues to be raised. *The introduction of activity-based funding, along with other innovations, has ensured that the strong growth in spending has been matched by increased treatment activity. Looking ahead, spending pressures call for adoption of cost-saving technologies and mechanisms to avoid overuse. Health and employment services could be more responsive to those health problems that are part of the complex processes leading a growing number of people to be outside employment.*

The occupational pension system is a success, but capital taxation needs attention. *The main problem is associated with taxation of capital income outside pension funds: in some cases effective tax rates on real returns approach or exceed 100% and the gap between interest deductibility and pension tax rates encourages tax planning.*

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OECD Economic Surveys: Denmark

Assessment and recommendations

Living standards in Denmark are high and progress will continue with forward-looking reforms

The average Dane enjoys relatively high standards of living: GDP per capita is higher than in most other European countries, even though the gap *vis-à-vis* the United States remains at 15-20% where it has been for over three decades. A deep commitment to open trade and structural reforms in the markets for goods and services, combined with a cohesive approach to actively helping job seekers gain or regain employment, have contributed to a competitive business environment, low structural unemployment and sound public finances. Building on a consensus to sustain these good outcomes, a set of forward-looking reform agreements has been reached in recent years. The *welfare agreement* of 2006 – which was supported by an overwhelming majority in Parliament – will link retirement age to longevity. The *globalisation strategy* of 2006 implies a boost to R&D and higher education and, following tri-party negotiations, unions and employers are now incorporating the financing of life-long learning into the collective wage agreements. Moreover, a new local government structure was established in 2007 which, together with the recent *quality reform* and the *action plan to reduce bureaucracy*, will facilitate efforts to make public services more professional and efficient. By focusing on long-term issues the Danish economy will face, these reforms will allow for gradual adjustments rather than abrupt corrections. This approach and reform momentum should be continued as challenges remain in a number of policy areas. Employment rates are high, particularly for women, but average hours worked is low. Productivity growth halved in the late 1990s partly due to reallocation of resources across sectors and wider inclusion of marginal groups in the labour market. Progress in living standards has slowed, even when considering the parallel terms-of-trade gains.

The sound fiscal position should be sustained: the choice is between employment-oriented reforms or less public funding for services

With current strong fiscal revenues and recent reforms, Denmark is preparing for ageing better than most other OECD countries. As part of the 2006 welfare agreement, all age thresholds for voluntary early retirement and regular pension will move up by two years between 2019 and 2027. Thereafter, retirement age thresholds are to be raised in line with longevity, keeping average life expectancy in retirement at a constant 19½ years. *Adherence to this indexation principle is vital as it forms the backbone of fiscal sustainability: without that,*

current standards in publicly funded services could not be maintained in the context of population ageing. However, even within the framework of the welfare agreement, it will be difficult to meet growing pressure to raise service standards in areas like healthcare simply through additional public spending. Indeed, voluntary early retirement (*efterløn*) will continue as a five-year scheme also after 2019, acting as a drag on the labour supply of older workers at a high cost to public finances. *Thus, meeting growing demand for public services in the long-term will hinge on a mix of further employment enhancing reforms, higher efficiency in service provision and, residually, on adjustments to the balance between public and private roles with respect to funding.*

The targets in the 2015 medium-term fiscal strategy are laudable, but clearer mechanisms are needed to ensure that they are met

In August 2007, a new medium-term fiscal framework was presented by the government: the 2015 Strategy. Starting from fiscal sustainability as the overarching objective, it stipulates a set of targets that will guide fiscal policy. In line with the preceding 2010 Strategy, net lending adjusted for cyclical and other temporary factors should be in surplus by ¾-1¾ per cent of GDP until 2010. From 2011 to 2015, it should at least be in balance. Consequently, a small net asset position will develop while gross debt, measured according to the Maastricht definition, could be reduced to about 15% of GDP in 2015, although this is not an explicit target. The volume of public consumption spending will be allowed to increase, on average, by 1% a year. This implies a slight increase in the share of public consumption spending in cyclically adjusted GDP, although it is required not to exceed 26½ per cent in 2015. Finally, to achieve these targets, the strategy requires actions to counteract the negative demographic impact on working hours and to raise structural unsubsidised employment by 20 000 (0.7%) by 2015. These paths for the structural surplus and net debt imply a reasonable balance between pre-funding and supply-oriented reforms to tackle the fiscal consequences of ageing. The focus on employment-oriented reforms helps to make room for the ambitious – but costly – priorities in Danish social and welfare policies.

The preceding 2010 Strategy has been successful at building consensus for maintaining budget surpluses in good times. The boost to revenues from pension taxation and North Sea oil and gas production in recent years has, to a large extent, been channelled into faster-than-planned debt reduction. This is a remarkable achievement. Meanwhile, the volume of public consumption has grown almost twice as much as envisaged in the original 2010 Strategy, and this tension is set to continue: under the 2015 Strategy, the target for public consumption growth is 1¾ per cent in 2008, but thereafter falls to 1% per year until 2012 and ¾ per cent in 2013-15. *The strength of the consensus-based framework to withstand pressures in difficult times might, therefore, need to be enhanced by clearer mechanisms to ensure that the targets are met. In particular, the expenditure ceiling should be applied each year in the sense that if actual and projected spending indicates that the limit on public consumption spending in 2015 may be breached, action should be taken to redress excess spending up front*. Indeed Danish experience shows that it is extremely difficult to reverse any accumulated excesses in public consumption growth. Strict adherence to the annual spending targets is vital. It will also promote clearer prioritisation of government expenditures. As much of the spending overrun has traditionally occurred in local and regional authorities, these would

need to be better controlled, not least to prevent municipal tax hikes. *Transparency could be improved with more accurate and up-to-date statistics on budget execution coupled with clearer consequences for overspending to break the pattern where aggregate public consumption spending drifts above the annual targets*. If recent labour market reforms do not raise structural employment by as much as assumed, the requirement for new reforms would be commensurately higher. In this context, *it is important thatthe new labour market commission presents specific measures going well beyond the labour supply requirements of the 2015 Strategy.*

The ongoing surpluses change the government's balance sheet

Unless the government has more costly liabilities than government bonds, debt repayment should continue. The fixed exchange rate and closeness to the euro area means that euro-denominated government bonds can substitute for kroner bonds in many roles, such as pricing benchmarks and instruments for managing maturity-related interest risks. But re-entry may be associated with higher interest cost after a period of zero debt issuance. Being an oil producer, Denmark faces large fluctuations in revenue: for example, revenue from North Sea oil and gas production has risen by 1½ percentage point of GDP since 2003. If high oil prices continue, purchases of financial assets may then be required. *It would then be important to have a clear framework for the prudent and efficient management of the assets. The framework should also ensure that the funds are used in a fiscally sustainable way consistent with the 2015 Strategy.*

The economic boom has led to wider labour-market inclusion, but this could be lost if a wage spiral is now set in motion

Following strong economic growth during 2005 and 2006, unemployment reached a 30-year low in mid 2006 and has fallen further since then. Private-sector agreements concluded in early 2007 implied relatively moderate wage growth of 4 to 4.5% a year, but local agreements now have started to react to the labour shortages. GDP growth has slowed recently, but with a large positive output gap, capacity constraints are set to continue. Inflationary pressures are strengthening, and there is a real risk that the achievement of low unemployment could be spoiled in the coming years. Marginal groups, such as immigrants from non-western countries, have benefitted most from the recent strength of the labour market, but to secure a foothold in employment, these groups will need time and stability. It is therefore vital to avoid policies that put the current expansion at risk. *Crucial in this respect is to reach a reasonable settlement during the renewal of public-sector wage agreements in early 2008*. Demands are currently aired for wages to grow considerably faster than in the private sector, but if met, these wage increases might well spill over into an economy-wide wage spiral with increased inflation to follow.

Why has the record low unemployment not generated inflationary pressure until very recently?

These potential risks have to be assessed against changes in the structural rate of unemployment, the NAIRU, and changes in the structure of employment. There is growing

evidence that the NAIRU – the rate of unemployment consistent with a non-accelerating inflation – has fallen in Denmark as a result of a combination of factors: benefit reforms and active labour market policies, including greater efforts to mobilise people outside the labour market; hysteresis, as the length of the expansion provides opportunities for the former unemployed to develop work skills; increased supply of low wage workers from the new EU member states; and possibly more decentralised wage bargaining.

However, the decline in the NAIRU cannot fully explain the wage moderation observed until recently. Indeed, actual unemployment has been below any empirically-based estimate of the NAIRU for a while, and the unemployment gap is currently large. The observed wage moderation at the aggregate level can also be partially explained by significant changes in the industry structure towards sectors with relatively low labour intensity. Indeed, wage settlements have already begun to outrun productivity gains in some sectors, but this has not yet emerged at the aggregate level in part because changes in industry structure have helped to contain the overall development in wages relative to labour productivity. In the absence of further major changes in the industry mix, it is likely that the current very tight labour market conditions will strengthen the upside risks to wages and prices.

Monetary conditions are merely back to neutral…

The moderate inflationary pressures observed until recently probably also reflect the fact that inflation expectations have been firmly anchored at a level in line with the European Central Bank's definition of price stability, thanks to the highly credible fixed exchange rate between the kroner and the euro. Meanwhile, interest rates have often been somewhat out of line with the levels suggested by the cyclical position of the Danish economy. In spite of the short-term interest rate increases during 2006 and early 2007, monetary conditions are likely to remain too expansionary for Denmark in the near future, leaving the necessary adjustments to fiscal and structural policies.

… and with a serious risk of overheating, additional demand stimulus from fiscal policy must be avoided

A soft landing would imply a gradual increase of unemployment towards structural levels with an easing of labour shortages. A less benign scenario would emerge if demand growth is not contained in the short run. In this context, it is unfortunate that fiscal policy is set to be eased in 2008 with clear increases in public consumption and tax cuts that are not financed in the short run. Additional demand stimulus will only add to inflationary pressure, leading to a loss of competitiveness and potentially undermining inflation expectations; a major hike in unemployment going well above structural levels could then follow. With house prices above what interest rates and other fundamental factors would justify, such a development could trigger a harsh correction with forced sales and strong house price falls, suppressing investment and adding to the direct effect of higher unemployment on consumption. In the worst case, this chain of events could lead to a prolonged recession. Tackling this risk is an urgent challenge. *The government's priority initiatives should be offset by savings elsewhere and other measures so that fiscal policy as a whole*

does not stimulate aggregate demand. It is vital to avoid excessive public-sector wage increases and overspending by municipal and regional authorities during the year.

Labour supply should be boosted now– in ways that also help fiscal sustainability

With the recent strength in job growth, actual employment is well above the structural targets envisaged in the 2015 Strategy. However, this cyclical rise will only be sustained if it is supported by measures to increase durably the labour supply and further reduce structural unemployment. The government's recent job plan recognises this, proposing measures to enhance activation as well as measures to reduce reliance on disability and sickness benefits. A number of these measures could be implemented quickly. Others may require more time, for example those aimed at strengthening the capacity of job centres to implement stronger activation requirements. Rather, measures should be pursued in ways that also help the long-run challenge of fiscal sustainability. These include:

- *Focus on job search early in the unemployment spell.* This includes immediate assessment of job readiness and referral to available positions.
- *Refine activation programmes to make them more cost effective.* Ensuring more counselling with job-centre staff and better matching of activation programmes to individual needs should be considered, while putting less time and resources into training which has proven not to be cost effective. In cases where it is cost-effective, compulsory activation could be brought forward to speed up the transition back to employment. Also, training programmes should be structured so that they ensure continued jobs search. Continued evaluation of labour-market programmes is essential given their high cost.
- *Activation programmes should focus more on older workers close to moving into early retirement.* A special focus on such workers in activation policies, as is the case for young people, might reduce unemployment amongst older workers and possibly even reduce the flow into early retirement.
- *Ensure that unemployment benefits support activation.* It is important to have benefits early on so that the unemployed can spend time on job search. At the same time, it is important that if the unemployment spell is prolonged, eligibility to benefits becomes gradually tighter with requirements to search for jobs in other areas or to consider changing profession. In particular, for full-time unemployment benefit recipients who had low income and so face a very high replacement rate (up to 90%) for four years, the incentives to consider moving to another part of the country for work are quite limited, since such a move would leave the person with less disposable income than if they stayed unemployed where they are. Reducing the unemployment benefit replacement rate during the period of unemployment should be considered, as has recently been introduced in Sweden. In addition, shortening the duration of part-time unemployment benefits would help promote search for full-time work.

Policies to promote immigration of workers, which is also a focus of the government's job plan, should contribute to easing the current labour shortages. However, Denmark does not have a good track record of integrating immigrants, especially from non-western countries, into the labour market. The gap between the employment rates of native born and foreign born individuals is the largest in the OECD, partly reflecting immigrant characteristics, including their country of origin. Weak integration and the redistributive features of taxes,

benefits and publicly funded services imply that low-skilled immigration does not generally improve fiscal sustainability. High-skilled workers may also be discouraged from staying for long in Denmark by the high income tax rates. Accompanying reforms would therefore be needed to ensure also long term benefits from higher migration flows, including policies to encourage high skilled immigrants to stay in Denmark and policies to enhance the skills and employment prospects of low skilled immigrants.

Tax reforms to promote labour and skill supply should continue

Having one of the highest tax-to-GDP ratios among OECD countries makes it very important for Denmark to constantly consider how to refine the tax structure in order to reduce distortions to the supply and allocation of production factors, not least labour. Indeed, the co-existence of high employment rates and low average hours worked also reflects the income tax schedule as labour market contributions, income and consumption taxes combine to create a marginal tax wedge of over 70% from just above average full time earnings. In 2008, the in-work tax credit will be enlarged but, to compensate those not working, there will also be a one-off increase in the level of all income benefits, attenuating the incentive effect of the larger in-work tax credit. *To strengthen employment incentives, the in-work tax credit should rather be combined with benefit reductions, as done in Sweden*. In 2009, the threshold from where the middle tax is paid will be moved up to be exactly the same as for the top tax, thus improving work incentives for a fifth of the labour force.

Meanwhile, the 15% top tax, which generates a 70% marginal tax wedge for four out of ten full-time employed, has not been cut despite bringing only modest revenue worth 1% of GDP. Estimates of dynamic effects from cutting the highest marginal tax wedge indicate that the rise in the tax base from a less distorted choice of hours worked at the margin would bring back over half of the initial revenue loss. The degree of self-financing could in fact be even higher in the long run when considering the full range of dynamic gains in terms of greater effort, better skill formation, young people starting studies and work earlier, less difficulty in attracting and retaining talented staff from abroad, less do-it-yourself activity, less artificial fringe benefits and the associated possibilities for making capital taxation more neutral. Consequently, if focused on bringing down the high marginal rates, then a financed tax reform is capable of enhancing individual economic welfare, by reducing distortions, as well as contributing to fiscal sustainability and thereby helping to finance public consumption growth in the long run. Given the uncertainty about the size and timing of the dynamic gains, a prudent approach to financing should be adopted. *Reducing the high top marginal income tax rate or, as a second-best option, raising the threshold from where it is paid should therefore have priority – but unless cuts are fully financed also in the short run, then it should wait until the risk of macroeconomic overheating has subsided*.

Danes live longer now, but lifestyle remains the key to progress in longevity and health status

Life expectancy, while relatively low from an international perspective, has been improving in recent years and the gap with the other Nordic countries had narrowed to 2½ years for women and 2 years for men in 2005. Still, cancers result in premature deaths more often than in other countries, and this could partly reflect previous inadequacies in healthcare

attention or quality. The government's increased focus on earlier diagnosis and access to treatment, notably for cancer, is therefore welcome. However, having a healthy lifestyle is the key determinant of longevity, and the coming prevention strategy should therefore be welcomed: the stated objective it to raise average life expectancy by three years over a ten-year period. With half of the adult population smoking on a daily basis back in 1980, Denmark was a clear outlier, but now the share has come down to a quarter, just marginally above the OECD average. Meanwhile, obesity is rising, as in other countries, and excessive alcohol consumption, notably among youth, remains problematic. *The government's increased focus on nutrition and physical exercise is therefore well chosen, but promoting moderate and sensible use of alcohol should also be a priority for public health policy.*

Who should pay for growing healthcare costs?

At close to 8% of GDP, Danish public spending on health and long-term care is only surpassed by France, Iceland and Germany. Indeed, public consumption growth has given healthcare particular priority with the number of physicians employed in public hospitals rising almost 3% annually over the past five years. Nevertheless, as private spending is rather limited, total healthcare spending is close to the OECD average and well below that in the United States or Switzerland. Looking ahead, continued technological advances enlarging the range of effective treatments might intensify spending pressures. *Consequently, public funding must be prioritized for where it is most needed.*

For costly healthcare needs that arrive unpredictably, there is a clear case for insurance, and the Danish model with tax-financed healthcare may be a relatively well-functioning and simple solution. In this light, the structure of co-payments for Danish healthcare is understandable: it mainly applies to pharmaceuticals, dentists and some treatments, such as physiotherapy. Yet, the share of private spending has fallen in recent years. *Consideration could be given to co-payments for general practitioner visits, as exist in other Nordic countries. Annual ceilings, as currently used for pharmaceutical co-payments would maintain equal access and avoid disadvantaging chronically ill and low-income groups.* The hardest element to justify from a social insurance perspective, however, is that a quarter of the population aged 65 or over receives publicly funded long-term care, including help with practical tasks like housekeeping for a few hours a week. Norway is the only other OECD country coming close to having such wide coverage. Sweden offers long-term care to considerably fewer older persons – but the presumption of informal care obligations does not prevent 45-64 year old Swedish women from having considerably higher employment rates than their Danish peers. *Targeting public funding for practical home help to cases with substantial needs would free considerable resources without undermining equity considerations. It would be a less complicated alternative than having to move part of the funding for core healthcare services over to private insurance or develop individual health savings accounts.The rapid expansion of employer-paid private health insurance should therefore not be favoured with complete exemption from income taxation.* Funding diversity helps nurture innovation in healthcare provision, but the tax exemption may create incentives to cover a wide array of wellness services for which insurance is not needed, thereby magnifying the loss of tax revenue.

More efficient healthcare provision is vital

Following a doubling of the student numbers admitted to medical school in the 1990s, the number of graduates has risen to 4% of the physician workforce in 2005. This is relatively high in international comparison, implying that the physician workforce is set to grow along a path above what can be expected for most other OECD countries. For nurses, current shortages and growing demand could be eased if more worked full time, as currently 6 out 10 work part time. There is also scope for reallocation of tasks among health professions to improve efficiency, technology adoption and accommodate staff shortages.

Increased use of activity-based funding mechanisms appears to be a key factor behind strong productivity improvements in hospitals. Indeed, the ample spending growth of recent years has been more than matched by increased treatment activity. Waiting times have shortened by 6 weeks (20%) from 2002 to 2006. *Activity-based funding can still be refined, but the strength of incentives might be maintained broadly as it is today. Meanwhile, the role of private-sector healthcare providers could be expanded via both contracting and choice to ensure contestability and spur innovation*. Choice in home care introduced five years ago has successfully created contestability *vis-à-vis* public agencies, even though the effect is still limited in areas where the market share held by private providers is small. *Finally, public health sector pay schemes might be developed more in line with the private sector with elements of team-level and individual pay flexibility to make it easier to nurture skill development and effort.*

Could the system be made more attentive to those health problems that matter for the ability to stay on the labour market?

Wide labour-market participation is necessary for fiscal sustainability and thereby for good-quality healthcare to continue to be affordable for society. The healthcare system itself has a role to play here, by helping people with health problems maintaining, if possible, a foothold in the labour market. From 2001 to 2007, the share of 15-64 year olds receiving some form of sickness or disability-related income benefit increased from 9.6% to 11.2%. Meanwhile health care provision has grown mainly for persons aged 65 or older. Better coordination between the health and employment services could help to address, early on, health problems that are part of the complex set of factors that can lead to prolonged detachment from the labour market. Several measures could be taken:

- *Establish a national strategy to identify and prioritize the preventive and curative measures that will help maintain labour market attachment. Give the new coordination committees, involving all municipalities within each regional authority, a clear responsibility for the cooperation between healthcare providers and municipal job centres administering benefits and activation for persons with sickness or disability.*
- *Adjust funding incentives to advance these priorities: municipalities could carry more of the costs for benefits and flexjob subsidies, combined with clearer instruments to guide the availability of vocational healthcare services.*
- *Develop the use of models – like the so-called round table for dialogue between the employer, job-centre caseworkers, physicians and the employee – to ensure early action when sickness absence reaches a duration that implies the risk of drifting into long-term absence and loss of labour*

market attachment. Consider differentiated employer co-financing of sickness benefits depending on participation in roundtables or similar dialogue.

Part of the sickness- and disability-related benefits would also need adjustment to make sure that it pays to remain in, or return to, unsubsidised employment. This concerns, in particular, the flexjob scheme where the public subsidy currently offers complete coverage of the income loss associated with reduced work capacity. Consequently, employers, as well as the persons concerned, have a clear incentive to seek a flexjob, rather than taking another job that might be easier to manage but pays less. As health conditions are sometimes hard to assess objectively, *some element of self-insurance might be warranted to prevent overuse of the scheme: the salary under a flexjob should be lower than for a normal unsubsidised job.* For example, flexjobs could pay a wage for the hours worked and an unemployment benefit for the hours not worked. In general, the maximum flexjob wage subsidy should be scaled down further to be equal to, or less than, the disability benefits.

The occupational pension system is maturing…

The occupational pension framework reached wide coverage in the early 1990s. Building on agreements between unions and employers, the system aims at supplementing the public pension. Contribution rates have now reached their initially intended levels, so it is a natural time to take stock and assess the system and its outcomes. Combined with the basic and income tested elements of the public pension, the occupational framework has generated pension assets, replacement rates and wealth projections that are now amongst the highest in the OECD. The overall pension system is comprehensive and almost unique in achieving high levels of private pension provision without much legal compulsion. However, people who are marginally attached to the labour market are at risk of missing out on these gains. *The best solution to this problem might be found in labour market policies to increase employment amongst these groups.* At the same time, low income workers with strong attachment to the labour market may end up with more income in retirement than they do from work. *As such, there is a case for reducing the amount of special concessions and non-pension benefits for seniors. There may also be scope to consider increased choice and flexibility in a range of dimensions of the pension system, notably for the profile of pension contributions and the extent of insurance coverage.*

… but taxation of capital income outside pensions needs attention

There are significant differences between the taxes levied on different types of capital income, with pension fund income taxed much more lightly than income from assets held outside the pension system. Also, the combination of pension tax concessions and generous tax deductibility of interest expenditure may nurture tax planning, for example through the use of new flexible mortgage products. *Reducing the tax rates on capital income outside the pension system, as well as the tax value of negative capital income, would effectively reduce the tax concession towards pensions and at the same time reduce incentives for tax planning.*

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Chapter 1

Key challenges for the Danish economy

The Danish economy has come to a pivotal point. A lot has been achieved over the past 25 years thanks to stability-oriented macroeconomic policies and gradual forward-looking reforms. Following rapid debt reduction, public finances are better prepared for population ageing than in most OECD countries. Moreover, the flexible labour market, combined with active support for those losing jobs, makes a good starting point to benefit from globalisation. Yet, economic stability could be at risk now: unsustainable wage increases could undermine the stability of inflation expectations, and thus the current boom could end in a major hike in unemployment going well above structural equilibrium levels. A strong correction could then be triggered in the housing market and could lead to a recession which might be prolonged. This chapter starts with the urgent challenge of avoiding overheating and the requirements for fiscal policy. Thereafter, it assesses the economy from a structural perspective and indentifies the key challenges in the short- and medium-term.

At first glance, the Danish economy is doing extremely well: strong growth, record-low unemployment and the largest fiscal surpluses in the European Union. Part of this is the result of gradual reforms that have helped to expand the economy's supply potential, but much is also due to very strong demand following a housing boom, fiscal stimulus, and high asset and oil prices, which have bolstered public finances with temporary revenues. Since mid 2006, GDP growth has eased to around its potential rate, but a large positive output gap of about 1½ per cent of GDP remains with strong capacity pressures and labour shortages. The previous *Survey* identified macroeconomic overheating as a potential risk (OECD, 2006a). Since then, it has become an urgent issue – and avoiding overheating is probably the most acute challenge for economic policy right now. In addition, a number of key challenges of a more structural nature should be addressed:

- The rapid debt reduction, achieved during recent years, must not be spoiled. It is vital to adhere to the targets in the revised medium-term fiscal strategy (Chapter 2).
- The current strong labour shortages provide further ground for reforms to bring marginal groups into employment (Chapter 3), and once the risk of overheating recedes, the high marginal taxes should be cut (Chapter 4). That would also strengthen the capacity to benefit from globalisation.
- Meeting expectations for rapidly rising standards in publicly funded services without compromising fiscal sustainability will also be a challenge. In particular for healthcare, where new medical technologies and ageing are major cost drivers, this will require careful balancing of public *versus* private funding, ongoing efforts to raise efficiency and attention to how the health system can help prevent labour market exclusion (Chapter 5).
- The occupational pension system has passed a major milestone, as contribution rates set in collective employment agreements have now reached the original objective. Meanwhile, capital taxation needs attention (Chapter 6).

The risk of overheating requires urgent attention

Following gradually increasing interest rates, the house-price boom has come to an end, and mortgages weigh on disposable income. Private consumption growth has weakened, and residential construction has stopped growing. Consumer confidence has taken a step down, but remains above its historical average. Meanwhile, export demand has continued with unabated strength; orders are coming in at a rising rate but, with intensifying capacity utilisation and labour shortages, actual export volumes have grown at a moderate pace recently. For some professions – public as well as private – the number of vacancies exceeds the number of unemployed. Consumer price inflation dipped temporarily to just 1% in mid 2007, but then rose rapidly to over 2% at the end of the year. Moreover, domestically generated inflation is on the rise and, since the second quarter of 2007, wage growth has picked up.

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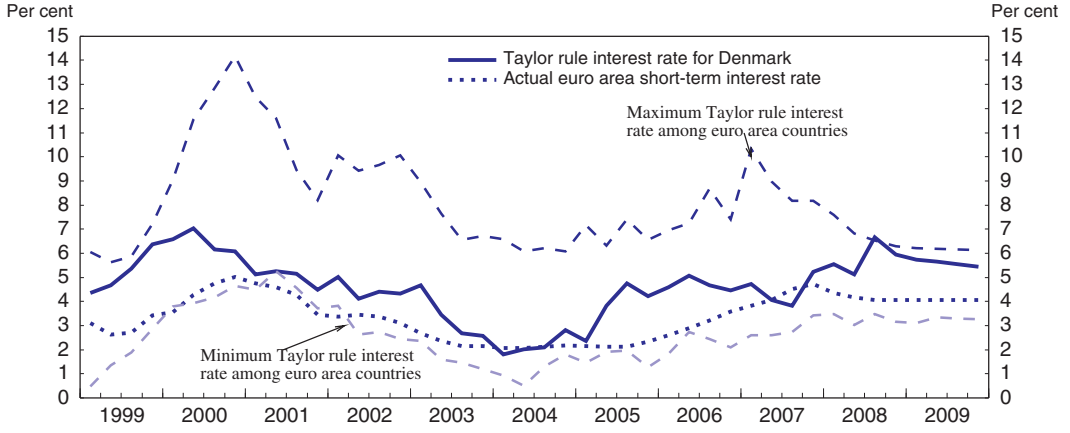
Monetary conditions have driven the housing market

Monetary conditions are now back to neutral. With a fixed exchange rate *vis-à-vis* the euro, the Danish central bank mimics all movements in the European Central Bank's policy rates. Thus, short-term interest rates increased gradually during 2006 and until autumn 2007. Most recently they stabilised reflecting the reaction to global financial-market turmoil. This helps to contain demand: analysis presented in the previous *Survey* indicated that a one percentage point rise in short-term interest rates lowers the GDP level by about 0.4% with more than half of this effect materialising within a couple of quarters. These monetary transmission mechanisms appear to have strengthened relative to some decades ago, possibly due to changes in mortgage markets (Annex 1.A3 in OECD, 2006a). However, interest rates are likely to be well below what a simple Taylor rule would indicate as optimal for the Danish economy throughout 2008-09 (Figure 1.1).[1] Appreciation of the euro and thereby the Danish *krone vis-à-vis* the dollar helps to soften total demand, but with neighbouring markets playing a dominant role in Danish exports, the effective appreciation of the Danish *krone* has merely been about 1-2% a year during 2006 and 2007. Thus, monetary conditions, *i.e.* interest rates and exchange rates combined, are merely back to neutral.

Figure 1.1. **Taylor rule interest rates for Denmark and euro area countries**[1]



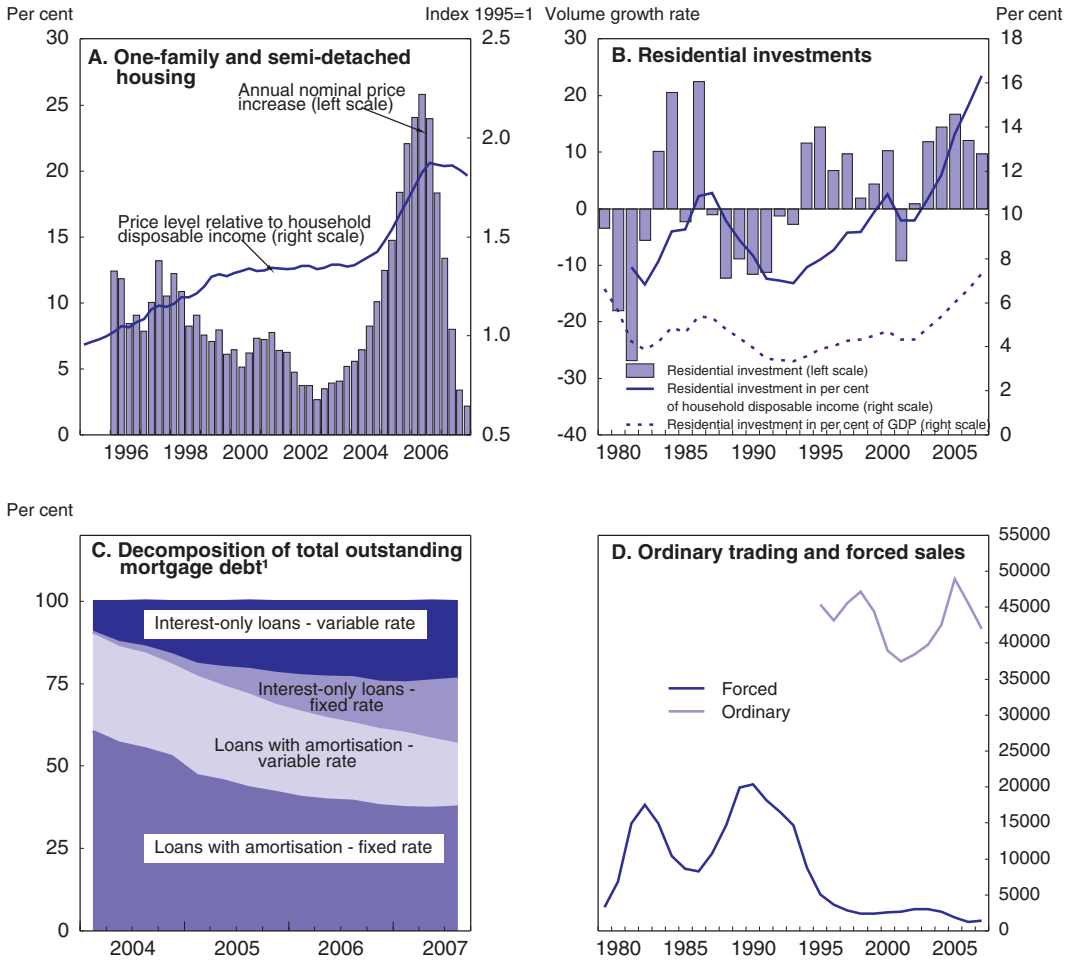
StatLink http://dx.doi.org/10.1787/262745262813

1. The Taylor rule interest rate is calculated as: i = 2 + inflation + 0.5 * output gap + 0.5 * (inflation – 1.9).

Source: OECD calculations based on *OECD Economic Outlook No. 82 Database* updated with 2007Q4 inflation outcomes.

Developments in the housing market are a mirror of the interest rate movements. National average house prices were constant in nominal terms from the second to the third quarter and again to the fourth quarter of 2007, thereby putting an end to the spectacular boom where annual price increases peaked at 26% in spring 2006 (Figure 1.2). However, the adjustment that often follows such episodes has, so far, not materialised. Forced sales became more frequent during the first half of 2007, but then stabilised during the second half of the year at less than a tenth of what they were in the downturn of the late 1980s. Apparently, banks have maintained more cautious lending standards during the current boom. Another reason might be that the rapid rise in interest-only loans keeps stretched households liquid. Unlike in the United States, the recent financial turmoil has had only limited implications as mortgage banks keep loans on their books, financing them with bonds having the same coupon and maturity as the loans, implying no need to refinance

Figure 1.2. **House prices and mortgage debt**



StatLink http://dx.doi.org/10.1787/262772384878

1. Interest-only loans were first introduced on the Danish mortgage market in autumn 2003.

Source: *OECD Economic Outlook No. 82 Database*, Statistics Denmark and Association of Danish Mortgage Banks.

via the interbank market (Danske Bank, 2007). Nevertheless, with the level of prices being above what interest rates and other fundamental factors would justify, risks remain.

The end of the house-price surge should soon lead to a downward correction in construction activity. Residential investment expanded at double-digit rates during 2003-06, and reached a GDP share above 7% in 2007 – well above its 1966-2006 average of 5¾ per cent. On the back of the nominal housing tax freeze, introduced in 2001-02, and mortgage liberalisation, introduced in 2003-04, demand for housing has, no doubt, risen. Thus, residential investment has expanded more than recent years' low interest rates would suggest it should, based on historical relationships. Buoyant construction activity should be expected to continue until the housing stock has grown sufficiently to satisfy demand. Thereafter, construction activity should be expected to contract while it returns to a more normal GDP share, as argued in the recent OECD *Economic Outlook* (OECD, 2007a). Such a turning point might be nearing as the numbers of new permits and construction starts are dwindling.[2]

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The labour market is heating up

Notwithstanding the situation on the housing market and the slowing of GDP, employers have recruited additional staff at a rapid pace. Employment surged by 2½ per cent during the year to the third quarter of 2007. Unemployment reached a 30-year low in mid 2006 and it has continued falling. Still, less than half of the employment increase can be attributed to lower unemployment. Registered unemployment has fallen steadily by about one percentage point annually, from a peak of 6.9% in the month of December 2003 to yet another record low of 2.7% in December 2007. Meanwhile, the labour force survey unemployment has only declined by 2 percentage points from its peak of 5½ per cent in 2004. The gap between registered and labour force survey unemployment possibly reflects that persons outside the labour force have intensified their search activity in response to the rise in job offers. Indeed, the net flow into employment from social assistance and labour-market training programmes has been equal to almost 1% of the workforce during the year to October 2007. Immigrants coming to work in Denmark and cross-border workers may have expanded the workforce by a similar magnitude – much more than in previous cycles.

Meanwhile, with employment growing much faster than output, productivity has fallen. In the second quarter of 2007, unit labour costs were 5.3% and 5.1% higher than one year earlier in industry and services, respectively. Compared to just 0.4% and 3.4% for the OECD area as a whole, it is clear that Danish exports are becoming less competitive. During 2007, this has been exacerbated by the 2% appreciation of Denmark's effective nominal exchange rate, reflecting not least the 20% fall in the dollar *vis-à-vis* the euro during the year.

Short-term outlook

After having been ahead of other countries in the European recovery, growth is now expected to stay below that in neighbouring countries and the euro area, throughout the forecast horizon (Table 1.1). The composition of growth will reflect how sheltered or exposed various components are *vis-à-vis* the tense capacity constraints and the ongoing loss of competitiveness.

- Private consumption weakened temporarily after the house price surge ended in mid 2006, but the strong labour market seems now to have boosted household disposable income sufficiently for consumption to regain momentum, with the savings ratio being back at its long-run average.[3] Car sales, which is a reliable leading indicator, have picked up strongly in the autumn of 2007, rising at a double-digit annual rate. This would indicate that private consumption is set to be a stable demand component throughout the forecast horizon, growing slightly faster than GDP.
- As discussed above, a fall in housing construction is, perhaps, the most predictable element in the short-term outlook. Business investment should also soften: capacity utilisation remains elevated in manufacturing, but business confidence has come down and stabilised around historical averages.
- While physical capacity constraints have forced firms to reject export orders during recent years, it should be expected that rising cost pressures will hamper competitiveness, dent export demand and lead to a pronounced loss of export market share. Meanwhile, the gradual weakening of domestic demand limits the negative contribution from net exports.

Table 1.1. **Short-term economic outlook for Denmark**

OECD Economic Outlook as published 6 December 2007[1]

	2004	2005	2006	2007	2008	2009	08Q4	09Q4
		Percentage change from previous year, volume (2000 prices)						
Private consumption	708.5	4.2	3.1	1.9	1.7	1.5	1.5	1.5
Government consumption	388.5	1.1	1.5	1.9	2.2	1.4	2.0	1.2
Gross fixed capital formation	283.5	9.6	12.9	5.0	2.3	1.1	2.0	0.8
Private residential	78.4	16.7	12.0	9.6	–1.0	–4.3	–2.5	–5.2
Business and other private non-residential	179.3	7.5	13.3	5.3	3.9	3.0	3.9	2.8
Public	25.8	3.0	13.1	–13.0	3.1	7.8	5.5	9.3
Final domestic demand	1 380.4	4.4	4.8	2.6	2.0	1.4	1.8	1.3
Stockbuilding[2]	7.0	–0.1	0.4	0.2	0.0	0.0	0.0	0.0
Total domestic demand	1 387.4	4.3	5.2	2.8	2.0	1.4	1.7	1.2
Exports of goods and services	667.3	7.2	10.1	3.2	4.7	3.9	4.3	3.6
Imports of goods and services	595.4	10.7	14.4	4.7	5.4	5.1	5.5	4.9
Net exports[2]	72.0	–1.0	–1.4	–0.6	–0.3	–0.5	–0.5	–0.6
GDP at market prices	1 459.4	3.1	3.5	2.0	1.7	0.8	1.2	0.6
GDP deflator		3.2	2.2	2.0	3.0	2.9	3.1	2.8
Memorandum items								
Output gap		0.1	1.6	1.7	1.6	1.0	1.4	0.7
Unemployment rate[3]		4.8	3.9	3.5	3.4	3.6	3.5	3.6
Unemployment gap[3]		–0.2	0.6	0.9	1.0	0.7	0.9	0.6
Total employment	2 747	0.7	2.0	2.4	0.0	–0.7	–0.4	–0.8
Average hours worked	1 558.0	1.0	0.7	0.2	–0.1	–0.1	–0.1	–0.1
Consumer price index		1.8	1.9	1.6	2.4	2.7	2.8	2.7
Wage rate in the private sector[4]		3.3	3.3	4.0	4.6	4.5	4.7	4.4
Household saving ratio[5]		–2.5	–0.2	3.2	3.9	4.4	4.1	4.6
General government financial balance[6]		4.6	4.7	4.8	3.8	3.0	3.5	2.7
Current account balance[6]		3.8	2.4	1.2	1.0	0.7	0.8	0.6
Export market growth		7.2	8.9	5.7	6.7	6.8	6.8	6.8
Export market share		0.1	1.1	–2.4	–1.9	–2.7	–2.3	–3.0
GDP at market prices in major export markets								
Euro area (44% of Danish exports)		1.6	2.9	2.6	1.9	2.0	1.9	2.0
Germany (17% of Danish exports)		1.0	3.1	2.7	1.8	1.6	1.6	1.7
Sweden (13% of Danish exports)		2.9	4.5	3.4	3.2	2.6	2.8	2.5
United Kingdom (9% of Danish exports)		1.8	2.9	3.1	2.0	2.4	1.7	2.9
USA (7% of Danish exports)		3.1	2.9	2.2	2.0	2.2	1.6	2.6

Note: National accounts are based on official chain-linked data. This introduces a discrepancy in the identity between real demand components and GDP. For further details see *OECD Economic Outlook*, Sources and Methods *(www.oecd.org/eco/sources-and-methods)*.

1. The *OECD Economic Outlook*, No. 82, is based on information available up until 21 November, before the third quarter 2007 and revised historical data were released on 28 November. This affects the assessment for the year of 2007, but not the fourth-quarter figures in the two columns to the right.
2. Contributions to changes in real GDP (percentage of real GDP in previous year), actual amount in the first column.
3. Based on the Labour Force Survey, differing by +/–½ a percentage point from the registered unemployment rate.
4. Wage per person employed in the private sector, *i.e.* combining changes in hourly pay and average hours worked.
5. As a percentage of disposable income, net of household consumption of fixed capital.
6. As a percentage of GDP.

Source: OECD Economic Outlook No. 82 Database and Statistics Denmark.

How strong will overheating become and how should economic policy respond?

Despite slowing GDP growth, a large positive output gap is set to remain and inflationary tendencies might soon strengthen. The strong reaction of construction-sector wages seen in the housing boom of the mid 1980s has not materialised this time. This may well reflect that the private sector is now more exposed to international competition,

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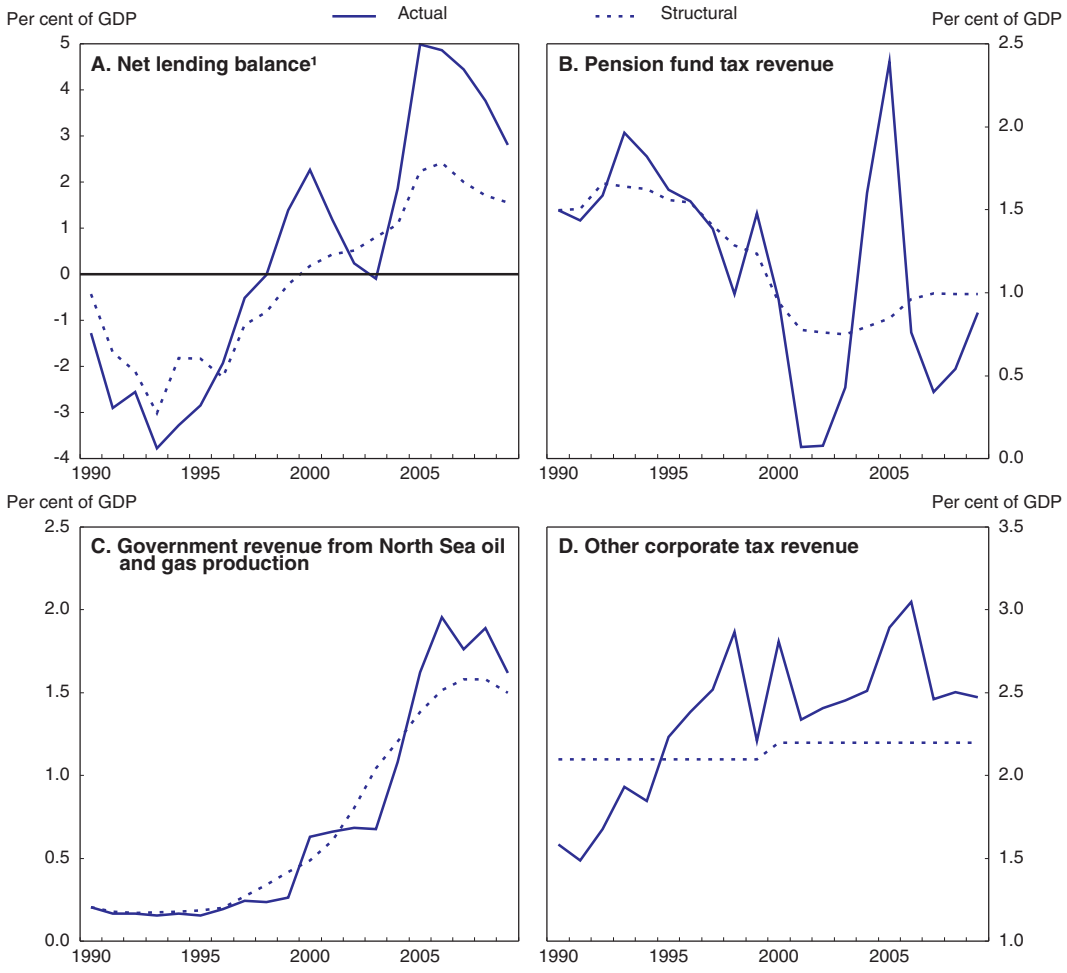
including migration of construction workers from the new EU member states. In combination with other factors, this has reduced the structural unemployment rate. However, overheating may come via the public sector where wage agreements are due for renewal in early 2008. If anything like the very high demands currently aired were to be met, they could well fuel local wage growth and further loss of competitiveness in the private sector, where collective agreements recently signed otherwise imply hourly wage increases of 4 to 4½ per cent. In this way, a general wage spiral could be initiated. So far, the fixed exchange rate regime, and its high degree of credibility, has firmly anchored inflation expectations at a level in line with the ECB's definition of price stability. Moreover, the cheap imports reflecting the weak dollar, have kept consumer price inflation at low levels until late in 2007. The rising oil and raw material prices have to some extent been absorbed in corporate profits, but this cannot be expected to continue. The combination of these factors could unsettle inflation expectations and entail genuine macroeconomic overheating.

With the fixed exchange-rate regime, Denmark is in the same situation as euro area countries in the sense that monetary policy cannot be used independently to stabilise the economy. Therefore, fiscal policy needs to be conducted with attention to its effect on aggregate demand. As a minimum, the automatic stabilisers should be allowed to work. Ideally, discretionary fiscal measures should also lean against the wind and help stabilise demand when fluctuations lead to large positive or negative output gaps. However, policies have not been playing quite this role recently; discretionary fiscal policy is effectively pro-cyclical. According to the government's own estimates, fiscal stimulus is set to add as much as 0.3 percentage points to GDP growth in 2008 (Ministry of Finance, 2007a). Other estimates suggest that fiscal stimulus may be even higher, adding 0.5 percentage points to growth in 2008 and 0.3 percentage points in 2009 (Economic Council, 2007). These numbers result from aggregating the estimated effect of each component of the budget, while taking into account differences in the fiscal multipliers for the various spending and revenue components. Both the Ministry of Finance and the Economic Council estimate that two thirds of the stimulus is due to the unusually strong growth in public consumption and one third is due to the income tax cuts being introduced in 2008-09. Indeed, the recent strength of fiscal revenues is largely cyclical, not least due to accrual taxation of capital gains in pension funds and revenues from North Sea oil and gas production (Figure 1.3).

It is unusual that fiscal policy in Denmark does not play a more stabilising role. During the boom of the 1990s, fiscal policy intervened well before the output gap had reached its current magnitude: early and gradual tightening during 1996-97, and the Whitsun package from 1998 played a crucial role by softening aggregate demand and thereby avoiding overheating. This approach prolonged the economic expansion and laid a fertile ground for gradual structural reforms to be met by steady demand turning increased labour supply into increased employment. The risk is that lack of caution with fiscal policy leads to overheating and an early end to the economic expansion, with the labour shortages dissipating before supply reforms have had time to work. The current strong labour shortages provide a great opportunity to pursue further reforms to help those at the margin of the labour market. However, to gain a solid foothold in employment, they will need time.

A soft landing would imply a gradual increase of unemployment towards structural levels with an easing of labour shortages. A less benign scenario would emerge if demand growth is not contained in the short run. Unsustainable wage increases, undermined

Figure 1.3. **Actual *versus* structural fiscal balance and revenue**



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1. The structural fiscal balance is here adjusted for the Special Pension contribution (SP) which was introduced in 1998, but suspended 2004-08.

Source: Ministry of Finance (2008), Økonomisk Redegørelse, February.

inflation expectations and loss of competitiveness, could in the end lead to a major hike in unemployment going well above structural equilibrium levels before inflation expectations are brought back down. With house prices above what interest rates and other fundamental factors would justify, such a development could trigger a harsh correction with forced sales and strong house price falls, suppressing investment and adding to the direct effect of higher unemployment on consumption. In the worst case, this chain of events could lead to a prolonged recession. Much would then depend on how the foreign labour supply reacts: either staying in Denmark or moving to other countries, and thereby cushioning the rise in unemployment.

A structural assessment of the Danish economy

Abstracting from the risk of overheating, the structural features of the Danish economy are relatively sound. This situation reflects a gradual but forward-looking reform approach focused at reaping the benefits of open and flexible markets, accompanied by

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actively enabling and helping those made redundant to find new employment. The most striking – but internationally less known – feature is the century-old and deep commitment to free trade. OECD indicators consistently show that Denmark is more comparable to the English-speaking countries than to continental European countries with respect to trade- and competition-friendly regulation in markets for goods and services (Conway *et al.*, 2005 and 2006). Moreover, market efficiency is supported by a high degree of transparency in business dealings and government affairs (TI, 2007) and, unlike other Nordic countries, Denmark never had large-scale public ownership in the business sector (Paldam and Christoffersen, 2006). Combined with a well-trained labour force, and institutions focused at actively moving benefit recipients into work, Denmark has the right policy settings to allow all parts of society to gain from globalisation. Ongoing reforms, notably the government's Globalisation Strategy and the broad Welfare Agreement from 2006, will reinforce these strengths (Government, 2006a, 2006b and 2007a). Thus, the analysis and policy recommendations given in this *Survey* are not about radical changes to deal with deep flaws in the Danish economy, but about building on its existing strengths. With high social ambitions and strong public demands for expansion of publicly funded services, there is little room for complacency. The level of GDP per capita is high compared to most other Nordic and European countries. Nevertheless, the 15-20% gap in GDP per capita *vis-à-vis* the United States has remained constant since the 1970s; it reflects lower labour utilisation as well as lower productivity, indicating scope for improvement in both of these domains (Figure 1.4).

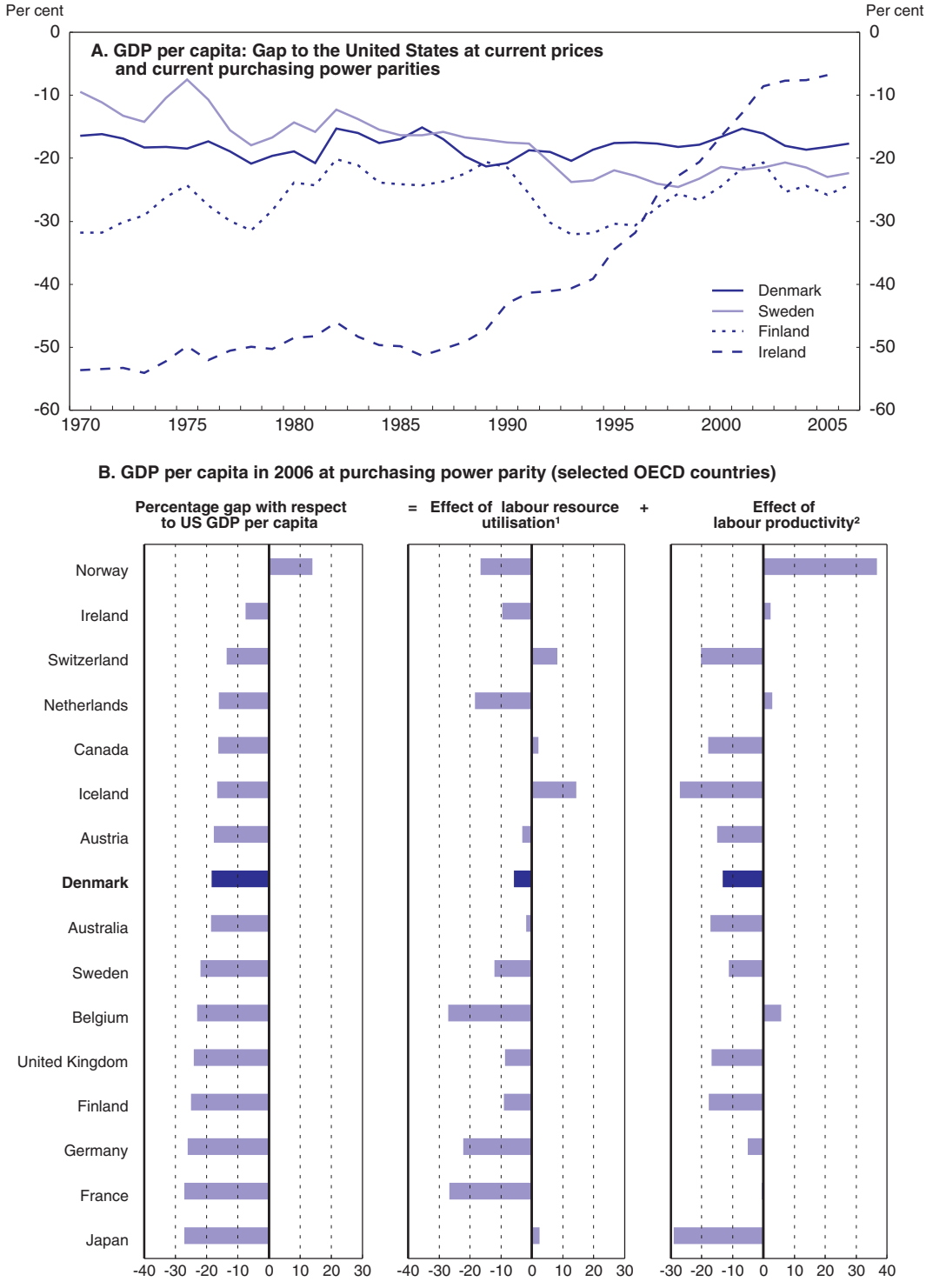
Employment rates and hours worked

Employment rates are high, but the average number of hours worked annually by each person employed is low. Labour supply, measured as total hours worked by the working-age population, is therefore close to the OECD average (Figure 1.5). Most of the difference in the aggregate employment-to-population ratio is explained by higher participation of prime-age women (30-59 year olds). Women below 30 are often out of work for good reasons as they are studying. For women above 60, the cultural preference for female labour market participation is completely offset by a stronger tendency to early retirement. Meanwhile, average hours worked are well below the OECD average due to both shorter weekly hours and longer holidays and other leave. Employment and also, to some extent, average hours have risen in the most recent years, but this largely reflects the cyclical upturn. In this context, the 2005 situation shown in the figure gives a better picture of the structural position.

Productivity

Productivity growth has been slow over the past 10-15 years. Back in the late 1960s and early 1970s, GDP per hour worked grew around 5% a year. Productivity growth then slowed down following the first oil crisis. In the 1980s and until the mid 1990s, GDP per hour worked grew around 2½ per cent a year. The remarkable thing, however, is that a new slowdown occurred in the late 1990s, with GDP per hour worked having grown at a mere 1% annually since then (Figure 1.6). Meanwhile, the composition of exports and imports means that the terms of trade have improved steadily year after year since the mid 1980s, as analysed in the previous *Survey* (OECD, 2006a). The volume of goods and services that national income can buy for consumption and investment thereby grows more than the volume of goods and services produced. But even if considering a terms-of-trade adjusted

Figure 1.4. **GDP per capita and why it differs across countries**



StatLink http://dx.doi.org/10.1787/262803324185

1. Labour resource utilisation is measured as total number of hours worked *per capita*.
2. Labour productivity is measured as GDP per hour worked.

Source: OECD Productivity Database, December 2007, *OECD SNA Database*.

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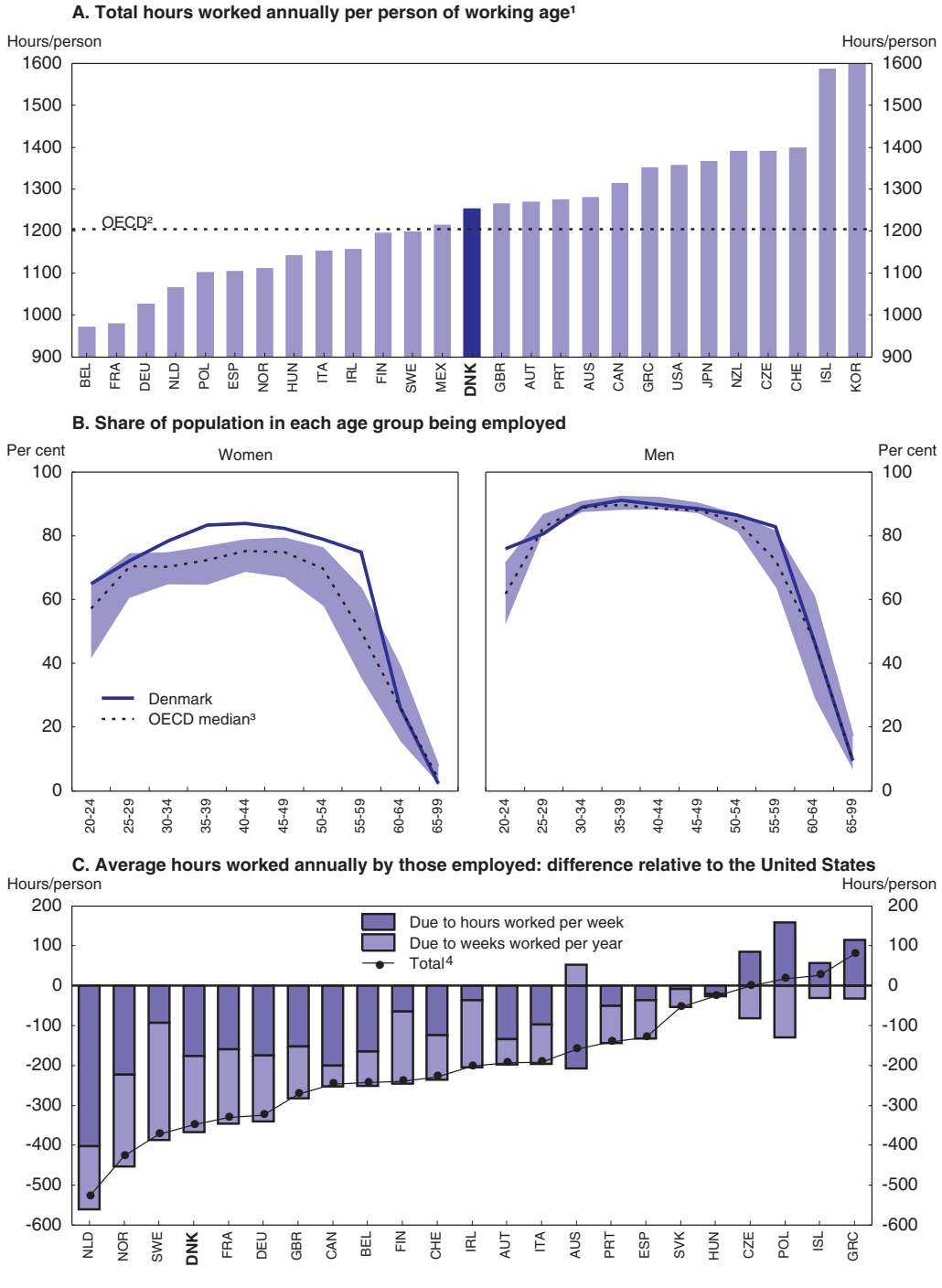
Figure 1.5. **Total labour supply is around average**

2005



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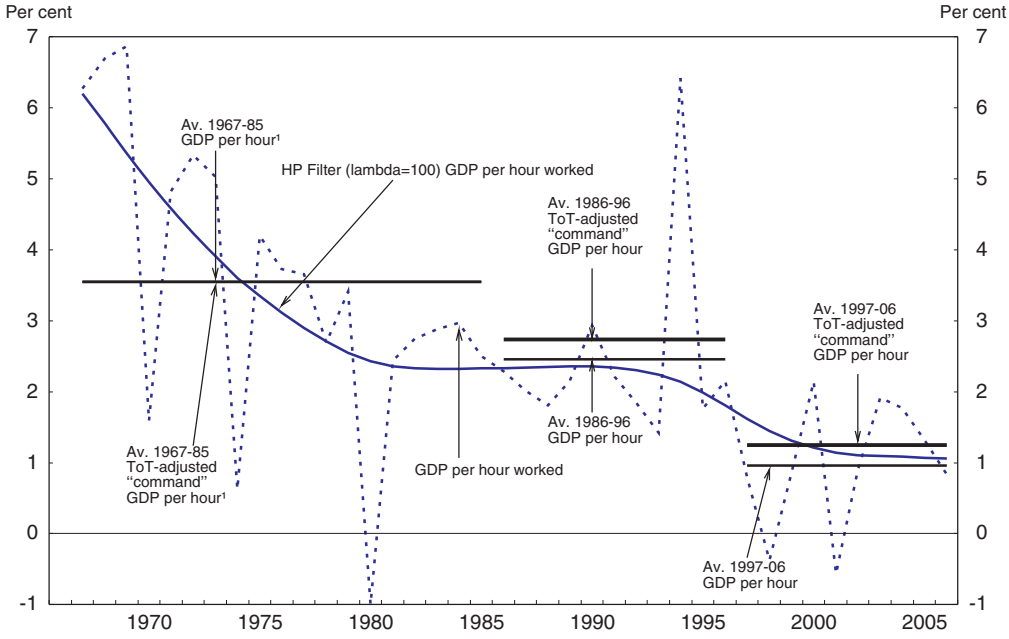
1. National statistics do not use the same age intervals for working-age population in all countries. For consistency, the data shown here are total hours worked relative to size of the population aged 15-64.
2. Considering the OECD as whole, but excluding Turkey.
3. The shaded area shows the range of the two central quartiles (*i.e.* half of the countries fall in this range).
4. Because of interaction between deviations in hours worked per week and weeks worked per year, the total deviation in hours worked per year *vis-à-vis* the United States is different from the sum of the two components.

Source: OECD Economic Outlook No. 82 Database; *OECD Productivity Database*; OECD *Labour Force Statistics Database*; Burniaux (2008).

Figure 1.6. **Productivity growth 1966-2006**
Whole economy, annual growth rate



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1. During 1967-85, oil prices and cyclical movements implied fluctuations, but no trend in the terms of trade. Thus, the two concepts of hourly productivity growth shown here were almost identical for the period as a whole.

Source: OECD calculations based on the *OECD Economic Outlook No. 82 Database*.

measure of GDP per hour worked, the rate of productivity has halved since the late 1990s compared with the 1986-96 period.

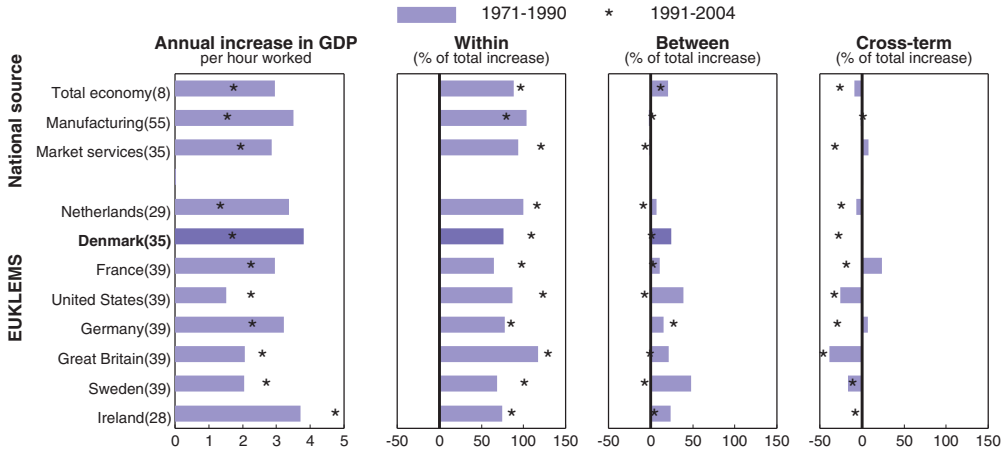
The slowdown in labour productivity can be attributed partly to less rapid growth within each sector of the economy, and partly to weaker reallocation of resources towards sectors with above-average productivity levels and growth. During the 1970s and 1980s, reallocation between the eight main economic sectors made an annual net contribution of ½ percentage point to aggregate productivity growth, partly offset by the so-called cross term, reflecting a tendency for workforce and value-added share of agriculture and manufacturing to decline in response to the rapid productivity growth in these sectors (Table 1.2; Figure 1.7). In the post-1990 period, the annual contribution from reallocation between the eight main economic sectors had weakened to ¼ percentage point, and it was completely offset by the so-called cross term. This reflects the fact that while employment and economic activity shifted away from sectors like trade, hotels and restaurants having a low productivity level, and into sectors like raw materials, finance and business services having a high productivity level (the between effect), conversely, the shift away from manufacturing and into financial and business services implied a move towards areas with less rapid productivity increases (the cross term). On balance, the within-sector component therefore accounts for close to 100% of the aggregate productivity increase in the post-1990 period. For the service sector considered in isolation, this effect becomes even clearer: reallocation among a detailed breakdown of 35 sub-segments of the service sector subtracted ½ percentage point from annual productivity growth as employment and

Table 1.2. **Relative size and productivity growth of the main economic sectors**

	Share of total economy gross value added (%)			Average annual increase of GVA per hour worked (%)		Level of GVA per hour worked (DKK)
	1966	1990	2006	1967-90	1991-2006	2006
Agriculture, fishing and quarrying	8.3	5.0	5.2	8.1	6.5	464
Manufacturing	21.6	17.4	14.6	4.5	2.6	318
Electricity, gas and water supply	1.8	2.1	1.9	5.8	2.2	1 254
Construction	9.7	5.1	6.1	3.1	–0.1	259
Wholesale and retail trade; hotels and restaurants	19.6	14.2	12.5	3.2	1.6	210
Transport, post and telecommunication	8.0	7.6	9.0	3.5	3.5	378
Finance and business services	13.1	21.5	24.1	1.7	–0.3	498
Public and personal services	17.8	27.0	26.7	1.0	0.6	247
Total economy	100	100	100	3.4	1.5	311

Source: OECD Secretariat calculations based on Danish national accounts.

Figure 1.7. **Productivity growth within sectors and from reallocation across sectors**



StatLink http://dx.doi.org/10.1787/263007202267

Source: OECD Secretariat calculations based on Danish national accounts and EUKLEMS.

activity went into areas with less scope for continued productivity growth. A similar effect was not observed in the pre-1990 period.

Medium-term outlook and challenges

Over the coming years, the effects of ageing will start to show, reducing the economy's growth potential. In the absence of further reforms, potential GDP growth is set to slow from 1.9% in recent years to merely 1.2% from 2010 onwards (Table 1.3). As discussed above, productivity slowed sharply in the late 1990s, but so far this has had only a limited effect on potential growth, as reforms have been successful at raising average hours worked, lowering structural unemployment and raising participation. Most recently, labour immigration has also added to the workforce. When the contribution from these factors recedes, it will mean a noticeable weakening, with potential growth well below the United States, where productivity is stronger and the potential workforce expands, and also below the euro area, where productivity is expected to accelerate. Moreover, starting with a large positive output gap, the Danish economy will sooner or later have to adjust

Table 1.3. **Medium term scenario – in the absence of further reform**

Average annual growth rates, per cent

	1979-96	1997-2004	2005-07	Forecast 2008-09	Medium-term scenario[2] 2010-14
Denmark					
Actual GDP			2.8	1.4	1.0
Potential GDP	2.2	2.1	1.9	1.6	1.2
potential hourly productivity	2.4	1.3	1.3	1.4	1.4
trend average hours worked	–0.5	0.4	0.1	0.0	–0.1
potential employment	0.3	0.4	0.5	0.1	–0.1
Variables underlying potential employment					
working age population	0.4	0.1	0.3	–0.1	0.0
trend participation rate[1]	0.0	0.0	0.1	0.1	–0.1
structural unemployment rate[1]	0.1	–0.2	–0.1	–0.1	0.0
United States					
Actual GDP			2.7	2.1	2.5
Potential GDP	3.1	2.9	2.6	2.5	2.4
Euro area					
Actual GDP			2.4	2.0	1.9
Potential GDP		2.1	2.0	1.9	1.9

1. Percentage point change.
2. The difference between actual and potential GDP growth reflects the assumption that the output gap which each country has at the end of the forecast horizon in 2009Q4 will close gradually over the medium-term years.

Source: OECD *Economic Outlook*, No. 82 and medium-term reference scenario updated from *OECD Economic Outlook*, No. 81.

with a period where actual GDP grows slower than its potential rate. During that period, it might well happen that Danish economic growth is among the slowest in the OECD area, as indicated by the OECD medium-term scenario (OECD, 2007b).

The 2015 medium-term fiscal strategy should be welcomed

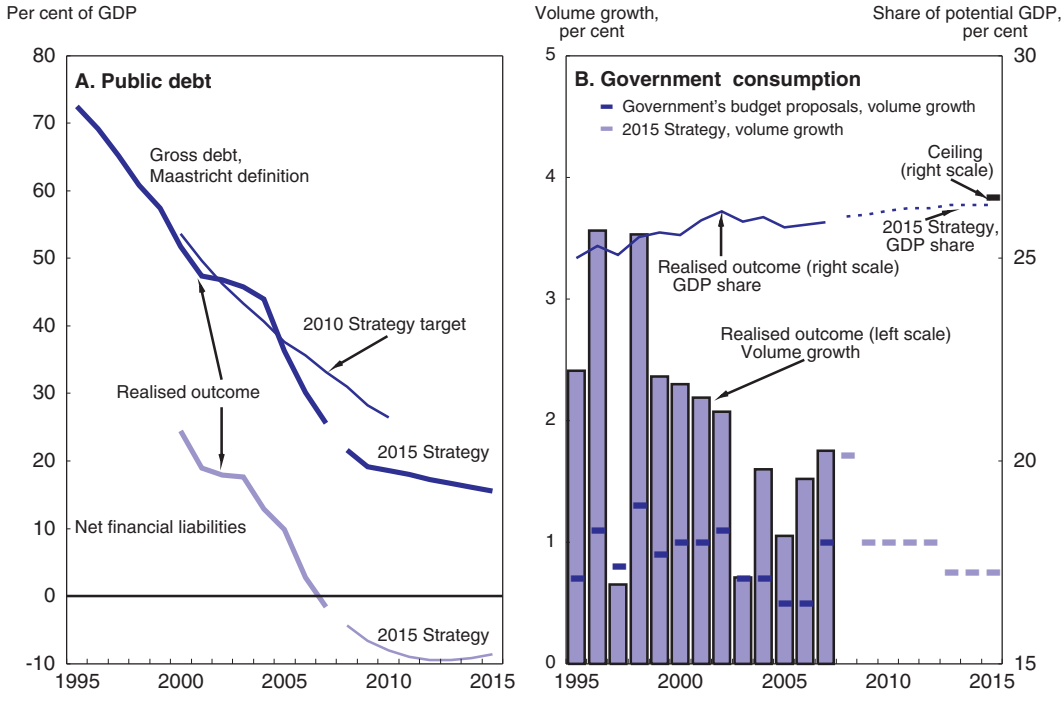
The best response to the dismal medium-term outlook would be to continue with employment-oriented reforms. With the Welfare Agreement from June 2006, a wide majority of political parties committed to raising the retirement age in line with longevity. Adhering to this agreement is of vital importance for tackling the long-run fiscal challenges associated with ageing: it implies that structural employment as a share of the total population will only fall slightly from 50% today to about 49% as opposed to a low of 44% in 2040 if retirement age thresholds were kept unchanged. However, the adjustment process only begins in 2019, and the new medium-term fiscal framework, the 2015 Strategy presented by the government in August 2007, therefore concludes that further employment-oriented reforms are needed to ensure fiscal sustainability.

From 2005 to 2015, structural employment-to-population ratios have to rise by 2½ percentage points on average across age, gender and country-of-origin groups. Higher average education levels and longer average length of stay for immigrants will help, but in addition to these contributions and expected effects of recent reforms, new measures are needed to ensure the last ¾ percentage point addition to the employment-to-population ratio, *i.e.* 20 000 unsubsidised jobs, by 2015. Moreover, the average number of hours worked per employed person must be sustained at its 2005 level, in a context where shifts in work-force composition would imply a 2% decline towards 2015 (Government, 2007c). Since the

mid 1990s, average hours worked have evolved beyond what demographic projections would have predicted, but at the same time, the preference for spending more time outside work appears to be strengthening, such as with the expansion of paternity leave in the collective agreements concluded in spring 2007. With the strong economic boom, actual employment and average hours worked in 2007 exceed the targets for 2015, but this does not mean that the challenges are minimal: most of the recent rise is cyclical and the drag from demographics has not yet set in.

Aside from improvements in the labour market, fiscal sustainability will depend crucially on how popular expectations for rapidly rising standards in publicly funded services will be handled. Experience from fiscal management under the 2010 Strategy, which preceded the new 2015 Strategy, shows that it can be challenging to limit public consumption spending growth to the intended path. Thanks to the broad political consensus around the importance of making the welfare state fiscally sustainable, the sudden rise in oil and pension tax revenue over recent years has been used to repay public debt faster than anticipated in the 2010 Strategy. With this advanced pay-down, net financial liabilities passed below zero in 2007 – a remarkable achievement. Meanwhile, the volume of public consumption spending has typically grown twice as fast as expected by the Ministry of Finance in August the year before when presenting the government's proposal for the budget bill (Figure 1.8). Consumption has thereby also grown considerably more than the original intention in the 2010 Strategy of 1% in 2001-05 and ½ per cent

Figure 1.8. **Debt has fallen more than planned, but consumption has grown more than planned**[1]



StatLink http://dx.doi.org/10.1787/263013463744

1. Data for 2007 are OECD secretariat estimates based on *OECD Economic Outlook No. 82 Database*.

Source: OECD Economic Outlook, No. 82, Government (2007b), *Mod nye mål – Danmark 2015* (Towards new goals – Denmark 2015) and each year's August issue of Ministry of Economic Affairs, *Økonomisk oversigt* (for 1994-2001) and Ministry of Finance, *Økonomisk Redegørelse* (for 2002-2006).

in 2006-10. Such overruns have been permitted given the soundness of the structural budget balance owing to positive surprises on other spending and revenue components. Looking ahead, labour market improvements and fiscal wind-fall gains from rising oil prices can hardly be repeated with the same strength that they have had recently; the capacity to control public consumption spending will therefore be vital.

Against this background, Chapter 2 discusses the 2015 Strategy, in particular:

- How can adherence to the fiscal policy targets be ensured so as not to lose the sound fiscal position that has been built over the past 25 years?
- How should the government's balance sheet be managed in a context of rapid debt reduction?

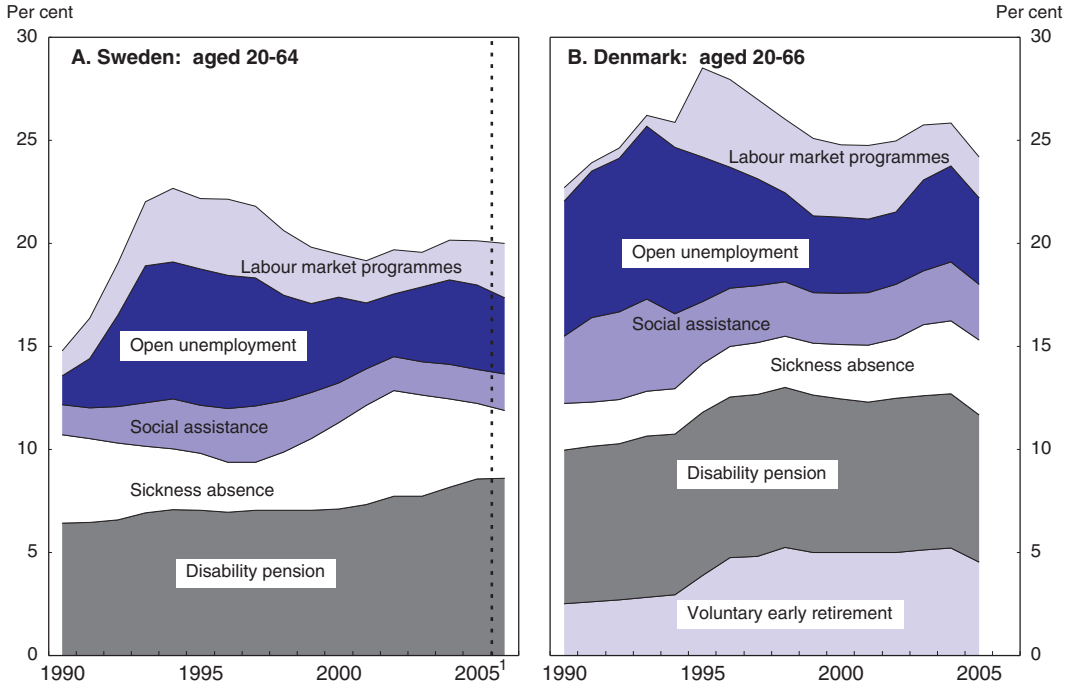
Distortions to labour supply from income benefits and taxation

With the most generous benefits for low-income groups and one of the highest tax-to-GDP ratios in the OECD, it is vital to pay attention to the potential disincentive effects on labour supply. There is a lot of international attention to the Danish labour market and its emphasis on activation and job-search requirements which have managed to bring down open unemployment a lot (OECD, 2006b). Meanwhile, disincentives to labour-market participation remain pervasive: four out of ten working-age adults receive income benefits at some stage during each year and, measured in full-time equivalents, more than one in five are outside employment living from income benefits that are purely passive, not involving training or activation (Figure 1.9). This ratio is even higher than in Sweden, where fighting labour market exclusion and benefit dependency is seen as the key priority for policy reform (OECD, 2007c). There are slightly more recipients of disability benefits in Sweden, but this may reflect that those entering disability benefit at age 60 or above in Sweden have already gone off to voluntary early retirement in Denmark. Sickness absence is now equally large in the two countries. Social assistance, which is much more generous in Denmark, is used to an extent only observed in Sweden in the mid-1990s following deep economic crisis.

The comparison with Sweden shows that the labour market can still be improved. Since the 1990s a number of reforms have gradually improved the labour market, in line with recommendations made in previous *Surveys* (Annex 1.A1). The June 2006 welfare agreement has settled the conditions for voluntary early retirement, even though it means that publicly funded voluntary early retirement will continue as an option for people below 65 until some time between 2030 and 2040.[4] However, there is ample scope for making the labour market more inclusive *vis-à-vis* recipients of social assistance, sickness and disability benefits. Even for those receiving unemployment benefits, activation measures can still be refined and made more cost efficient. The flexicurity model's liberal approach to hiring and firing enhances turnover in the labour market and makes it easier for outsiders to enter the labour market, as employers are less concerned about adverse consequences of hiring someone who turns out not to be the right person for the job. Meanwhile, refining the incentives generated by benefits and activation programmes is still important. When the pure flexicurity model with limited employment protection legislation and generous long-lasting unemployment benefits existed in the 1980s, it led to rising unemployment; when the duration and generosity of unemployment benefits was reduced and tougher job-search and activation requirements were introduced in the 1990s, it led to falling unemployment (Andersen and Svarer, 2007; Calmfors, 2007).

Figure 1.9. **Adults living from passive income benefits or participating in labour market programmes**

Persons (full-time equivalents) receiving income support as percentage of population



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1. 2006 is estimated by the National Institute for Economic Research.

Source: Statistics Sweden, the National Institute for Economic Research of Sweden and Statistics Denmark.

There is a fine balance between, on the one hand, providing income security and redistributing income and, on the other hand, avoiding that too generous benefits counteract the person's own motivation to work and create dependency due to unemployment or inactivity traps. The encouraging experience witnessed during the 1990s is that income security can be maintained for core workers on the labour market if there is a willingness to reform benefits for the marginal groups that have limited earnings capacity and therefore, in the worst case, may be punished financially if taking up work (Tranæs, 2006). The best example is the youth package from the 1990s which shortened unemployment benefits from 4 years to 6 months for those below 25 without children while boosting the training offer: since then youth unemployment has stayed well below the average unemployment rate. Measures for youth may be particularly effective due to their effects on norms, helping to avoid a gradual decay in attitudes towards benefit dependency (Lindbeck *et al.*, 1999; Lindbeck and Nyberg, 2006).

Chapter 3 analyses recent labour market developments and policy issues:

- Has the level of structural unemployment declined?
- Could activation measures and income benefit policies be further improved to ensure that the current strong labour shortages feed through to those at the margin of the labour market?

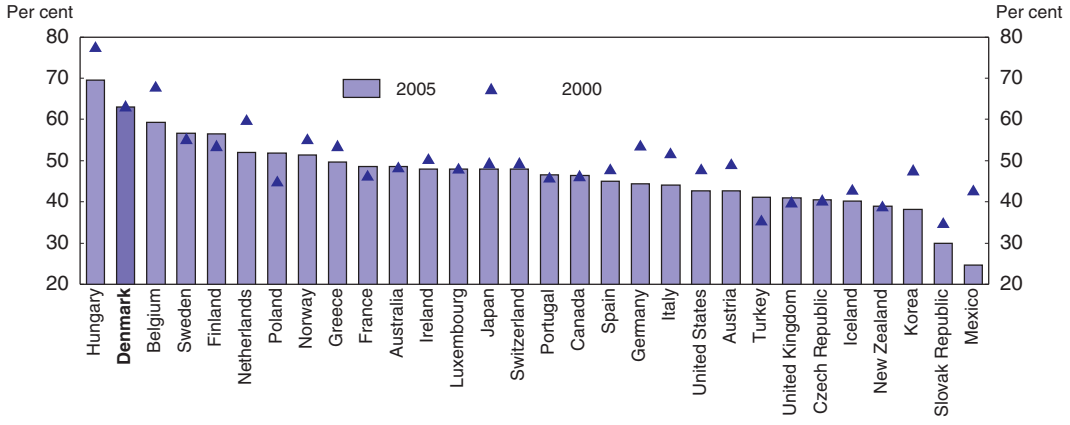
In a similar way, it is vital to pay attention to whether some taxes are distorting activity in ways that put a large drain on individual welfare without generating much gain

for society. Previous *Surveys* have emphasised the adverse effects of the 70% marginal tax wedge which now affect four out of ten full-time employed persons, but no progress has been made with respect to reducing the highest marginal tax rates since the late 1990s (Annex 1.A1). This is quite unlike the developments in other OECD countries; for example, Germany and the Netherlands have reduced their highest marginal tax wedges considerably (Figure 1.10). The situation is hardly sustainable because, aside from holding down hours worked, it discourages human capital formation and makes it hard for employers to attract and retain talented staff from abroad.

The new government programme's initiative to prepare a tax reform is therefore most welcome (Government, 2007d). Chapter 4 seeks to answer the central question:

- What tax cuts would reduce distortions to labour supply, skill formation and other aspects of human and business activity most relative to their fiscal cost?

Figure 1.10. **Top marginal tax wedge on labour**
Combining income taxes with employer and employee contributions



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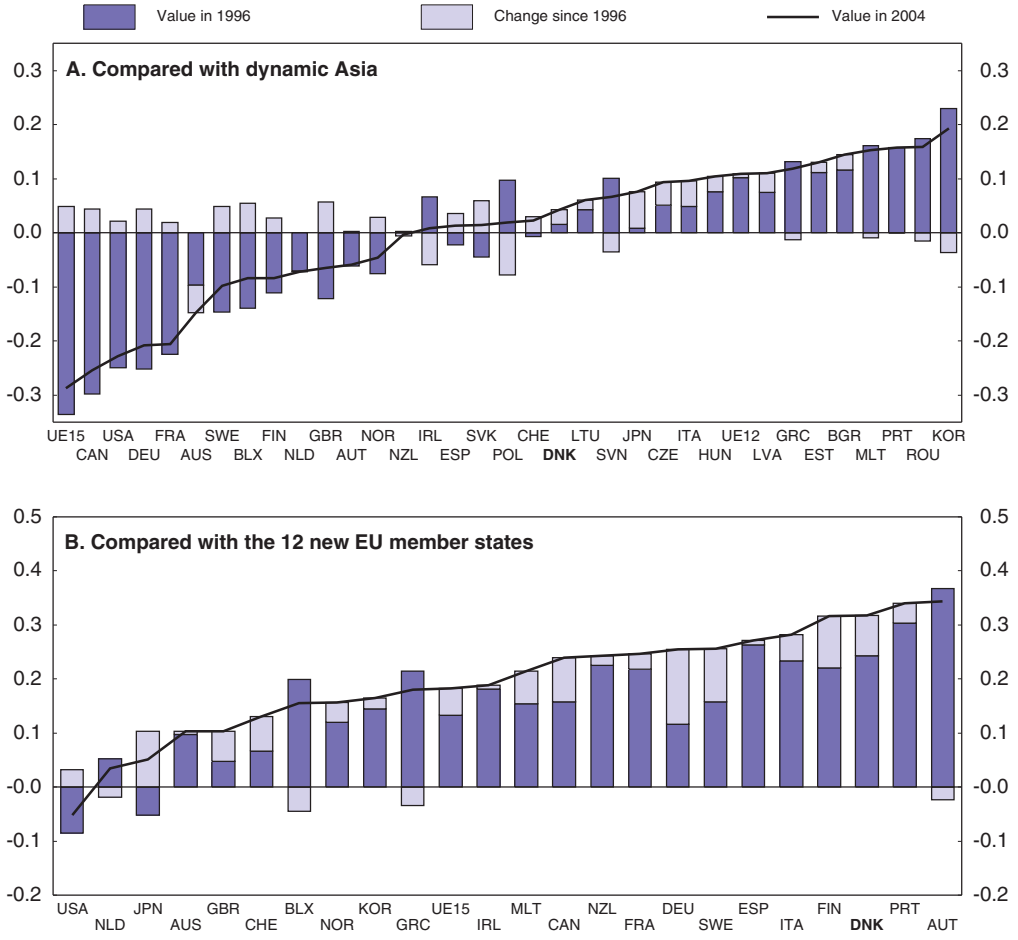
Source: OECD Taxing Wages Database.

Globalisation

Many of the policies discussed above that could reduce distortions to labour supply would also strengthen the ability of Denmark to get the most out of globalisation. Thus, the policy recommendations made in Chapter 3 and Chapter 4 should also be seen from the broader perspective of the challenges posed by globalisation.

Following from the long-standing tradition for open trade, globalisation is generally seen as a positive force in Denmark. Indeed, the flexibility of the labour market means that Denmark is in a better position than many European countries to adapt to the changes in global market conditions brought about by the emergence of low-cost producer countries (OECD, 2007d). Meanwhile, the pressures for business reorganisation to come should not be underestimated: the composition of Danish exports is more correlated with that of dynamic Asia and the new EU member states than it is with other northern European countries (Figure 1.11). Such a correlation is not necessarily a problem as it also reflects that, for example, the textiles industry has been very successful at gradually putting more weight on design and marketing while outsourcing production, but it is important to be

Figure 1.11. **Trade specialisation**
Rank correlation coefficient of RCAs[1]



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1. The revealed comparative advantage index is calculated across 1 043 categories of goods and services. The EU aggregates exclude intra-region trade.

Source: UN, *Comtrade Database* and OECD calculations.

realistic in recognising that similar large re–organisations will have to take place also in other sectors.

Against this background, it is encouraging that some of the clearest progress in structural reform is related to the Globalisation Strategy from 2006 which combines a boost to R&D and higher education with a tri-party agreement on the financing of life-long learning, as discussed in the previous *Survey* (OECD, 2006a). The Globalisation Strategy recognised that effective competition is vital for the economy's capacity to reorganise and reap the benefits from globalisation. However, the actual measures taken in recent years are rather modest compared with the reforms in network utilities implemented in response to EU directives during the 1990s. Ownership barriers in professional services are still an issue, privatisation is progressing only slowly, or not at all, as in the case of Scandinavian Airlines which is owned jointly with Norway and Sweden. Concentration is growing in the energy sector as recent mergers imply that the state-owned DONG now controls not just gas but also large parts of the electricity sector (Annex 1.A1). More

competition in these areas could make a welcome contribution to reviving productivity growth.

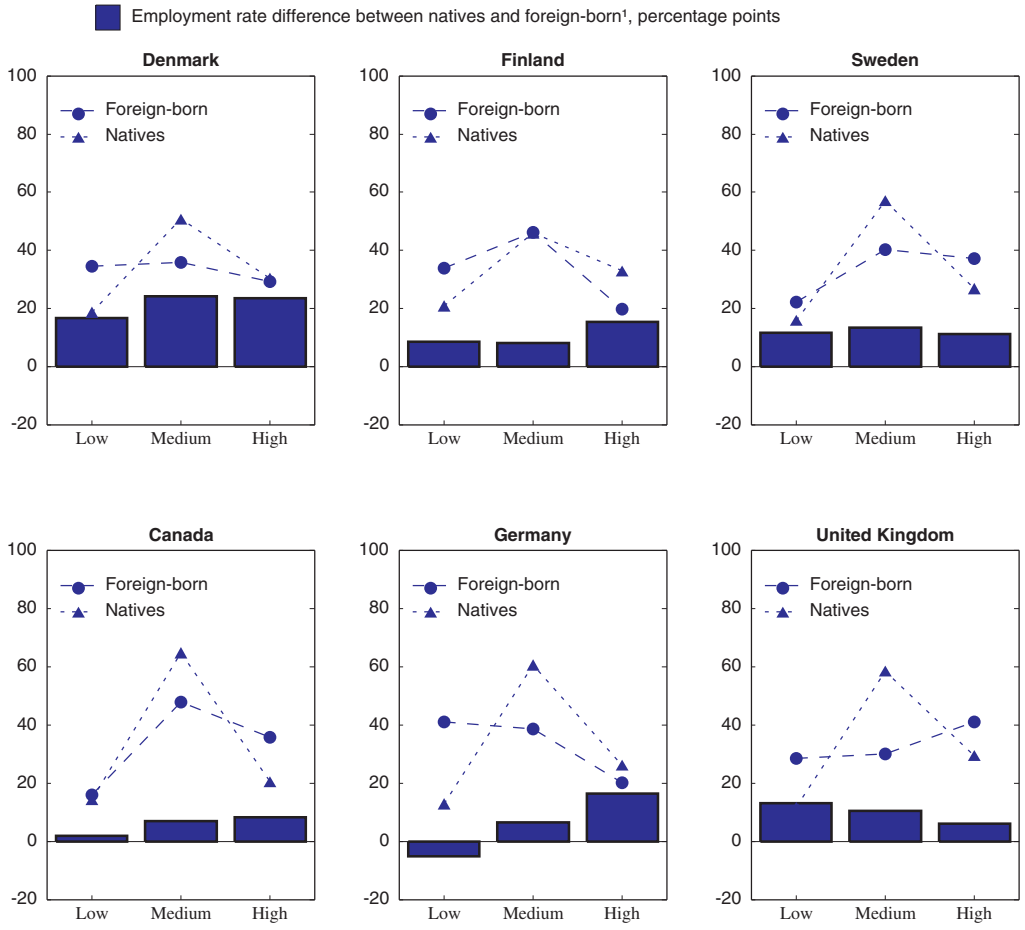
Resolving the inherent tension between flexicurity and migration is perhaps the most difficult challenge for the Danish economy with respect to globalisation. The combination of a flexible labour market and rather generous benefits has proven instrumental to globalisation by underpinning the associated business reorganisation. As long as the labour force is sufficiently homogenous in terms of skills and thereby earnings capacity, the flexicurity model may be as adaptive in an environment with frequent shocks as the Anglo-Saxon model of low benefits and low job protection. Meanwhile, the outcomes with respect to migration have been less successful. Immigration to Denmark grew to be relatively important in the 1990s reflecting conflicts and subsequent refugee flows, but from around 2002 changes in immigration policies have curbed the inflow. However, low-skilled immigrants generally find it harder to integrate in the labour market than in other countries, partly because their wide heterogeneity in terms of background and skills implies that the flexicurity model's generous benefits can create deep inactivity and unemployment traps for the least skilled immigrants. Understanding and addressing this issue is particularly important given that demographic dynamics are set to create large labour surpluses in some low- and middle-income countries, over the next decades, with numerous young persons in countries in the Middle East and North Africa likely to want to move to European countries for work. Meanwhile, lower transportation costs and still-stronger communication technology may well increase "immigrant supply", as it becomes easier to live in Denmark while maintaining contact with family back home. This current economic boom and strong migration flows will offer many insights into the mechanisms that might be needed to make flexicurity more adept in dealing with the increased heterogeneity associated with migration.

High-skilled migration patterns also indicate some problems. Even if small in size, there is a clear brain drain with high-skilled Danes moving abroad while, on the other hand, Denmark attracts relatively few high-skilled immigrants compared with English-speaking countries. Moreover, the high-skilled immigrants who come have considerably lower employment rates than their native peers. This could reflect that language barriers matter more in high-skilled jobs: indeed, pronounced underemployment of high-skilled immigrants is a feature shared with Finland and Germany, but not with Canada and the United Kingdom (Figure 1.12). The fact that underemployment is so clear for immigrants across all skill levels could also indicate that discrimination plays a role (OECD, 2007e). In this context, it is encouraging that a recent survey by the Danish National Institute of Social Research found that 80% of Danes declare themselves "positive" towards having immigrants as colleagues; seven years earlier, only 50% held that view. Nevertheless, high-skilled immigrants often say that they don't feel very welcome in Denmark. This should be a matter of concern, as business activity might increasingly involve moving high-skilled staff around across the countries where firms operate, notably in knowledge-intensive sectors. Being open and attractive for high-skilled migration might therefore be important for competitiveness.[5]

In general terms, globalisation and migration may require a slightly different approach to redistribution policies. Increased mobility of tax bases will make it more and more costly to redistribute from capital owners and high-income earners to others (Swedish Globalisation Council, 2007). Indeed, the Danish economy would be less fragile if not just trimming corporate taxes, as done from this year, but also making a bold reduction in the

Figure 1.12. **Educational attainment and employment among foreign-born and natives**

Educational attainment of 15-64 year olds: foreign-born arrived between 1994 and 2004 and natives
Lines and dots show per cent having below upper secondary (low), upper secondary (medium) or tertiary (high) educational attainment, 2004



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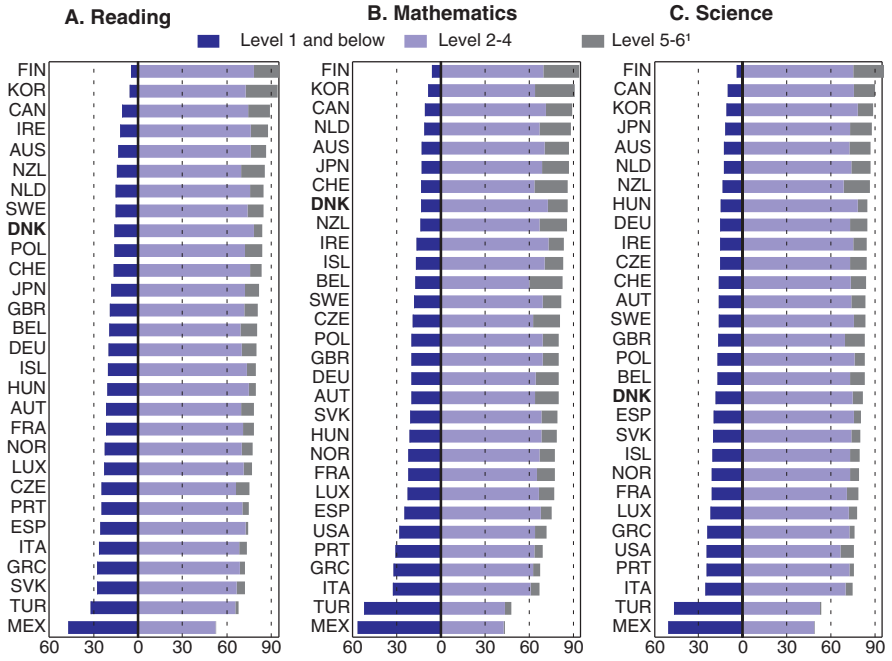
1. All foreign-born irrespective of their year of arrival.

Source: OECD Migration Database and *EU Labour Force Survey*.

income taxes for high income earners. By contrast, the attractiveness of reinforcing equality and opportunity *via* strong basic education for every child is growing with globalisation. This is an area where further improvements are needed: 15-year olds have good proficiency in mathematics – above the OECD average – but that is not the case in reading and science. Moreover, in all three subject areas, and science in particular, a significant group of the 15-year olds are at the lowest levels of proficiency (Figure 1.13; OECD, 2007f). These outcomes are hardly satisfactory when considering that Denmark for many years has been one of the OECD countries spending most on primary and lower secondary education: 3.0% of GDP in 2004 (OECD, 2007g). As such, globalisation is not at odds with tax-financed public services, as migrants should see the taxes paid and services received as a package; but asking above-average earners to pay several times more than

Figure 1.13. **Learning outcomes in compulsory education**

Distribution of 15-year olds by proficiency as measured by PISA 2006
Countries are ordered according to the share of 15-year olds with proficiency at level 1 or below



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1. For reading, the proficiency scale does not include a level 6.

Source: OECD, *PISA 2006 Database*.

low-income earners towards the financing of these public services will be increasingly problematic.

Given the challenges and opportunities associated with globalization, Chapter 3 also asks:

- How have immigrants fared in the current boom? Has the inflow of workers from the new EU member states helped to "grease the wheels", by lowering structural unemployment?

Chapter 4 also asks:

- Can migration patterns be related to differences in income taxation?

Publicly funded services

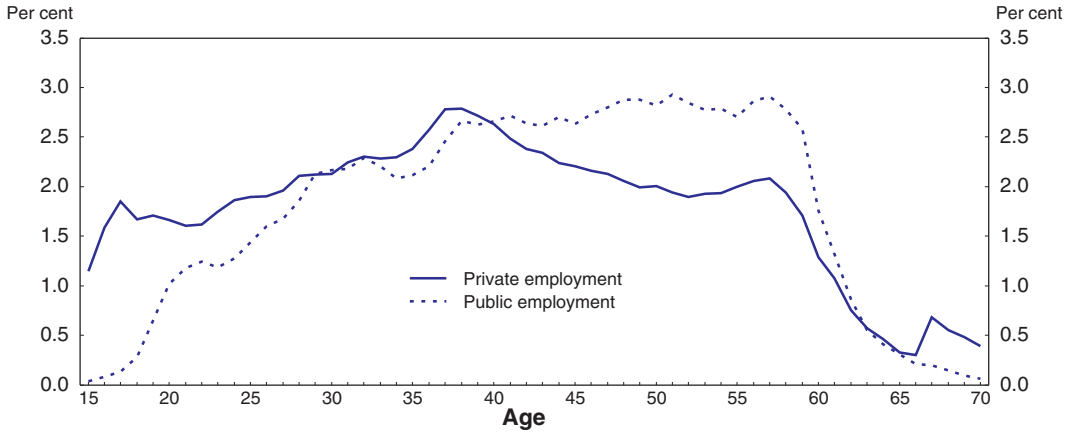
Aside from improvements in the labour market, fiscal sustainability will depend crucially on how popular expectations for rapidly rising standards in publicly funded services will be handled. From 2007, sub-national authorities have been restructured with the number of municipalities being reduced from 271 to 99, and with 5 regions replacing 14 counties. As in other Nordic countries, sub-national government spending accounts for more than a fifth of GDP – even more than in federal countries like Australia and Germany – meaning that this is a major structural change in the economy. For health care, in particular, the new larger regions give better scope for specialisation, facilitating efforts to make public services more professional and efficient. The Quality Reform of public services, presented in August 2007, and the action plan to reduce bureaucracy, to be

presented in 2008, build on this momentum (Government, 2007d and 2007e). In this respect there has been clear progress in structural reform. Relative to recommendations in previous *Surveys*, however, there has been little progress on opening services to contestability (Annex 1.A1). Municipalities now purchase a bit more from outside providers than previously, but still not much relative to the potential (Paldam, 2006).

Economising on scarce resources is all the more important because a large part of those employed in public services are aged 50 or more, meaning that many will retire over the coming couple of decades. Thirty four per cent of those employed in the public sector are aged 50 years or more, compared to just 26% of those employed in the private sector (Figure 1.14). With current retirement patterns, this implies that the outflow from public sector employment to early retirement, disability pension and old-age pension will rise from an average 14 000 annually over the recent 10 years to an average 20 000 over the coming 10 years. Consequently, it will be a challenge to retain and recruit sufficient staff in certain parts of the public sector. At the same time it is vital not to overdramatize this need. Each year about 110 000 leave jobs in the public sector and a similar number, or 3.8% of the workforce, are recruited to jobs in the public sector. To achieve constant public-sector employment towards 2015 it would suffice to increase annual gross recruitment by ¼ percentage point of the workforce – or less than that if sickness absence was reduced, working time increased or early retirement reduced (Ministry of Finance, 2007b).[6]

Figure 1.14. **Age distribution of public and private employment**

2004



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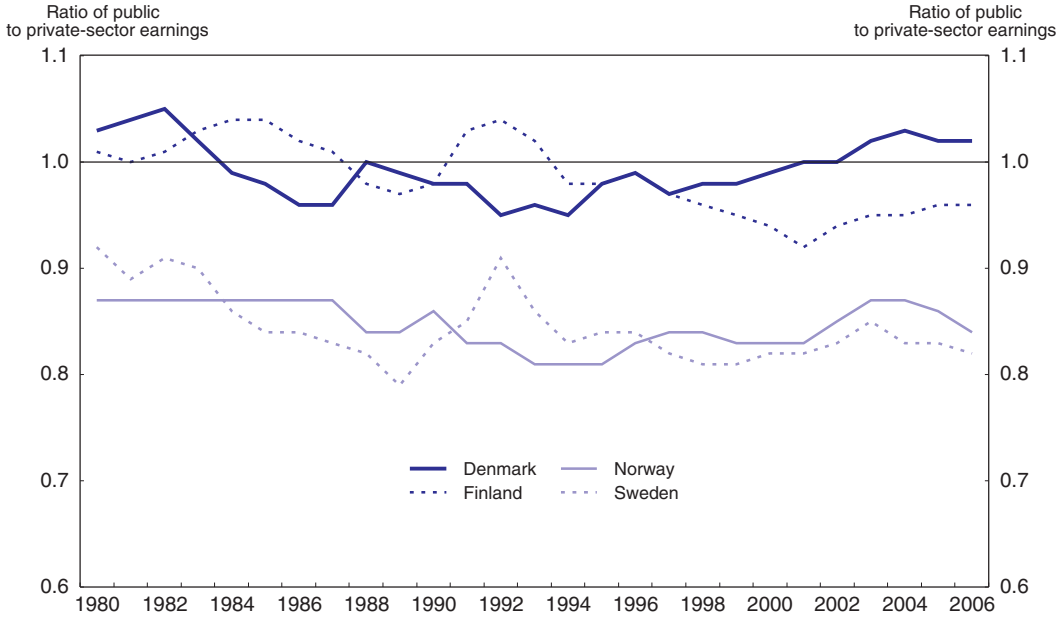
Source: Ministry of Finance, *Budgetredegørelse 2007*.

Public-sector pay is not low compared with the private sector. Based on aggregate national accounts, public-sector pay appears to have grown more strongly than private sector pay in Denmark since the mid 1990s. Furthermore, while average earnings in the public sector are somewhat below the private sector in, for example, Sweden, that is not so in Denmark (Figure 1.15). The real risk may well be that the perceived plenitude of tax revenues leads to excessive pay rises and recruitment across all parts of the public sector, ignoring the wider economic resource costs. Simplistic attempts at attracting staff to the public sector such as raising the general pay levels faster than in the private sector should therefore be avoided in the public-sector wage negotiations which are due in spring 2008.

Figure 1.15. **Relative earnings in the public and private sector**[1]

Total remuneration per employee,1980-2006



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1. As the figure is based on total remuneration per employee, it encompasses employers' pension contribution which are typically more generous in the public sector. Moreover, it does not take account of fringe benefits (which are typically more generous in the private sector) or tolerance to frequent sickness absence for example related to children being sick (which are typically more generous in the public sector).

Source: OECD Economic Outlook Database.

The focus should rather be on adjusting relative pay within each public sector profession in ways that can nurture skill development and effort.

Healthcare is perhaps the most challenging part of publicly funded services. Its share of spending has been growing in recent years, and with high popular expectations for service improvements, spending pressures are likely to continue being strong. Indeed, the semi-official assessment of long-run fiscal challenges following the June 2006 Welfare Agreement, concluded that cost control of health care was the biggest remaining challenge for fiscal sustainability (DREAM, 2006).

Against this background, this *Survey* provides an in-depth review of the health system in Chapter 5:

- How strong will be the cost pressures from demographic trends, new medical technologies, and growing patient expectations in a richer society?
- What adjustments would be required to sustain the core elements of Denmark's public insurance model over the coming decades?
- How can human resource management, contestability and coordinated technology adoption contribute to higher efficiency?
- Could healthcare and employment activation policies be better integrated to stem the inflow to sickness-related income benefit schemes?

Pension savings and capital taxation

Denmark's unique system, where contributions for occupational pensions are negotiated alongside pay increases in the collective agreements, has now reached its original target contribution rate. Together with the recent opening of the pensions market following an EU ruling on the tax treatment of pension savings made abroad, this makes it a natural time to take stock, even if there are no urgent problems.

Chapter 6 therefore reviews these issues:

- Where has the occupational pension system "got to" in terms of contributions, coverage, flexibility for savers, etc.?
- Would the related issue of capital taxation outside pension funds benefit from more attention in order to tackle non-neutralities that nurture tax planning?

Conclusions

The Danish economy is doing rather well, with strong growth, a record low unemployment and a sound fiscal position. These impressive results have been achieved through a set of reforms that have further improved the functioning of the Danish economy and contributed to its long term sustainability while preserving social cohesion. A key feature of the reform process has been the collaborative effort of the government and social partners in addressing the economy's major long-run challenges early on. With the new government programme from November, a number of similar processes have been initiated, including the Labour Market Commission and the Tax Commission. Indeed, despite the efforts already made, there are a number of key structural challenges that Denmark is facing, including: ensuring that the sound fiscal position is sustained; boosting the labour supply, by helping marginal groups securing a foothold in the labour market and reducing distortions related to the tax system; and further improving the health care system to better respond to growing demand for services. However, the biggest challenge now is to avoid overheating: if economic policies are not acting promptly the Danish economy may soon face some difficult times.

Notes

1. Ironically, the Taylor rule's indication of what would be an optimal interest rate for the Danish economy went below the actual euro areas interest rates in mid 2007, reflecting the temporary low inflation rate.
2. From January 2007, municipalities have been merged and, therefore, reporting of permits and construction starts is more delayed and incomplete than usual. Taken at face value, the numbers show that construction of around 700 thousand square meters of housing was commenced in each of the first three quarters of 2007. That is below the peak of around 1 million square meters in the 2005Q4-2006Q2 period, but it is slightly above the level observed during the 1999-2004 period.
3. Annual data, as shown in Table 1.1, hide how volatile private consumption has been recently.
4. The age thresholds for voluntary early retirement and regular pension is to be moved up in parallel in line with longevity while the level of benefit for those on voluntary early retirement remains unchanged. Assuming that life expectancy at retirement age grows one year per decade, the age threshold for entering voluntary early retirement in Denmark would reach 65 some time around 2030-40.
5. For example, a group of Danish executives visiting the OECD pointed to immigration barriers as key obstacle for developing MBA programmes with an international reach.
6. Following the standard definitions in the RAS employment register, these numbers on gross recruitment flows excludes shifts within the public sector, but includes persons returning from

leave due to sickness or childbirth. If also excluding recruitments from leave, from outside the labour market and from unemployment, it remains that the public sector recruits about 55 000 a year directly from the private sector, with slightly below 50 000 moving directly from public to private sector employment each year.

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ANNEX 1.A1

Progress in structural reform

This table reviews action taken on recommendations made in previous *Surveys*. Recommendations made in this *Survey* are listed in the conclusion section of each chapter.

Past recommendations	Actions taken since the previous *Survey* (May 2006)
Labour supply and employment	
Labour market participation, sickness and leave	
Phase out the 5-year voluntary early retirement scheme (*efterløn*). Make it easier to retire gradually by working part-time before and after the official pension age, supported by increased actuarially neutral flexibility in the public age pension. Abolish mandatory retirement age clauses from collective agreements.	As part of the 2006 Welfare Agreement, the age threshold for the voluntary early retirement scheme is to be raised from 60 to 62 years between 2019 and 2022, and pension age will be raised from 65 to 67 years between 2024 and 2027. This implies that the 5-year early retirement scheme continues.
Reduce the benefit received while undergoing rehabilitation to ensure that it pays for participants to accept jobs they might be offered. Reduce the maximum flexjob wage subsidy further to be equal to the disability pension or lower, and pay a lower benefit for the hours not worked. Review each flexjob case on a regular basis and scale down the wage subsidy in cases where the person's work ability improves. Revisiting also disability pension cases to take into account, *inter alia*, new medical and rehabilitation opportunities. Disability pensioners should have an obligation to accept flexjob offers that the municipality can provide.	As a key element of the changes introduced in July 2006, the maximum flexjob subsidy is based on a wage of DKK 387 000, but this is still higher than what 80% of Danes earn. As the two subsidy rates remain at 67% and 50%, the maximum subsidy is an amount 50% higher than the disability pension (Chapter 5).
Make a doctor's certificate compulsory for receipt of public sickness benefits, *i.e.* after two weeks. Introduce a waiting period of a few days for the sickness benefit. Enforce the 12 months time limit.	Medical assessments focus now on work ability but are no longer required after eight weeks – it is up to the municipality when to require an assessment.
Consider whether the parental leave system is now so generous that it is hurting employment prospects of women. Rebalance by putting more emphasis on child care relative to leave.	No action on maternity/parental leave, but child care charges have been reduced by increasing public subsidies.
Unemployment and activation programmes	
Ensure that greater flexibility in activation programmes does not reduce the motivation to look for work. Introduce activation earlier in the unemployment spell, but make programmes shorter.	Since October 2007, full-time activation is required for all having received unemployment benefits for 2½ years. Since August 2007, the right and duty to participate in activation sets in after 9 months in unemployment.
Shorten the standard four-year duration of unemployment benefits to something like the duration in other Nordic countries, meaning 1-2 years. Reduce unemployment benefit generosity and duration, such as lowering the highest replacement rate and have benefits decline with the length of the unemployment spell. Extend the waiting period for unemployment benefits. Extend activation to include also 58-59 year-olds and abolish the exemption which means that unemployment benefits can be received without interruption from age 51 to early retirement at age 60.	Since January 2007, unemployment benefit duration has been harmonised to the standard 4 years for everyone older than 25, meaning that the special 9-year duration for 55-59 year olds was abolished. To compensate, subsidised senior jobs with collectively agreed pay will be introduced from January 2008. Benefits generosity remains unchanged.

Past recommendations	Actions taken since the previous *Survey* (May 2006)
Ensure that all social assistance recipients without severe problems aside from unemployment are registered with the employment service so as to make them more visible for employers. Extend the benefit rules applying for those below 25, so that it covers all below 30 years, thereby supplementing the stronger activation and training approach already implemented for all below 30.	The benefit rules applying to those below 25 years of age have not been extended, but activation requirements have been tightened for the 25-29 year olds.
Introduce competition to the public employment service for placement services and for educational activation programmes.	External providers are increasingly involved in placement activities and the regular contacts with the unemployed.
Integration of immigrants	
Continue improving the language and professional skills of migrants. Ensure that municipalities where migrants are currently considered not to be ready for employment review their activation policies. Speed up the administrative procedures to issue residence and working permits for persons seeking work in companies without a collective wage agreement. Public employment offices could be active helping firms connect to unemployed workers abroad.	Denmark provides comprehensive language training courses to immigrants. The 2006 Agreement on Future Immigration introduced Danish language testing for some foreigners who apply for family reunion entry and preachers who apply for residence permit. New measures to promote employment-related immigration will be launched as mentioned in the new government programme from November 2007.
Human capital	
Continue the efforts to improve compulsory education, including by strengthening the educational content of the introductory year for six-year olds and targeting or abolishing the voluntary 10th form. Have more frequent monitoring of students' and schools' outcomes in compulsory education. Allow teachers to become more specialised.	The globalisation strategy proposed making the introductory year compulsory and more learning focused. The government has put forward a bill to this effect in Parliament for legislation in spring 2008. Based on new legislation agreed in Parliament in spring 2007 the 10th form has now been targeted at students with special learning needs to be fulfilled before embarking on upper secondary education. National tests in reading and mathematics were conducted for the first time in the school year 2006/07, and these will be supplemented with tests in science and English. Teacher training is being reformed following a political agreement from March 2006.
Make more apprenticeships available, possibly helped by increasing refunding for firms taking apprentices, based on higher contributions from all employers.	Following various policy initiatives, the number of apprenticeships has increased by 42% during the past four years. During the same period the intake in school-based practical training (a substitute for apprenticeships) has decreased by 77%.
Adjust the study grant so that someone who completes secondary education and wishes to study has a clear incentive to do it without first taking several sabbatical years. Adjustments should also encourage on-schedule completion of studies while continuing to make loans available for those being delayed. For the longer term, consider a combined tax and tuition charging reform where the costs of tuition and grants for living costs are treated as loans to be repaid after graduation. This repayment would replace some of today's income tax, thereby reducing the incentives to work short hours and encouraging highly qualified people to work in Denmark. Continue giving more autonomy to universities.	Starting from the 2009 enrolment, students entering tertiary education no more than two years after completing secondary school will have their grade average scaled up by a factor 1.08 and thereby have easier access to studies with *numerus clausus.* Funding for universities is already based on completed courses only, but from the students admitted from 2008 onwards, funding will be limited to the stipulated study duration plus one year; universities will also be paid a premium when a degree is completed. The globalisation strategy gives universities more flexibility to attract top academics.
Strengthen quality and cost effectiveness in adult education. Introduce sizeable user charges on adult education and training for the employed and cut back on public funding for courses with firm-specific content.	Based on the recommendations from a joint committee comprising the government and the social partners, contributions to education funds for life-long learning were introduced in collective wage agreements in early 2007.
Taxation	
Raise the income threshold from where the top tax is paid as soon as the macroeconomic situation allows. Moreover, make income taxation flatter by lowering the middle or top income tax rate, possibly financed by raising the real estate tax.	From 2008, the in-work tax credit is enlarged. From 2009, the threshold from where the middle tax is paid will be raised. The nominal tax freeze remains in place except for energy taxes that will grow in line with inflation from 2008 onwards.
Innovation, research, and business start-up	
Shift further towards project based rather than institution based public research funding. Move to a single, contestable funding pool. Allow private firms to bid for funds on equal terms. Tie funding to quality. Remove remaining restrictions on setting up technology transfer companies and science parks.	The globalisation strategy implies a shift to more contestable research funding and more weight on quality assessments when allocating research grants.
Revise taxation rules if they are discouraging pension funds from entering the venture capital market.	Pension funds will have a temporary 5% tax relief for investment *via* SME market places 2005-2008.

Past recommendations	Actions taken since the previous *Survey* (May 2006)
Ease the bankruptcy rules and allow greater opportunities for informal corporate rescue plans.	Bankruptcy rules were eased in 2005. A committee is considering adjustments to allow more informal rescue plans.
Competition (in-depth topic of the 2005 *Survey*)	
Legislative framework and institutions	
Reduce merger thresholds and improve the leniency programme. Abolish either the Competition Council or the Appeals Tribunal; for example, a specialist commercial court could also replace the Tribunal, mirroring the EU system. But if they are to be retained, the Council should be slimmed down, it should hand responsibility for merger decisions to the Authority, and the Tribunal should be strengthened by giving it more economic expertise. Have an independent arbitrator (*e.g.* the Competition Authority) decide whether restrictions on competition are necessary to achieve the purpose of a particular regulation.	A leniency programme was introduced in July 2007 with an amendment to the competition act: the first company or person to inform the Competition Authority about the cartel can apply for partial or no legal punishment. The size of the Competition Council was reduced marginally to 17 members, but no changes were made concerning the Appeals Tribunal.
Network industries	
In electricity, the new system operator should push for establishing more capacity on the inter connectors out of the country. Redesign the structure of the price system to make a larger part of households' electricity bill dependent on the market price of electricity. Increase vertical separation in the energy distribution sector. Remove the financial disincentives for divestment by local governments.	The new transmission and system operator intends to build an interconnector between Funen and Zealand and considers a link to Norway as well as upgrading the link between Jutland and Schleswig-Holstein. The price system has been restructured as recommended. High-voltage transmission has been separated from other parts of the system, but the low-voltage grid remains vertically integrated.
In the gas market, make sure there are no barriers for foreign suppliers entering the market. Privatise the incumbent (DONG) before letting it diversify into other sectors (diversification should be approved only if significant synergy gains can be demonstrated).	The gas transmission grid has been transferred to an independent government owned entity. DONG has diversified by merging with a number of electricity companies. The government ownership share is now to be reduced to 51% via an initial public offering.
In telecommunications, change price regulation to ensure that users of shared lines pay only once for raw copper rental. Consider introducing price regulation for termination fees in the mobile network. Ensure that full number portability takes place.	Alternative solutions are being investigated. Full number portability between mobile and fixed networks was to have been achieved by April 2002 but in 2005 it has been concluded not to be technically feasible yet.
In passenger rail, ensure contractual requirements are the same for private and public providers.	
Other industries	
In the construction sector, abolish the sharp division among professions, and eliminate special approval requirements on EU building materials.	A ministerial task force is working on the issue.
In the retail sector, remove the needs based elements in the Planning Act that govern approval of establishment of shops. Withdraw the fixed price exemption on the book market. Make the bottle return system independent of industry interests. Replace the fixed price system with maximum prices and allow free entry into the retail market for pharmaceuticals. Liberalise shop opening hours.	The book market was liberalised in July 2006. New legislation allowing for a gradual relaxation of restrictions on retail opening hours, in particular on Sundays, came into force in July 2005. No major action has been taken in other areas.
Remove ownership restrictions in a number of professional services. Change price regulations in dental care so the current fixed price setting is replaced by maximum prices. Open the taxi market to price and quality competition.	No action.
Persuade labour market partners to allow employees to decide on who should administer their pension savings.	The LD pension scheme allows members to move their assets to another fund. Otherwise no action.
Market mechanisms in the public sector	
Where there are well developed private markets, these should be exploited more by the public sector, for instance *via* greater tendering and free choice arrangements. Make sure there is a level playing field for private and public providers by improving accounting and management information systems and aligning tax rules.	Since mid-2005, legislation has allowed private entities to operate child care centres. From October 2007, the access to choose a private hospital or clinic on public funding took effect for patients having waited more than one month, down from two months previously. From July 2007, the Competition Authority can intervene if prices applied for choice in publicly funded services are not giving a level playing field for public and private providers.
Impose an obligation to tender on local governments (above a reasonable threshold). Improve the rules on the challenge right by removing the possibility of refusing a reasonable offer; such an offer should either be accepted or lead to an open tender.	For orders below the EU rules' threshold for public tender, but above DKK 500 000, local governments have since July 2007 been required to announce their needs before entering a contract so that interested providers can react. Appeal procedures for neglected contractors have been streamlined.

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Past recommendations	Actions taken since the previous *Survey* (May 2006)
Clarify the conditions under which government players can operate on competitive markets. Continue privatisations, and focus more on the functioning of competitive markets than on raising revenue.	Following the sale of 25% of the shares in the postal services incumbent in 2005, the government will soon reduce its ownership share in the gas incumbent to 51%.
Public sector	
Introduce a politically binding expenditure ceiling. Getting political agreement on the overall spending level before budget negotiations with local governments would strengthen top down control.	No action.
Make more use of performance-improving instruments such as activity-based funding and performance-related pay. Continue developing the strategy for e-government and ensure that savings are collected for centrally determined reallocation.	The use of activity-based funding has increased in health care (Chapter 5). A joint e-government strategy for 2007-10 was agreed between the government, and municipal and regional authorities in June 2007.
Increase or improve the structure of user charges, and give municipalities more discretion in setting charges.	No action.
Housing (in-depth topic of the 2006 *Survey*)	
Direct and indirect subsidization	
Increase the real estate tax for owner-occupied housing to make it neutral *vis-à-vis* the tax value of interest deductibility. Ensure that regulation allows mortgage institutions to offer products whereby the real estate tax and the land tax are paid automatically based on mortgage equity withdrawal. Make co-operative housing liable for the real estate tax (at least for the part of the flat's value that is not matched by borrowing in the co-operative) and remove also other special subsidies to bring co-operative housing at par with owner-occupied housing.	No action. Given the current fragility of the housing market, adjustments to housing taxation should not be implemented right now, but reform should remain a priority for the medium term.
Replace the general subsidies for the housing associations with targeted support for those who are in clear need of public housing support. Reconsider the size and targeting of personal housing allowances. Link the allowance to appropriate rents in each region instead of actually paid rents. Funding of construction, ghetto alleviation and similar measures should be subject to normal public budgeting scrutiny. The cap on associations' construction costs should reflect best practice.	No action.
End the subsidies for pension funds' investments in newly constructed private rental housing, as well as the tax exemption for pension funds' return on property bought previously.	To comply with the EU ruling on taxation of pension savings, the current tax exemption for pension funds' investment in rental housing will be ended in 2009.
Openness and flexibility in rental housing	
Let rents in private rental housing be set freely on market terms by progressively scaling back current rent regulation. Lowering the threshold for how much landlords must spend on renovating apartments in order to transfer to less strict rent regulation could advance a gentle transition.	No action.
Let tenants in social housing pay rents that better reflect differences in quality, location and demand.	Reallocations via the national housing fund will channel surplus funds towards refurbishment of unattractive sections. A government committee on the future regulation of the housing association sector considers, among other things, the financing and subsidization of new social housing.
Remove price regulation for shares in housing co-operatives. Such a liberalisation would generate capital gains, and the part that reflects identifiable public construction subsidies or urban renewal subsidies might be returned to the state and municipality.	No action.
Supply responsiveness and mortgage financing	
Give expanding municipalities more room for borrowing to finance social infrastructure when new land plots are issued. Consider mechanisms like road pricing, to ensure that infrastructure investment is more closely linked to where the demand is. Consider mergers in the fragmented municipal structure around Copenhagen to balance local and wider perspectives on zoning.	Road pricing is being discussed in the Copenhagen area. Otherwise no action.
Improve statistics on housing finance by linking household-level data from mortgage credit institutions with income and other individual data from Statistics Denmark.	No action.

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Chapter 2

Fiscal strategy: keeping with the targets

The government's new 2015 Strategy provides a valuable framework for focusing on the long run fiscal position and highlighting the impact of reforms to improve publicly funded services and the tax system. The paths envisaged for the fiscal balance and public spending are reasonable, but the strategy lacks a rigorous set of mechanisms to ensure that the targets are adhered to. The somewhat loosely formulated targets for public consumption spending could be problematic, because spending overruns, in particular in the sub-national parts of government, have often been the Achilles heel of fiscal management. The purpose of this chapter is to assess options for establishing mechanisms to ensure targets are met.

What can be learnt from the successful fiscal management of the past 25 years?

Since the early 1980s, fiscal policy in Denmark has been successful at reducing public debt and improving macroeconomic balances in general. The deep economic crisis that built up during the late 1970s and early 1980s laid the basis for a comprehensive turn-around in economic policy making. Since then, a broad political consensus has grown around the objective of sustainable fiscal policy in the sense that current policies (spending programmes etc.) can be sustained in the foreseeable future without leaving growing debt to future generations. This objective of fiscal sustainability was established with the comprehensive medium-term fiscal strategies presented in 1997 and 2001, *Denmark 2005* (Government, 1997), and *A sustainable future – Denmark 2010* (Government, 2001). These strategies have built a broad political understanding and consensus about: *i)* the importance of guiding fiscal policy based on a forward-looking medium- and long-term perspective; and *ii)* the need to promote high employment rates for ensuring fiscal sustainability in an economy with high tax rates and generous income benefits for those not working. Building on this growing consensus, and the Welfare Commission's report prepared during 2003-05, it was possible to conclude, in June 2006, a political agreement supported by about 90% of the votes in Parliament on gradually raising the age thresholds for the voluntary early retirement and regular pensions. Compared to the experience of other European countries, it is clear that the recent Danish fiscal strategies have been effective in building consensus and political will to adhere to the targets they set out.

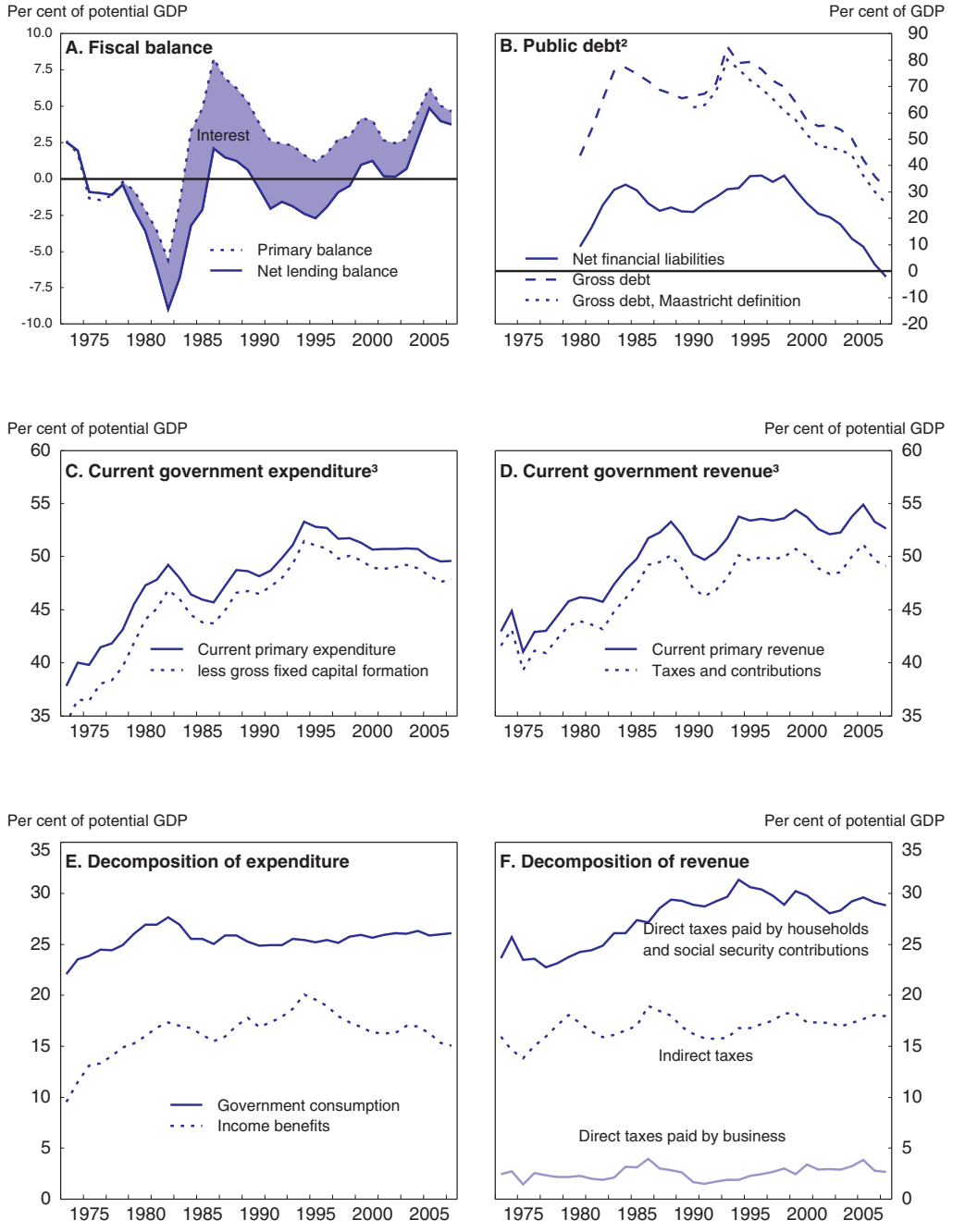
Still, certain aspects of fiscal management have continuously caused problems for successive governments. First, there is a strong tendency for public consumption spending to drift beyond the target year after year (Chapter 1). Second, once benefit schemes have been introduced, their use has tended to expand beyond original projections and often also beyond their original purpose. Revising a benefit scheme is then extremely difficult as recipients start to view benefits as an "acquired right". This general problem is compounded in Denmark by the fact that the electoral system favours numerous small parties and virtually all Danish governments are in a minority and have to negotiate with opposition or support parties for any change in legislation, including even small adjustments of the parameters of benefit schemes. Voluntary early retirement is a clear case of an expensive benefit scheme that has grown in use far beyond the original purpose set out in 1979, leading all major economic advisers to recommend abolishing it (Economic Council, 2005; OECD, 2005 and 2006; Welfare Commission, 2006). Yet, with the welfare agreement from June 2006, voluntary early retirement will continue as a five-year scheme in all foreseeable future, despite strongly limiting the room for increasing public spending in areas like health care.

A closer examination of movements in the fiscal balance, and its components, since the 1970s reveals the following patterns (Figure 2.1):

- Fiscal consolidations, via genuine consumption spending cuts, have only happened under circumstances of extreme and prolonged crisis, namely in the early 1980s. Aside

Figure 2.1. **Fiscal consolidations and relaxations since the 1970s**

Cyclically adjusted measures[1]



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1. The method used to calculate cyclically adjusted series is described in Girouard and André (2005). As the cyclical adjustment of government disbursements is associated with benefit payments, public consumption is not cyclically adjusted. To follow convention, debt levels are shown relative to actual GDP, not potential.
2. Gross debt refers to consolidated general government gross financial liabilities following the national accounts definition with market-based valuations of liabilities. Maastricht debt differs from this by being based on bond face value while excluding trade credits and advances as well as insurance technical reserves from the liabilities. Net financial liabilities include all financial assets held by government: equity as well as debt instruments.
3. Current primary expenditure and revenue exclude capital transactions and interest payments.

Source: OECD, *Economic Outlook No. 82 Database*.

from this, there have been no marked year-on-year reductions in government consumption as a share of potential GDP.

- During the 1990s, fiscal consolidation was achieved *via* a better functioning labour market, leading to clear reductions in social security benefit payments as a share of potential GDP. This mainly reflected fewer recipients, but there were also some changes to the benefit schemes. Meanwhile, government consumption increased gradually including in 1998-99 when the *Whitsun* fiscal consolidation package was introduced to contain domestic demand.
- Traditionally, taxes have been used flexibly for fiscal consolidation. Indirect taxes have been altered frequently, with the introduction of green taxes in the 1990s helping fiscal consolidation as well as financing income tax cuts. Moreover, reduced interest deductibility in the 1986-87 and 1998-99 consolidation packages and increased pension taxation in the 1998-99 package all lifted household taxation visibly. However, with the tax freeze introduced in 2001, this option is currently constrained.[1]

The lesson to draw is that the Achilles heel for any fiscal framework in a Danish context is the capacity to manage public consumption growth in line with targets, and to avoid establishing new benefit schemes that are difficult to modify once introduced. It is important to be realistic in recognising that if public consumption spending now grows strongly beyond what is planned, then it will be very cumbersome to bring it back down. By contrast, until the introduction of the tax freeze in 2002, it has been less difficult to increase taxes when motivated by the need to ensure long-run fiscal sustainability.

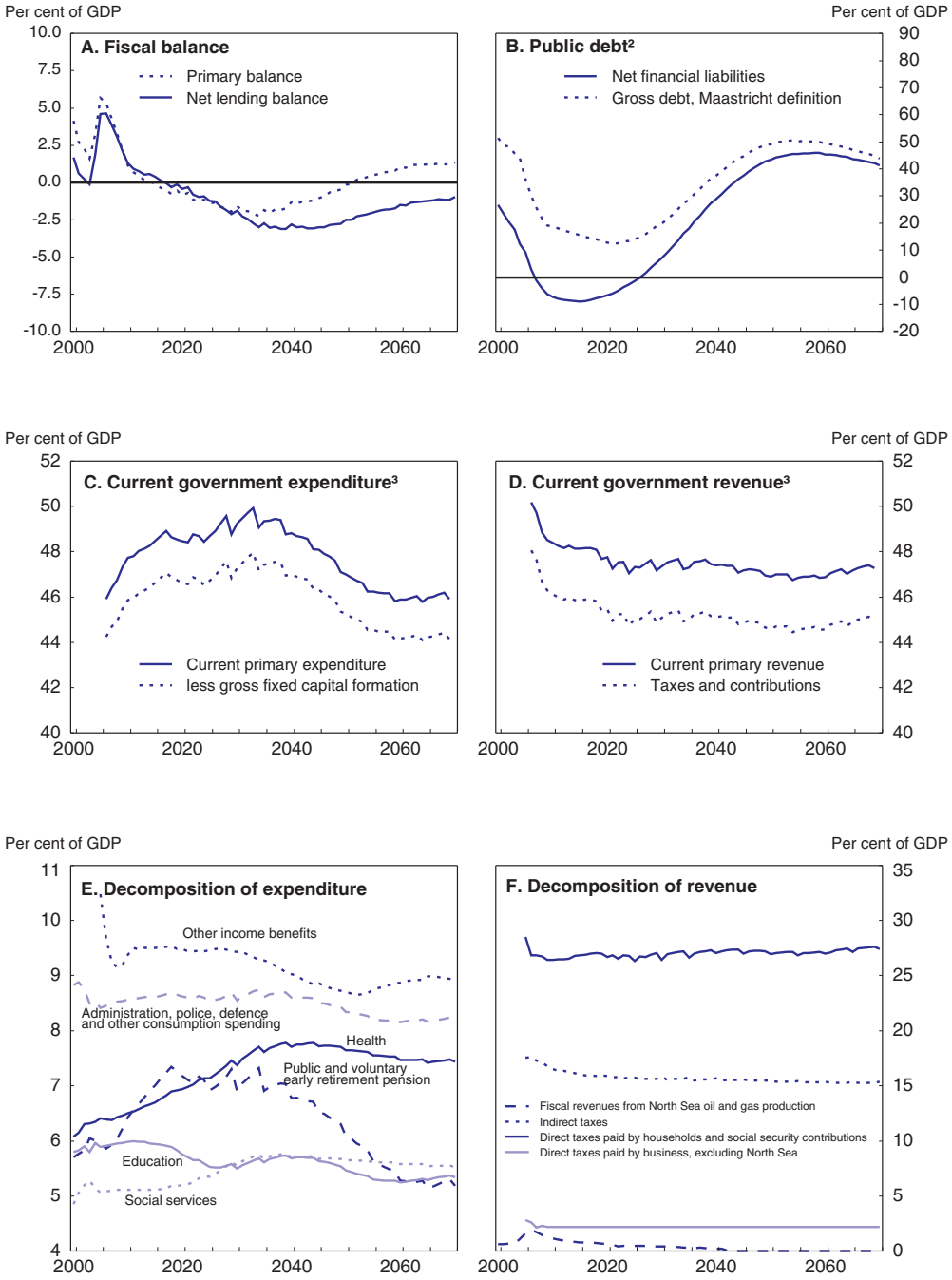
Evaluated relative to the original objectives, both the 2005 Strategy and the 2010 Strategy have been highly successful at reducing public debt, which has come down considerably more than originally planned. Both strategies have been reasonably successful at raising employment, although the ambitious targets have not been fully met. However, government consumption expenditure has constantly increased more than targeted, resulting in strong increases in municipal income tax rates, notably during the late 1990s. In the original 2005 Strategy, the tax-to-GDP ratio was supposed to fall from 49½ per cent in 1997 to 45½ per cent in 2005. Yet, now ten years after the launch of the 2005 Strategy, the structural tax-to-GDP ratio remains around 47½ per cent, abstracting from temporary movements in tax revenues – even when including the 2004 and 2008-09 tax cuts. Tax-bases have increased more than expected and, therefore, the tax-to-GDP ratio has not fallen much despite income tax cuts exceeding what was anticipated in the 2010 Strategy.

The new 2015 Strategy

A new medium-term framework for fiscal policy was presented in August 2007. As the title *Towards new goals – Denmark 2015* and the subtitle *Sustainable welfare and growth* indicate, the strategy continues the line from the 2010 Strategy by insisting on fiscal sustainability as an overarching requirement: improvements introduced during the years to 2015 should also be sustainable after 2015 without necessitating tax increases or other fiscal consolidation measures. Meanwhile, the June 2006 agreement to raise the retirement age in line with longevity has reduced the need to pre-save for large future pension expenditures. The fiscal surplus will therefore be allowed to decline towards 2015 and, in the technical scenario beyond 2015, a deficit emerges. As a consequence, debt reduction will slow down, although gross public debt will move below 15% of GDP during the years 2016-26. This means that the value of assets held by government will exceed gross debt implying positive net assets peaking at 9% of GDP in 2015 (Figure 2.2).

Figure 2.2. **Long-term development of public finances implied by the 2015 Strategy**

Beyond 2015, the series illustrate what lies behind the fiscal sustainability indicator calculations[1]



StatLink http://dx.doi.org/10.1787/263308001818

1. The expenditure decomposition is purely technical, also for the years to 2015; it does not reflect explicit budget priorities.
2. Gross debt refers to consolidated general government financial liabilities following the national accounts definition with market-based valuations of liabilities. Maastricht debt differs from this by being based on bond face value while excluding trade credits and advances as well as insurance technical reserves from the liabilities. Net financial liabilities include all financial assets held by government: equity as well as debt instruments.
3. Current primary expenditure and revenue exclude capital transactions and interest payments.

Source: Ministry of Finance.

Public spending will increase. In the strategy's long-run scenario, total government primary expenditure reaches 49-50% of GDP in 2030-40 and thereafter falls to 46% in 2055-70. Demographic changes imply that spending on public and voluntary early retirement pensions rises as a share of GDP by 1¼ percentage points between now and 2019, when the process of raising the retirement age thresholds starts. Government consumption spending rises later, as the largest cohorts grow older and need more care, adding 1½ percentage points of GDP to healthcare spending over the coming 30 years, and ¾ percentage points of GDP to spending on social services, *i.e.* long-term care (Figure 2.2).

Fiscal revenues will decline. In the strategy's long-run scenario, total government primary revenue reaches a low of 47% of GDP during 2045-65. In the near future, a rather steep fall in revenues should be expected as temporary and cyclical factors dissipate, but thereafter, revenues are broadly constant. Given the peculiarities of the Danish context, demographic changes will not erode revenues because most social security benefits and income from pension funds are taxed. However, oil and gas production in the North Sea has a clear time profile: currently fiscal revenues are exceptionally large, reaching 2% of GDP in 2006, but that will not continue in the long run as the currently known oil and gas reserves will reach depletion within a foreseeable future (Figure 2.2).[2]

Is fiscal policy sustainable?

The paths for fiscal balance and public debt implied by the 2015 Strategy are reasonable. The Government's own calculations find that the strategy is exactly sustainable after incorporating the effects of the 2008 Budget proposal, as presented in August, and the September agreement on tax reform. This assessment is based on the Ministry of Finance's sustainability indicator (Box 2.1). Yet, in the technical scenario beyond the 2015 planning horizon, public debt will grows considerably with net financial liabilities reaching a plateau of 45% of GDP late in the scenario – well above the peaks of 33-36% seen in the 1980s and 1990s.

A subsequent independent report, as well as a background report issued by the government following the 2015 Strategy, has analysed how sensitive this assessment is to changes in various assumptions. Assuming "healthy ageing" is not unreasonable (Chapter 5), but if instead spending remains at current levels for each age group, the structural fiscal surplus would need to rise by 1% of GDP to restore sustainability (Economic Council, 2007). Assumptions about interest rates have important effects, but they are rather complex and tend to cancel out each other. Most importantly, higher returns on assets boost pension tax revenues and reduce public spending on pension supplements, housing benefits etc. as these are withdrawn when retirees have high income from the funded labour-market pensions. On the other hand, tax deduction for households' higher interest expenditures would also rise. Finally, a higher interest rate on government borrowing implies a stronger discounting of the post-2050 primary surpluses. In sum, if raising the assumption about the return on all financial assets by one percentage point, then fiscal sustainability would appear 0.3-0.4% of GDP better. It could be argued that the 2015 Strategy's assumption of 5¾ per cent is too high; 4¾ per cent, as used by the Economic Council and the DREAM model would be in line with the average long-run real interest rates observed in Denmark over the past 140 years.[3] Meanwhile, it could also be argued that the 2015 Strategy's assumption of no risk premium in the return on equity is too pessimistic. And in fact, if holding the return on equity constant, then the assessment

Box 2.1. **The Danish fiscal sustainability indicator**

The fiscal sustainability indicator seeks to incorporate predictable future changes in a consistency check of the robustness and sustainability of policy initiatives. It indicates, in per cent of current GDP, how much the fiscal balance needs to be raised in order to avoid growing debt in the long term. A value of zero implies that the debt-to-GDP ratio will be on a stable path in the long run. Until 2015, it is based on the policy scenario in the 2015 Strategy and, after 2015, it builds on the following assumptions:

- Demographically induced changes in the demand for publicly funded services and social security benefits are based on constant propensities for detailed subgroups defined by age, gender and country of birth. For health and long-term care, the calculations follow a "healthy ageing" approach by attaching part of current costs to the last three years of life, meaning that rising longevity as such adds about half as much to spending as in the absence of this correction of age-related costs. Aside from the continued indexation and rise in pension age thresholds, no changes in life patterns are incorporated.
- Aside from demographic effects, public service spending follows general wage growth. As the prices of intermediate supplies etc. used in service provision grow less than wages, this convention implies that the volume of public services per user can grow moderately over time (on top of which come service improvements associated with unmeasured productivity gains in the public sector). It effectively also allows for a gradual substitution towards more computers, supplies, equipment, etc., per unit of labour input as the relative price changes.
- The social security benefits paid to a person with given characteristics also follow general wage growth.
- Tax rates remain constant while excise duties specified in nominal DKK amounts grow in line with general inflation. Subsidies and net transfers to abroad are a constant share of GDP.
- Government gross investments follow the path needed to ensure that the public capital stock grows in line with the provision of publicly funded services.
- The nominal yield on all financial assets, including equity as well as government bonds, is set at 5¾ per cent in the long run. It reflects inflation of 1¾ per cent and a real interest rate of 3.9%. Annual productivity growth in the private business sector is assumed to be 2%.

Source: Government (2007a), *Mod nye mål – Danmark 2015* (Towards new goals – Denmark 2015), August; Government (2006), *Denmark's Convergence Programme* 2006, November; Ministry of Finance (2007), *Mod Nye Mål – Danmark 2015: Teknisk Baggrundsrapport* (Towards new goals – Denmark 2015: Technical background report), December.

of fiscal sustainability is virtually unaffected by modifications of the interest rate assumption (Ministry of Finance, 2007).

In international comparison, Denmark is well prepared for the fiscal consequences of ageing. Denmark is one of a very small number of European Union countries whose policies could be considered sustainable when measured using a simple standardised indicator (European Commission, 2006).

Operational targets for fiscal policy

The most prominent operational target concerns the structural fiscal balance (Box 2.2). The new 2015 Strategy confirms the target of the 2010 Strategy to have a structural net lending surplus of ¾-1¾ per cent of GDP until 2010. Thereafter, the target for net lending is simply to have structural balance or surplus. The targets for the fiscal balance imply a path for the net debt or asset position, but this path is not a binding target. In this respect, the operational targets in the 2015 Strategy put less emphasis on gross debt than in the 2010 Strategy which had a specific target of halving gross financial liabilities from 53% of GDP in 2000 to 26% in 2010.

The targets for the fiscal balance conform fully with the European Union's Stability and Growth Pact (SGP). Until 2010, the target exceeds the EU requirement by a wide margin, and for 2011-15, the strategy's target corresponds to the SGP requirement to aim for close to balance or surplus on public finances measured in structural terms.[4] This implies that automatic stabilisers can be allowed to work fully during an economic downturn without compromising the SGP requirement to never have net lending deficits of more than 3% of GDP: based on the historical strength of Danish business cycle movements, it is highly unlikely that the actual fiscal balance will go beyond a deficit of 3% of GDP if the structural net lending is in balance or surplus (Dalsgaard and de Serres, 2000).

The role of wage and benefit indexation and the tax freeze

The indexation mechanisms making public–sector wages and income benefits grow in line with private-sector earnings gives stability but, at the same time, stress the importance of on-going reforms of benefit schemes. These indexation mechanisms were introduced back in the 1980s and guarantee that public-sector employees and those receiving unemployment benefits, disability benefits or other income support will not see their purchasing power decline over time relative to other people in society. Basing the 2015 Strategy and the long-run sustainability indicator on an infinite continuation of this indexation mechanism makes the assessments of sustainability realistic. But it also requires addressing situations where the parameters of benefit systems generate adverse incentives to overuse of benefit schemes or lock recipients into unemployment or inactivity traps. Indeed, the 2015 Strategy's fiscal sustainability hinges on new effective labour-market initiatives being introduced following the recommendations of the Labour-Market Committee which is being established now (Chapter 3). It also hinges on future adherence to the principle of retirement age indexation established by the June 2006 agreement: as longevity rises, additional increases in the retirement age must be passed into law in the future. It is vital that this is understood and adhered to. Finally, when public-sector pay automatically grows in line with private-sector pay, it is vital that feasible productivity gains are pursued as vigorously in the public sector as in the private sector (Chapter 5), while overcoming the strong tendency for public consumption to grow faster than planned (Chapter 1).

The tax freeze introduced in 2001 seeks to ensure similar stability for tax payers, but its mechanics could be improved. Having a ceiling on taxes helps to focus public service management on value for money rather than simply increasing spending. It is therefore a natural part of a fiscal strategy. However, capping the real estate tax (*ejendomsværdiskatten*) for each dwelling at its nominal 2002 level has magnified the indirect subsidies for housing as prices and property valuations have surged, as analysed in the previous *Survey* (OECD, 2006). The similar nominal freeze on the taxes and levies that are stipulated in

Box 2.2. **Operational targets and requirements in the 2015 Strategy**

The strategy rests on the long-run sustainability requirement that policies, including spending increases or tax changes, should only be introduced if they can be sustained also beyond 2015 without causing unsustainable growth in public debt. The operational targets focus on the structural fiscal balance:

- Towards 2010, the net lending should be ¾-1¾ per cent of GDP when adjusted for cyclical and other temporary factors. From 2011 to 2015, there should be balance or surplus.*

As a consequence, public sector net debt is expected to be replaced by a small net asset position. Gross debt, measured according to the Maastricht definition, is expected to fall to about 15% of GDP in 2015. These debt paths are, however, not binding targets. For public spending and taxation, the government plans as follows:

- In volume terms, public consumption can grow 1¾ per cent in 2008, 1% annually in 2009-12, and ¾ per cent annually 2013-15. This implies that public consumption can expand slightly more than the aggregate economy, in the sense that consumption spending is allowed to grow from just below 26% of cyclically-adjusted GDP in 2007 to maximum 26½ per cent of GDP by 2015. This ceiling is a new element introduced with the 2015 Strategy, but the statements about adjustments in case consumption spending drifts beyond plan are vague: "If spending as a share of structural GDP rises above 26½ per cent, then the government is committed to reconsider fiscal priorities with a view to bring spending in line with what is presumed at the planning horizon's end in 2015."
- A special fund with capital of DKK 50 billion (2.8% of one year's GDP) will be established to finance additional public investment spending during 2009-18.
- Public income benefits will continue to be indexed on private sector wages. Public-sector wages are assumed to grow in line with private sector wages.
- The tax freeze introduced in 2001 will continue: no tax rates will be increased and taxes or levies that are stipulated in nominal terms will stay constant, except for energy taxes that will now, from 2008 onwards, grow in line with medium-term inflation (1.8% annually).

Given the above, fiscal sustainability requires these labour market outcomes:

- The demographically determined decline in employment by 30 000 from 2007 to 2015 must be countered not only by the estimated 25 000 increase resulting from already agreed reforms, but also by new reforms capable of moving an additional 20 000 persons into unsubsidized employment.
- Average hours worked per person employed must not decline. Effectively, this implies an increase in hours worked for employees with given characteristics, since the compositional change with a rising share of elderly and young people in the labour force, other things being equal, implies a reduction in average working hours of 2% until 2015 as these groups often work part time.

* The structural surplus target until 2010 is identical to that in the 2010 Strategy, except for technical revisions associated with the statistical reclassification of the Labour Market Supplementary Pension scheme (ATP), which reduced the structural fiscal surplus by about 1% of GDP, and the suspension of the Special Pension scheme (SP), which raised the structural fiscal surplus by ¼ per cent of GDP.

Source: Government (2007*a*), *Mod nye mål – Danmark 2015* (Towards new goals – Denmark 2015), August.

kroner amounts per unit or volume has in some cases precluded adjustments that would help environment and other policy goals. Continuing the tax freeze unchanged from 2007 to 2015 would cost 0.4% of GDP on the sustainability indicator – almost the equivalent of the 2008-09 income tax cuts. It is therefore laudable that the 2015 Strategy provides for indexation of energy duties from 2008 onwards; that will finance almost half of the 2008-09 income tax cuts. Keeping the nominal freeze on environmental duties and the real estate tax in place until 2015, costs 0.2% of GDP on the sustainability calculator (Government, 2007a). The new government programme's intensions for a wide-ranging tax reform should therefore be welcomed: it should bring as much elements of taxation into play as possible in order to finance clear reductions in the high marginal taxes on labour (Chapter 4) as well as capital (Chapter 6).

Are the mechanisms to ensure that targets are adhered to strong enough?

The choice of targets used for a medium-term fiscal strategy should be based on a few key criteria: *i)* their rigour and thereby capacity to resist drift of public finances away from the intended path; *ii)* their robustness to the uncertainty surrounding the underlying economic conditions and assumptions that may change during the course of the period covered by the strategy; and *iii)* their flexibility to facilitate ongoing policy reform, avoiding sub-optimization and rejection of initiatives that would be beneficial from an overall economic and social perspective. The two central targets, relating to the structural fiscal balance and long-run fiscal sustainability, satisfy notably the two latter of these criteria in addition to being intuitively sensible and understandable for the wider public. It is true that the sustainability indicator relies on a number of assumptions, including about future demographic developments and interest rates. But the objective of fiscal sustainability remains relevant irrespective of how these underlying conditions and assumptions might change. And, for given assumptions, the sustainability indicator provides an intuitively understandable quantification of the long-run impacts of policy proposals, with varying impact in the short and long run. It therefore facilitates ongoing policy reform well. Having a target for structural net lending adds a "down-to-earth" element: it abstracts from changes in the budget balance due to the economic cycle, revenues related to North Sea oil production, and pension fund earnings taxation, but when underlying conditions are considered to have changed permanently, it requires fiscal adjustment right away. In the context of policy reform, it implies that policy proposals with large up-front costs cannot be approved or "financed" by uncertain long-run fiscal returns.

However, performance against these targets is difficult to assess accurately in real time, implying a risk that public finances drift relative to the paths envisaged in the 2015 Strategy. Measurement of the structural net lending balance relies on assessments of the business cycle, making it easier to assess with one or two years hindsight than *ex ante*. A weak point of the 2015 Strategy may therefore prove to be that it lacks well-specified mechanisms for correcting deviations from the intended paths: if, for example, it turns out that reforms passed in recent years do not improve the functioning of the labour market as much as assumed, then the structural fiscal balance would be less strong. In that case, meeting the net lending target will require fiscal consolidation – but only when the true state of structural employment becomes known after some years. Similarly, a target band of 1% of GDP allows room for the structural balance to drift. If the structural surplus falls below the envisaged path and stays at the bottom of the target band until 2015, for example, the net debt to GDP ratio would be roughly 5 percentage points higher in 2015

than shown in Figure 2.2. When the fiscal balance is subsequently restored, public debt would be permanently higher than envisaged in the strategy. Yet, the effect on the fiscal sustainability indicator would be indistinguishable from a rounding error: a 5% of GDP shift in the initial net financial liabilities would worsen the sustainability indicator by slightly less than 0.1% of GDP.[5] Prudent adherence to the targets for structural net lending each year is therefore important. Moreover, calculation of the fiscal sustainability indicator is reliant on numerous assumptions and is computationally heavy. The rich documentation provided in the background report that followed the 2015 Strategy should therefore be welcomed (Ministry of Finance, 2007). The transparency it provides makes it relatively easy for external agencies to provide independent assessments of whether the strategy's targets are being met and thereby enhances the credibility of fiscal policy.

The ability to catch up and correct past drift might also be important with respect to the target for employment. In case recent labour market reforms turn out to be less effective than anticipated, the requirement for new reforms would be commensurately higher. The new Labour Market Commission has been tasked with preparing measures that could meet the employment and working time requirements of the 2015 Strategy, or even exceed them. Exceeding the 2015 Strategy's reform requirements would generate valuable room for manoeuvre.

It is an open question whether the mechanisms embodied in the 2015 Strategy will be strong enough to stem the tendency for public consumption spending to grow more than planned. The strategy has clearly articulated targets for the volume growth of public consumption each year. Yet, a similar framework applied under the preceding 2010 Strategy could not prevent public consumption volume from growing nearly twice as much as originally planned. The new ceiling stipulating that public consumption must not exceed 26.5% of potential GDP by 2015 is therefore welcome. However, if the annual volume targets are exceeded, the strategy does not necessarily prevent spending from rising above this ceiling before then returning to it in 2015, and there is little to ensure that future governments would not, in such circumstances, simply change the target. The structural net lending target, combined with the tax freeze, implies a limit on how much aggregate spending could rise, but if the structural component of reduction in unemployment and other benefit expenditure is overestimated, then public consumption spending might easily drift up and, in practice, this would be very hard to bring back down later. Indeed, international experience shows that fiscal frameworks embodying rigorous expenditure targets in addition to fiscal balance targets are more likely to succeed, generating the longer-lasting positive effects on public finance soundness (OECD, 2007). And in Sweden – being close to Denmark in terms of policy preferences – the rigorousness of the spending ceilings is currently being strengthened so as to prevent temporarily higher government revenues from leading to permanently higher expenditures (Box 2.3).

The tendency for municipal and regional overspending should be stemmed

In order to keep public finances in Denmark on the intended sustainable track, stronger spending control will be essential. To avoid public consumption drifting above 26½ per cent of GDP by 2015, the ceiling should be applied each year in the sense that if actual and projected spending indicates that the ceiling might be breached in 2015, action should be taken to redress excess consumption spending up front. In particular, each year's negotiation with municipal and regional authorities and the central government budget proposal should always be kept at a level where the realised outcome for public

Box 2.3. **Sweden's fiscal rules and institutions**

In the *Spring Fiscal Policy Bill*, released in April 2007, the Swedish government has announced a tightening of what was already a strict rule-based fiscal framework. The explicit purpose is to avoid fiscal drift during cyclical upturns, notably on the spending side.

The target set for the fiscal balance is broadly comparable to that in Denmark, even if the mechanics are slightly different: general government net lending should average a surplus of 1% of GDP over a business cycle. The assessment of whether a budget under preparation keeps fiscal policy on track to meet this target, is based on a 7-year moving average for actual net lending in the preceding three years, the current year, the budget year and the two following years.

The Swedish fiscal rules have much more emphasis on spending ceilings that the Danish 2015 Strategy: the government envisages an ambitious reduction in public spending relative to GDP by 3 percentage points from 2006 to 2010. To achieve that, Parliament will decide each year in the spring on ceilings for total government spending in each of the next three years which are then binding for the government when it prepares the detailed fiscal bill presented to Parliament in the autumn. This procedure was originally introduced with the 2000 budget, but the multi-annual perspective had subsequently been relaxed. The ceiling applies to the central government but includes central government grants to local authorities; as they are under a balanced budget requirement, it is effectively a control of total public spending, apart from their own revenue raising possibilities. A break-down by ministry is often provided but for information only, as the ceiling applies to the central government as a whole. It is a "hard" ceiling which has so far never been breached, and to make room for unforeseen expenditure needs during the year, budgeted spending is kept a bit below the ceiling implying a safety margin of typically about ½ per cent of GDP.

Fiscal Council

The Swedish Government established a new Swedish Fiscal Policy Council (*Finanspolitiska rådet*) in August 2007 to increase the transparency and credibility of fiscal policy. The Council will focus on:

- the extent to which government budget documents are consistent with the achievement of long-term sustainability of public finances, the budget surplus target, and the multi-annual expenditure ceiling for the central government;
- the consistency between government policies and long-term sustainable growth and employment;
- how well budget documents explain and justify the fiscal policy stance and individual policy proposals; and
- the quality of forecasts and the models used to generate them.

The Fiscal Council is an independent agency with eight members appointed by the Government for three years. The members of the council are mainly academic economists, but there are also two former members of parliament (a former Minister of Finance and a former member of the parliamentary finance committee). The Fiscal Policy Council will report to the Government in mid-March (including any dissenting views of individual Council members), prior to the presentation of the Spring Fiscal Policy Bill (a pre-budget statement announcing policy priorities for the coming budget).

Source: Swedish Ministry of Finance (2007a and 2007b) and *www.finanspolitiskaradet.se*.

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consumption maintains a safety margin *vis-à-vis* the ceiling. Tools should be developed to quantify the uncertainties and find an appropriate size for this safety margin, and to better project structural nominal GDP.

From past experience, the tendency to spending drift beyond plan often comes from the municipal and regional authorities rather than the central government. It plays a role that education, health and social services provided locally and regionally receive more public attention than the central government administration, police and defence. For 2008, half of the municipalities have announced that they plan to increase their income tax rate, with these moves not being offset by other municipalities planning to reduce their income tax rates by a similar magnitude. The heart of the problem is that while municipalities may consider that tax hikes have adverse effects on labour supply, which diminish their income tax base, they do not internalise the associated reduction in central government tax revenues. This makes a case for stronger coordination, by changing or reinforcing the negotiation framework. The government's recent Quality Reform for public services will bring more focus on how services are provided and their quality level (Government, 2007b), but it needs to be followed up by measures to enhance efficiency and contain excessive cost pressures. A range of approaches could be considered:

- Municipal and regional authorities must have freedom to pursue efficiency in services provision. Where they have excess management and staff following the 2007 mergers, they should be allowed to lay off as recommended in the previous *Survey* (OECD, 2006). Enhanced efforts to pursue efficiency in service delivery would help to expand service provision and quality without raising costs, as discussed for health and long-term care in Chapter 5.
- Co-financing of income benefit expenditure can still be improved, to remove adverse incentives to overuse benefit schemes. This applies, in particular, to schemes related to poor health, including the flexjob scheme (Chapter 5).
- To avoid continued spending drift, it would help to negotiate each year's agreement from the starting point of the preceding year's agreement, rather than budgets or realised outcomes in municipal and regional authorities. It should therefore be welcomed that the government has announced that the agreements for 2009 will be prepared in this way.
- Transparency could be improved significantly with more accurate and up-to-date statistics on budget execution. This could be coupled with clearer consequences for overspending. For example, municipalities with a track record of spending overruns could be made subject to review of their internal procedures by national auditors, while municipalities with a fine track record on budget execution could be allowed to earn autonomy from such scrutiny.
- The tendency for municipalities to hike income tax rates beyond the agreement with central government would call for stronger control. One solution would be to oblige those municipalities wanting to hike tax rates to compensate those municipalities willing to lower tax rates: previous *Surveys* have recommended doing so *via* tradable taxation permits (OECD, 2003).
- Another approach would be to allow only municipalities with below-average unit costs to hike tax rates, thereby *combining benchmarking with enhanced fiscal procedures*. A weakness of benchmarking of public services can be that citizens tend to be interested mostly in the quality of the services they use personally and less in the cost efficiency of

the wider range of municipal activities. Benchmarking and transparency, therefore, risk reinforcing an asymmetric interest group pressure to drive up public spending and, in turn, taxes.[6] The regular measurement of user satisfaction, to be introduced with the Quality Reform of public services (Government, 2007b), may well add to this risk by making any demand for enhanced service provision very visible. Thus, there may be a case for combining benchmarking with enhanced fiscal procedures to ensure that, in the case of below-average efficiency, any expansion of service provision is funded by first exhausting the potential for productivity improvements and reductions in unit costs, before increasing municipal tax rates. For example, if a municipality with above-average unit costs wishes to provide child care services to more families, it should do so first by approaching the national average for the number of children per employee in its child care institutions. Only once it reaches the point where its unit costs are equal to, or below, the national average, should it expand child care coverage through investing in new facilities and employing more child care teachers funded by increased taxes. Alternative institutional changes could be considered that would oblige local authorities to "think twice" before raising expenditure or taxes, while at the same time maintaining their autonomy *vis-à-vis* central government. For example, it could be a requirement to have a two-thirds majority in the municipal council, a public hearing or even a local referendum for a decision to increase tax rates in a municipality with above-average unit costs.[7]

How should the government's balance sheet be managed?

The fiscal strategy's focus on long term budget developments and sustainability highlights the importance of considering the structure of the government's balance sheet. While fiscal policy discussions are often focused on the budget balance and government debt, in reality government's balance sheets are much more complex. Considering how best to manage the government's assets and liabilities might yield strategies that help to achieve long-term fiscal goals.

Since the mid 1970s, the Danish government has had a relatively large amount of outstanding government debt. Danish government gross financial liabilities, as a proportion of GDP, were above the OECD average between 1980 and 2000. The central government debt to GDP ratio was over 50% in the early 1980s, and after falling to just above 40% of GDP in the late 1980s, it again rose to nearly 60% of GDP in 1995. However, the debt to GDP ratio has fallen sharply since then due to strong budget surpluses, higher than expected North Sea oil revenue, and sales of government-owned enterprises. Government net financial liabilities, a measure which takes into account the value of government assets, were 31.5% of GDP in 1994 and fell to 2.7% of GDP in 2006. The balance sheet is expected to continue to improve and assets are expected to exceed liabilities by nearly 9% of GDP in 2015, before deteriorating again to a net liability position of about 45% of GDP in 2060. However, even when the balance sheet is at its strongest, there will still be some 10-15% of GDP in gross government debt outstanding. The difference between gross debt and the net financial position, apart from assets related to liquidity management, is the government's equity interest in the central bank and key state owned enterprises (Table 2.1).[8]

The current approach to managing the balance sheet implies that unexpected large actual budget surpluses or revenues from further sales of government-owned enterprises would be used to reduce outstanding debt. There are plans to reduce the government's

Table 2.1. **Consolidated general government balance sheet, end of year 1994 and 2006**

Per cent of GDP

			1994		2006	
			Financial assets	Liabilities	Financial assets	Liabilities
General government	Total financial instruments		46.4	78.0	33.9	36.0
	Debt	Securities (mainly government bonds)	11.5	68.5	1.4	25.8
		Loans	6.0	5.2	5.5	4.8
	Equity	Shares and other equity	12.2	0.0	14.6	0.0
	Short term instruments	Currency and deposits	8.2	0.7	4.4	0.8
		Other accounts receivable/payable	8.5	3.7	7.9	4.7
	Net financial assets		–31.5		–2.7	
Of which						
Central government	Total financial instruments		42.6	71.4	28.1	28.8
	Debt	Securities (mainly government bonds)	11.0	68.8	0.7	25.8
		Loans	5.6	1.6	4.0	0.6
	Equity[1]	Shares and other equity	12.0	0.0	11.2	0.0
	Short term instruments	Currency and deposits	6.3	0.0	3.7	0.0
		Other accounts receivable/payable	7.8	1.0	8.5	2.3
	Net financial assets		–28.8		–0.7	
Local government	Total financial instruments		6.4	9.2	6.5	8.0
	Debt	Securities	0.8	0.0	0.8	0.1
		Loans	1.4	4.5	1.6	4.3
	Equity[2]	Shares and other equity	0.2	0.0	3.4	0.0
	Short term instruments	Currency and deposits	1.8	0.7	0.5	0.8
		Other accounts receivable/payable	2.2	4.0	0.0	2.8
	Net financial assets		–2.8		–1.6	

Note: "Central government" and "Local government" do not add to "General government" because of consolidation between the central and local government jurisdictions and due to the exclusion of the small category of "social security funds".

1. Includes equity in Danmarks Nationalbank (DKK 55 billion), DONG energy (DKK 25 billion), DSB (DKK 8 billion), Energinet.dk (DKK 4 billion), Post Denmark (DKK 2 billion), and SAS (DKK 2 billion). Figures relate to the book value of the government's share of the equity in each company, except for the equity in Danmarks Nationalbank which is at market value.
2. Includes housing co-operative assets.

Source: Statistics Denmark National Accounts and Ministry of Finance.

ownership in a number of wholly or partly government-owned enterprises in the next few years. The government's interest in Scanlines was sold in August 2007 and government ownership of DONG Energy is likely be reduced from 73 to 50% some time during 2008. In addition, there are plans to privatise TV2 Danmark, although these plans are currently on hold due to legal issues. There are other enterprises that the government partly or wholly owns that might be considered candidates for privatisation. In addition, high oil prices and the possibility of future discoveries of additional oil reserves would increase the actual budget balance. Hence, there is some prospect that the net financial position of the government might be stronger than expected, even if the budget surplus targets are met.

Balance sheet analysis and debt reduction

A thorough analysis of the government's assets and liabilities may reveal existing explicit liabilities that are not currently reported. Reporting these liabilities on the balance sheet would increase the transparency of the government's overall financial position. If these liabilities are more expensive to service, on a risk-adjusted basis, than government debt, it would make sense to eliminate them first. While this would imply reducing the pace of debt reduction, or possibly even increasing debt issuance, it would have positive

implications for the fiscal position in the long term. If other existing liabilities are cheaper to service than debt, it would be more beneficial to continue to reduce outstanding debt. Liabilities related to unfunded civil servant pensions are not currently reported on the general government balance sheet (although they will be in the future) and including them will worsen the net financial position (although it is not clear by how much). Since the expenditures associated with these liabilities are captured by the sustainability indicator, funding the liabilities would only improve the fiscal sustainability assessment to the extent that the assets put aside earned a higher yield than the cost of government debt. Funding the liabilities may improve the chances of privatisation (for microeconomic policy reasons) of some state owned enterprises. Setting aside some financial assets against the liabilities, or paying the current value of the liabilities into a private sector pension fund, would make it easier to transfer the staff of privatised companies into private sector pension arrangements.

There are, nevertheless, risks associated with setting aside funds to cover the cost of implicit liabilities (that are not on the balance sheet), such as future health spending or social security benefits. A key issue is that the presence of an asset might reduce the incentive to minimize the liability. For example, setting aside funds to pay for the costs associated with future health care spending might reduce the incentives to strive for productivity growth in health care provision. However, there might be cases where such pre-funding makes sense. For example, Chapter 6 discusses the possibility of pre-funding pension benefits for people with marginal attachment to the labour market, by introducing a government funded contribution to a pension scheme for social welfare recipients. This would bring forward the cost of pensions for this group and allow them to benefit from accrued investment returns. However, this is not an alternative use of budget surpluses, but rather a reduction in the current surplus.

If there are no more costly liabilities that should be financed, further fiscal surpluses should probably be used to pay off government debt. It is sometimes argued that government debt plays a unique role in the financial markets, due to its status as the lowest risk financial instrument in the market, and that the government should maintain a stock of debt even if the fiscal position allows it to be eliminated.[9] This argument does not seem to be strong in the Danish case. There are a number of close substitutes available. The Danish mortgage bond market is large and liquid, with outstanding bonds of more than 100% of GDP that generally have very high credit ratings. Non-callable mortgage bonds in particular are priced very much like government bonds (Christiansen *et al.*, 2003; Nykredit, 2006). However, mortgage bonds may not be a perfect substitute for government bonds since they entail some credit risk (that is, the risk of the losses on the mortgages underlying the bonds). The Danish financial markets also have access to a very large liquid market of euro dominated government bonds. The fixed exchange rate to the euro means that these bonds can be used as substitutes for Danish government bonds without having to take into account the risk of exchange rate changes.

However, it may also be argued that completely eliminating the government bond market may create additional costs when the government needs to borrow again in the future, while the resources devoted to managing public debt (and hence the potential savings from temporarily eliminating issuance) are negligible. The additional costs of re-entering the market derive from having to re-establish the institutional structures and required knowledge to trade in government bonds (for example, integrating the bonds into trading platforms, primary dealer systems, renegotiating collateral arrangements, etc.). In

addition, there might also be an interest rate premium associated with restoring issuance, if market participants are uncertain about the scope and magnitude of the issuance programme. However, if a new programme of debt issuance is required, it would be due to large and ongoing fiscal deficits, such as those projected after 2020. Clearly communicating this financing need to the market and carefully structuring the issuance programme to build liquidity quickly could minimise this liquidity premium.

Asset accumulation

Some accumulation of financial assets might be required as part of a debt reduction strategy. As the stock of debt declines, it may become increasingly expensive to buy back the bonds in advance of maturity, since there may be some investors that are reluctant to sell these bonds and their prices may rise. An alternative strategy is to allow the bonds to mature. In this case, actual budget surpluses in excess of debt maturities in any one year would be put aside for use in financing debt maturities when they occur. This approach would generate cost savings and some investment revenue, and so would improve the fiscal position. Such a strategy could be managed within the current institutional and risk management framework adopted by the central bank's government debt management operations (Box 2.4). The assets accumulated in such an arrangement should be invested in liquid instruments, such as mortgage bonds, that earn at least the cost of the outstanding debt.

Box 2.4. **Interest rate risk management of the government debt portfolio**

Interest rate risk is usually assessed by the amount of variation in interest payments, and measured by "duration", which is a measure of the average time until maturity of the stock of debt. The reductions in debt in recent years have been managed by targeting issuance into liquid bond lines and buying back, where it is costs effective, illiquid lines. This leads to a portfolio with relatively high duration, which means relatively low variability of interest costs, since much of the outstanding debt is fixed rate bonds with relatively long maturities.

The interest rate risk profile of the outstanding debt can then be changed by using interest rate swaps. This involves entering an agreement to receive a stream of fixed interest rate payments and to pay a floating interest rate. Since the interest rate on long term fixed rate debt is usually higher than short term debt, lowering the duration reduces the expected interest cost of the debt, but increases the risk of higher interest costs. Using interest rate swaps is normally efficient relative to simply issuing shorter maturity bonds, since the government tends to have the largest comparative advantage in the issuance of long dated bonds. However, entering into interest rate swaps exposes the government to counterparty credit risk (the risk that the swap counterparty will not pay their leg of the swap). This is managed through credit risk management framework, including a requirement that swaps are only entered into with counterparties that have high credit ratings and a requirement that the counterparty post collateral if the market value of the swap moves in the government's favour.

Source: Danmarks Nationalbank (2007a).

Further asset accumulation may be required if a decision is taken to maintain a government debt market and if actual budget surpluses are larger than currently expected (say, due to strong oil revenues or sales of government-owned enterprises). As many of the

assets on the balance sheet are unlikely to be sold, this scenario is probably unlikely. However, if it were to occur, an institutional framework that protects the assets would be required to ensure that they are used in a manner consistent with fiscal sustainability and the 2015 Strategy. There is a risk that financial asset accumulation may generate increased demand for public spending or tax cuts. Since assets would generally only be accumulated to help finance the expected future fiscal deficits resulting from demographic change, it is important that they should not be "spent" before they are needed (Pinfield, 1998). This problem could be resolved by establishing a legal framework that stipulates that the accumulated assets can only be used after a specified date and/or for a specified purpose. Similar institutional arrangements have been put in place for the existing asset funds that are managed by Danmarks Nationalbank such as the Financing Fund, which was established by law to manage around DKK 1.5 billion in assets that are to be used to support basic research in Denmark. It would also be important to make the management of the assets independent from government, since it is possible that future governments may wish to use the allocation of assets to achieve specific policy objectives (for example, supporting a particular industry).

If acquisition of financial assets is needed, consideration should be given to the composition of the asset portfolio. The mortgage bond market would provide a large liquid asset class that a government fund could invest in without necessarily having any impact on market prices. Investing in domestic shares may create a conflict between the government's role as regulator of company activity and its role as an owner of shares in these companies. This could be dealt with through an independent authority making investment decisions on behalf of government, with a mandate only to maximise returns within acceptable risk tolerances, and with restrictions on the size of holdings of shares in any one company. Another alternative is to avoid these issues altogether by minimising domestic equity investment. An increase in overall returns could be achieved by investing on foreign financial markets, including equities. However, there is a potential issue with investment in euro denominated assets, since their volume in Danish currency would rise in the unlikely event that the Kroner were to devalue against the euro. This might create the perception of reduced costs of not adhering to the fixed exchange rate regime and could thereby weaken the credibility of the fixed exchange rate, which has served Denmark well with stable inflation expectations and a negligible interest rate differential compared to the euro area.

If unexpected fiscal gains arise from further oil price increases or discoveries of new oil reserves, consideration could be given to creating a fund to smooth the benefits of this natural resource over future generations. This has been done in many oil producing countries. Again, this scenario is unlikely since government revenue from North Sea oil production is already declining and is expected to be virtually eliminated by 2040. However, if oil revenues increase in the future, there may be a case for sharing the benefits between generations, by using some of the windfall to cut taxes or increase spending and saving the rest for use by future generations. If this approach were followed, the assets would probably be best invested offshore. Many commodity-related funds invest in foreign assets in order to minimize the impact on the domestic economy of changes in commodity prices (Truman, 2007).

Conclusions

The fiscal strategy followed since the start of this decade provided the government with a framework to ensure that the improvement in the fiscal position was not wasted. As a consequence, Denmark is much better prepared than many countries for the weakening of public finances that is anticipated with demographic changes. However, there is a clear risk that this sound position will be weakened, notably through growing demands for publicly funded services. Some tightening of fiscal management should help to prevent this. In addition, the current juncture seems an opportune time to consider the structure of the government's balance sheet and the way this may change over time if the government's fiscal plans are realised (Box 2.5).

Box 2.5. **Recommendations regarding the medium-term fiscal strategy**

- To avoid that public consumption spending drifts above target, the ceiling should be applied each year in the sense that if actual and projected spending indicates that the 26½ per cent limit in 2015 may be breached, action should be taken to redress excess spending up front.
- The compliance of municipal and regional authorities with the limits to spending growth must be ensured. Transparency should be improved with more accurate and up-to-date statistics on budget execution coupled with clearer consequences for overspending.
- To have a buffer in case past reforms turn out to have raised structural employment by less than expected in the 2015 Strategy, the new Labour Market Commission should present specific measures going well beyond the labour supply requirements of the 2015 Strategy.
- If analysis of the government's balance sheet uncovers liabilities that are more costly than government debt, budget surpluses should be applied to reducing these liabilities. Otherwise, debt reduction should continue unless there are strong reasons to maintain a government bond market. If such a decision is taken and, subsequently, accumulation of financial assets becomes necessary, then it should be ensured that there is a clear legislative framework established to govern the management of the assets in order to prevent them from creating pressure for lower fiscal surpluses and to ensure that they are invested to maximize returns subject to risk, rather than being used for other policy objectives.

Notes

1. From around 2000, tax revenues from the household sector become very volatile due to accrual capital gains taxation in pension funds. Similarly, oil prices become an important factor for business taxation revenue. The 2004-05 increases in household and business tax revenue therefore do not reflect fiscal tightening in the sense of, for instance, raising tax rates; in fact, personal income taxation was cut in 2004.
2. The Danish national accounts treat North Sea oil and gas production as an integral part of the economy. There are no official statistical aggregates for the "mainland economy", unlike what exists for Norway. Fiscal revenues from oil and gas production are, therefore, included in the standard measures for the fiscal position used throughout this *Survey*. These fiscal revenues have risen from ¼ to 1½-2% of GDP over the past ten years (Figure 1.3), and they are expected to fall back gradually reaching 1% in five years and ½ per cent of GDP in 15 years (Figure 2.2). This falling profile is taken into account in the calculation of the fiscal sustainability indicator (Box 2.1). Adhering to fiscal sustainability, based on the 2015 Strategy, thereby emulates what could alternatively be achieved *via* a separate fund set up to capture extraordinary revenues from oil and gas production, as done in Norway.
3. During the 1875-2003 period, real interest rates on long-dated debt instruments virtually never departed from the 2-3% range, except for the inflationary decades beginning in late 1960

(Abildgren, 2005). Adding to this a 2% inflation rate consistent with the fixed exchange rate and ECB policy, gives the nominal interest rate of 4¾ per cent mentioned in the text.

4. Beyond 2015, the fiscal balance would continue declining to a deficit slightly larger than 3% of GDP in 2035-45 (Figure 2.2). This would clearly breach the Stability and Growth Pact's requirements, implying a need for fiscal consolidation at some point before then (Economic Council, 2007).

5. The fiscal sustainability indicator spreads out the effect as an annuity over an infinite time horizon, and the indicator therefore only moves by the product of the shift in initial position and the difference between real interest rates on public debt and GDP growth. The indicator would say that a 1% of GDP shift in initial net financial liabilities requires an 0.0175% of GDP move in the primary balance in order to restore fiscal sustainability.

6. The typical finding from studies of who, in practice, reads benchmarking results is that service providers and professionals are the most interested, as they are concerned about their public image and compare their own position with that of colleagues (Reilly *et al*. 2002). Many citizens even appear to be unaware of the municipal tax rates they are paying. A recent survey in Denmark found that while four out of five knew who their mayor was and what functions and services the municipality was responsible for, only one out of three knew what municipal income tax rate they were paying within a margin of five percentage points – even though comparisons of municipal tax rates feature prominently in newspapers every year (Pedersen, 2003). This clearly illustrates that even in a Nordic context, with municipalities playing a large role, local democracy may exert only limited control on the upward drift in income tax rates, and that there is a need for better information on each municipality's efficiency and the link to taxes.

7. If a proposal to raise taxes is turned down in a referendum, the municipality would then still be obliged to balance its budget over three years, and it would therefore have to reduce the speed of service expansion (or ultimately reduce the level of spending in real terms).

8. The government currently has a number of financial asset funds that are managed by the central bank, but these funds almost exclusively hold government bonds, so do not appear separately as assets in the balance sheet. The four funds are as follows. The Financing Fund manages around DKK 1.5 billion in assets that are to be used to support basic research in Denmark. The High Technology Foundation aims to facilitate the development of high technology research and will have DKK 16 billion in assets by 2012 (the fund had DKK 4.4 billion in 2006). The Preventative Measures Fund was established in 2007 to support projects aimed at preventing losses from the labour market due to physical and psychological injury. This fund was allocated DKK 3 billion and will each year transfer DKK 350 million to the Ministry of Employment for expenditure. The Social Pension Fund was established in 1970 to receive a special national retirement pension contribution. This contribution was ceased in 1982 and an accumulated pool of DKK 129 billion remains in the fund. Each year a transfer is made out of the fund to the Ministry of Social Affairs for expenditure. The Social Pension Fund is the only one of these funds that holds anything other than government bonds – it has a small portfolio of mortgage and index linked bonds (Danmarks Nationalbank, 2007a and 2007b).

9. Government bonds are often argued to play a unique role in the financial markets. They are generally the lowest credit risk financial instrument, since they are effectively backed by the taxing powers of the government. In practice, government bonds are used as a benchmark for pricing and referencing of other financial products, as a safe investment for portfolio diversification, to facilitate interest rate risk management, to assist with the implementation of monetary policy, and (in countries with current account deficits) to assist in attracting foreign capital inflow. A number of governments have chosen to continue to issue government bonds in excess of financing requirements, in order to support the development of financial markets. For example, in Australia, the decision to continue issuing government bonds despite a strong fiscal position was based primarily on the role of the government bond market in facilitating interest rate risk management through the Treasury Bond Futures market (Comley and Turvey, 2004).

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Chapter 3

Promoting employment and inclusiveness

Unemployment reached a three-decade low already by mid 2006, and has fallen further since then. A number of indicators suggest that the labour market is "tight" although wages growth has been benign until recently. This may be explained by a fall in the level of structural unemployment, but also changes in the industry composition of the economy that may have helped to contain overall wage growth pressures. Even so, the actual unemployment rate is now clearly below the NAIRU and recent data suggest some reaction of wages to the very tight labour market conditions. With continued, albeit somewhat more modest, economic growth projected and the government's new 2015 Strategy for fiscal policy relying on strong gains in labour utilisation, efforts to increase labour supply will have to be redoubled. This chapter assesses the prospect of promoting further employment growth, given the current labour market patterns.

The unemployment rate in Denmark has fallen substantially in recent years and yet wages growth has been relatively low and stable. A key reason that has been put forward for the stability of wages growth despite the fall in unemployment is that the NAIRU – the rate of unemployment consistent with non-accelerating inflation – has fallen in Denmark. This has been attributed to: active labour market policies, including greater efforts to mobilise people outside the labour market; hysteresis, as the length of the expansion provides opportunities for the former unemployed to develop work skills; increased supply of low wage workers from the new EU member states; and possibly more decentralised wage bargaining. However, the decline in the NAIRU may not fully explain the observed wage moderation. It may also be partially explained by significant changes in the industry structure towards sectors with relatively low labour intensity. These changes may have helped to contain the overall development of wages relative to labour productivity.

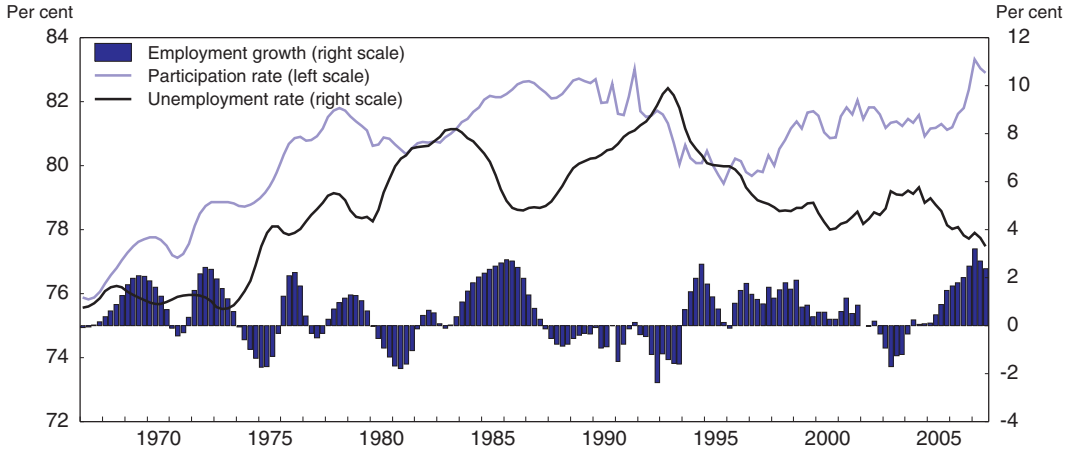
In any event, the unemployment rate is now well below the NAIRU and, in the absence of further major changes in the industry mix, it is likely that the current very tight labour market conditions will strengthen the upside risks to wages and prices. Marginal groups, such as immigrants from non-western countries, have gained disproportionately from the recent strength of the labour market, but to secure a foothold in employment, these groups will need time and stability. In order to prolong the current expansion and help achieve the employment goals of the government's new fiscal strategy, policies should continue to focus on returning the unemployed back to work quickly and increasing labour market participation of groups that traditionally have low attachment to the labour market. This will require enhancing the effectiveness of active labour market policies and ensuring that benefits provide the right incentives to get the most out of activation.

What is happening on the labour market in the current boom?

The recent performance of the Danish labour market is a clear success story when compared to the early 1990s. After peaking at about 10% in 1993, the unemployment rate, based on the Labour Force Survey, declined and has been below 4% since mid 2006. The fall has been gradual, albeit with a temporary reversal during the economic downturn at the start of the century. Since 2004, the decline in the unemployment rate has resumed at a strong pace, driven by strong employment growth that outpaced the concomitant pick-up in participation (Figure 3.1). Registered unemployment, which is more used in Denmark, has fallen even more over recent years, posting a new seasonally adjusted record low of 2.7% in December 2007. The differences between survey- and register-based data are discussed in Annex 3.A1.

There are increasing signs that expansion in the demand for labour is exceeding supply, particularly in the construction sector (Figure 3.2). This is clear when regional labour market authorities (panel A) and firms (panel B) are asked about labour shortages. For the construction sector, the proportion of occupations reporting shortages is high across most regions and, in all but two regions, construction is the sector with the largest

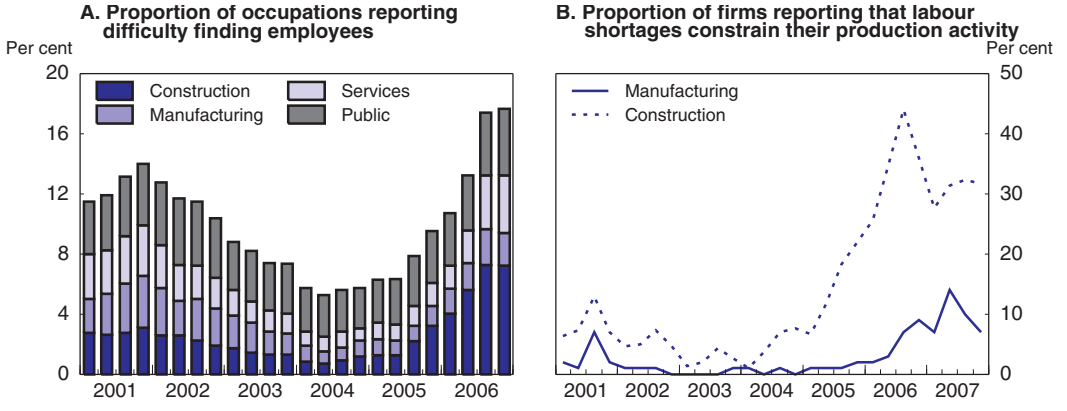
Figure 3.1. **Labour market indicators**



StatLink http://dx.doi.org/10.1787/263366150874

Source: OECD, *Economic Outlook No. 82 Database*.

Figure 3.2. **Bottlenecks in employment**[1]



StatLink http://dx.doi.org/10.1787/263374721168

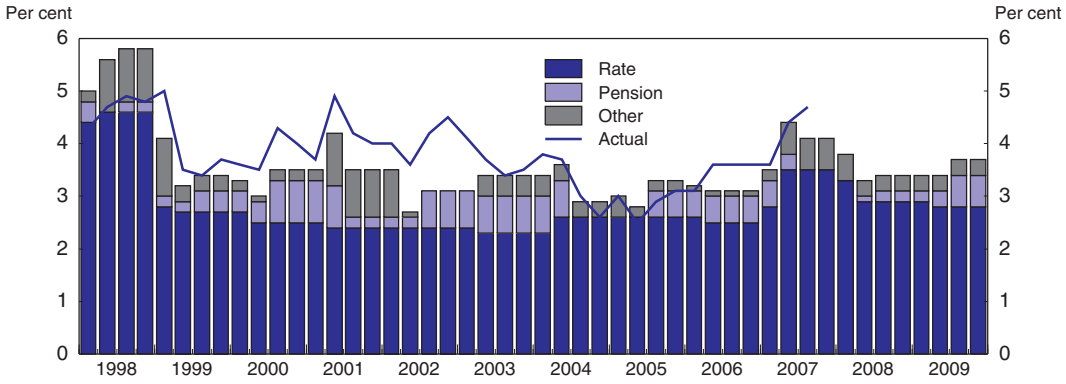
1. The number of occupations which report bottlenecks (Panel A) is expressed as a proportion of the total number of occupations in each industry and region. These figures are then averaged over industries and regions to construct an aggregate bottlenecks series. From 2007 this statistic has been replaced by the survey of unsuccessful recruitment attempts mentioned in the text.

Source: The National Labour Market Authority and OECD calculations; Statistics Denmark BAR03 and KBYG3.

number of firms reporting shortages.[1] In the public sector, shortages appear to be more widespread, with only a handful of regions reporting limited difficulties finding labour. Public and private employers were unable to fill 66 000 jobs during the autumn of 2007, and for some professions, the number of vacancies exceeded the number of registered unemployed (National Labour Market Authority, 2008).

Despite the fall in unemployment over the past decade and the most recent tightening in the labour market, there has been little evidence of a pick-up in wages growth until the beginning of 2006 (Figure 3.3). Recent wage negotiations have resulted in higher wage outcomes, particularly for 2007, and there is a risk that these outcomes will lead to wage drift in local level negotiations and also in public sector wage negotiations that are due to take

Figure 3.3. **Composition of wages growth**
1998Q1-2009Q4



StatLink http://dx.doi.org/10.1787/263443814734

Note: The figure shows the outcome of wage agreements for "blue collar" workers, disaggregated by wage rate, pension contribution and other non-wage elements of remuneration. The actual series includes local level pay outcomes.
Source: Confederation of Danish Employers.

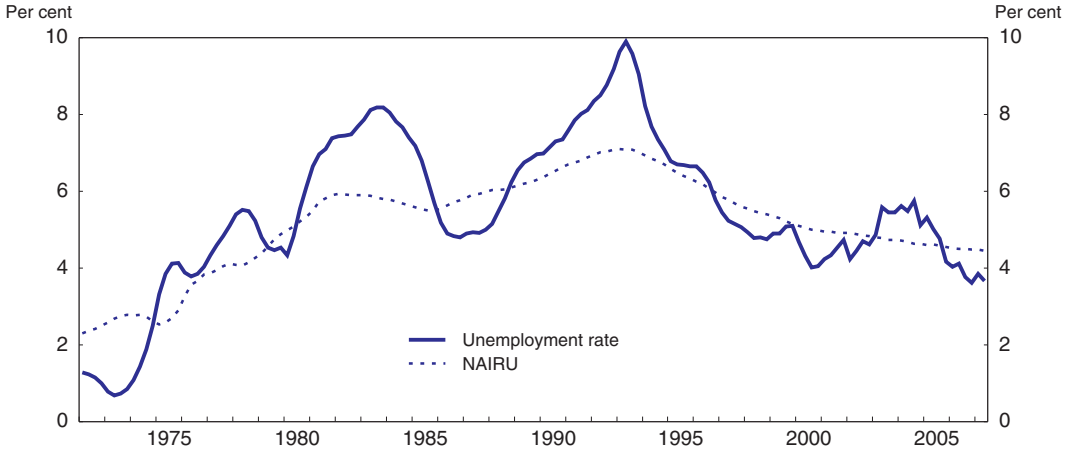
place in the spring of 2008. Stronger wages growth in comparison to other industrial countries, if not matched by an improvement in productivity, would erode competitiveness.

The NAIRU and the Phillips curve

NAIRU estimates

One explanation for the apparent lack of wage response to the falling unemployment rate over recent years is that the unemployment rate consistent with non-accelerating inflation (NAIRU) has fallen since the early to mid 1990s (Figure 3.4). In the first quarter of 2007, the NAIRU was estimated to be just below 4.5% (Box 3.1).[2] The NAIRU is a key concept for policy analysis since, when the actual unemployment rate is below the NAIRU, inflation is expected to rise, potentially implying the need for tighter macroeconomic policy. The significance of the fall in the NAIRU is that it might help to explain why

Figure 3.4. **Actual and structural unemployment rates**



StatLink http://dx.doi.org/10.1787/263488017801

Source: OECD, *OECD Economic Outlook* No. 82.

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Box 3.1. **NAIRU estimates for Denmark**

The NAIRU is defined as the equilibrium rate to which the actual unemployment rate converges in the absence of temporary supply shocks. This contrasts with the long-term equilibrium unemployment rate, which is reached when the NAIRU has fully adjusted to all supply and policy influences, including those having long lasting effects. This is consistent with the concept of a natural rate of unemployment. The NAIRU is a key concept for policy analysis, since when the actual unemployment rate is below the NAIRU inflation is expected to rise, potentially implying the need for tighter macroeconomic policy.

The NAIRU is estimated via a reduced-form Phillips curve, which estimates the relationship between inflation and the gap between actual unemployment and the NAIRU, controlling for temporary supply shocks. The reduced-form Phillips curve is shown to be consistent with an underlying structural model in which wages are set by bargaining between workers and firms in a context of imperfect product market competition. The reduced form approach is also a compromise between a purely structural approach and purely statistical approach, since it combines the Phillips curve relationship with a Kalman filter to jointly estimate the NAIRU and the Phillips curve parameters (Richardson *et al*., 2000).

The NAIRU estimates prepared for this *OECD Economic Survey*, and incorporated in the *OECD Economic Outlook*, No. 82, are based on a Phillips curve which models the change in core harmonised inflation as a function of lags of inflation (suggesting that inflation expectations are adaptive), the gap between actual unemployment and the NAIRU (the unemployment gap), the change in the gap between actual and trend productivity, the difference between import price inflation and general consumer price inflation (weighted by the share of imports in GDP), and the rate of inflation of the Danish Kroner-denominated price of oil. The Phillips curve is estimated in a Kalman Filter framework using maximum likelihood methods. This involves jointly estimating two equations: the Phillips curve and an equation for the evolution of the NAIRU, in which the NAIRU is modelled as a random walk. Further details of the estimation of the Phillips curve and the NAIRU are presented in Annex 3.A2.

inflation has been relatively moderate to date in the current expansion. Despite the fall in the NAIRU, the actual rate of unemployment appears to be below the NAIRU and this clearly points to inflation pressure building as a consequence of the tight labour market.

What factors explain the fall in the NAIRU?

Labour market policies

The strong performance of the Danish labour market over the last decade has generally been related to its specific institutional settings: the "flexicurity" which combines low employment protection legislation (leading to high job flows), a comprehensive social safety net and labour market policies that focus on the activation of the unemployed. The first element of the flexicurity model can be traced back more than 100 years, but the strong focus on activation originated in 1993-94 (Bredgaard *et al*., 2005). In this context, it has been argued that the reduction in unemployment since the early 1990s probably has more to do with reforms of unemployment benefits and active labour market policies (Andersen and Svarer, 2007). In the 1994 reforms, the duration of eligibility for unemployment benefit was reduced, availability and mobility rules and

sanctions were tightened, the right to re-qualify for eligibility for benefits after a brief time in employment was abolished, and the duty of activation was reinforced. In addition, there was an increased focus on initiatives for adult training and skills upgrading of the unemployed, individual action plans and earlier and more intensive activation programmes. A separate policy stream was introduced to reduce youth unemployment, involving earlier introduction of mandatory activation and a reduction in social assistance (previously, social assistance payments were higher than study grants, creating an incentive for young people to stay unemployed rather than study). Policy changes since 2000 include improved employment incentives for social assistance recipients, increased counselling of insured unemployed and increased control of availability for the labour market.[3] In 2002, the "starthelp" and "introductory benefit" introduced lower benefits for some groups (refugees and just-arrived immigrants) which meant a 30-50% reduction in income compared to cash benefits.

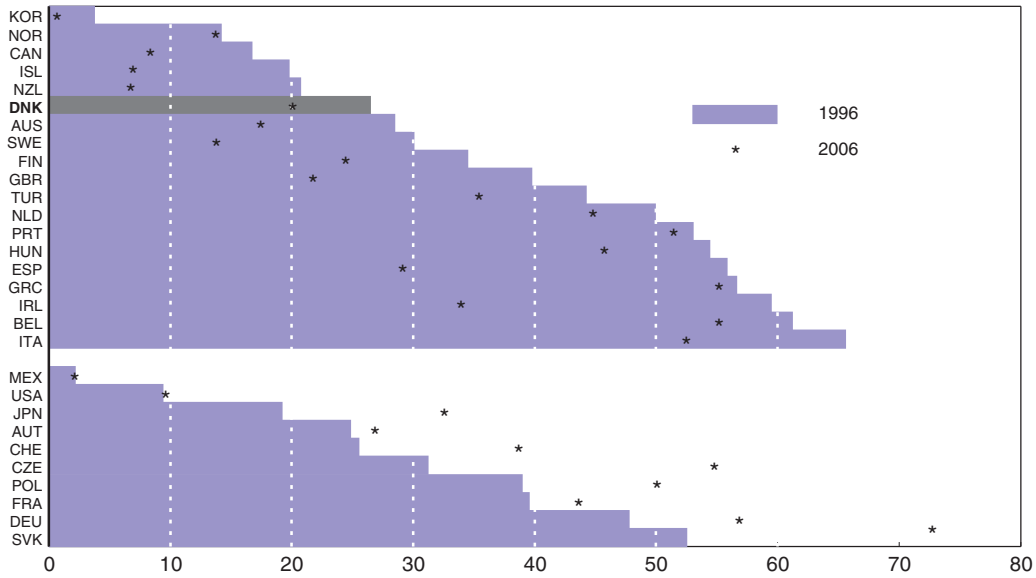
The Economic Council has estimated that 2 to 3 percentage points of the 7 percentage point reduction in the unemployment rate between 1993 and 2002, could be ascribed to the strength of the economic expansion; 1 to 1.5 percentage points was due to voluntary withdrawal from the labour market (early retirement, paid leave, etc.); and the rest can be attributed to changes in the framework for the labour market, including changes in labour market policy and more decentralised wage negotiations (Economic Council, 2002).

Hysteresis

Lower structural unemployment may have been achieved through the sustained fall in the actual unemployment rate. The hysteresis hypothesis (where cyclical fluctuations are said to have long-lasting effects on unemployment) is usually put forward to explain a persistently high unemployment rate: if a person is unemployed for a long period, they may face a deterioration of their human capital and so find it increasingly difficult to regain employment. A protracted period of falling unemployment may offer both long-term unemployed, and the discouraged unemployed, greater opportunity to gain work and to improve their skills, increasing the prospect of sustained attachment to the workforce. If there is indeed persistence in unemployment, as suggested by the hysteresis hypothesis, then long stable expansions will provide the greatest benefits in terms of providing opportunities for marginally attached workers to get a foothold in the labour market. This highlights the need to avoid policies that would increase the cyclical fluctuation of the economy.

The empirical evidence on the hysteresis hypothesis is mixed (see, for example, Chang *et al.*, 2005, and Camarero and Tamarit, 2004). Despite this uncertainty, there has been a noticeable reduction in the number of long-term unemployed over the last decade, as has been the case in many OECD countries (Figure 3.5). The relatively low incidence of long term unemployment in Denmark may partly be explained by the fact that there is a relatively high turnover rate in the labour market which translates into a high proportion of short spells of unemployment. However, Denmark has not been able to achieve as large a reduction in long term unemployment as in some other OECD countries, which is somewhat surprising given the strength of labour demand in 2006. In any event, there are limits to how far the hysteresis effect can go. Recently, there has been a marked rise in sickness absence as marginally attached workers have gained a foothold on the labour market (Chapter 5). This may indicate that the hysteresis effect might not continue in the

Figure 3.5. **Incidence of long term unemployment**
Share of unemployed with an unemployment spell of 12 months or more



StatLink http://dx.doi.org/10.1787/263488880621

Note: The figure shows countries grouped according to those that have experienced a fall in long term unemployment in the last decade in the top half and those that have had an increase in long term unemployment in the bottom half. Duration is measured as the length of time of the search for employment or the length of the period since leaving the last job, whichever is shorter. Data are based on the Labour Force Survey which requires that persons without work and in education or training are to be classified as unemployed if they are "currently available for work" and "seeking work". The unemployment figures presented above therefore will include people in activation programs, since people in activation programs (other than subsidised employment) are required to be available and seeking work during their activation program. It may be the case that participation in some forms of activation programs is counted as a termination of a spell of unemployment, in which case, high incidence of such programs would lower the overall proportion of long term unemployed.

Source: *OECD Incidence of Unemployment by Duration Database*, European Labour Force Survey Basic Concepts and Definitions.

coming years and that further structural reforms are needed to continue to reduce the NAIRU.

Increased labour supply through immigration

Another factor possibly explaining the fall in the NAIRU is an increase in the supply of labour, such as through immigration, if the newly supplied labour has lower reservation wages (for a given level of human capital) than the rest of the workforce. That is, if new entrants to the labour market have lower reservation wages, they might exert downward pressure on wages, which would be consistent with a lower unemployment rate when the labour market is in equilibrium. Similarly, structural unemployment might be lowered if immigration leads to better skills matching or a more flexible workforce.[4] The share of immigrants in total employment has risen sharply since the mid–1990s. In 1997, 3.7% of employees were immigrants, while by 2006 this number had risen to almost 6%. One key source of new immigrant workers is the new EU member states, by far the largest of which being Poland and Lithuania (Table 3.1).[5] Workers from the new EU member states now make up more than a half of the total number of work permits issued. In 2002, the "start help" and "introductory benefit" policies introduced a 7 year qualifying period for access to full cash benefits and, in the mean time, offered benefits in the order of 50-70% of regular

Table 3.1. **Total inflow of workers and workers from the new EU member states**
Working permits and EC/EEA residence certificates issued during the year

	2004	2005	2006
Total	**7 984**	**11 809**	**19 856**
Poland	1 502	3 069	7 341
Lithuania	1 034	1 723	2 042
Latvia	301	586	682
Slovakia	84	121	258
Romania	153	210	232
Hungary	106	204	168
Estonia	103	173	115
Czech Republic	112	132	108
Bulgaria	94	131	106
Slovenia	7	24	16

Note: The total is residence permits issued for "wage earners and self-employed people", "persons from the new EU member states", "Job card scheme and specialists", "interns" and "EU/EEA residence certificates for wage earners" from Danish Immigration Service and Ministry of Refugee, Immigration and Integration Affairs (2007). This excludes some people categorised as "others" who were issued a permit that would allow work, such as work permits for students, humanitarian work and trainees, since it is not possible to distinguish in this category between those who are working and those who are not. The listings for each country are "working permits" from Statistics Denmark Table VAN6.
Source: Danish Immigration Service and Ministry of Refugee, Immigration and Integration Affairs (2007) and Statistics Denmark Table VAN6.

social benefits. This reduced the disincentives to moving into the labour market associated with high benefit rates. While this means lower benefits than are available to some other groups in Denmark, the introductory benefit still provides income support purchasing power equivalent to, and even higher than, the benefits available in other countries (Tranæs *et al.*, 2006). At the same time, programmes were introduced to facilitate labour market integration, including language training and traineeships involving salary subsidies. Also, a motivation for the Danish job card programme is to ease the risk of labour shortages and wage pressure building up in specific industries and skill areas, thus promoting increased flexibility of the labour market.

Greater numbers of immigrants coming to Denmark for work may be putting downward pressure on wages growth, since there are indications that immigrants tend to have a minor, but significant, negative impact on the earnings of Danish-born employees (Malchow-Møller, Munch and Skaksen, 2007). The number of cross-border commuters has also risen sharply in recent years, notably from Sweden following the construction of the Oresund Bridge, and their labour supply may respond with particular flexibility, helping to reduce the NAIRU.

Decentralised wage bargaining

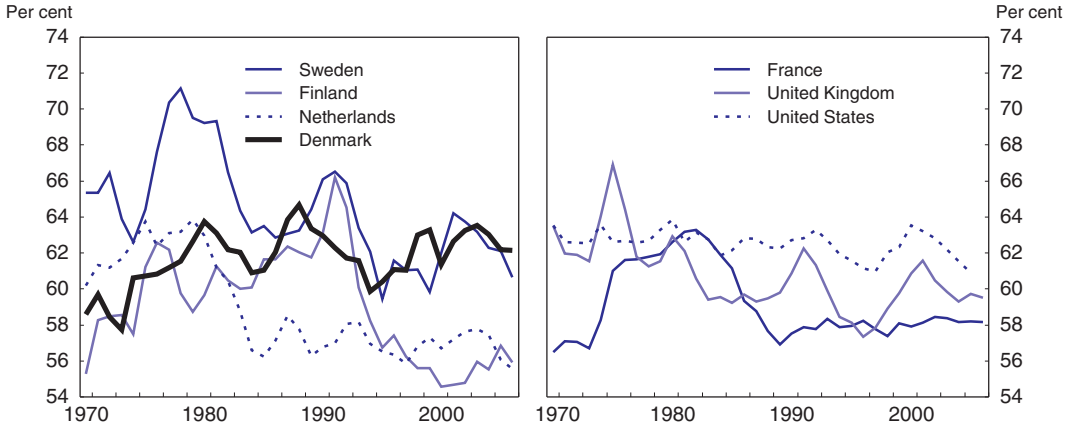
Another factor potentially explaining the fall in the NAIRU is the decentralisation of wage negotiations. Some decades ago, Denmark had a fairly centralised approach to wage bargaining, but pay setting processes are becoming more decentralised over time. Central negotiation between the Confederation of Danish Employers and the Danish Confederation of Trade Unions over working hours, pensions and base pay rises are being supplemented with firm level negotiations. This could increase the efficiency of the job matching process and lead to lower structural unemployment since it facilitates a closer match between wages and firm level performance. This may lead to wage growth being more closely tied to productivity growth (Economic Council, 2002, Beier and Pedersen, 2005).

The labour share and industry composition

The decline in the NAIRU may not fully explain the wage moderation observed until recently. The lack of a pick-up in wages growth may also reflect the effects of changes in industry composition, in addition to the reduction in the responsiveness of wages to strong employment growth. Put differently, analysis of the labour share of gross value added (GVA) suggests that there has not been as much wage moderation as the aggregate data suggest. While the share of labour compensation in GVA has been declining in many OECD countries over the last two decades, after the strong wages growth of the 1970s, it has been relatively stable in Denmark throughout the past three decades and has even shown some increase from the mid 1990s to the early 2000s. A stable labour share can be interpreted as a sign that real wages have grown in line with underlying labour productivity in Denmark. By contrast the declines in labour shares observed in many other European countries over the past two decades have been interpreted first, as the endogenous increase in capital in response to the increased cost of labour in the 1970s and, more recently, as a strong pressure for wage moderation in the context of globalisation (Figure 3.6).

Figure 3.6. **Labour share across countries**

Compensation of employees as a proportion of gross value added,1970-2006



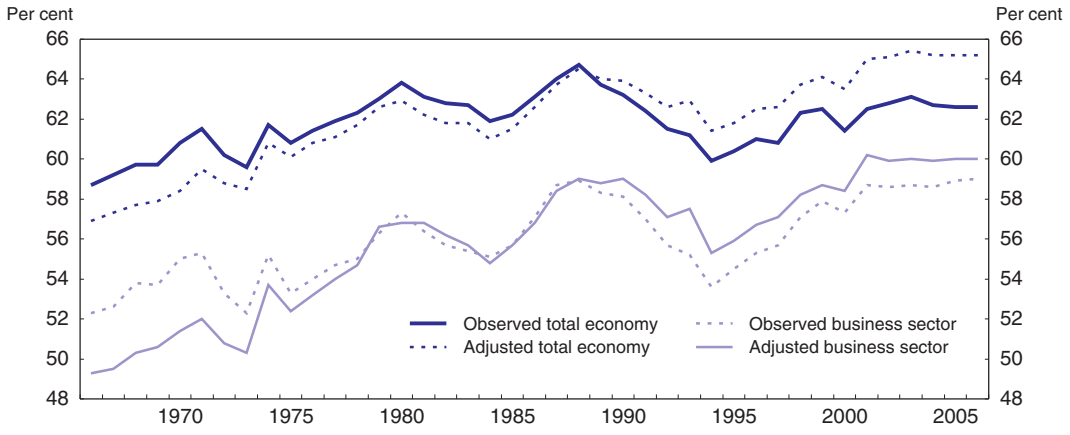
StatLink http://dx.doi.org/10.1787/263510748530

Source: OECD, *Economic Outlook No. 82 Database*, 2007.

Indeed, at industry level, the labour share has shown an upward trend in Denmark since the mid-1990s, which is particularly marked when focusing on the non-agricultural business sector. At the same time, however, structural changes have shifted value added towards sectors with lower labour shares thereby containing the overall development in wages relative to productivity (Figure 3.7). Changes in industry composition have put downward pressure on the aggregate labour share, while changes within sectors have put upward pressure on the labour share. That is, increasing compensation of employees at the industry level would have been more obvious if it were not for the change in industry structure, suggesting that the change in the sectoral composition of the economy helped keep aggregate wages growth in line with aggregate productivity. Consistent with this, industry level data suggests a stronger relationship between unemployment and wages growth than is seen in the aggregate data (Box 3.2 and Annex 3.A3). Hence, aggregate wages growth may have been subdued by changes in industry composition, despite the low

Figure 3.7. **Labour share in Denmark**

Compensation of employees as a percentage of gross value added



StatLink http://dx.doi.org/10.1787/263524278662

Source: Statistics Denmark National Accounts and OECD calculations.

Box 3.2. **The labour share and industry composition**

The labour share is the ratio of total compensation of employees to gross value added. The labour share is sometimes used as an indicator of the distribution of gains between employees and owners of capital. The fall in the labour share observed in many western countries was generally interpreted as a response to the strong wage push of the 1970s but more recently also to globalisation increasing the returns to capital in advanced economies at the expense of labour. If the labour share is rising, it might imply that wages are growing more quickly than productivity. Firms may then be forced to increase their prices to cover higher labour costs, rather than suffer a reduction in profits.

Factor shares are often regarded as being constant, at least in the long run. Such constancy is suggested by both traditional Solow-type growth models as well as some more recent models of endogenous growth. If the elasticity of substitution is not unitary, factor shares will change when the ratio of factor inputs change over time. However, there is little evidence in OECD countries of significant deviations of the elasticity of substitution from unity (Blanchard, 1998). In addition, a deviation in this relationship may be caused by changes in imported raw material prices or capital-augmenting technical change. Factors that lead to divergence between wages and the marginal product of labour, such as non-competitive pricing, union bargaining power or labour adjustment costs will shift the relationship between wages, capital and labour productivity, and so also shift the labour share (Bentolila and Saint-Paul, 2003). It has also been argued that changes in the labour share can be caused by changes in methods of remuneration, such as stock options and payroll savings schemes, or mis-measurement of the income of the self employed (de Serres, Scarpetta and de la Maisonneuve, 2002).

The aggregate labour share can be a misleading indicator of the degree of wage moderation for a number of reasons. In particular, a change in the labour share may reflect a gradual shift in the sector composition of the economy across sectors with different underlying labour shares. In order to assess the importance of this aggregation bias, econometric equations were estimated following the approach used in de Serres *et al.* (2002), which relate the growth rate of the labour share to its lagged growth rates, the level of the labour share as well as productivity growth, inflation measures, the unemployment

Box 3.2. **The labour share and industry composition** *(cont.)*

rate and the effective tax wedge. Two versions of this equation were estimated, one using the aggregate labour share and productivity data and the other taking account of industry level labour share and productivity data. These equations suggest that nominal wages do not necessarily fully adjust in the long run to changes in productivity. The key difference from the aggregated data is that the relationship between unemployment and wages was much stronger when the sectoral composition is taken into account. This provides some support to the argument that the observed wages growth may have been muted by changes in industry composition, despite the low unemployment rate.

Sources: Blanchard (1998); Bentolila and Saint-Paul (2003); de Serres, Scarpetta and de la Maisonneuve (2002).

unemployment rate.[6] While this analysis does not attempt to explain the causes of the industry composition changes, such changes may not continue to provide a moderating effect on aggregate wages growth. Capacity pressures and the possibility of inflationary increases in wages growth may be stronger than they appear at first glance.

The fall in the NAIRU and changes in industry composition may explain why Danish unemployment has fallen so far with few signs of significant increase in aggregate wages growth until recently. Without further analysis of the causes of industry structure change it is virtually impossible to predict whether this will continue to restrain aggregate wages growth. However, the factors that are likely to have lead to a fall in the NAIRU may continue to put downward pressure on structural unemployment. This is particularly so if the effectiveness of labour market policies can be improved further and if macroeconomic policies do not lead to an abrupt end to the current expansion.

How to support the current expansion and achieve the jobs required by the 2015 Strategy

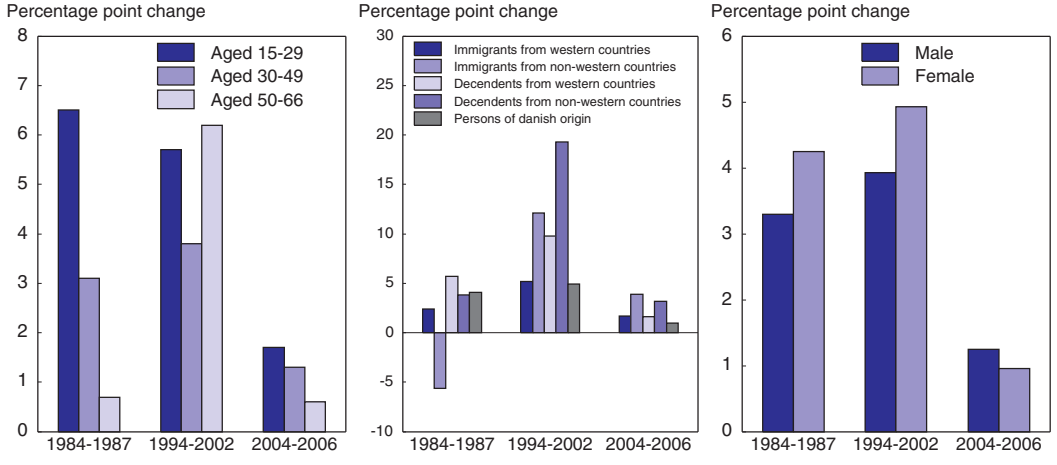
With the unemployment rate below the NAIRU and a wage reaction that may be greater than is suggested in the aggregate data already occurring, further increases in labour supply and reductions in structural unemployment are required to prolong the current expansion. In addition, the government's new 2015 Strategy for fiscal policy requires that the demographically induced-decline in structural employment of 30 000 from 2007 to 2015 must be countered not only by the estimated 25 000 increase in structural employment resulting from already agreed reforms, but also by new reforms capable of increasing structural (unsubsidised) employment by a further 20 000 persons. Also, average hours worked per person employed must not decline, implying an increase in hours worked by employed people, since the rising share of elderly and young people in the labour force implies a reduction in average working hours until 2015 (Government, 2007a). In order to support the current expansion, ensure that any cyclical increase in unemployment does not become entrenched and meet the government's structural employment targets, policy measures should continue to focus on returning the unemployed back to work quickly and increasing labour market participation of groups that traditionally have low attachment to the labour market.

Who are getting jobs and who are not?

With high employment by international standards, further gains in employment will require mobilisation of groups with traditionally low labour market attachment. In 2006, the employment to population ratio in Denmark was the third highest in the OECD, behind Iceland and Switzerland (OECD, 2007b). The expansion period between 1994 and 2002 provided a substantial boosts to groups that have traditionally had lower employment-to-population ratios: immigrants from non-western countries and their descendants, the young and people aged between 50 and 66, and females (Figure 3.8). The expansion that began in 2004 initially favoured young people with their employ-to-population ratio rising more than for other groups.[7] Judging from more recent data on unemployment, however, older workers (aged 50-66) are now experiencing the largest decline in unemployment: their unemployment rate fell 1.6 percentage points during the year to December 2007, compared to a 1.1 percentage point fall for all age groups combined. The recent expansion has also lowered unemployment amongst immigrants from the EU, non-EU Europe, North America and Asia, while little headway has been made in unemployment for immigrants from Africa. The rising employment-to-population ratios for immigrants and their descendents probably also reflect the fact that many second generation migrants have left the education system and that there has been a shift in the composition of immigrants away from family and asylum migrants, who have lower employment rates.

In 2005, around 20% of the working age population was outside the labour force and 40% of the working age population received income support at some point during the year (25% if calculated on a full-time equivalent basis). By far the largest group of people of working age that are outside the labour force are those on disability benefits and other forms of sickness absence (Table 3.2). About 15% of the people not in employment are retired from the labour force through the Voluntary Early Retirement Programme (VERP; *efterløn*). Almost two-thirds of them are women, and skilled workers make up a relatively large share (Confederation of Danish Employers, 2006).[8] The full-time equivalent of the number of people on active labour market programmes is about 5% of the total non-employed population. Around 35 000 people are placed in subsidised employment as part

Figure 3.8. **Change in employment-to-population ratios**



StatLink http://dx.doi.org/10.1787/263545086677

Source: Statistics Denmark RAS1.

Table 3.2. **Transfer payment recipients, 2005**

Number of persons and proportions of the population aged between 18 and 66 (full-year equivalents)

	Total	Men	Women	Age		
				18-29	30-49	50-66
Population aged 18-66	3 496 166	1 762 166	1 734 000	755 494	1 569 735	1 170 937
Proportion of population, full-time equivalent						
Total benefit recipients	25.0	20.8	29.2	13.7	20.0	39.1
Disability pension	6.9	6.2	7.6	1.2	4.7	13.5
Voluntary early retirement program	4.4	3.8	5.0	..	..	13.1
Unemployment benefits	3.8	3.4	4.1	2.6	4.1	4.0
Social assistance	2.7	2.5	2.9	3.9	3.3	1.1
Sick day benefits	2.0	1.7	2.2	1.0	2.3	2.1
Maternity day benefits	1.6	0.1	3.0	2.3	2.4	..
Old age pension	1.4	1.4	1.5	..	..	4.3
Local government activation	0.9	0.8	0.9	1.5	1.0	0.3
Rehabilitation	0.6	0.4	0.8	0.9	0.9	0.1
State activation	0.4	0.2	0.6	0.3	0.6	0.2
Unemployment allowance	0.3	0.2	0.4	0.1	0.3	0.4
Leave benefits	0.1	..	0.2	..	0.2	..

Note: "Disability pension" is *førtidspension* and "Voluntary early retirement program" is *efterløn*.
Source: Statistics Denmark – population is from BEF1A07 and benefit recipients is from SAM7.

of an active labour market programme, although these people are usually classed as employed in the labour market statistics. About 200 000 people aged between 18 and 66 are students (another 108 000 are vocational apprentices, meaning that they are both working and studying in the same field).[9] The proportions of the population studying, being in the VERP or receiving disability, sickness and rehabilitation benefits have been remarkably stable over the last decade, suggesting that the fall in unemployment has not created much additional incentive to move off these benefits or out of study and into unsubsidised work.

A policy priority should be to ensure that the groups that have gained a stronger foothold on the labour market in recent years remain in work. Measures will need to be put in place to facilitate the continuation of the current expansion and ensure that any cyclical rise in unemployment does not become entrenched. In addition, there is also scope to bring more inactive individuals into the labour market to increase labour supply. The government's intentions to quickly introduce a set of measures to increase employment in the context of current strong labour shortages should therefore be welcomed (Box 3.3). The

Box 3.3. **The government's job plan**

In early October 2007, the government announced that a set of measures would be prepared to boost employment quickly. Some measures of the June 2006 Welfare Agreement have just come into effect. Compulsory activation will now be brought forward from 1 year to 9 months into the spell of unemployment (since August 2007). Full time activation will be required after 2½ years unemployment (since October 2007). The unemployed will be required to have continuous contact with their municipal job centre, and all unemployed will be required to register on an internet site each week to search for a job, or they will lose their benefit entitlement (since October 2007). Some of the new measures are already under implementation, whereas those concerning benefits and tax rules still have to be discussed in Parliament.

Box 3.3. **The government's job plan** *(cont.)*

- **Unemployment and activation:** Efforts to bring the remaining unemployed into work should be continued and strengthened. Further pilots will be conducted with activation focused on face-to-face contact (*Hurtigt I gang II*). Rules that generate unemployment traps and lock-in effects should be identified and changed.
- **People in their 60s and 70s:** A special in-work tax credit will be introduced for 64-year olds, conditioned on having worked full time from age 60 to 64. The value of the credit can reach up to € 13 400 (28% of average full-time earnings) during the one year it can be received. The scheme will end in 2012, unless renewed. It will also be made easier for those who receive the old-age pension (*folkepension*) to work: additional earnings of € 4 000 a year will be allowed before pension withdrawal starts, and for those wishing to continue regular employment after pension age, it will be possible to defer the foregone pension if working at least 1 000 hours a year, compared to 1 500 under current rules. A set of measures will be developed to retain older staff members in public services. Mandatory retirement for civil servants at 70 will be abolished.
- **Students:** Students will be allowed to earn more from working without deduction in the € 670 monthly grant for living costs (tuition is free-of-charge for all tertiary education).
- **Employment-focused immigration:** A lower income level will be required in job offers to prospective immigrants before work permits can be issued; the income level requirement will be abolished for a larger set of occupations with particular skill-shortages or growth prospects; the green card scheme will be expanded following the Canadian model, entitling persons with certain qualifications or experience to enter the country without a job offer; companies will be granted standard residence permits for staff members migrating to work in a Danish affiliate. Other barriers will be reviewed: Denmark will be promoted as a destination for labour migration in international media, in particular for health professionals, and language training will be offered to migrant workers and their spouses.
- **Sickness:** A committee has been established to assess options to reduce sickness absence in consultation with social partners, general practitioners, municipalities and other stakeholders. The target is a 20% reduction by 2015. Cases of work accidents should be processed more rapidly.
- **Disability pensioners:** Persons admitted to the disability pension prior to 2002 should have the opportunity to work with the reassurance that they can return to the disability pension later on. More will be done to prevent young people entering the disability pension, for example due to mental health problems.

Finally, a Labour Market Commission has been established to report in mid 2009 with proposals for reforms that can further raise employment in line with, or going beyond, the requirements of the 2015 Strategy (Chapter 2).

Source: The new government programme, *Mulighedernes samfund*, released 22 November (Government, 2007b).

measures are likely to be effective, even if the short-run impact may not be sufficient to make other policy measures countering overheating redundant.

Active labour market programmes

Denmark has the highest spending on active labour market programmes (ALMPs) as a per cent of GDP in the OECD, although this high ranking may be influenced by the relatively large number of people on disability-related activation (Table 3.3). Widespread use of

Table 3.3. **Participants in active labour market programs**
Percent of labour force, 2005

		Denmark	Germany	Sweden	United Kingdom
Total		5.2	4.74	4.39	..
Total excluding integration of the disabled		3.06	4.35	3.65	..
Training		1.79	2.35	1.07	0.74
including	*Institutional training*	*1.57*	*0.94*	*0.52*	*0.04*
	Alternate training	*..*	*..*	*..*	*0.06*
	Special support for apprenticeship	*0.21*	*0.57*	*..*	*0.64*
Job rotation and job sharing		..	0.01	0.21	..
Recruitment incentives		1.27	0.27	2.25	..
Direct job creation		..	0.89	..	0.02
Start-up incentives		..	0.83	0.12	..
Supported employment and rehabilitation		2.14	0.39	0.74	..
including	*Supported employment*	*1.25*	*0.05*	*0.56*	*..*
	Rehabilitation	*0.89*	*0.32*	*0.19*	*..*

Note: Subtotals do not add because some programmes are included in the total but not allocated across components. "Recruitment incentives" includes employment subsidies payable for a limited period. Job rotation and job sharing programs in Sweden have been significantly revised in 2007 (OECD, 2007c).
Source: OECD labour market programs database and OECD (2007b).

activation programmes has been found to lower the negative impact of high unemployment benefits on unemployment (OECD, 2006b). ALMPs have potentially four distinct effects: the threat effect, the locking-in effect, the post-programme effect, and the wage effect. The threat effect results from increased search effort in order to avoid participation in activation programmes. The locking-in effect is due to time spent in a training programme reducing the amount of time spent looking for a job and may raise expectations about earnings potential. The post-programme effect is the direct result of an ALMP – if the programme increased employability, the job finding rate should increase. The wage effect is an indirect result, where employed people may moderate their wage demands due to the threat of ALMP participation in the event that they become unemployed. This may lead to higher overall employment, meaning that ALMPs affect the employed as well as the unemployed (Andersen and Svarer, 2007). Table 3.3 suggests that the locking-in effect is likely to be relatively large, given Denmark's comparatively high reliance on training. Indeed, the Economic Council finds an overall net cost to society from activation programmes, due primarily to the high costs and low benefit of classroom training (Economic Council, 2007a).

While active labour market policies may be effective in lowering unemployment, they are also potentially very costly, and therefore should be carefully targeted and tailored. Recent studies suggest that not all types of active labour market programmes are cost effective for society and the long-term effects of activation need to be taken into account (Economic Council, 2007a; Jespersen *et al.*, 2004; OECD, 2007b). Given the different effects of active labour market programmes, careful assessment of the needs of each individual reduces the risk of ineffective expenditure. For some groups, introducing activation earlier in the unemployment spell may increase employment without the need for any costly programmes. For those who are not as motivated by the threat effect, private on-the-job training appears to have the most positive impact on employment and earning prospects. Statistical profiling techniques, where each individual's personal characteristics are

compared to the previous experiences of people with similar characteristics, have been suggested by a number of studies (Andersen and Svarer, 2007 and Economic Council, 2007a). However, statistical profiling should be used in conjunction with the judgement of experienced job centre staff. For example, the positive effect of private job training found in studies of ALMP may be due to self selection and these programmes may only effectively reduce the cost to the employer of employing a person who would have found a job anyway. If this is indeed the case, statistical profiling would suggest on-the-job training for such a person since it worked for other similar people in the past.

Developing the job counselling provided by job-centres could strengthen the re-employment focus early in the unemployment spells. A natural experiment was conducted by the National Labour Market Authority, in which a group of unemployed were sent to a two week job search course, followed by regular meetings with employment office staff and potentially further training. This group were compared to a control group who did not participate in any such programmes. A study of this experiment showed that the "activated" group had a significantly higher job finding rate compared to the control group. These results were attributed to the threat effect prior to commencement of the programme and the post-programme effect, due to improved job search ability and intensive meetings with the employment centre assisting with job search. Training programmes did not increase the job finding rate due to the locking-in effect (Graversen and van Ours, 2006). The importance of the threat effect is also highlighted in a number of other studies (Rosholm and Svarer, 2004; Geedersen, 2006). In cases where it is cost-effective, the enhanced counselling efforts could be combined with compulsory activation being brought forward to, say, 6 months (as it is currently the case for unemployed people under 30 and over 60). However, introducing activation earlier in the unemployment spell is costly, and continued evaluation of the effectiveness is therefore essential.

While the locking-in effect has a negative impact on the job finding rate, many unemployed people would benefit from some training, either in job search methods or work related skills. This suggests a balance between training that enhances skills and increases the post-programme effect and the time commitment involved (Economic Council, 2007a). Indeed, it is important to continue to enforce job search requirements during participation in activation programmes (OECD, 2007b), especially since there is evidence of lower availability for work by activated unemployed (Confederation of Danish Employers, 2007).

It may be appropriate for newly registered unemployed to undergo a full registration and assessment with a job centre, including possible job referrals, before unemployment benefits are paid (Box 3.4). Denmark is one of the few countries that do not tie benefit application to immediate referral to job vacancies. Full registration of jobseeker characteristics, to assess work availability at the time of registration for benefits, can help to ensure that contact with the employment office has a job focus rather than a benefit focus. Some countries require an intensive interview to obtain details for job matching and referral (to either job or an ALMP) at the time of benefit application while others require interviews within a week. In Denmark, initial interviews can be a month or more later. This may lead to some matching opportunities being missed (OECD, 2007b).

While the government's new proposal to require weekly internet job search is a positive step, it should be supplemented with regular in-person contact. At present, intensive interviews are required once every three months, in line with many other OECD countries, although there is a large group of countries in which an intensive interview is conducted

Box 3.4. **Job centres in the new municipal structure**

Prior to the local government reform of 2007, the central government was responsible for recipients of unemployment insurance benefits through the Employment Service (AF) and each municipality managed its own job centre to provide assistance to people without insurance. Under the new municipal structure, the central government seeks to ensure consistency between the national employment policies and local activities through four employment regions (corresponding to the regional boundaries except that two regions, the capital region and the neighbouring Zealand region, are combined in one employment region). These employment regions have resources to help with prevention and mitigation of labour supply bottlenecks and reaction to the closure of large companies. The local job centres, which are staffed by both local and central government employees, have become a single access point for all citizens and companies needing assistance with employment matters. Ten of the 98 local job centres are run entirely by the local government, without central government involvement, on a pilot basis.

The new approach creates a greater employment focus by removing a distinction in the employment service based on what kind of income support the unemployed person receives. However, there are a large number of job centres given the size of the labour force and the municipal focus may hinder labour mobility by focusing the unemployed on services and jobs within the municipality. Consequently, the co-ordination role of the regions will be particularly important.

Source: Ministry of Interior and Health (2006).

more frequently.[10] However, in practice, around 35% of the unemployed did not have contact with a job centre for more than three months in 2007 and the contact requirements are not being enforced uniformly across municipalities (Confederation of Danish Employers, 2007). In-person contact facilitates provision of information and guidance about training and employment opportunities, as well as providing an opportunity for motivation and guidance counselling. Regular in-person contact could be required, say, monthly and measures should be considered to ensure that this requirement is imposed uniformly across municipalities. The government's plan to tie job search more closely to withdrawal of benefits is a positive step. A recent study showed that the exit rate from unemployment to employment increases when sanctions are imposed, with the effect lasting for about three months, and more severe restrictions have a significantly higher effect on unemployment (Svarer, 2007).

Unemployment benefits

It is very important that benefit rates and eligibility for unemployment benefits are structured in a way that supports active labour market policies and job search. The unemployment benefit rate can be up to 90% of the previous salary but the cap on benefits is around 53% of average earnings compared to 113% for the Netherlands, 96% for Norway, 57% for Sweden and 61% for the United States (OECD, 2007d). The average net replacement rate for unemployment benefit recipients is around 70% initially and remains at that level until 48 months in unemployment, whereas in most other countries, replacement rates decline (in some cases sharply) over time. Denmark has the second highest duration of unemployment benefits in the OECD after Belgium, and the maximum benefit duration in most OECD countries is less than two years (OECD, 2006b). A number of neighbouring countries have amended their unemployment benefits in recent years. For example, Norway has reduced the

duration of unemployment benefits from three to two years in 2003, and changes were introduced in Sweden in 2007 to reduce the unemployment benefit duration and lower the gross replacement during the unemployment spell. There is evidence that the transition from unemployment to employment increases from 2% per week to 10-12% per week around the time of the end of the benefit period (Economic Council, 2007a). A gradual reduction of the benefit level maintains income security for a long period but gives early signals about the need to increase search effort. By contrast, shortening the eligibility period would imply one sharp reduction in benefits, and some people would see their disposable income drop sharply. Unless this is fully anticipated and leads to an increased search effort in advance, it will result in reduced welfare due to loss of income. That is, if unemployed people are not strictly forward looking, the small losses of income from a gradual reduction in the benefit rate may have a more positive impact by increasing search effort without resorting to a sudden loss of income.

People on part-time unemployment benefits should be provided with greater incentives to seek full-time work. At present, an unemployed person who takes a part-time job can continue to receive *pro-rata* unemployment benefits so that their total income is equal to what it would have been when they were unemployed. This policy is aimed at providing incentives for people to move from unemployment to part-time employment. However, it also creates a disincentive to move from part-time to full-time work, since this may not necessarily result in higher overall income. Around 11% of insured unemployment is part-time and two thirds of all part-time unemployment benefit recipients receive the benefit for more than 15 weeks (Confederation of Danish Employers, 2007). People who worked in a job where the employer was required to give notice of termination and who take a part-time job can continue to receive the part-time unemployment benefit for 52 weeks. People who did not have a notice period (casual or non-contract employees) can receive part-time benefits indefinitely. In order to improve the incentives to move from part- to full-time work, a shorter entitlement period should be introduced for both groups.

Measures targeted at older workers

A first best policy solution for raising employment amongst older workers would be to phase out the Voluntary Early Retirement Programme (VERP; *efterløn*), as was recommended by the Welfare Commission, the OECD's 2005 review of ageing and employment policies in Denmark (OECD, 2005), and in the 2006 *Survey* (OECD, 2006a). In the absence of such a policy change, measures have focused at providing incentives to stay in work, such as the bonus for continuing work,[11] to offset the impact of the VERP. The initiative, included in the government's job plan (Box 3.3), to allow older workers to avoid payment of up to DKK 100 000 in tax if they work continuously up to and including the year they turn 64, entails a deadweight loss since people who would have worked until that age anyway will receive the benefit. Despite this, the Economic Council estimate that the initiative would be fully self-financing if one third of the people who currently retire at age 62 would postpone their retirement to age 64, as long as it is only introduced for workers turning 64 in 2010 or later (Economic Council, 2007b). An alternative to increasing the incentives to stay in work would be to provide disincentives for early retirement, for example by reducing the VERP benefit payment rate from the current level of 90-100% of the unemployment benefit and/or ceasing payments to the labour market supplementary pension scheme for VERP recipients (OECD, 2005).

Consideration should also be given to improving active labour market policies for older workers who are not old enough for the VERP. Particularly tight activation

requirements appear to have been effective in reducing unemployment amongst the young. A similar focus could be considered for unemployed people over the age of age of 55 (OECD, 2005). This might help to reduce any resistance on the part of employers' to hiring workers that they might reasonably expect to move into the VERP within a few years and might ensure stronger search effort by the unemployed. It might also have the added benefit of reducing the flow into early retirement, since if older workers can find well-paying jobs, they will face a lower replacement rate when moving onto VERP than they would if they had remained on unemployment benefits.

Other measures could be considered to raise employment amongst older workers, such as smaller reduction in pension benefits if continuing to work. The new government programme issued in November includes an increase in the annual amount that recipients of the old age pension are allowed to work and a reduction from 1 500 to 1 000 of the annual hours that an older person is required to work to be allowed to defer the old age pension.

Measures to increase immigration

Promoting higher immigration of workers would help ease current labour shortage problems. It would also lead to higher structural employment of residents if it lowers overall reservation wages, or if it allows better skill matching and labour market flexibility. These factors, along with higher human capital, may lead to higher productivity growth.[12] In the past, Denmark's track record of integrating immigrants into the labour market has been affected negatively by the preponderance of humanitarian low-skilled migrants, but in recent years the outcome has been significantly improved by the shift in immigration policy toward work related migration. Higher immigration may not necessarily improve the fiscal position, since the new immigrants' contribution to the Danish social welfare system may be less than the benefits they receive from it (particularly if the immigrant worker brings a spouse or children) and any gain in productivity growth is automatically shared with welfare recipients through indexation. However, the shift in Danish immigration policy towards employment-related immigration will probably contribute positively to the budget impact of immigration. Still, high income earning immigrants would provide the greatest fiscal benefit, since their contribution to the social welfare system is likely to be larger than their benefit, but they may be discouraged from moving to Denmark by the high income tax rates.

Policies such as "start help" and "introductory benefit", which seek to raise the incentive for immigrants to move from welfare into work (as is the case of lower social assistance for young people), should be accompanied by reforms to ensure long term benefits from higher migration flows. First, policies should focus on encouraging high skilled immigrants to stay in Denmark. These could include, for example, reducing the high marginal tax rates on labour income (Chapter 4) and allowing tax credits for the repayment of tuition fees for graduate students as discussed in the previous *Survey* (OECD, 2006a). The Economic Council has also suggested extending the period in which foreign specialists are eligible for lower gross tax rates, but this will only have a positive long-term impact if the additional concessional period increases the likelihood that the individual will stay after the concessional period finishes. Second, policies should be directed towards raising the skill level and employment prospects of lower skilled immigrants. This could include further focus on measures to improve primary and secondary educational outcomes for immigrants and their descendents, financial rewards

for firms that take on trainees who are having trouble finding a traineeship despite relevant qualifications, and continuing to focus on finding employment appropriate to foreign qualification through qualification recognition programmes (Economic Council, 2007b; OECD, 2007a).

Measures targeted at students

In order to reduce the time taken for young people to move from secondary education, through tertiary education and into the workforce, the OECD has previously recommended adjustments to study grants to provide greater incentives to reduce the time between secondary and tertiary study and to reduce the length of time taken to complete tertiary programs (OECD, 2006a). A set of reforms is currently being implemented to reduce the time between completion of secondary education and the completion of tertiary studies. These include altering the university admission system so that it favours students who move quickly from secondary to tertiary education, the introduction of a 6 months limit for completion of masters degree theses, and a funding incentives for universities to encourage shorter study times.

Other measures

Policies to address the large and growing number of people on disability pension and sickness benefits are discussed in Chapter 5. The relationship between labour supply, particularly hours worked, and taxes is discussed in Chapter 4.

Conclusions

The slow and lagged pick-up in wage pressure in the face of a very low unemployment rate probably reflects both a fall in the NAIRU and changes in industry structure. While GDP growth has slowed recently, the large positive output gap is set to continue and inflationary pressures might therefore strengthen, as the actual unemployment rate is now clearly below the NAIRU. With continued economic growth projected and the government's new 2015 Strategy for fiscal policy relying on increasing employment, efforts to increase labour supply will have to be redoubled. Some specific recommendations are provided in Box 3.5. There are some areas where current policies to bring unemployed people back to the labour market should be improved. In addition, attention will need to be given to policies to bring people who are outside the labour market back into work. At the same time, it is important the macroeconomic policy settings, particularly fiscal policy, do not lead to overheating that may sow the seeds of a sharp economic downturn. This would seriously affect people with traditionally marginal attachment to the labour market who have managed to gain a foothold during the current expansion.

Box 3.5. **Recommendations regarding employment and capacity constraints**

Making sure that unemployment spells start with a re-employment focus

- Consider earlier assessment of unemployment benefit recipients' job readiness and immediate referral to job vacancies upon application for unemployment benefits.
- Develop the job-search counselling provided by job centres.

Box 3.5. **Recommendations regarding employment and capacity constraints** *(cont.)*

Refining activation to make it more cost effective

- In cases where it is cost-effective, compulsory activation could be brought forward to speed up the transition back to employment.
- Introduce statistical profiling to better tailor active labour market programmes to each individual's circumstances, but continue to use the judgment of experienced job centre professionals to ensure that programmes are well targeted.
- Make sure that training courses offered as part of an active labour market programme are structured in a way that ensures continued job search. Enforce job search requirements during periods of participation in training courses.
- Introduce more intensive face-to-face contact and activation requirements, like those for young unemployed people, for older workers such as people in their late 50s who have lower employment rates.

Ensuring that benefits support activation

- Consider gradually reducing the unemployment benefit replacement rate over the benefit entitlement period.
- Reduce the length of time for which a person can receive part-time unemployment benefits while working in a part-time job.

Notes

1. The overall result for manufacturing is driven by a very high level of shortages in the *Roskilde* area. In the services sector, *Bornholm*, *Fredriksborg*,*Storkøbenhavn* and *Århus* are driving the aggregate result.
2. The Economic Council suggest that the level of structural unemployment is currently around 145 000 (Economic Council, 2007a). The Ministry of Finance estimate that the structural unemployment rate was about 5% in 2006, but that it is expected to fall to about 4½ per cent in 2008 (Ministry of Finance, 2007). The Economic Council and Ministry of Finance's estimates are not directly comparable to those shown in Figure 3.4 since they use different data sources (Annex 3.A1).
3. Four main types of active labour market programs (ALMPs) are offered to the insured unemployed after nine months of unemployment: private job training (placed in a private firm for average of 22 weeks and paid the same salary as other employees but the firm receives a subsidy), public job training (employed in a public institution for average of 39 weeks with a maximum hourly pay rate), classroom training (for an average of 28 days paid an amount equivalent to unemployment benefits), and residual programs including individual job training, entrepreneurship subsidies, targeted classroom training and courses (Jespersen *et al.*, 2004).
4. It is worth noting a few potential caveats to the analysis of the impact of immigration on structural unemployment. First, if immigrants are willing to work at a lower wage than is demanded by natives for the same work and this lowers the wages offered to native job seekers, it could cause them to experience longer spells of unemployment. Second, if immigrants do significantly undercut national pay standards, this could erode political support for a liberal immigration policy.
5. As in some other EU countries, a new transition scheme was introduced in 2004 for workers immigrating from Estonia, Latvia, Lithuania, Poland, Slovakia, Slovenia, the Czech Republic and Hungary. Citizens from these countries are eligible for Danish work permits if they are offered fulltime employment on collective bargaining contract conditions, or under standard wage and work conditions. From 1 January 2008, enterprises covered by a collective agreement can employ people from the new EU countries without having obtained a work permit (Government, 2007a).
6. The stabilisation of the labour share since about 2003 may be a reaction to the increase in the unemployment about that time.

7. Labour Force Survey data generally show much higher unemployment amongst young people since students that are looking for part-time work are classified as unemployed.
8. As part of the Welfare Agreement, the VERP eligibility age is to be raised from 60 to 62 years between the years 2019 and 2022, and the eligibility age for the public old-age pension will be raised from 65 to 67 years between 2024 and 2027. From 2025, the age thresholds in the retirement system are to be indexed to the average life expectancy of 60 year olds (see Box 6.1 in Chapter 6).
9. Without questioning the importance of education, it should be noticed that there is a "culture of delay" amongst Danish students involving delays in starting tertiary education and taking longer than necessary to complete study programs. This reduces the overall returns to education, since it results in fewer years in work (OECD, 2006*a*). Moreover, there is a high rate of dropout from vocational education programs, as many shift to other forms of education (Confederation of Danish Employers, 2006), thereby increasing the overall duration of study.
10. There is a risk with early job focus and strict reporting requirements that some unemployed may accept a job too quickly (*i.e.* taking a job that is not a good fit or does not closely match their productivity). This could result in more frequent return to unemployment and or lower wages. On the other hand, longer spells in unemployment lead to deterioration of technical and other work related skills (OECD, 2007b).
11. The tax free bonus rewarding those who continue working for at least two years when eligible for the VERP will also be raised by 50%, but this only applies to people that were under 50 years old when the policy was introduced in 2006 and hence will not have any impact until 2018.
12. Greater employment focus in immigration policy is warranted, since a number of studies point to the high share of refugee, asylum seeking and family re-union based immigration as a cause of low employment amongst immigrants (Constant and Zimmermann, 2005; OECD, 2007a).

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ANNEX 3.A1

Labour market statistics: Register data and the Labour Force Survey

There are two main sources of unemployment data produced on a monthly or quarterly basis by Statistics Denmark. They are based on the Labour Force Survey (LFS) and the Central Register of Labour Market Statistics (CRAM). Virtually all Danish analysis is conducted using register data but the OECD uses LFS data in order to facilitate international comparisons. This annex explains the key differences between the two sources.

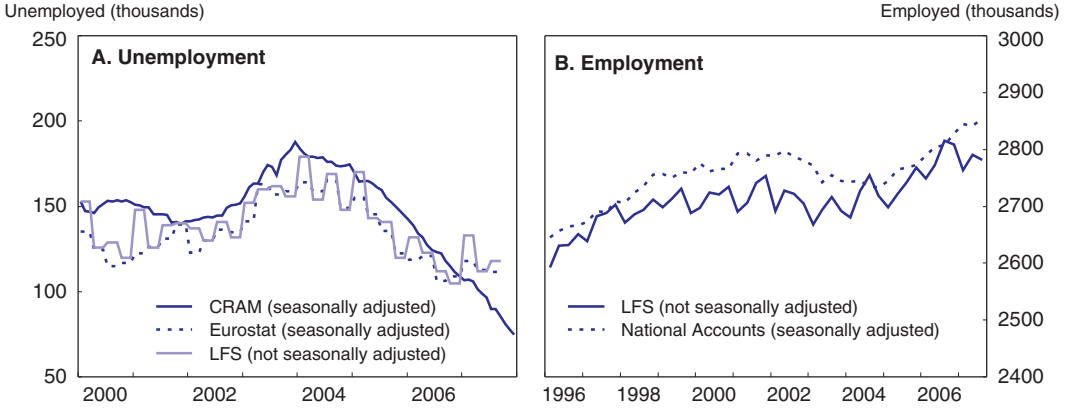
The CRAM unemployment statistics are based on data from unemployment insurance funds and job centres. Since CRAM focuses on the unemployed, people are classified only as unemployed or not unemployed. The statistics include all unemployed persons insured against unemployment, people who are not insured but claiming cash benefits under the Danish Social Assistance Act, and unemployed people who are not yet entitled to claim, or who have lost their right to claim, unemployment benefits. Cash benefit recipients who are participating in activation programmes for more than 18½ hours per week are not considered to be unemployed. Registered unemployment data are usually quoted in thousands of persons; however, an unemployment rate is calculated by dividing CRAM unemployment by the sum of CRAM unemployment and the level of employment from the annual Register-based Labour Force Statistics (RAS). The RAS is a snap-shot of register data sources taken in November each year. The level of total employment determined in that snap-shot is used for four quarters in the calculation of the CRAM unemployment rate, but this figure can be up to two years old when it is used to calculate the current period unemployment rate.

The LFS follows International Labour Organization guidelines and is a survey involving about 90 000 interviews each year. All survey respondents are categorized as either in the labour force (either employed or unemployed and actively seeking work) or outside the labour force. To be classified as employed, the respondent has to have worked for payment (including in the armed forces), been self-employed or worked in a family business for at least one hour in the reference week. People temporarily absent from work due to vacation, illness, or maternity leave are classified as employed. Also, people who are in subsidised employment as part of an activation programme are classified as employed. To be classified as unemployed, the survey respondent must have been without work but actively looking for work in the past four weeks and capable of commencing a job within two weeks. Active job-search includes contact with a public employment office, applications to employers, contact with friends, relatives or trade unions, and studying or

answering advertisements in newspapers or journals. Looking for permits, licenses, financial resources, land, premises or equipment for potential self-employment are also considered to be active job search. The LFS unemployment rate is calculated by dividing the number of unemployed by the sum of the employed and unemployed.

In Denmark, where most job seekers receive some form of benefits and are in contact with job centres, register based unemployment data may be more reliable than LFS data that is based on a survey. However, there are some differences in the classification of unemployment between the two series. For example, a person who worked at least one hour per week but still claimed unemployment benefits will be counted as unemployed in CRAM but employed the LFS. People who are participating in activation programmes for more than 18½ hours per week are not counted as unemployed in CRAM but are unemployed in the LFS (or outside the labour force if they say they are not available to start work within two weeks). Students looking for (part-time) work and people receiving other social assistance benefits that are trying to re-enter the labour market are counted as unemployed in the LFS but not in CRAM. People who are on leave are classed as employed in the LFS, provided they can return to work within six months, while people who had accumulated leave with their previous employer before becoming unemployed may be entitled to receive a social assistance benefit while on leave, and so would be classed as unemployed in the CRAM. Despite these differences, the absolute numbers of unemployed in both the CRAM and the LFS have been very similar since the late-1990s (Figure 3.A1.1). Prior to then, the number of unemployed was higher in the CRAM, but since the late 1990s, this gap has diminished due to the tightening of the definition of unemployment in the CRAM register. The persistent gap between the CRAM and LFS unemployment rates since the late 1990s is explained by a difference in the labour force estimate, with the CRAM labour force series being lower than the LFS labour force.

Figure 3.A1.1. **Comparison of labour market data from the Labour Force Survey and CRAM**[1]



StatLink http://dx.doi.org/10.1787/263547645240

1. CRAM figures are monthly frequency, while the LFS data are quarterly. In panel A, quarterly data are shown as the same value for each of the three months of the quarter.

Source: Statistics Denmark Tables AKU1 and AB61107; OECD Analytical Database.

Because employment data from the LFS can be volatile, the OECD Economic Outlook uses a combination of national accounts data and Eurostat data. Total employment is sourced from the Statistics Denmark national accounts, while the number of unemployed

is the Eurostat LFS harmonized level of unemployment. The Eurostat unemployed data is sourced from the Danish LFS with minor adjustments (Eurostat excludes people living in collective households and do not consider military conscripts as employed). The main source for the national accounts employment series is the Statistics Denmark Working Time Accounts. The national accounts employment series is a domestic concept, meaning that people who contributed to production in Denmark are counted as employed. In contrast, the LFS only measures people who are resident in Denmark. Similarly, CRAM measures residents since it covers people who are members of unemployment insurance funds (who must be residents of Denmark or the European Community) and people eligible for social assistance.

ANNEX 3.A2

Phillips curve estimation

The estimation of the NAIRU and Phillips curve for Denmark follows the approach outlined in Richardson *et al.* (2000) and various internal working papers at the OECD. The approach began by estimating the Phillips curve by Ordinary Least Squares (OLS) using the OECD's existing NAIRU estimate (which was constructed along similar lines in 2004) and also the unemployment rate smoothed using a HP filter as a proxy for the NAIRU. Various alternative specifications were used with both NAIRU measures to test the robustness of the regression results. The estimated coefficients from this equation were then used as starting values in the estimation of the state-space model using maximum likelihood methods. Then, using the new NAIRU estimate derived from the state-space model, the Phillips curve was again re-estimated by OLS.

In the initial estimation process, the basic form of the Phillips curve was determined. The equation used the quarterly percentage change in the core harmonized consumer price index as the dependent variable, as it is also used in many other OECD NAIRU models. The independent variables used were three lags of the dependent variable (more lags were tried but found to be insignificant), the unemployment gap (actual unemployment minus the NAIRU), the first difference of the gap between actual and trend productivity (where trend productivity was determined by smoothing the actual productivity series with a HP filter), real import prices (the inflation rate of import prices less CPI inflation) weighted by the share of imports in GDP, and oil prices converted from US dollars to Danish Kroner and weighted by the share of oil in production. The latter series was only included until 1980, by using a dummy variable. Models were estimated with a number of lags for each variable and a number of different permutations on some of the variables. For example, the productivity variable was replaced with business sector productivity, but this was found to be not significant. Also, the real import price variable was replaced with the change in nominal import prices weighted by the share of imports in GDP. This was found to be significant, but the inflation-adjusted series was conceptually more consistent with the model.

The Kalman filter specification was estimated along the lines of the approach outlined in Richardson *et al.* (2000), Laubach (2001) and internal OECD working papers. The Kalman filter was specified with the Phillips curve as the signal equation and an autoregressive process for the NAIRU as the state equation. The estimated model is set out below:

Phillips curve:

$$\Delta\pi_t = \beta_1\Delta\pi_{t-1} + \beta_2\Delta\pi_{t-2} + \beta_3\Delta\pi_{t-3} + \beta_4\left(unr_t - u_t^*\right) + \beta_5\Delta\left(prod_t - trendprod_t\right) + \beta_6 wtm_t\left(\pi_t^{pmgs} - \pi_t^{cpi}\right) + \beta_7 wtm_{t-1}\left(\pi_{t-1}^{pmgs} - \pi_{t-1}^{cpi}\right) + \beta_8 d1980\pi_t^{oil} + \varepsilon_t^{\pi}$$

State equation:

$$u_t^* = \gamma u_{t-1}^* + \theta\Delta u_{t-1}^* + \varepsilon_t^{u^*}$$

where the variables are as defined above. The model was estimated over the period from the second quarter 1972 to first quarter 2007. In testing this model, the best results were achieved with the parameter θ set to zero. Also, the model was allowed to freely estimate the parameter γ and this was estimated to be one, so a simple random walk model for the NAIRU was adopted.

In this model, there are a number of variables that must be calibrated. First, the initial value of the NAIRU and its variance must be specified in advance. At the start of the sample period, with inflation fluctuating significantly (between 1% and 2.5% per quarter), the unemployment rate was a little over 1% and relatively stable, and GDP growth was around 4% in annual terms, after strengthening from a weak period around 1970. This conjuncture gives little suggestion about whether the actual unemployment rate was above or below the NAIRU. Hence, the initial value of the NAIRU was set equal to the actual unemployment rate, at 1.3. The variance of the NAIRU was set at 0.5. Second, the variances of the errors in the two equations were calibrated since estimating them gives unstable results (Laubach, 2001 and Llaudes, 2005). The variance of the error in the state equation was set at 0.04, in line with both Laubach (2001) and Llaudes (2005). The value of the variance of the error in the signal equation was then iterated until the model produced a relatively smooth NAIRU series. The final value of the variance of the signal equation error was 0.0821. Third, the parameter values from the Phillips curve using the previous OECD NAIRU estimate were used as initial parameter values in the Kalman filter estimation.

The estimated Phillips curve was tested for a variety of statistical properties. A simple plot of the residuals shows much larger variation in the 1970s, suggesting that the model had more trouble explaining the variation in inflation during the relatively high inflation period of the 1970s. To account for this heteroskedasticity, the last OLS stage of the estimation was conducted using White heteroskedasticity consistent standard errors. There was also some evidence to suggest serial correlation in the errors at the 5% level of significance, so an additional lagged dependent variable was added to remove this. However, this variable was not consistently significant throughout the estimation process. Stability and misspecification were tested using Chow breakpoint and Ramsey RESET tests. Since the Chow breakpoint test doesn't function due to the dummy that operates until 1980, the models were re-estimated with the 1980 dummy taken out. Splitting the data sample into two and performing the Chow test with the break set at the third quarter of 1989, the model rejected null hypothesis of no structural break. This is consistent with the heteroskedasticity described above. The model also failed a Jarque-Berra test for normality of the residuals, which appears to be related to the outlying error observations in the volatile segment of the sample. The model passed the Ramsay RESET test with two fitted terms.

To test whether the NAIRU estimate was significantly affected by lower variation in inflation since the 1980s, the sample was truncated to begin in the first quarter 1982 and re-estimated. A slightly modified version of the Phillips curve was found to provide the best fit to the data over the shorter sample:

Phillips curve:

$$\Delta\pi_t = \beta_1\Delta\pi_{t-1} + \beta_2\Delta\pi_{t-2} + \beta_3\Delta\pi_{t-3} + \beta_4\Delta\pi_{t-4} + \beta_5\left(unr_t - u_t^*\right) + \beta_6\Delta\left(prod_t - trendprod_t\right) + \beta_7\Delta ulcman_t + \varepsilon_t^{\pi}$$

State equation:

$$u_t^* = \gamma u_{t-1}^* + \theta\Delta u_{t-1}^* + \varepsilon_t^{u^*}$$

Where *ulcman* is unit labour costs in the manufacturing sector. The initial value of the NAIRU was set to 6.4, which is the midpoint between the value of the NAIRU estimated over the full sample and the value of the HP filtered unemployment rate in the first quarter of 1982. The initial variance of the NAIRU was left at 0.5. The variance of the error in the state equation was left at 0.04, and the value of the variance of the error of the signal

equation that was consistent with a reasonably smooth NAIRU was 0.035. The random walk formulation for the state equation was retained.

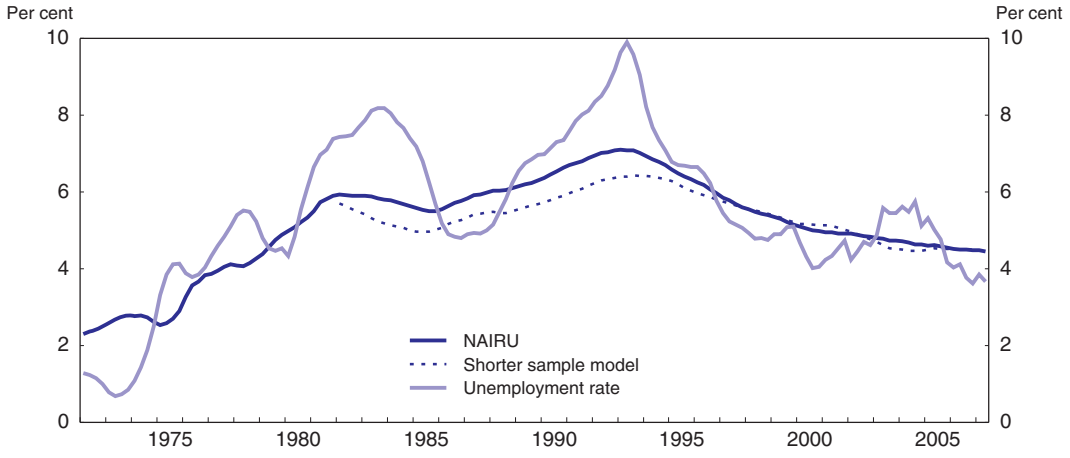
The model estimated over the shorter sample performed better in several diagnostic tests. It passed both the heteroskasticity test and the Chow breakpoint test (although only just at the 5% level of significance). It also passed the serial correlation test, probably due to the inclusion of the additional lagged dependent variable. The model passed the test for normally distributed residuals, but failed the RESET test at the 5% level of significance, despite neither of the fitted terms in this test being individual statistically significant (Table 3.A2.1). The shorter sample model produced a NAIRU series that was very similar to the full sample model, although it suggests that the NAIRU was slightly lower between the early 1980s and the mid 1990s (Figure 3.A2.1).

Table 3.A2.1. **Phillips curve estimation – empirical results**

$\Delta\pi_t$	1972Q1-2007Q1		1982Q1-2007Q1	
	Coefficient	T-statistic	Coefficient	T- statistic
$\Delta\pi_{t-1}$	–0.765	–7.010	–0.914	–9.926
$\Delta\pi_{t-2}$	–0.371	–2.884	–0.678	–5.989
$\Delta\pi_{t-3}$	–0.426	–3.038	–0.548	–5.076
$\Delta\pi_{t-4}$			0.187	2.172
$unr_t - u_t^*$	–0.173	–4.087	–0.010	–4.426
$\Delta(prod_t - trendprod_t)$	14.825	2.669	7.391	2.665
$wtm_t * (\pi_t^{pmgs} - \pi_t^{cpi})$	–0.663	–3.204		
$wtm_{t-1} (\pi_{t-1}^{pmgs} - \pi_{t-1}^{cpi})$	0.628	3.425		
$d1980\pi_t^{oil}$	0.0550	2.682		
$\Delta ulcman_t$			–0.129	–2.433
SE of regression	0.628		0.235	
Adjusted R^2	0.740		0.947	
Diagnostic tests (p-value)				
Heteroskedasticity	0		0.125	
Serial correlation	0.340		0.984	
RESET misspecification	0.968		0.382	
Chow mid sample	0	(1989Q3)	0.349	(1994Q3)
Normality	0		0.512	

Note: Coefficient estimates and t-statistics for the full sample model were estimated using a White heteroskedasticity consistent co-variance matrix.
Source: *OECD Economic Outlook 81 Database* and OECD estimates.

Figure 3.A2.1. **NAIRU estimates**



StatLink http://dx.doi.org/10.1787/263557038804

Source: *OECD Economic Outlook* No. 82 and OECD calculations.

ANNEX 3.A3

Labour share equation estimation

The labour share is defined as the ratio of total compensation of employees to gross value added (GVA). Alternatively it can be expressed as the ratio of compensation per hour worked to GVA per hour worked. If both compensation and GVA are deflated by the same deflator, then the labour share is the ratio of real compensation per hour worked to real GVA per hour worked. The latter is a measure of productivity.

In many economic models, factor shares are regarded as being constant, at least in the long run. If the elasticity of substitution is not unitary, factor shares will change when the ratio of factor inputs changes over time. However, there is little evidence in OECD countries of significant deviations of the elasticity of substitution from unity (Blanchard, 1998). In addition, a deviation in this relationship may be caused by changes in imported raw material prices or capital-augmenting technical change. Factors that lead to divergence between wages and the marginal product of labour, such as non-competitive pricing, union bargaining power or labour adjustment costs, will shift the relationship between wages, capital and labour productivity, and so also shift the labour share (Bentolila and Saint–Paul, 2003). It has also been argued that changes in the labour share can be caused by changes in methods of remuneration, such as stock options and payroll savings schemes, or mis–measurement of the income of the self employed (de Serres, Scarpetta and de la Maisonneuve, 2002).

From the early 1970s to the mid 1980s, Danish wages growth was very high, pushing the share of compensation of employment in gross value added up, in line with other OECD countries. Since then, while the labour share of GVA has been declining in many OECD countries, the labour share in Denmark has been relatively stable – even increasing during the period of stable compensation growth from the mid 1990s to the early 2000s. While noting the caveats outlined above, a stable labour share in Denmark implies that hourly compensation has been growing in line with labour productivity. In the countries that have experienced declining labour shares, labour productivity growth has been faster than compensation growth.

The aggregate labour share dynamics may be influenced by a composition effect resulting from the aggregation of sectors with different underlying labour shares. When controlling for this composition effect resulting from changes in industry composition, the labour share has actually risen more than is observed. This implies that the sectors that are increasing their share in total value added have relatively lower compensation of employees and the industries that have become smaller in terms of output have higher compensation of employees. Put another way, changes in the sectoral composition have

constrained the increase in the overall labour share but within sectors there is more evidence of increases in labour shares.

The industries where the value added share has increased the most are real estate, renting and business activities; mining and quarrying; and transport, storage and communication (Table 3.A3.1). The labour share in the real estate, renting and business activities industry is about two-thirds of the economy wide average (up substantially from three decades ago), while the labour share in the transport, storage and communication industry is a little below the economy wide average. The labour share in the mining and quarrying industry has fallen dramatically at the same time as the share of value added has risen (hence the growth of the mining sector has put downward pressure on the overall labour share). Key industries that have seen a substantial reduction in their share of value added, such as manufacturing and wholesale and retail trade, have above average labour shares.

Table 3.A3.1. **Labour share and value added share by industry**

Per cent

		1970	1975	1980	1985	1990	1995	2000	2005
Agriculture, horticulture and forestry	labour share	18.7	18.4	20.6	18.2	22.2	20.9	25.7	43.5
	value added share	5.1	4.9	4.3	4.5	3.7	3.2	2.4	1.4
Fishing	labour share	23.8	28.8	21.7	34.7	37.6	42.3	44.2	44.7
	value added share	0.6	0.4	0.6	0.5	0.3	0.2	0.2	0.1
Mining and quarrying	labour share	41.1	43.5	52.4	10.5	11.7	13.1	3.4	2.5
	value added share	0.3	0.2	0.2	1.2	1.1	0.9	3.0	3.9
Manufacturing	labour share	71.5	73.0	74.3	70.6	74.5	69.7	67.4	69.0
	value added share	20.5	19.4	18.9	18.8	17.4	17.1	16.2	14.2
Electricity, gas and water supply	labour share	25.3	27.0	31.9	28.3	26.4	21.8	21.8	20.3
	value added share	1.8	1.8	1.6	1.6	2.1	2.4	2.1	1.9
Construction	labour share	83.0	73.1	78.0	85.1	80.6	82.6	73.6	72.4
	value added share	8.9	7.2	6.5	5.0	5.1	4.7	5.5	5.6
Wholesale and retail trade	labour share	50.8	53.7	64.6	56.1	65.3	61.2	70.5	74.1
	value added share	17.4	16.5	13.6	14.4	12.7	13.2	12.2	11.3
Hotel and restaurants	labour share	71.1	70.3	64.3	61.4	69.8	71.2	70.0	72.2
	value added share	1.4	1.4	1.4	1.7	1.5	1.5	1.5	1.5
Transport, post and telecommunications	labour share	55.3	66.5	72.1	69.0	62.6	58.4	54.8	47.7
	value added share	7.8	6.7	6.4	6.8	7.6	7.6	8.2	9.2
Finance and insurance	labour share	38.7	49.0	52.1	54.2	69.3	54.9	57.3	51.4
	value added share	4.9	4.8	4.8	4.8	4.7	5.2	4.7	5.6
Real estate and business activities	labour share	24.5	24.4	26.2	28.5	29.0	28.4	34.9	41.5
	value added share	10.7	12.3	14.3	14.3	16.8	17.1	17.6	18.2
Public and personal services	labour share	78.4	82.0	82.2	81.6	81.4	81.5	83.9	84.4
	value added share	20.8	24.6	27.3	26.3	27.0	26.9	26.4	27.1

Source: Statistics Denmark National Accounts.

Focusing on the decade from 1995 to 2005, a period in which the total economy observed labour share rose by about three percentage points, industries can be classified into those that have put upward pressure or downward pressure on the labour share by considering both the change in the labour share and the change in the value added share of each industry. In the first group of industries, putting upward pressure on the labour share, the largest changes are from real estate and business activities and public and personal services, followed by wholesale and retail trade, construction and finance and

insurance. In the second group, the main downward influence is due to manufacturing, but other sectors that have put downward pressure on the labour share are electricity, gas and water supply, agriculture, fishing, transport, mining and quarrying, and hotels and restaurants.

In order to further investigate the evolution of the aggregate labour share, error-correction econometric equations were estimated following the approach used in de Serres, Scarpetta and de la Maisonneuve (2002), which relate the growth rate of the labour share to its lagged growth rates, the level of the labour share as well as productivity growth, inflation measures, and the unemployment rate. Two versions of this equation were estimated: one using aggregate data and ordinary least squares, and the other estimated using a Pooled Mean Group (PMG) estimator on sectoral data. The latter approach allows for the long run coefficients to be the same across all sectors, while allowing the short run responses of each sector to differ. The short-run coefficients across the sectors are then averaged to obtain a single fitted model. The analysis covers the non-agriculture business sector excluding mining and water transport.

The basic form of the estimated equation for the OLS model is as follows:

$$\Delta ws_t = \beta_1 + \beta_2 \Delta ws_{t-1} + \beta_3 \Delta prod_t + \beta_4 \Delta unr_t + \beta_5 \Delta \inf_t + \beta_6 \Delta relp_t + \beta_7 \Delta oil_t + \beta_8 ws_{t-1} + \beta_9 prod_{t-1} + \beta_{10} unr_{t-1} + \beta_{11} \inf_{t-1} + \beta_{12} relp_{t-1} + \beta_{13} oil_{t-1} + \varepsilon_t$$

Where *ws* is the labour share, *prod* is gross value added per hour worked, *unr* is the unemployment rate, *relp* is the ratio of the private consumption deflator less the GDP deflator to the private consumption deflator, and *oil* is the rate of inflation of the Danish Kroner denominated price of oil. The PMG model in wage share form is:

$$\Delta ws_{it} = \beta_{1i} + \beta_{2i} \Delta ws_{it-1} + \beta_{3i} \Delta prod_{it} + \beta_{4i} \Delta unr_t + \beta_{5i} \Delta \inf_t + \beta_{6i} \Delta relp_t + \beta_{7i} \Delta oil_t + \beta_{8i} ws_{it-1} + \beta_9 prod_{it-1} + \beta_{10} unr_{t-1} + \beta_{11} \inf_{t-1} + \beta_{12} relp_{t-1} + \beta_{13} oil_{t-1} + \varepsilon_{it}$$

The PMG model was also estimated in wage rate form. In the wage share model, the PMG approach assumes that the coefficient on the lagged level of productivity is unity, implying that real wages adjust fully to productivity in the long run. Estimating the model in wage rate form facilitates testing this assumption. The wage rate form of the model is:

$$\Delta wr_{it} = \beta_{1i} + \beta_{2i} \Delta wr_{it-1} + \beta_{3i} \Delta prod_{it} + \beta_{4i} \Delta unr_t + \beta_{5i} \Delta \inf_t + \beta_{6i} \Delta relp_t + \beta_{7i} \Delta oil_t + \beta_{8i} \left(wr_{it-1} - \theta prod_{it-1} \right) + \beta_9 unr_{t-1} + \beta_{10} \inf_{t-1} + \beta_{11} relp_{t-1} + \beta_{12} oil_{t-1} + \varepsilon_{it}$$

The estimation results for the ordinary least squares and pooled mean group models are presented in Table 3.A3.2 below.

In the wage rate equation, the coefficient on the lagged level of productivity was estimated to be around 0.8, which is higher than generally found in de Serres *et al* (2003) for a sample of OECD countries but still suggests that wages do not fully adjust to productivity in the long run. The coefficient on the lagged level of the wage share or wage rate, which can be interpreted as speed of adjustment parameter, is generally consistent with the findings in de Serres *et al.* (2003).

The key result from this analysis is that the coefficient on the lagged level of the unemployment rate is higher in the models estimated with the PMG approach than the OLS model on the aggregate wage share. This suggests that there is a stronger relationship between wages and unemployment when sectoral composition is taken into account.

Table 3.A3.2. **Labour share equations**

	OLS		PMG			
	Δws_t	P-value	Δws_t	P-value	Δwr_t	P-value
Constant	–0.101	0.012	–0.115	0.009	–0.094	0.009
Δws_{t-1}	0.242	0.043				
$\Delta prod_t$	–0.616	0	–0.53	0	0.491	0
Δinf_t			0.199	0.032	0.189	0.085
$\Delta relp_t$	0.38	0.058				
ws_{t-1}	–0.239	0	–0.144	0.002	–0.129	0.001
$prod_{t-1}$			1	..	0.826	0
unr_{t-1}	–0.004	0.001	–0.04	0	–0.015	0.067
oil_{t-1}	–0.001	0.001				
Observations	39		312		312	
R-squared	0.725					

Note: Only coefficient estimates that were found to be statistically significant have been included in the table.
Source: Statistics Denmark National Accounts, OECD Economic Outlook No. 81 database and OECD calculations.

With the caveat that there is evidence that wages do not fully adjust to productivity in the long run, the stronger relationship between unemployment and wages at the sector level confirms that the change in the sectoral composition of the economy has helped to keep aggregate wages growth in line with aggregate productivity. Had it not been for the changing industry structure, wages pressure may have been somewhat more visible at the aggregate level before now. This conclusion relies on the assumption of constant factor shares for the interpretation of the relationship between compensation of employees and labour productivity. As mentioned above, there are a number of factors that could affect this relationship, key amongst them being technological change. Further analysis of the changing industry structure would shed more light on the evolution of the labour share.

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Chapter 4

Tax reform, hours worked and growth

The new medium-term fiscal strategy requires that average hours worked are kept constant in a context where demographic changes would imply a 2% decline towards 2015. Tax reform could make a significant contribution to achieving this objective, provided that the cuts focus on areas where they could reduce distortions the most and that they are appropriately financed. This chapter analyses the relative merits of the enlarged in-work tax credit introduced in 2008 and the higher threshold for the middle tax to be introduced from 2009. It also presents the results of a new OECD study on hours worked. Finally, it discusses the long-run prospects of maintaining a system where four out of ten full-time employed face a marginal tax wedge of more than 70% resulting from contributions plus income and consumption taxes combined.

Having one of the highest tax-to-GDP ratios among OECD countries makes it very important for Denmark to constantly consider how to refine the tax structure in order to reduce the distortions to supply and allocation of production factors, not least labour. Indeed, the pattern of high employment rates but low average hours worked, illustrated in Chapter 1, to some extent reflects the tax schedule with very high marginal tax rates setting in just above average full-time earnings. Reducing these high marginal tax rates is therefore one of the five key priorities pointed out for Denmark in *Going for Growth* (OECD, 2007). That would also help human capital formation and enhance the capacity to attract and retain high-skilled workers in a context of international mobility.

The 2004 and the 2008-09 income tax reductions

Recent measures have reduced marginal taxes for large groups in the labour market, but not for persons with income above average full-time earnings. Since the last major tax reform in 1998, personal income taxation has been changed twice. In 2004, an in-work tax credit was introduced, and the threshold for the first progression step, the so-called middle tax, was raised. In 2008-09 these measures will be enhanced (Box 4.1).

Box 4.1. **The 2008-09 income tax reductions**

In September 2007, a political agreement was reached on tax cuts to be implemented in two steps:

- From 2008, the in-work tax credit (*beskæftigelsesfradraget*) will be enlarged to 4% of taxable earned income up to a maximum equal to 85% of average full-time earnings (DKK 308 000). At the same time, however, there will be a 0.6% one-off increase in the level of all income benefits, attenuating the incentive effect of the larger in-work tax credit. The basic personal income tax allowance will also be increased to moderate the distributional effects of the tax cuts. From 2009, the in-work tax credit will be further enlarged to 4¼ per cent.
- From 2009, the threshold from where the first progression step, the so-called middle tax or 6% tax, is paid will be moved up to become exactly the same as for the second progression step, the so-called top tax or 15% tax. There are, however, slight differences in the tax bases for these two progression steps, the main one being that spouses can share unused deductibles for the middle tax, but not for the top tax. This implies, in some cases, that the two progression steps will effectively change order; some people with incomes moderately above average full earnings would pay the top tax, but not the middle tax.

These policy initiatives are associated with the so-called labour-market contribution (a tax on earned income without any deductions). This contribution was introduced in the 1990s reflecting an international trend of broadening the tax base while reducing rates (OECD, 1996). At that time, a set of rules were also established for future adjustments of the contribution rates. Because of lower spending on certain income benefits and higher revenue from the labour market contribution in recent years, these rules implied that the labour-market contribution rate had to be cut from 8 to 7½ per cent in 2008, along with an

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Box 4.1. **The 2008-09 income tax reductions** *(cont.)*

automatic upward adjustment in income benefits by 0.6 per cent. These rules have now been abolished. The contribution rate is kept at 8% and, instead, the tax cut has been made in the form described above, including the one-off increase in benefits, which would have followed from previous rules. Abolishing the labour market contribution regulation guards against automatic pro-cyclical changes in the labour market contribution rate.

To finance the higher threshold for the middle tax, energy duties will no longer be frozen in nominal terms, but raised 1.8% annually from 2008 onwards, in line with expected inflation. However, this will only increase revenues very gradually, meaning that the 2009 tax cuts are also by-and-large unfinanced in the short run.

Finally, the agreement states that the number of persons paying top tax must not rise beyond what it was in 2007. If the number grows in 2008, it is therefore stipulated in the agreement that a decision on further measures should be taken in 2009 with effect from 2010, and a general model should be established to prevent future increases in the number paying the top tax.

Moving the threshold from where the middle tax is paid is the most effective element of these tax reductions. It implies that a large number of full-time earners will no longer pay the middle tax, implying a clear reduction in the marginal tax rate they face. Previous *Surveys* and the OECD *Going for Growth* publication recommended raising the threshold from where the top tax is paid (OECD, 2006 and 2007a), but the incentive effects are not much different. In the coming years, when the scarcity of labour in the public sector will be particularly pronounced, moving the threshold for the middle tax has the advantage of reducing the marginal tax wedge in particular for groups like nurses, teachers and child care professionals (Government, 2007a).

The in-work tax credit is a less cost-effective way to expand labour supply. Unemployment and inactivity traps are pronounced for some groups, but the narrow earnings distribution makes it difficult for tax cuts to enhance the financial reward for moving into employment without generating other problems. In fact, a four-country comparison of stylised in-work tax credits found that such instruments were somewhat less suited for a Scandinavian economy than for a German, UK or US context. If the in-work tax credit is targeted at low-income earners, the withdrawal of the credit as income grows will add to effective marginal taxes, and because of the narrow earnings distribution, this will affect a large part of the

Table 4.1. **Labour supply effects of the tax measures as estimated by the government**

	Fiscal revenue impact[1]	Changed incentives for an average individual			Labour supply effects[2]		
		Gain from employment	Replacement rate	Marginal tax	Participation	Hours	Total
	Billion DKK	*DKK*	*Percentage points*		*Thousand full-time equivalents*		
Higher in-work tax credit	4.01	140	–0.50	–0.34	1.5	0.4	1.9
Higher income benefits (+0.6%)	0.68	–50	0.30	0.01	–0.8	0	–0.8
Higher basic tax allowance	1.62	0	0.08	–0.03	–0.2	–0.3	–0.5
Higher income threshold for the 6% "middle" tax	3.78	135	–0.38	–0.94	0.5	6.9	7.4
Combined effect	10.09	225	–0.51	–1.30	1.0	7.0	8.0

1. Loss of revenue if not considering dynamic effects.
2. The estimates of the dynamic effects on labour supply are associated with some uncertainty.

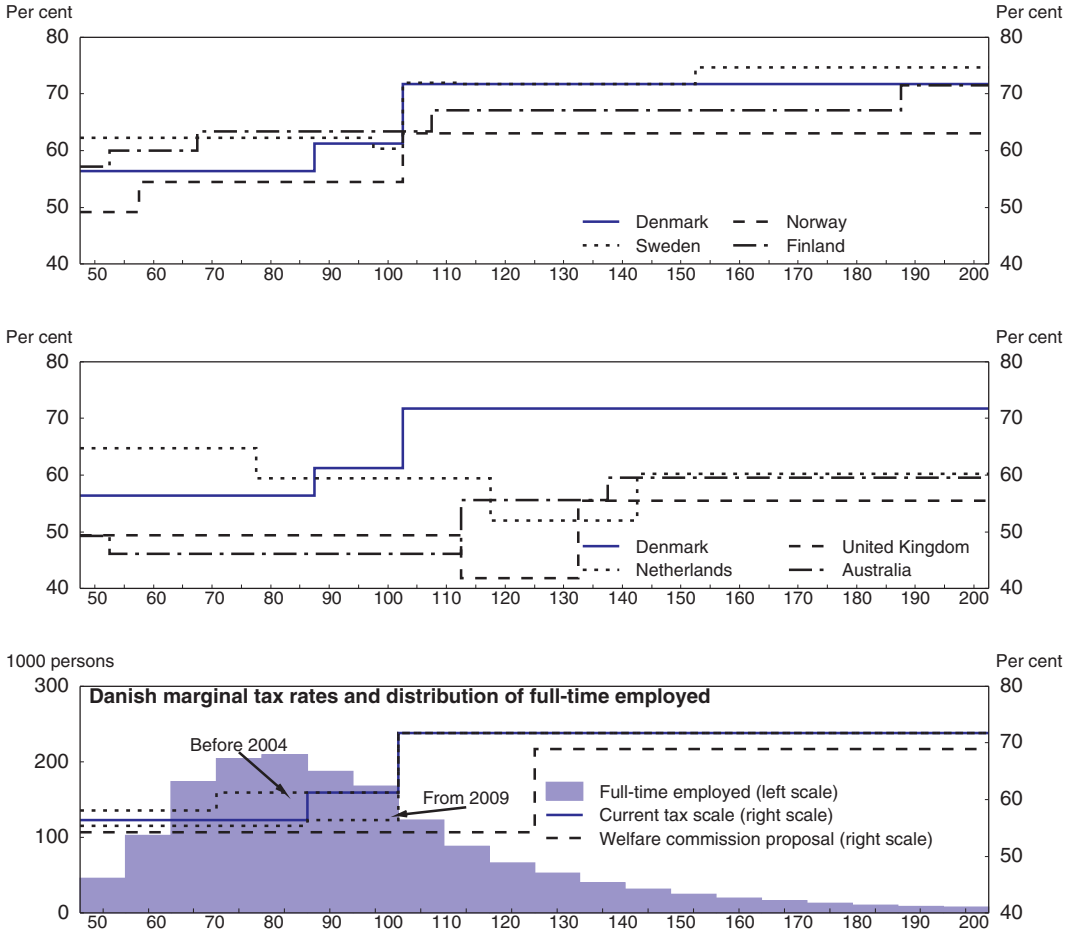
Source: Government (2007b), *Arbejdsudbud af skattenedsættelserne* (Labour-supply effects of the tax cuts).

workforce. If not withdrawn for middle and higher income earners, even a modest in-work tax credit becomes very expensive as it is given to everyone in employment (Bassanini, Rasmussen and Scarpetta, 1999; Rasmussen and Lundsgaard, 1999). According to the government's estimates, the 2008 expansion of the in-work tax credit costs ¼ per cent of GDP, but it will merely increase labour supply by 1 900 full-time equivalents; the higher threshold for the middle tax is four times more effective (Table 4.1). In essence, a reform involving an in-work tax credit is only really cost-effective in a Scandinavian context if the tax reduction for low-income groups, generated by the in-work credit, is accompanied by lower benefits for those outside employment, thereby redoubling the effect on incentives to search for work and leave income benefits. This approach has been followed in Sweden (OECD, 2007b).[1]

Also after 2009, Denmark will have some of the highest marginal income taxes for above-average income earners. For those with incomes up to average full-time earnings, marginal tax wedges will become broadly similar to those in Norway, while lower than in Finland and Sweden (Figure 4.1). Meanwhile, marginal tax wedges above average full-time

Figure 4.1. **Marginal tax wedges**

Income taxes, employer and employee contributions and consumption taxes combined for a single person without children having income at 50-200% of average full-time earnings, 2005



StatLink http://dx.doi.org/10.1787/263570522138

Source: OECD Taxing Wages Database; Welfare Commission.

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earnings remain considerably higher than in other Nordic countries, except Sweden. Even if the top tax was abolished, the combined marginal tax wedge implied by social contributions, income and consumption taxes would be similar to, or higher than, countries like Australia, the Netherlands and the United Kingdom. This puts the 2004 and 2008-09 cuts into perspective. They are welcome, but relatively modest changes – also when compared with the 2006 proposals by the government-established Welfare Commission (Figure 4.1). Changed demographic composition is set to reduce average hours worked by 2% towards 2015, equivalent to the labour supply of about 50 000 full-time employed. It is estimated that the 2008-09 tax cuts would make up for 15% of this decline. More measures will therefore be needed to meet the 2015 Strategy's requirement of unchanged average hours worked.

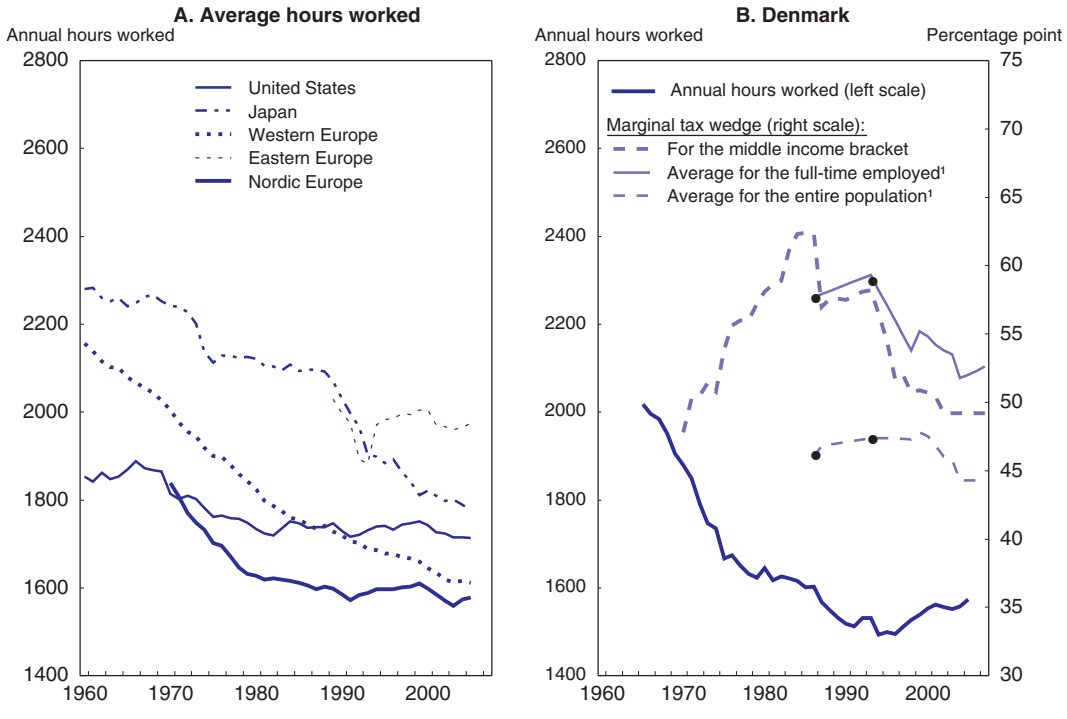
It is therefore most welcome that the new government programme from November takes the initiative to establish a Tax Commission to prepare a wide-ranging income tax reform. The stated objective is to achieve a clear reduction of the tax on income from work, notably regarding marginal rates (Government, 2007c).[2]

How much do income taxes matter for hours worked?

A new OECD study has developed a refined dataset on hours worked and studied the effect of marginal tax rates on labour supply. Over time, average hours worked have fallen in many countries. The Nordic countries are special since this fall came earlier, with strong declines in the 1970s followed by stability (Figure 4.2).

Figure 4.2. **Average hours worked and marginal tax wedges over recent decades**

Income taxes, employer and employee contributions combined



StatLink http://dx.doi.org/10.1787/263610777245

1. Annual data are only available from 1998 onwards. The first part of the series is an interpolation of the 1986 and 1993 data.

Source: *OECD Productivity Database* and Ministry of Finance.

A series of tax reforms in the late 1980s and during the 1990s, which reduced the marginal tax rates faced by most people, may have contributed to the slight increase in average hours worked in Denmark since the mid 1990s. After drifting up for decades, marginal tax rates were cut considerably in 1987 and 1994-98. The movement in the statutory rates exaggerate the actual decline, as the share of tax payers being in the higher income brackets has gradually risen, partly reflecting deliberate efforts to broaden the tax base by trimming deductions. Consequently, the marginal tax wedge for the average full-time employed persons actually increased from 1986 to 1993. Thereafter it fell almost seven percentage points during the 1994-2007 period (Figure 4.2). It is remarkable how well average hours worked are correlated with these tax movements: in the mid 1990s, the decline was reversed to a gradual increase in average hours worked, despite the fact that demographic changes should have pulled towards a decline in average hours worked.[3] If considering not just the full-time employed, but all taxpayers in the population, the reduction in marginal tax rates has been more limited; from 46.0% in 1986, to 44.7% in 2007. This partly reflects the 1994 conversion of previously tax-free income benefits into larger benefits that are subject to income taxation. This conversion moved a large number of persons up above the threshold where the first non-zero income tax bracket starts.

Across countries there is a clear correlation between marginal tax rates and average hours worked. This may reflect a number of factors, but also when controlling for other relevant factors, including employment and the average tax level for the whole economy, the marginal tax wedge appears a significant and important determinant of average hours worked by women. There is a clear negative substitution effect: higher taxes reduce the income from working an extra hour and so induce more consumption of leisure (Box 4.2). For men, the effect is smaller.

Box 4.2. **Cross-country estimation results for taxes and hours worked**

The econometric analysis of hours worked was conducted on a panel of 22 OECD countries, including Denmark, with data for 1991-2005. The equations also included employment rates (instrumented), educational and family patterns as control variables as well as time and country fixed effect dummies. The main result of this econometric work is as follows (here omitting the other explanatory variables).

For men: log (usual weekly hours worked) = –0.136** marginal tax wedge + ..

For women: log (usual weekly hours worked) = –0.730*** marginal tax wedge + ..

These estimates confirm that marginal tax wedges are an important determinant of variation in hours worked across countries and over time, even if the exact magnitude of the effect can only be estimated with some uncertainty. In some specifications, the coefficient is not statistically significant for men. The effect tends to be stronger for married men than single men and stronger for persons with tertiary education than for those without. As always with cross-country panel datasets it should be kept in mind that the strength of the effect might vary considerably across countries *inter alia* due to different institutional features not controlled for in the analysis: the estimated coefficients reflect the strength of the effect of a change in the marginal tax rate in the average country. For example, differences in family and gender roles on the labour market might imply that there is less of a gap between the size of elasticities for women and men in Denmark than in the average OECD country.

Box 4.2. **Cross-country estimation results for taxes and hours worked** *(cont.)*

Working hours data come from the labour force survey: respondents are asked to state how many hours they work in a usual week not affected by holidays, sickness absence or similar. As this excludes "unusual" overtime and second jobs, the difference between total annual hours worked in the United States *versus* Europe may not be fully captured in the dataset. Marginal tax wedges are calculated based on OECD Taxing Wages models which include the combined effect of direct income taxes, social security contributions paid by employers and employees, child benefits and in-work tax credits, but not consumption taxes (indirect taxes). Wedges are averages over 6 household types and gross earnings at each percentile from 61% to 200% and 33% to 99% of Average Production Worker earnings, for first and second earners respectively.

The estimated semi-elasticities imply that a one percentage point increase in the marginal tax wedge may be associated with a 0.73% decline in the usual weekly hours worked by women in the average OECD country.

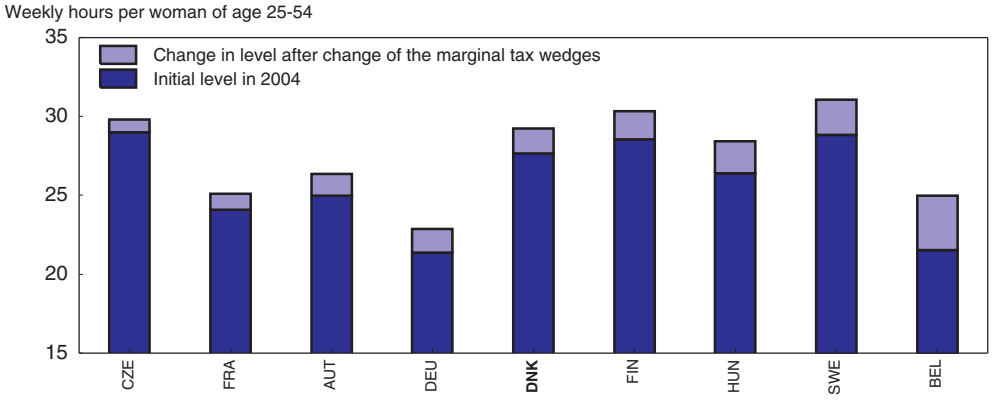
Factors other than marginal taxes also affected average hours worked, but with a smaller magnitude. The availability and costs of childcare matter a lot, but here Denmark is already well equipped. Regulations that restrict weekly working time explain part of the variation across OECD countries for men, whereas women tend to work fewer hours and so are less constrained by maximum working time limits. Finally, the degree of union membership can matter, although whether this has a positive or negative influence on hours worked is ambiguous.

Source: Burniaux (2008) and Causa (2008).

To illustrate the implications of these estimation results, it is instructive to simulate the effect of reducing marginal tax rates in Denmark to the level in Australia – a country with a relatively low marginal tax rate. For women, the usual weekly hours worked might increase by 1½ hours, about 5% (Figure 4.3).

Figure 4.3. **Simulated effect on women's labour supply of lowering marginal tax rates to Australian levels**[1]

Simulation for total hours worked per week including effects on both usual weekly hours worked and share of women working, but not effects of the number of weeks worked per year



StatLink http://dx.doi.org/10.1787/263615188644

1. Countries a ranked according to change in hours worked after change of the marginal tax wedges.

Source: Calculations based on Causa (2008).

How much do income taxes matter for other drivers of economic growth and welfare?

While hours worked are an important determinant of cross-country income differences, taxation also matters for many other drivers of economic growth. Changes to the tax system should therefore just as much be guided by how to reduce adverse incentives with respect to work effort, human capital formation, mobility, and tax avoidance. Common to these effects is that they are all hard to quantify, implying that they are often excluded in calculations of the likely effects of alternative tax cuts. That is problematic, because most of these considerations point to a reduction of the high marginal taxes as a key to improve outcomes. A number of recent studies focusing on the tax elasticity of income rather than employment rates or hours worked are therefore interesting as they attempt to capture some of these wider effects of taxation. These studies, based on data for Sweden and other countries, typically find that total income is somewhat more elastic to taxes than hours worked (Gruber and Saez, 2004; Holmlund and Söderström, 2007; Kopczuk, 2005; Ljunge and Ragan, 2007).

Human capital formation is affected by taxation in several ways. High taxes and progression reduces the return to studying in general, but in a Danish context this is compensated by generous study grants. However, this combination of free tuition, generous grants for student's living costs and high income taxes has the disadvantage of distracting young people from considering earnings prospects when choosing what to study, and rather emphasises consumption aspects such as the sheer pleasures of student life which, for natural reasons, are not taxed. Moreover, the strong progressivity that sets in for incomes right above average full-time earnings means that the individual retains only a small part of the additional production value arising when young people start and finish their studies early. This could help to explain why Denmark and Sweden are the countries where students are oldest when starting tertiary education: on average almost 23 years, as documented in the previous *Survey* (OECD, 2006, Chapter 3).

International mobility is an area of growing importance. Strictly speaking, marginal taxes are not the issue here. Rather, migrants should be expected to assess the whole package of taxes, costs of living and the public services they would have access to in different countries. For a single person with below-average earnings and average risks of sickness, this package is reasonably attractive in Denmark, and for families with children, generous public funding for childcare makes the overall package relatively attractive even for those with incomes moderately above average. However, the high tax rates applied to incomes above average full-time earnings makes the ratio between what one individual contributes in terms of taxes and what he/she gets in terms public services somewhat less balanced than in other countries. Consequently, there is a tendency for skilled Danish emigrants to go to places where high-income earners are taxed less, notably countries such as the United States, Canada, and the United Kingdom, although presumably language also plays a large role here. Meanwhile, immigration to Denmark rarely comes from these countries (Table 4.2). For Norway and Sweden, linguistic and cultural proximity plays a special role, and *vis-à-vis* Sweden, migration is also shaped by integration in the Öresund region, as many younger Danes buy more affordable homes in southern Sweden and commute to work in Copenhagen.

It is hard to quantify precisely how much changes in income taxation would alter these mobility patterns, in particular because the lessons that can be drawn from past observations may not give reliable guidance for future developments. A recent study, following in the tradition of Borjas (1987), estimates the determinants of migration and finds that taxation

Table 4.2. **Top 10 countries for migration in and out of Denmark**

Emigration from Denmark[1]			Immigration to Denmark[1]		
	Number of persons	Per cent of Denmark's population		Number of persons	Per cent of the country's population
Sweden	33 128	0.775	Norway	14 968	0.424
United States	32 482	0.760	Sweden	17 311	0.241
Norway	21 878	0.512	Sri Lanka	7 142	0.125
Canada	18 095	0.424	Turkey	29 215	0.064
United Kingdom	17 055	0.399	Gambia	462	0.061
Germany	13 750	0.322	United Arab Emir.	160	0.044
Australia	8 743	0.205	Ireland	1 046	0.037
France	5 312	0.124	Germany	24 762	0.036
Spain	4 880	0.114	Poland	10 247	0.033
Switzerland	3 876	0.091	Netherlands	4 120	0.032

1. Rather than focusing on one year's migration flow, the table shows the stock of person aged 15 or more: Danish-born persons living abroad; foreign-born persons living in Denmark. The analysis excludes migration to/from Greenland and the Faeroe Islands which are part of the Kingdom of Denmark.

Source: OECD Database on Immigrants and Expatriates, November 2005.

plays a significant role in determining both where emigrants from Denmark go and from where immigrants to Denmark come (Nielsen, 2007). At the same time, new business models emerge in knowledge-intensive areas where researchers, skilled specialists, managers and, not least, entrepreneurs appear to be increasingly mobile – in particular if staff is anyway recruited internationally. In principle, the special tax regime, with a 25% gross income tax during three years for researchers and other persons with very high income recruited from abroad, would cater for such a situation. However, this scheme may not be conducive to business continuity, as vital firm-specific knowledge may be lost if unable to retain staff beyond the three years.[4] It may help that the government has now proposed to modify the special tax scheme, so that those eligible can choose between paying 25% of gross income during 3 years or 33% during 5 years. In the long run, however, special regimes for foreign recruits may have to give way to more general tax reform aimed at lowering the income tax rates for above-average incomes. Reducing the role of special tax arrangements would also help reduce the bureaucracy associated with recruiting staff from abroad: to benefit from the special tax regime, researchers now have to be approved individually by an official research council, unless their contractual pay exceeds 225% of average full-time earnings.

Labour mobility within Denmark is also a factor of growing importance. While job-churning is generally very high in Denmark, regional mobility and the efficient reallocation of jobs could be hampered by the strong tax progressivity setting in just around average earnings. A numerical example based on a typical couple and the 2009 tax structure might help to illustrate this point: one spouse earns 130% and the other 85% of average full-time worker earnings. The first spouse pays middle and top tax, but the other does not. Would a job offer with a DKK 100 000 pay increase to the highest earnings spouse be attractive if it requires that the couple moves to another part of the country, and the other spouse finds work there but earning DKK 40 000 less than previously? Indeed, for society as a whole there is a clear productive gain worth DKK 60 000 (18% of GDP per capita) if they accept the offer and move, but the couple is more likely to incur a loss. As the deductible for the top tax cannot be shared among spouses, the marginal tax rate applied to the first spouse's pay rise is considerably higher than the rate applied to the second spouse's pay reduction. Consequently, the couple retains only DKK 12 600 annually after the labour market contribution, income and

consumption taxes – hardly enough to cover the costs associated with moving. When they, most likely, say "no" to the job offer, public finances forego tax revenue of DKK 47 400.[5] In principle, the disincentives to internal mobility could be reduced by allowing couples to share the deductible for the top tax, but that would create adverse labour supply incentives for second earners more generally. A better possible solution could be to cut the high marginal tax rate.

Tax avoidance can take a number of forms ranging from underreporting of actual income and black-market activities to more subtle ways of getting round paying the highest income taxes. The informal economy in Denmark may not be as large, relative to GDP, as in some other countries, but surveys indicate that undeclared work is relatively widespread. When asked to identify the main reason for doing undeclared work, 39% of the Danish respondents pointed to high taxes, a larger share than in any other EU27 country (European Commission, 2007; Box 4.3). Meanwhile, personnel benefits have grown considerably in volume in recent years: in the form of computers and internet connections at home, wellness offers at work and similar arrangements where employees and employers find ways of giving income in forms that are not liable for taxation. Such arrangements are rational from a staff and firm perspective, but they entail a lot of additional transaction costs both in a bureaucratic sense and by reallocating consumption away from what people would prefer if not for the tax distortions.

Box 4.3. **Undeclared work has a remarkable pattern**

Estimating the size of the shadow economy and undeclared work is, for natural reasons, very difficult. Available estimates suggest that the shadow economy in Denmark could have a size equal to about 17% of GDP, broadly similar to its neighbouring countries Germany, Norway and Sweden (Schneider, 2004). However, a recent Eurobarometer shed some additional light on this issue. It asked 27 000 people, including 1 000 Danes, whether they had carried out undeclared work, *i.e.* paid work not fully reported to the tax or social security authorities, during the past twelve months. In Denmark, 18% said "yes", a higher share than in any other of the 27 EU member states, and several times more than the 5% EU average. Denmark also topped the list for the share responding that they had acquired services of which they had a good reason to assume embodied undeclared work: 24% replied "yes" compared to the average for the 27 EU member states being just 9%. The international comparison may be biased by respondents in other countries understating their actual exposure to undeclared work, but the figures are still striking.

The pattern of responses might reflect that, while the regular labour market is relatively shielded from undeclared work, the high marginal tax rates setting in just above average earnings nurture unreported work as a side activity among certain professional groups, notably skilled construction workers, who typically have earnings just around the threshold for the top tax. Much fewer individuals than in other countries said they had been in the situation that their employer had suggested to pay undeclared "cash-in-hand" for part of their work. When the respondents were asked who, in their opinion, were most likely to carry out undeclared work, 41%, on average for EU27, pointed to the unemployed, but only 17% did so in Denmark. By contrast, 26% pointed to the self employed in Denmark, a share only surpassed in Malta. Only 8% said that their own undeclared income was part of the remuneration from their regular work; a lower share was only seen in Sweden. Among those responding that they had personally done undeclared work, 30% said it was in construction, compared to 15% on average for EU27.

Source: European Commission (2007), "Undeclared Work in the European Union", *Special Eurobarometer*, No. 284, October.

Finally, many of the obstacles to reform in capital taxation are related to the high marginal tax rates for above-average income. If having positive net capital income, interest income is taxed at the same rate as income from work in order to avoid entrepreneurs achieving lower taxation by reclassifying income as interest. But thereby, the real tax rate on genuine interest income is around 100% as a nominally based tax system does not take account of that part of interest is compensation for inflation and not real income. Reducing the high marginal tax rates would alleviate this problem and also scale back some of the subsidies for pension savings (Chapter 6).

Undertaking tax reform – financing income tax cuts

Even if just considering the effects on hours worked, official estimates indicate that over half of the initial revenue loss due to cuts in the top tax would come back via a more ample labour supply (Ministry of Finance, 2002 and 2004). When considering also the wider effects discussed above, it cannot be entirely excluded that reducing middle or top tax (cutting their rate or moving up the income threshold from where they apply) could be completely self-financing – it is not possible to estimate precisely. This conclusion was drawn also in a Swedish context (Holmlund and Söderström, 2007) – where the so-called state income tax very much resembles the Danish top tax. But even if this is not the case, and reductions in the high marginal taxes are self-financed by maybe 75% as recently suggested by the Economic Council,[6] then the loss of revenue from completely abolishing the top tax would be smaller than the net revenue loss from the 2008 tax cuts as the total revenue from the 15% top tax is merely 1% of GDP, or DKK 14.7 billion in 2005.

Given the uncertainty about the size and timing of the dynamic gains, a prudent approach to financing should be adopted. A tax reform would only contribute to the 2015 Strategy's underlying requirement of fiscal sustainability if the anticipated dynamic effects are allowed to improve public finances – *i.e.* that they are not all included as financing for the tax cut itself. Realistically, reductions in the high marginal tax rates might have to be financed by increasing less distortive taxes, user charges and *via* spending restraint in less vital areas. Housing stands out as a policy area claiming large public subsidies for housing associations and indirect subsidies, in the form of preferential tax treatment of cooperative and owner-occupied housing. For cooperatives, the direct and indirect subsidies per inhabitant amount to over 6% of GDP per capita as documented in the previous *Survey* (OECD, 2006). This implies ample scope for financing reductions in the most distortive income taxes. Adjustments in housing taxation should be seen in the context of capital taxation more widely (Chapter 6).

The 2008-09 tax changes are partly financed by letting energy taxes rise in line with inflation. Since 2001, all taxes that are stipulated as kroner amounts per unit or volume have been frozen in nominal terms. Adjusting this policy to keep taxes constant in real terms is a welcome policy move, and similar adjustments for environment taxes could potentially make room for further income tax cuts in the future. However, proportional increases across the board for all energy and environmental taxes is a second-best relative to differentiated measures that can target the most beneficial environmental impact and also avoid increasing distortions; for example with respect to cross-border trade of fuels. With high volumes of road-based goods imports and exports as well as north-south transit freight, the choice of fuelling in Denmark, Germany or Norway/Sweden implies that the tax base, notably for diesel, is highly mobile (Ministry of Taxation, 2007). Although the elasticities of consumption substitution and cross-boarder trade are hard to estimate precisely, it may be that the net fiscal revenue gain from a unilateral move of Danish tax

rates is rather small, unless the neighbouring countries also raise fuel taxes in the coming years. Moreover, some environmentally related taxes – being high already – may exceed what can be justified by the damaging effects of the use of the good. Further moves to increase energy or environmental taxes should therefore be based on a comprehensive assessment of the environmental and economic impact.

Conclusions

The empirical analysis presented in this chapter suggests that certain tax cuts could be relatively easy to absorb, given the dynamic effects they would unleash. Nevertheless, it has proven difficult to reach consensus about tax changes: neither the 2004 nor the 2008-09 cuts affect the high marginal tax rates for those with incomes above average, where the combination of contributions plus income and consumption taxes combine to create a marginal tax wedge above 70% for four out of ten full-time employed. Discussions have stranded on concerns that persons with above-average income would get larger tax reductions, in kroner amounts, than persons with below-average income. It is unavoidable that the distribution of disposable income would widen, but a holistic assessment of the equity outcome would also have to take into account three other perspectives. First, the widening of the income distribution would not be dramatic: as documented in previous *Surveys*, the Gini coefficient would just be at par with Sweden even if the top tax were completely abolished (OECD, 2005). Second, people would change their behaviour in ways that enlarges their taxable income. Their disposable income would be higher, but their tax payments – and thereby their contribution to the financing of public expenditures – would probably not be much lower. Finally, when the relative skill supply changes (because above-average earners choose to work more hours, young people choose to start and complete studies earlier, etc.), it will put an upward pressure on the relative wage for the low-skilled, thereby mitigating the widening of disposable incomes.

The bottom-line is that reducing the high marginal tax rates for above-average incomes (either cutting the rates or moving up the thresholds) would probably have little impact on government revenue. Therefore, an appropriately financed tax reform would be capable of enhancing the economic welfare of individuals and families, by reducing distortions as well as contributing to the fiscal targets of the 2015 Strategy. Hence, it would increase the ability to uphold a generous welfare state, ensuring that health care and education are available to everybody irrespective of income. It may even make it easier to provide generous income security for those in need *via* complementary demand for low-skilled labour. Indeed, the capacity to sustain the comprehensive welfare state as it evolved in countries like Sweden and Denmark in the 1960s and 1970s owes much to a continuous willingness to address the worst disincentives that inevitably develop when the total tax burden is around half of GDP.

Box 4.4. **Recommendations regarding taxation and labour supply**

- Any further expansion of the in-work tax credit should be accompanied by reductions in benefits. Otherwise, the positive effects in terms or labour supply are too small to justify the high budgetary costs of the in-work credits resulting, in particular, from the narrow income distribution.
- Reduce the high marginal tax rates which apply from incomes just above average full time earnings or, as a second best, move the thresholds from where the middle and top tax brackets apply.

Notes

1. Some studies have approached the in-work tax credit as an instrument to increase redistribution and find that it is a better instrument for this purpose than higher benefits (Immervoll, Kleven, Kreiner and Saez, 2007). However, the same authors argue that the distortions generated by the high marginal taxes may well be so strong that Denmark has passed the top of the Laffer curve (Kleven and Kreiner, 2006). This basically illustrates that, in an economy with a very high tax-to-GDP ratio, virtually all taxes are, at the margin, quite distortive, and cutting them appears promising. The central question from a public policy perspective is what taxes are *most* distortive at the margin, *i.e.* where can the strongest dynamic effects be unleashed if willing to forego a given amount of fiscal revenue.

2. The new government platform issued in November 2007 gives some further guidelines for the coming tax reform. The tax freeze, which was introduced in 2001 and stipulates that no tax rates can be increased and that housing taxes cannot grow in nominal terms, will remain as it is before and after the reform. A new tax commission will be set up with the task to propose models for a tax reform with the following terms of reference: 1) A significant reduction in the tax on earned income – including marginal tax rates – to stimulate labour supply and promote entrepreneurship; 2) the tax reform should underpin the government's environmental ambitions through the provision of incentives for energy saving behaviour for private individuals and companies; 3) the tax reform should have a balanced distributional outcome; 4) the long term economic impacts should be in line with the targets in the 2015 Strategy and be robust in the context of an increasingly globalised world. The tax commission will finalise its work in early 2009. It will be possible to finance the reform by raising some taxes, with the explicit exception of the real estate tax (*ejendomsværdiskatten*), but the revenue will have to go fully to a reduction of income taxes. It is furthermore a part of the government platform that efforts against tax avoidance will be enhanced, while trying to further reduce the administrative burden for tax payers.

3. From 1999 to 2005, a simple demographic projection based on constant hours worked in sub-groups broken down by age, gender etc. would have predicted a 1½ per cent decline in average hours worked for the labour market as a whole.

4. A promising Danish biotech start-up recently surprised when announcing that it was considering moving most of its research activities abroad, possibly to the United Kingdom, due to difficulties retaining international staff under Danish taxation, and other activities to Hungary in order to benefit from the availability of special laboratory facilities. The start-up, Glycom, was established at the Technical University of Denmark some years ago and now has a leading position in biotechnology related to sugar molecules for babies. A large part of the staff has been recruited internationally including from Australia, Austria, Cuba, Germany and Hungary. The case was reported by the newspaper *Børsen* on Monday 8 October 2007.

5. With average full-time earnings of an estimated DKK 353 000 in 2008, the first spouse earns DKK 460 000 and the second spouse DKK 300 000. Consequently, the first spouse is well above the threshold for middle and top tax (marginal tax wedge is 63%) while the other is below the threshold (marginal tax wedge is 41%, but as the deductible for the middle tax is shared by the couple, the marginal tax wedge is effectively 47%). Disposable income thereby grows by DKK 37 000 as result of the DKK 100 000 pay rise, and falls by DKK 21 200 as result of the DKK 40 000 pay reduction. The net change is DKK 15 800. Meanwhile revenue from labour market contributions and income taxation goes up by DKK 63 000 – 18 800 = 4 200 and consumption tax revenue goes up by DKK 3 200. The couple's joint gross income gain of DKK 60 000 is effectively taxed by 79% when considering the combined effect of contributions, income and consumption taxes.

6. Estimate given by the Economic Council chairman, Professor P. Birch Sørensen at a tax conference and reported by the newspaper *Børsen* 9 October 2007.

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Chapter 5

Health: a major fiscal challenge

Over the past few years, the Danish health system has improved. Yet when looking ahead, further pressures should be expected from new costly medical technologies expanding the range of conditions that can be treated, as well as from continued demand for shorter waiting times and care that responds to individual needs. Managing healthcare spending may well be the largest fiscal challenge over the coming decades. Sustaining universal public health insurance financed by general taxation should be feasible, but it will require continued efforts to enhance efficiency via organisational adjustments, refined economic incentives and the adoption of cost-saving treatment practices. At the same time, promoting healthy nutrition and lifestyles should have higher priority, and the system as a whole should be more engaged in helping to prevent people with health problems ending up being excluded from the labour market.

Healthcare enjoys high priority: it is the fastest growing area of public spending, and with ambitious government plans for more rapid treatment of cancer and cardiovascular diseases, and large-scale investments in new hospitals, this is set to continue. Against this background, the chapter starts by reviewing health outcomes in Denmark from an international perspective. It then examines spending trends to disentangle the likely future cost drivers associated with medical technologies, ageing and income growth leading to wage pressures and higher service expectations in general. The chapter reviews three different but potentially complementary strategies to respond to the growing demand for healthcare spending, while keeping intact the core elements of the Danish health system building on universal public insurance (Box 5.1):

- Rebalancing public and private funding slightly differently than today, notably for long-term care.
- Strengthening efficiency *via* human resource policies, funding incentives, choice and cost-saving treatment practices.
- Reinforcing the nexus between healthcare and activation measures, thereby reducing the number of people being out of employment due to health problems.

Box 5.1. **The Danish health system in a nutshell**

With universal public health insurance, everyone resident in Denmark has a legal right to publicly-funded coverage for healthcare. As patient copayments only exist for specific areas like pharmaceuticals and dental care, public spending is among the highest in the OECD. Hospitals are almost exclusively public, whereas primary care and many types of specialist care are provided by physicians in private practices. All of these services, as well as subsidies for pharmaceuticals, are funded *via* the regional authorities' budgets. Regions, in turn, get their resources from the central government in the form of block grants (79%) and payments for additional activity compared to previous years (3%), plus a smaller element of municipal co-financing in the form of block grants (7%) and activity-based payments when citizens of each municipality use regional healthcare facilities (12%). All taxpayers are liable for the 8% "health contribution", levied by the central government, but this is only notionally linked to healthcare. Municipalities levy income taxes which finance their grants to regions as well as prevention and long-term care, including rehabilitation following hospital discharge, which are municipal responsibilities. Approval of new drugs and treatments, as well as other regulatory oversight, rests with central government. The regions are expected to undertake medical research, with the aim of creating regional research clusters around hospitals.

Health status, lifestyle and access to care

For decades, Danes' life expectancy was losing ground relative to other countries, but this trend has reversed recently. Since the mid-1990s, life expectancy at birth has gone up by 3 years for men and 2½ years for women (Figure 5.1). Life expectancy is still on the low

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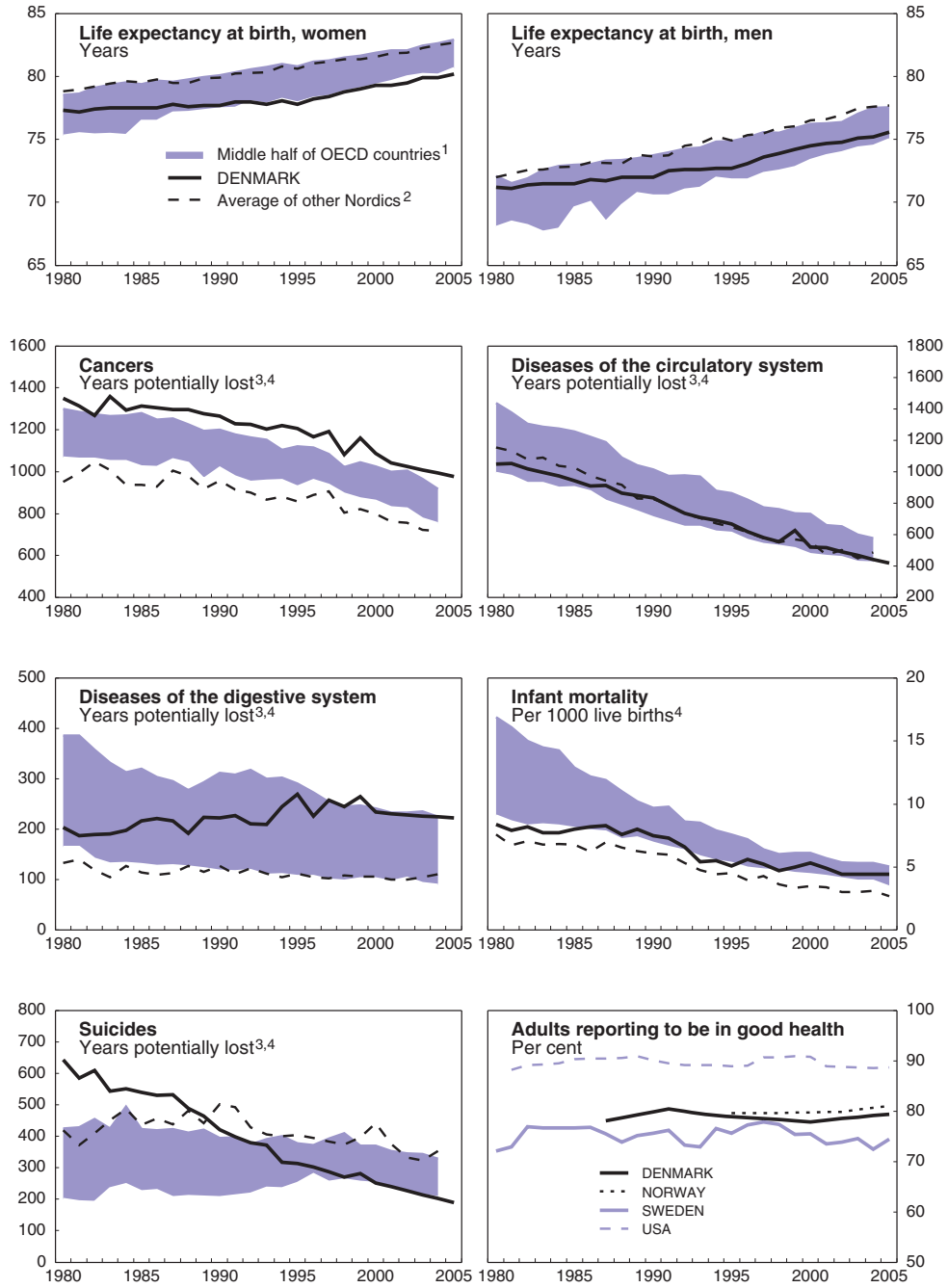
Figure 5.1. **Indicators of health status**

Women and men combined, where not otherwise mentioned



StatLink http://dx.doi.org/10.1787/263622213358

1. The shaded area shows the middle two quartiles, *i.e.* half of the OECD countries fall in this range.
2. Simple average of Finland, Iceland, Norway and Sweden.
3. Potential Years of Life Lost (PYLL) measures premature deaths per 100 000 population aged 0-69: A death at age 5 counts as 65 years lost, a death at age 50 counts as 20 years lost, deaths at age 70 or higher do not count.
4. Due to changes in the IT system used for data collection, mortality data for 2002-04 are not available yet for Denmark. The definitions used, however, are the same as previously meaning that there should be no data break between 2001 and 2005.

Source: *OECD Health Data 2007*, October 07, and National Board of Health for the most recent cause-of-death data.

side from an international perspective, but the gap with the other Nordic countries, which had widened in the past, is now narrowing, reaching 2½ years for women and 2 years for men in 2005.

The major killing diseases

Among the causes of premature deaths, cancer stands out as the weak point. Close to fifty thousand potential years of life are lost annually because of cancers killing persons still below the age of 70. In absolute terms, cancers are several times more important than other major disease groups as a cause of premature deaths. And compared to other countries, Danish cancer mortality remains relatively high, despite improvements during recent years. For a few cancers, such as lung cancer, mortality rates come close to the OECD average, but on the other hand, standardised mortality rates for breast cancer are well above those in any other OECD country (OECD, 2007a). In addition to life-style factors, the elevated cancer mortality rates may partly be explained by previous inadequacies in healthcare attention or quality. Some years back, international comparisons revealed a lower likelihood of survival at fixed points in time after the initial diagnosis than in other comparable countries (Coleman *et al.*, 2003). However, more recent data indicate clear improvements (OECD, 2007a). Against this background, it is not surprising that much of the debate about healthcare in Denmark focuses on cancer: the government has responded with welcome measures to speed up diagnosis and access to treatment for cancers (Government, 2007a).

Much better outcomes are observed for diseases of the heart and circulatory system and for infant mortality. Meanwhile, diseases of the digestive system appear as an area warranting renewed attention, as they cause more premature deaths than in three out of four other OECD countries.

The most encouraging development is that the potential years of life lost due to suicide has plummeted to a third of what it was in 1980. This stands in stark contrast to the developments observed elsewhere. Over the past quarter century, Denmark has completely changed its relative position to become one of the OECD countries in which premature deaths due to suicide play a relatively small role. As suicide is a fairly good indicator of the extent of severe mental health problems, the decline might indicate an improvement in mental healthcare.

Traditionally the Danish debate has emphasised that the purpose for healthcare in old age should be to "add life to the years" rather than "add years to the life". How well the health system delivers on such an objective is hard to quantify and compare internationally. When asked in surveys, most adults, including older persons, report to be in good health, and generally satisfied with life.

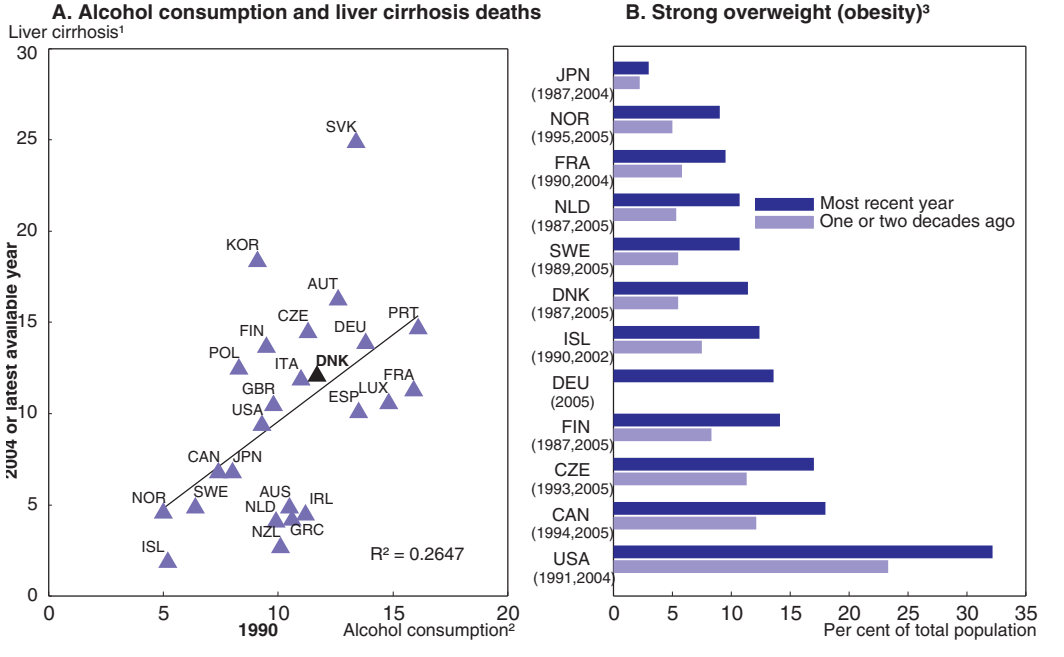
Danish lifestyle

Lifestyles should warrant more policy attention. Environmental factors – in a wide sense – explain more of the cross-country variation in life expectancy and premature mortality than healthcare spending and medical services (Or, 2000). Thus, a government commission, set up in the 1990s, indentified unhealthy lifestyles as the main cause behind the slow increases in life expectancy observed in Denmark at the time (Juel, 2004). Consequently, enhanced public health measures to tackle poor health habits was pointed out as the biggest opportunity for the Danish health system considered as a whole in a recent review by British health experts (Hurst, 2002).

Traditionally, smoking has been a major public health issue in Denmark, but that has improved. In 1980, half of the adult population were smoking on a daily basis – a larger share than that recorded in any other OECD country in any year since then. Partly due to public health campaigns, the share of daily smokers has halved, reaching a level just marginally above the OECD average of 24%. By contrast, alcohol consumption has remained high at the equivalent of 14 bottles of beer or 2.6 bottles of wine per week per adult throughout the period since 1980. This is high relative to public health recommendations, and it is above the OECD average. Indeed, alcohol consumption has been declining in most continental European countries over recent decades. In the other Nordic countries, alcohol consumption has been trending upwards, but for Norway and Sweden it remains close to half of the Danish level, and also Finns drink less than the Danes. The issue requires attention not least because excessive use of alcohol and soft drugs among youth appears to be increasing, thereby not only having adverse long-run effects on health, but also having more immediate adverse effects on learning.

Lifestyle factors affect health status and health-care costs only with a lag of some decades. The full consequences of intensive smoking in the past may not have appeared yet,[1] and indeed there is some correlation across countries between the frequency of deaths due to alcohol-related diseases, such as liver cirrhosis, and the past intensity of alcohol consumption (Figure 5.2).[2] Because of these lags, it is essential to pay attention to risk-generating life-style issues as they emerge. Strong overweight (obesity) is one such emerging issue which, in many countries, has become twice as common over the past

Figure 5.2. **Lifestyle matters**



StatLink http://dx.doi.org/10.1787/263635133141

1. Deaths per 100 000 population.
2. Litres sold annually per person aged 15+.
3. Obesity is defined as having a body mass index (BMI) above 30. The BMI for an adult is calculated as the following ratio: weight in kilograms/sq(height in meters). A person of height 180 cm, would thereby be counted as obese if weighing more than 97 kilograms. Different measurement approaches are used in different countries, see OECD (2007a), *Health at a Glance*.

Source: *OECD Health Data 2007*, October 07.

twenty years. In Denmark, the rise in obesity is as strong as elsewhere, but the level reached so far is still modest (Figure 5.2). Obesity is a known risk factor for a series of health problems including hypertension, high cholesterol, diabetes, cardiovascular diseases, asthma, and some forms of cancer. For the United States, the resulting societal costs are already estimated now to exceed similar costs related to smoking and excessive drinking combined (Sturm, 2002).

Prevention

The government's intention to establish a prevention commission should therefore be welcomed. The stated target of raising average life expectancy by three years over the coming ten-year period is quite ambitious, but it may help to bring focus onto initiatives that have a documented effect. The government intends to give all children in day care and schools the possibility of buying healthy meals and increase their exposure to physical exercise; to prohibit the sale of cigarettes to youngsters below the age of 18 years, as is currently the case in Finland, Norway and Sweden; to exempt employer-paid access to fitness centres and similar sports facilities from income taxation; and reorient urban planning with an emphasis on bicycle tracks, parks and other facilities for physical exercise (Government, 2007a).

The commission will be asked to consider the pros and cons of introducing a differentiated value-added tax giving rebates for fruits and vegetables. Changing diet is indeed important: the intake of animal fats is high and gradually increasing in Denmark, as opposed to, for example, the United Kingdom where there has been a clear shift towards vegetable fat intake. This pattern may explain a fair part of the slow progress in life expectancy in Denmark over past decades (Kesteloot, 2006). However, a differentiated VAT for fruits and vegetables would increase the complexity of the tax system, adding administrative burdens for businesses that may be out of proportion with the positive health effects. Subsidised quality school meals may be a better approach, although it is important to target such measures well. For example, to test how subsidies matter for whether various parents would purchase the quality school meal for their children, different charging formulas could be introduced in different locations in a controlled pilot study. Adjustments in agricultural subsidies should also be on the agenda, as recent experience in Eastern Europe shows that reductions in subsidies for animal products had a large positive effect on life expectancy *via* reduced cardiovascular disease (Zatonski and Willett, 2005).

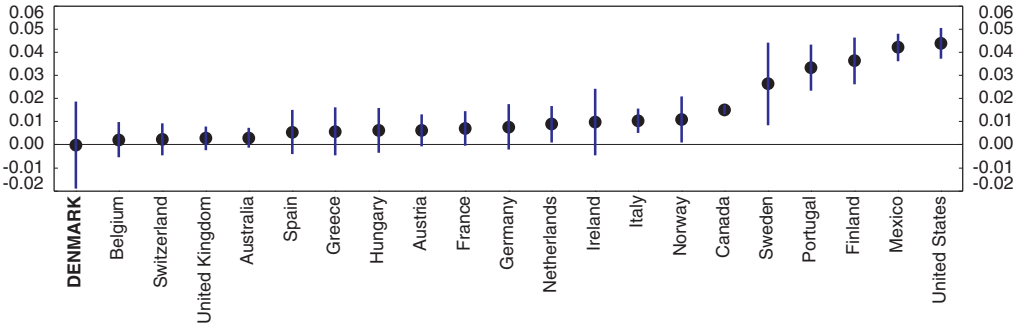
Promotion of healthy habits around alcohol use should also feature prominently in the preparation of the national prevention strategy to be launched in 2009. One route is to offer more guidance, not least for parents and young people, as emphasised in the new UK strategy on safe, sensible and social alcohol use (HM Government, 2007). Higher alcohol taxes could also be considered as cross-border trade will become less of a constraint when Sweden raises its duties on beer and tobacco in 2008 (Swedish Ministry of Finance, 2007).

Access to healthcare and equity

Health status is rather inequitable in the sense that persons with low income or limited social networks on average live shorter, not least because of less healthy lifestyles. By contrast, the Danish healthcare system stands out internationally by offering the same access to physicians for persons with different income but similar self-reported health (Figure 5.3).[3] Nevertheless, equity should still be a policy focus: by better helping those with

Figure 5.3. **Access to physicians is highly equitable**

Horizontal inequity indices[1]



StatLink http://dx.doi.org/10.1787/263653662500

1. The plotted points are horizontal inequity (HI) indices which summarize the inequality in the probability of at least one doctor visit (per annum) across income quintiles after need differences (variations in self reported health) have been taken into account. Positive values of HI indicate inequity favouring the rich; negative values indicate inequity favouring the poor. The vertical lines show the 95% confidence interval.

Source: Van Doorslaer, E. and C. Masseria (2004) "Income Related Inequality in the Use of Medical Care in 21 OECD countries", OECD Health Working Paper No. 14.

health problems avoid drifting into prolonged sickness absence, subsidised employment and ultimately disability pensions, the health system could potentially contribute even more to reducing income inequality.

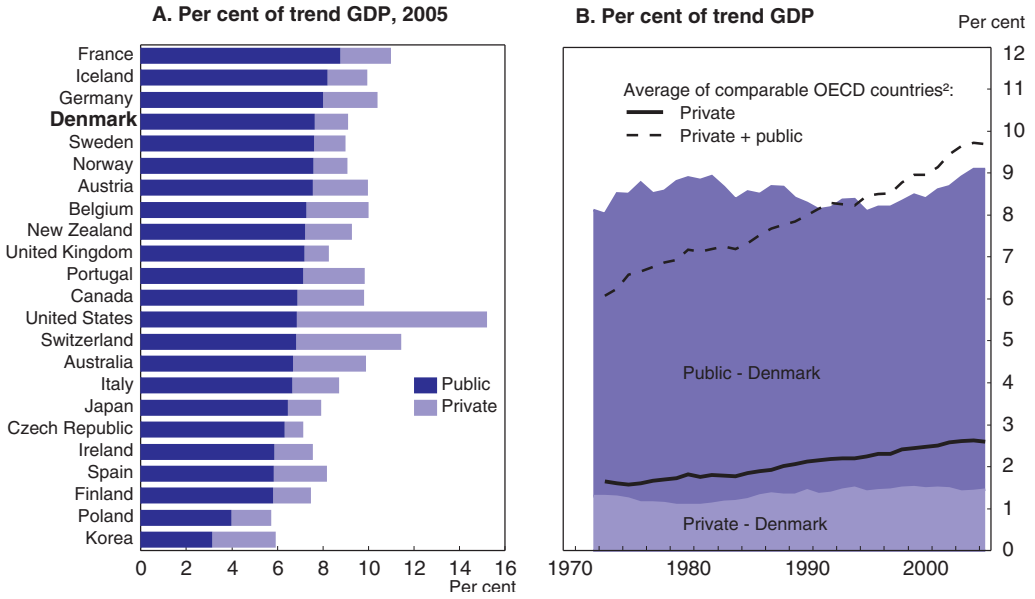
Spending on health and long-term care: What will the future bring?

Public spending on healthcare, including long-term care, is relatively high, whereas private spending is relatively low. At 7.6% of GDP, Danish public spending on healthcare is only surpassed by France, Iceland and Germany (Figure 5.4). Meanwhile, as private spending is rather limited, total healthcare spending is close to the OECD average. In this respect, Denmark is very similar to its two immediate Nordic neighbours, Norway and Sweden, whereas Finland allocates a somewhat smaller share of GDP to healthcare.

Healthcare reached its current GDP share already around 1980. This followed a rapid expansion of the public sector during the 1960s and 1970s which was not always well managed and therefore gave room for continued improvements in healthcare during the subsequent decades without requiring an increase in its share in GDP (Figure 5.4). A similar evolution has taken place in Sweden (OECD, 2005a), but it is rather different from what happened in other comparable OECD countries where the average GDP share of healthcare spending started somewhat lower, but has increased steadily by one percentage point per decade. The stability of total Danish healthcare spending has been supported by a tendency for public and private spending to compensate each other, partly reflecting that co-payments, notably for pharmaceuticals, were increased during the 1980s. Under the current wave of rapid public spending growth, however, private spending has been growing exactly in line with GDP, implying that the relative importance of private spending has been declining from 18% of total healthcare spending in 1998 to 16% in 2005 – coming back to the level it had in the early 1970s.

Contrasting with the modest spending growth observed during the 1980s and 1990s, healthcare has recently become the fastest growing element of public consumption. Over the five years 2002-06, real public spending on healthcare increased by an annual average of 3%. Given the conventions applied in the Danish national accounts, this means that the

Figure 5.4. **Health care spending**
Including long-term nursing care[1]



StatLink http://dx.doi.org/10.1787/263657436877

1. The numbers shown in this figure follow the OECD data definition of healthcare spending. This includes *long-term nursing care* (HC.3 in the *International Classification for Health Accounts*, ICHA) which is care given on a continuing basis to persons with a reduced degree of functional capacity, either physical or cognitive, who are consequently dependent on help with activities of daily living (ADL), such as bathing, dressing, eating, getting in and out of bed, and moving around. It can be provided in a home, or in various types of nursing home facilities. This item is what in a Danish context is referred to as *personlig pleje* with public spending worth 1.7% of GDP in 2005. Oppositely, *social services of long-term care* (HC.R.6.1 in ICHA) falls outside the OECD concept of healthcare spending. This part of long-term care is help related to instrumental activities of daily living (IADL) such as housekeeping, preparation of meals, transport and social activities. In a Danish context it is referred to as *praktisk hjælp* with public spending worth 0.4% of GDP in 2005.
2. Simple average of AUS, AUT, CAN, FIN, FRA, ISL, JPN, NLD, NOR, SWE, GBR, USA that have all had a limited and relatively stable income differential *vis-à-vis* Denmark throughout the period shown.

Source: OECD Health Data 2007, October 07 and *OECD Economic Outlook Database*.

volume of staff, equipment and supplies increased by 3% each year, with any productivity gains from better work organisation coming on top.[4] Against this background it is necessary to address the long-run prospects for healthcare spending, not least to avoid such expenditure growing in an unsustainable way that will require painful adjustments in the future.

Future cost and spending drivers

How much the demand for health and long-term care should be expected to grow in the future is hard to predict. However, a set of scenarios can be used to illustrate how the different key driving factors (demographics, life style, income and medical technology) could influence demand.

The most predictable factor is population ageing. This is not because increasing longevity as such will necessarily matter. The extra years added to the life of an average person may well be spent in good health, so that the effect of increased longevity is simply to postpone episodes of expensive health and long-term care that typically arise before a person dies. But even under the assumption of "healthy ageing", public spending is set to go up by 0.3% of GDP for healthcare and 0.7% of GDP for long-term care towards 2050,

because a larger share of the population will be in old age and in the terminal phase before death (Table 5.1). Spending would only fall in a scenario where ageing is combined with compression of morbidity and disability so that the period where the average person needs expensive care prior to dying would shorten. On the opposite side, if the duration of morbidity and disability prior to death expands with the extra years added to life not being spent in good health, then public spending would rise by about 2% of GDP for health and long-term care combined. This falls a bit below the middle of the range observed for other countries (Oliveira Martins and de la Maisonneuve, 2006). Moreover, current trends in obesity may produce a marked rise in disability with more adults needing long-term care at a younger age than what is common today; if not curbed, this trend alone could add 1.6% of GDP to long-term care spending by 2050 (Table 5.1).

Lifestyle is, thus, a key determinant, not just for longevity, but also for healthcare spending. A study in the United Kingdom has projected that differences in the evolution of public spending could amount to 2% of GDP after 20 years, when comparing two scenarios:

Table 5.1. **Illustrative scenarios for public expenditures 2005-2050**

Per cent of GDP[1]

Healthcare	2005	Demographics and health status[3]			Technology[4]		Combined worst case	
		Baseline	Compression of morbidity	Expansion of morbidity	No improvement in organisation and work practices	Costly medical innovations		
		Increase 2005 → 50			Additional increase 2005 → 50		Increase 2005 → 50	2050
Denmark	5.3	+0.3	–0.3	+0.9	+1.2	+1.8	+3.9	9.2
Sweden	5.3	+0.0	–0.4	+0.6				
France	7.0	+0.3	–0.6	+1.4				
United Kingdom	6.1	+0.4	–0.4	+1.2				

Long-term care[2]	2005	Demographics and health status[3]				No improvement in organisation and work practices	Increased participation	Combined worst case	
		Baseline	Compression of disability	Expansion of disability	Increase in dependency due to obesity				
		Increase 2005 → 50				Additional increase 2005 → 50		Increase 2005 → 50	2050
Denmark	2.6	+0.7	+0.3	+1.1	+1.6	+0.8	+0.2	+2.6	5.2
Sweden	3.3	+0.3	+0.1	+0.5	+0.9	+0.7	+0.2		
France	1.1	+1.2	+0.8	+1.6	+2.2	+0.5	+1.7		
United Kingdom	1.1	+1.0	+0.6	+1.5	+2.1	+0.9	+0.5		

1. In addition to the rise in public spending, private spending might grow in parallel, though this is not specifically modelled in the scenarios.
2. Includes both long-term nursing care and social services of long-term care, *i.e.* both the personal care and practical help (see Figure 5.4).
3. The demographic and health-status scenarios, which build on Oliveira Martin and de la Maisonneuve (2006), assume a one-to-one relation between GDP and healthcare spending, so only demographic factors matter. The baseline scenario assumes healthy ageing in the sense that the cost curves for healthcare shift up in parallel with increased longevity, while those for long-term care shift up by half of the increase in longevity. In the compression of morbidity scenario, the shift in cost curves is made twice as large as in the baseline scenario. In the expansion of morbidity scenario, cost curves do not move. In the obesity scenario, the population share needing long-term care in each age group grows by 0.5% a year.
4. Using the terms of Annex 5.A1, the first scenario is defined as $\partial P_H/\partial T_A = 0$ and the second as a doubling of T_{HF} combined with an increase by one half of T_{HC}.

Source: OECD Secretariat calculations based on the model in Annex 5.A1 and Oliveira Martins and de la Maisonneuve (2006).

one with low public engagement in lifestyle issues resulting in health status of the population being constant or deteriorating; one with a fully engaged population, combined with a health service that is more responsive in terms of productivity and technology uptake, particularly in relation to disease prevention (Wanless, 2002 and 2004).

The levels of GDP and national income appear strongly correlated with healthcare spending both over time and from a cross-country perspective. This overall correlation, however, hides a complex set of causal relations:

- In order to attract staff and new students, it will be important that wages in the health sector progress in line with other sectors. In Denmark, this link is institutionalised *via* the automatic mechanism in public-sector wage settlements implying that these adjust to past movements in private sector wages. In some parts of the health sector, wage increases can be underpinned by productivity increases, but this may not be possible in, for example, long-term care. Under such conditions, "Baumol's cost disease" arises: spending could grow substantially even if the true volume of services were to grow only slowly.
- Higher incomes and perceived affluence leads to growing healthcare demand both in the sense of declining thresholds for when a particular medical condition warrants treatment, and in the sense that people's expectations for non-medical service aspects grow, for example regarding single *versus* shared hospital rooms, flexible and individually tailored services, etc. Empirical studies based on cross sections of households indicate that, with given technologies and healthcare prices, persons with higher income tend to demand more healthcare, but possibly not so much more, indicating that the genuine income effect on demand may be somewhat below a one-to-one relationship (Manning *et al.*, 1987; Newhouse *et al.*, 1993; Getzen, 2000; Lundsgaard, 2008). In other words, households appear to consider healthcare more like a necessity than a luxury.

Despite these factors, it is not obvious that healthcare should grow as a share of GDP if healthcare providers stay efficient. Those technological advances that lie behind aggregate productivity and income growth often also have applications in healthcare: the same computer technology that is streamlining supply chains and boosting productivity in retail trade is capable of handling patient information, and improving logistics between different healthcare providers seeing the same patient. A similar overlap holds for general-purpose innovations in organisational and management practices. Indeed, electronic patient records, coordination of care and stronger management feature as key policy issues both among recent achievements and future priorities (Government, 2007b and 2007c). The direct effect when such general technological innovations are adopted is to lower the costs of providing a given volume of healthcare. So long as the offer of a particular treatment depends on medical considerations about its effectiveness rather than its price, then healthcare spending could be a constant or even declining share of GDP. This result can be derived from the stylised model presented in Annex 5.A1, which is built to reflect the key characteristics of the Danish health system.

Meanwhile, medical innovations continuously expand the range of medical conditions that can be treated. Newly patented drugs continue to become more effective, but often at a high cost.[5] Advanced imaging equipment, such as MRI scanners, is another branch of medical technologies that could not have been used some decades ago, even if there had been willingness to pay for them, simply because they did not exist.

Other innovations lead to medical technologies and practices that are able to treat given health conditions at a lower cost than previous clinical methods. Pharmaceuticals related to diseases of the circulatory system are a clear example. Changes in patient characteristics can also matter: the cohorts approaching old age over the coming decades have, on average, more education than today's seniors and they are more computer literate. This means that they can be given a larger responsibility for monitoring and managing their own chronic conditions, reducing the need for frequent hospital visits.

Overall, whether healthcare should grow or decline as a share of GDP will depend on the relative balance between productivity-enhancing general innovations, the emergence of medical technologies moving the frontier of what can be treated and their gradual replacement with cost-saving alternatives. Over recent decades, healthcare spending has grown in most OECD countries in a context where many new treatments have been introduced. Underlying advances in biochemistry, nanotechnology and the capacity to modify organisms at the molecular level may well generate a vast potential for pharmaceutical innovation in the decades to come going well beyond the current R&D efforts. In such a scenario, healthcare spending could rise by an additional 1.8% of GDP, on top of the demographic effects, if it is assumed that the range of treatable conditions doubles while the cost-saving medical advanced continue at half that rate towards 2050 (Table 5.1).

In this context, it will be all the more important that general improvements in work practices, logistics, communication, management etc. continue to be adopted in ways that enhance cost efficiency in healthcare. Otherwise, "Baumol's cost disease" might generate an additional cost increase of 1.2% of GDP by 2050 for healthcare alone (Table 5.1).

With the government's 2015 Strategy, the GDP share of public service spending can increase by half a percentage point from 2005 to 2015 (Chapter 2). The combined worst-case scenario presented here would imply that healthcare alone – not even including long-term care – would absorb all of this room, thereby compromising commitments already made in other areas, such as education or requiring a further decrease in expenditure shares related to administration and collective public consumption. Simulations based on the detailed Danish Rational Economic Agent Model, arrive at a similar conclusion: if on top of demographic effects, healthcare spending in value terms grows 0.4 percentage point more than GDP each year, then that would double the 1½ percentage points rise in the GDP share of healthcare spending they project by 2050. Thus, controlling healthcare costs is likely to be the biggest challenge for fiscal sustainability (DREAM, 2006).

For long-term care, the scope for adopting innovations that can simplify the provision of services may be more limited than in healthcare. The assumption underlying the demographic and health-status scenarios is that productivity in long-term care grows at half the rate as for the economy as a whole. Innovations in communication technology, medical appliances, work organisation etc. should be expected to continue to make it possible to provide a given quality of long-term care with slightly fewer resources, but assuming for illustration that there would be no such improvements in organisation and work practices, then public spending cwould increase by an additional 0.8% of GDP towards 2050.[6] Finally, increased labour-market participation of women would reduce the availability of informal care and raise the need for formal long-term care provision to take over. This factor is likely to become a large-scale cost driver in countries in Southern Europe, but also in Germany and France. Meanwhile, it should only have a marginal effect

in Denmark and most other Nordic countries as female labour-market participation is already high and associated with high long-term care spending already at the starting point (Table 5.1).

Combining all of these effects, public spending on health and long-term care measured as a share of GDP could, in the worst case, rise by over 6 percentage points between now and 2050. It is, of course, unlikely that all the cost drivers come though as forcefully as in these illustrative calculations. But even just a simple continuation of the long-run trends seen in other countries would imply an increase in the GDP share of 4 percentage points by 2050. This outlook leaves Denmark with an important policy question: should it allow for more private funding in order to avoid being forced to meet rising demand with strict cost containment? The issue is addressed in the next section. Efficiency could, and should, be strengthened, as discussed in the subsequent section, but realistically that would only mitigate, not mute, the spending pressures. Finally, if new and better treatments could help more persons with sickness to stay in employment, it would make rising health spending more affordable for society by raising GDP, as addressed in this chapter's last section.

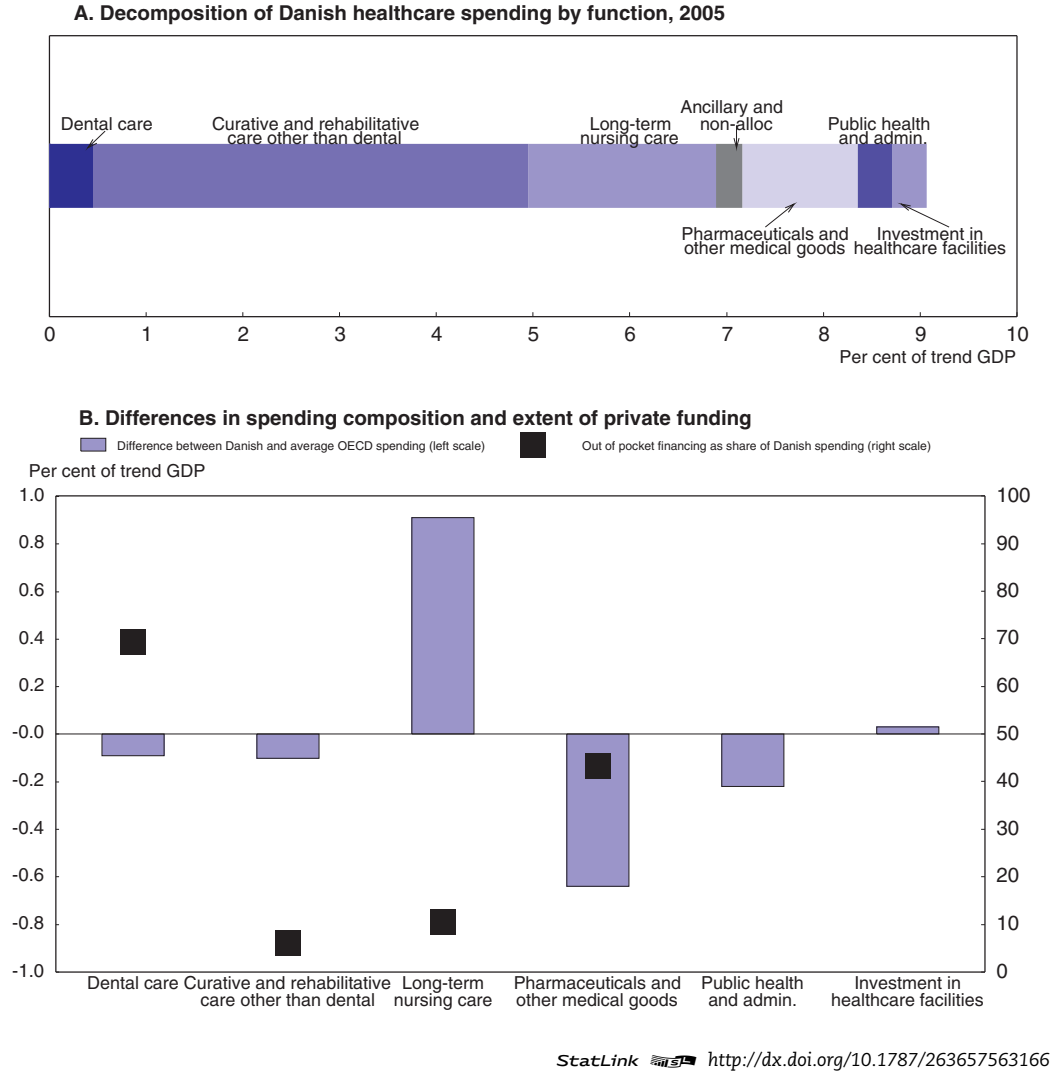
Balancing public and private funding

Public funding is a relatively well-functioning solution for healthcare, if combined with copayments in the right way. Strictly speaking, only the small part of health care spending that relates to contagious diseases has a truly public-good character. Treatment of broken legs, cancer and heart disease as well as accident and emergency care all share the basic defining features of a private good: providers can exclude a particular person from care, and if providing care to one person it will take up capacity that cannot at the same time be used to treat another person. The case for public funding is therefore less strong than in the case of, for example, police or certain aspects of environmental protection. Meanwhile, as medical treatments for selected events that are catastrophic financially arrive unpredictably, there is a clear case for insurance. Voluntary or mandatory private insurance is one option. Public insurance *via* tax-financed healthcare is another option which has the advantage of being simple and not necessarily costly: spending on administration in the Danish health system falls short of the OECD average by no less than 0.2% of GDP (Figure 5.5). Affordable healthcare access for all citizens brings also wider benefits for society. Complete insurance coverage tends to encourage overuse, but research, such as the RAND experiment, shows that this can be mitigated by moderate user copayments reducing the volume of healthcare use, with surprisingly little, if any, adverse effects on the health status.[7] In other words, providing public insurance for the bulk of healthcare costs does not produce strong incentives for overuse, as long as it is combined with well-designed copayments to encourage cost-consciousness.

Patient copayments

The composition of copayments might warrant a review: the share of total health and long-term care covered by private spending has fallen by two percentage points since the late 1990s, and the composition of patient co-payments is at some point hard to rationalise. Patients currently pay a relatively high share of the costs for pharmaceuticals and for seeing dentists, physiotherapist and similar therapists, whereas long-term care and doctor visits are free of charge (Box 5.2). This pattern has a clear effect on the composition of total health spending compared to other countries (Figure 5.5). Whereas

Figure 5.5. **Composition of healthcare spending and the extent of private funding**



StatLink http://dx.doi.org/10.1787/263657563166

Source: OECD Health Data 2007, October 07.

total healthcare spending is close to the OECD average, this is not the case for the following sub-components:[8]

- Spending on long-term nursing care as a share of GDP is much higher than in other countries. In most countries, a significant part of long-term nursing care is funded by private spending. That is the case not just in the United States, but also in continental European countries such as Germany, where well under half of long-term care expenditure is financed publicly. But it is not the case in Denmark where 90% of the spending on long-term care is public.[9]
- Spending on pharmaceuticals and other medical goods is rather limited. This coincides with out-of-pocket spending accounting for close to 50% of expenditure in Denmark.
- Dental care is predominantly funded *via* private out-of-pocket spending (70%) and, at slightly below ½ per cent of GDP, Danish spending falls short of the average by 0.1 percentage point, *i.e.* as much as a fifth.

Box 5.2. **Co-payments for healthcare in Denmark**

Virtually all in-patient care is provided in public hospitals where no copayments exist except for telephone use, relatives staying at on-site hotels and similar non-health services. For primary care and specialists, each individual has a choice between category 1 and 2 insurance. It is possible to switch between the two categories, at maximum every 12 months. In category 1, which is chosen by 97% of the population, patients are enrolled with a general practitioner of their choice. Patients pay nothing to see their GP or specialists that she refers them to. In category 2, which is chosen by 3% of the population, patients are not enrolled with a particular GP, and they can see specialists without referral. For these patients, GP's and specialists set their fee without restrictions, and patient have to pay if the fees exceed the public subsidy which is the same as for patients in category 1. For physiotherapists, chiropodists, and psychologists, rules are the same in the two categories: referral from a GP is needed, and the patient would typically pay about half of the costs, except when the GP considers that the needs are particularly severe to allow complete public cost coverage. All patients can see dentists and chiropractors without referral, but the public insurance would only cover about half of the costs.

For prescription drugs, the co-payment percentage declines gradually from 100 initially (50 for children) to 15 when total annual expenses exceed € 340 per adult in 2008. Special subsidies can be granted by the national authorities in individual cases based on application from the patient's physician: for persons with chronic conditions a zero co-payment percentage can be granted for annual pharmaceutical spending above € 2 259, meaning that total copayments for the patient would be € 439 a year. Where generic alternatives exist, the public insurance coverage is based on the lowest price among generic drugs – even if the prescribing physician requires that a more expensive brand is used. Moreover, pharmacies have an obligation to offer the patient the generic drug.

Source: www.regioner.dk, www.laegemiddelstyrelsen.dk, www.sundhed.dk.

The absence of user charges for consultations with general practitioner and specialists stands out in a Nordic comparison. In Finland, Norway and Sweden, copayments per consultation fall in the range € 12-18 for GPs and € 8-35 for specialists, and this may partly explain why people in these countries visit doctors only half as frequently as the Danes (OECD, 2007a). Introducing similar copayments in Denmark should be considered, as proposed also by a recent government-established commission (Welfare Commission, 2005 and 2006).

In dental care, patients pay a significant part of the cost themselves, but price competition is allowed only on one-quarter of services (constituting close to half of dentists' turnover). For the remainder, prices are determined in negotiations between the Dentists Association and the regional authorities. Such prices could more appropriately be set as maximum prices, as recommended by the 2005 *Survey* in the context of competition policy (OECD, 2005b).

Private insurance and individual health savings accounts

Employer-paid supplementary health insurance has grown rapidly in recent years. The development started in the 1990s in the context of long waiting lists in the public health system where private health insurance was seen as an element of remuneration that could attract and retain executives and key staff. From 2002, beneficiaries were no longer taxed

on the insurance coverage as income, provided that the employer offered the health insurance to all employees. Since then, it has grown in popularity: the number of persons covered doubled over the three years to 2006, reaching 17% of total employment. Further expansion will come in 2008, as many unions favoured this element of remuneration during the recent collective wage negotiations. The employer-paid insurances typically cover patient copayments for physiotherapy and chiropractic treatment, as well as treatments to reduce smoking or alcohol abuse. In some cases, surgery outside public hospitals is also covered, but it is likely that the take-up will wane now when patients are entitled to publicly funded treatment at selected private hospitals in Denmark or abroad, if the public healthcare system is unable to provide treatment within one month. The expansion of private insurance may help nurture diversity and innovation in healthcare delivery, but the complete tax exemption may create incentives to cover a wide array of wellness services for which insurance is not needed. This would magnify the loss of tax revenue, which the Ministry of Taxation estimates to have reached DKK 735 million (0.05% of GDP) already in 2006. It would be better to cut income taxes as discussed in Chapter 4, and eliminate the income tax exemption for employer-paid private health insurance.[10]

Personal health savings accounts would avoid the moral hazard problems of insurance, but they may not be robust in a Danish context. Public funding of healthcare implies redistribution in two dimensions: *i)* over the lifetime of each individual; and *ii)* between individuals with different characteristics. The second type of redistribution can only be implemented *via* spending financed by mandatory contributions or taxes. By contrast, the first type of redistribution could just as well be implemented *via* individual savings. This is the idea behind the international policy debate about health savings accounts (Prewo, 2004), or medical savings accounts as they are termed in a US context. Such a reform could have the great advantage of reducing the effective marginal tax rates as contributions to one's health savings account, even if mandatory, would not generate the same disincentives as taxation, given that any surplus could ultimately be transferred as retirement income. Similar proposals of a citizen account have therefore also been analysed in a Danish context (Economic Council, 2005). However, a potential weak point is that the features of the health savings accounts must be credible and stable in the longer term. The positive incentive effects on today's labour supply and healthcare demand will not materialise if people have doubt about how account surpluses or deficits will be treated in the future. In a Danish context, where the tolerance of income and consumption differences is very low compared to other OECD countries, health savings accounts might be prone to time inconsistency: unless they are set up as each person's private property and not just a notional account, it will be challenging for policy makers to establish credibility that account surpluses will not be taxed heavily or simply confiscated at some point in the future. Financing structures in the vein of citizen accounts may therefore have more relevance in relation to financing human capital, as discussed in the previous *Survey* of Denmark (OECD, 2006).

Funding of long-term care

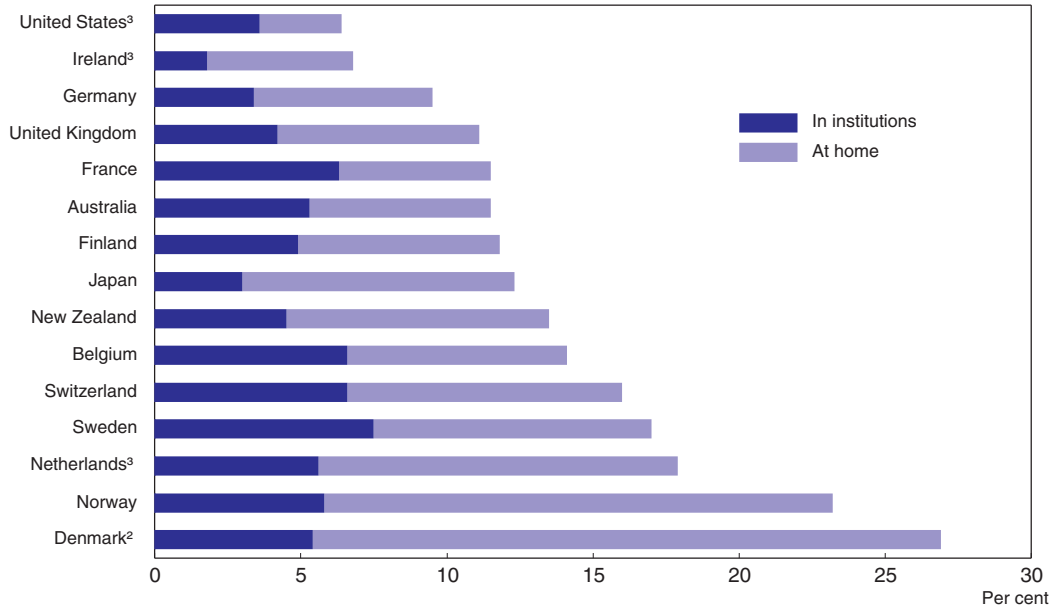
Perhaps the biggest scope for freeing up resources is in long-term care. Currently, the comprehensive set of long-term care services, including help with practical tasks like housekeeping, etc., are provided free of charge to a very larger number of recipients. Understanding long-term care is therefore essential to any assessment of the policy choices for financing healthcare going forward.

Denmark has been leading in the laudable effort to avoid institutionalisation. Moving frail older persons away from their familiar home environment into nursing homes or similar institutions can often advance the deterioration of the persons' condition. Having older persons staying in their own home as long as possible has therefore been a policy priority in virtually all countries (OECD, 2005c). Denmark has had an early lead in this area, which explains why relatively few older persons are in long-term care institutions compared with some other OECD countries. Since the law on dwellings for older people from 1987, no new nursing homes have been constructed, and instead a varied range of dwellings adapted for older persons have been developed. In 2006, the number of older persons living in traditional nursing homes was reduced to a third of what it was in 1987, whereas the total number of persons living in nursing homes, protected dwellings, nursing dwellings and adapted senior dwellings with limited care provision had risen to 30% above the number of nursing home beds existing in 1987.

The drive to avoid institutionalisation is naturally coupled with a relatively wide provision of home care. Some older persons receive more than 20 hours of home care a week. But in addition to what is necessary given the low rate of institutionalisation, many older persons also receive practical help at home. This applies also to persons with limited needs relative to the thresholds applied in other countries. Thus, the share of older persons receiving long-term care is larger in Denmark than in any other OECD country. In particular, the number of older persons receiving home care of some form is high (Figure 5.6).[11]

Figure 5.6. **Older persons receiving long-term care**

Share of population aged 65 or more, 2004 or latest available year[1]



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1. The bulk of care provision included in these statistics is publicly funded, but for some countries elements of privately purchased care are also included. Only formal/paid care is included.
2. Includes persons living in nursing homes, protected dwellings and nursing dwellings, *cf.* Table 5.2.
3. Home care recipients in 2000 based on OECD (2005c), *Long-term Care for Older People*, Table 2.3.

Source: OECD Health Data 2007, October 07.

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Over time, the total volume of long-term care provided at home has become more concentrated on personal care, and continuing this trend could free considerable resources. The share of older persons receiving practical help at home has been stable, in recent years, while the number of hours provided per recipient has declined a bit. Still, there would be scope for further savings on practical help: if, as an example, all of those who currently receive practical help but don't need personal care were to pay for it themselves, the share of the 65+ population receiving publicly funded home care would fall from 21.6% to 13.0%, but it would still be considerably higher than in Sweden. A first step could be to end public funding for practical help at home for those eligible for less than two hours a week. The cost for those older persons who would then have to purchase housekeeping services would not be large, meaning that there is hardly a need for building up administratively complicated alternative insurance coverage. Moreover, as preventive home visits are now offered to two thirds of the 80+ population every year (Table 5.2), there is very little risk that reduced public funding for practical help would lead to a lack of surveillance or contact between older persons and the health system. The use of these preventive home visits could be further developed, along with temporary home care which plays an important role in avoiding hospitalisation and in helping in the continued recovery after hospital stays.

Table 5.2. **Recipients of long-term care in Denmark**

Per cent of the population in each age group[1]

	Below 65	65-79	80+
Persons living in special dwellings, March 2006[2]			
Nursing homes, nursing dwellings and protected dwellings with 24-hour care provision at nursing-home level		1.9	14.8
Adapted senior dwellings with limited care provision		1.5	5.9
Recipients of permanent home care, March 2006[2]	0.6	11.1	50.0
Personal care and possibly practical help, ≥ 2 h/w	0.2	4.1	24.4
Personal care and possibly practical help, < 2 h/w	0.1	1.8	7.8
Practical help only, ≥ 2 h/w	0.0	0.1	0.3
Practical help only, < 2 h/w	0.3	5.2	17.6
Recipients of temporary home care, 2005	0.1	2.1	
Preventive home visits, 2005			
Persons accepting a visit			37.3
Persons rejecting a visit			27.0

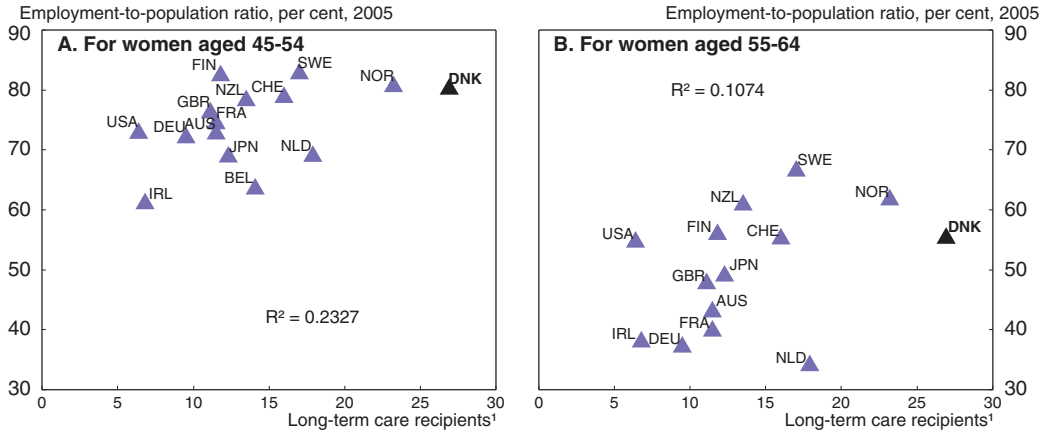
1. For temporary home care and preventive home visits, the numbers count all persons concerned at any time during 2005, whereas all other numbers refer to a snapshot of the situation in March 2006, thereby approximating full-year equivalents.
2. All nursing homes (*plejehjem*), 90% of the nursing dwellings (*plejeboliger*) and 63% of the protected dwellings (*beskyttede boliger*) have nursing staff stationed on site on 24 hour basis and provide food, cleaning, bed linen, etc. Thereby they match the OECD definition of long-term care institutions being "a place of collective living where care and accommodation is provided as a package". This is not the case for adapted senior dwellings (*almene ældreboliger*). In March 2006, a total of 44 414 persons aged 65+ lived in nursing homes, nursing dwellings and protected dwellings (5.4% of the 65+ population).

Source: Statistics Denmark (2007), "Den sociale ressourceopgørelse for ældre og voksne marts 2006", *Statistiske Efterretninger om sociale forhold, sundhed og retsvæsen*, No. 2007:9.

If savings are focused on elderly with limited needs, it should not have repercussions for labour market participation. There is a tendency for countries with extensive provision of formal long-term care to have higher employment rates for women. That is not to say, however, that more provision of formal home-care services will automatically bring higher labour-market participation rates. For women aged 45-54, there is some correlation, but for

women aged 55-64, the correlation is rather weak. Indeed, Denmark, Switzerland, Finland and the United States all have about the same employment-to-population ratio for women aged 55-64, but have vastly different provision of long-term care (Figure 5.7). And among the Scandinavian countries, Sweden's employment rate for women aged 55-64 is higher than that of Norway and Denmark *despite* providing publicly funded formal care to a lot fewer older persons than Norway and Denmark. The point is that if the voluntary early retirement scheme (*efterløn*) in Denmark in any case holds down employment rates, then the labour market case for publicly funded long-term care provision gets weaker. Meanwhile, involving the growing number of retirees being in good health in community-based informal care giving could become a valuable supplement to formal municipal long-term care provision (Lundsgaard, 2005). Currently 6% of the 50+ population are actively engaged in the social and health voluntary sector (Boje *et al.*, 2006). As part of the strategy for quality in public services, it is proposed that municipalities would be required to develop the role of the voluntary sector as a supplement to municipal service provision (Government, 2007c). The Swedish experience with non-financial support such as respite care, counselling training and personal support for informal caregivers could be a source of inspiration in this regard (Swedish National Board of Health and Welfare, 2003).

Figure 5.7. **Older persons receiving long-term care and relation with female employment**



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1. Recipients of long-term care, whether in institution or at home as share of population aged 65+. Data for 2004 or latest available year.

Source: OECD, Employment Data, 2007 and sources of Figure 5.6.

The bottom line is that substantial resources could be freed up by focusing better public long-term care spending, before care or employment concerns become binding constraints. This could make it possible to sustain public insurance coverage for new effective, but very costly, treatments as they become available.

Efficient care: human resources, incentives and coordinated technology adoption

With the reform of sub-national government, the larger organisational contours of the health system have been reshuffled as recently as in 2007. This reform will need time to work (Pedersen, 2005); in particular a *modus operandi* must be found in which the potentially asymmetric incentives between the spending regions and the funding central

government do not hamper co-operative efforts to seek cost-effectiveness. A leading motive behind the reform was to create larger units (on average regions have 1.1 million inhabitants), laying the ground for better managed healthcare and leading to higher quality (Structural Commission, 2004). Working within this new structure, three broad areas would require attention in order to achieve this objective – each of them being reviewed in turn on the following pages:

- *Human resources must be managed skilfully to ensure a qualified and flexible workforce.*
- *The health system must be open to contestability rather than giving particular providers monopoly. Funding formulas must support efficiency.*
- *Technology adoption, structural change and coordination across the health system must be fluid while focused on adopting the most cost effective treatments.*

Human resources and management

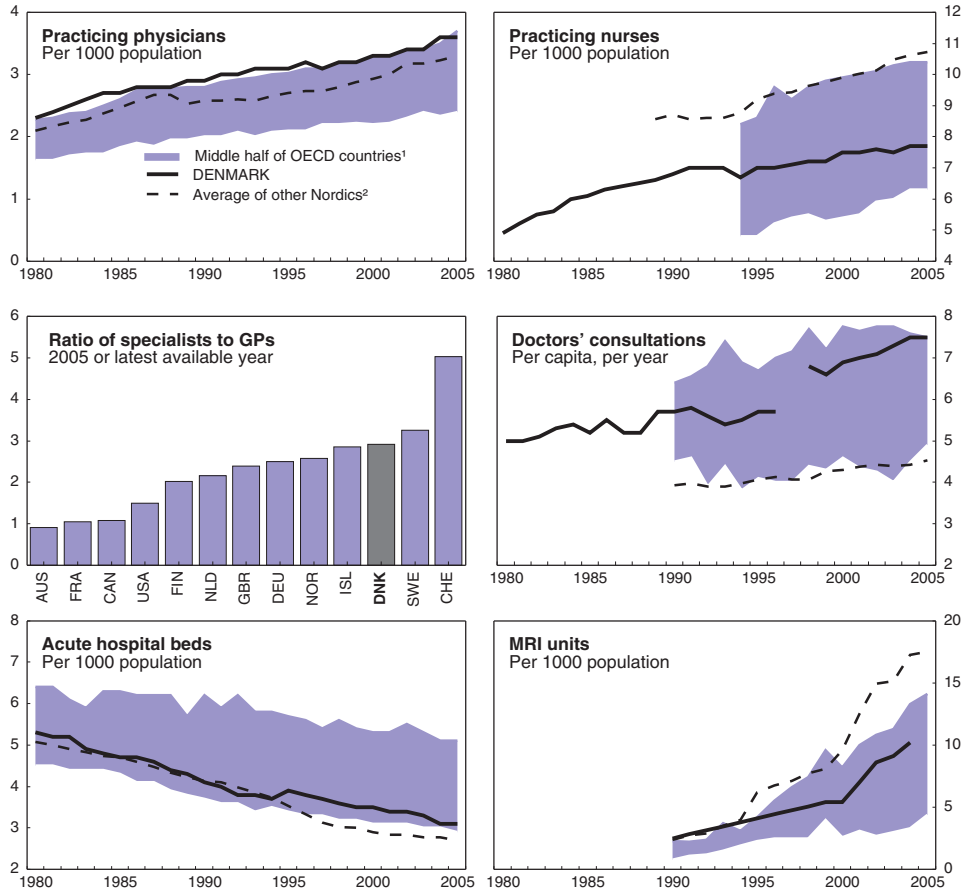
The number of physicians actively practicing medicine in Denmark is relatively high and has been so throughout the past 25 years (Figure 5.8).[12] Nevertheless, at the end of 2006, 12 out of 14 regional labour market councils reported shortages and bottlenecks for doctors. Admission of students to medical school fell during the 1980s, but since the mid 1990s it has doubled, and the number of graduates has risen to 4% of the physician workforce in 2005. This is relatively high compared internationally, implying that the physician workforce is set to grow along a path above that in most other OECD countries. The severe human resource shortages seen in many countries (Simoens and Hurst, 2006) may therefore be avoided in Denmark, provided that international spill-over *via* net migration of physicians can be avoided.[13] By contrast the number of practicing nurses is slightly below the OECD average, as the number of nurses has grown more rapidly in other countries than in Denmark. At the end of 2006, 13 out of 14 regional labour market councils reported shortages and bottlenecks for nurses. Several measures have already been taken in order to address the continuing lack of nurses: the admission of nursing students has increased by 10% over the past 10 years and the capacity at nursing colleges has been increased by a further 10% from 2007. Short hours is also an issue as, today, 6 out of 10 hospital nurses work only part time. In fact, the estimated current nurse shortage could be completely resolved if the average nurse worked just 2½ hours more per week (Danish Regions, 2007).

Much of the historic increase in the number of practicing physicians is due to a larger number of specialists. A similar trend is found in other countries, but with almost three specialists for each general practitioner (GP), Denmark has gone further along this trend than most OECD countries (Figure 5.8).

When the large cohorts retire…

For the public sector as a whole, the prospect of large cohorts retiring over the next 10-15 years poses a substantial challenge for human resource management, but in healthcare this issue has slightly different features. How shortages of skilled staff is likely to evolve and differ across professions can be gauged from a set of scenarios revealing the demographic effects on labour supply and service demand, assuming constant ratios between service provision and factor inputs (Table 5.3). For healthcare professionals, public-sector labour demand is set to increase by slightly less than 10% towards 2015 simply reflecting the larger share of older persons in the population. Assuming constant

Figure 5.8. **Health system resources**



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Note: Cross-country comparability of the number of nurses is more difficult than comparison of physician numbers because the borderline between nurses and care-giving assistants with shorter training is difficult to draw in a consistent way across countries. The Danish social/healthcare assistants which are more numerous than nurses are not included in the data.

1. The shaded area shows the middle two quartiles (*i.e.*, half the countries fall in this range). The inter-quartile range is calculated only if at least 18 countries are available.
2. Simple average of Finland, Iceland, Norway and Sweden.

Source: *OECD Health Data 2007*, October 2007.

age/gender-specific graduation, retirement, etc., however, the increase in the physician labour force is set to continue at a rate keeping pace with demographically induced changes in demand. In schools and childcare, labour demand will be curbed by a slight fall in the number of children. This illustrates that the challenge is not simply about recruiting more people to the public sector, but just as much about reallocation and encouraging young people to take training in those of the public-sector professions where the needs are. In fact the additional labour required in order to meet demographic changes in service demand for nurses and teachers combined is smaller than the excess labour force building up for childcare professionals. Student counselling during secondary school might play an active role here, alerting young people to the fact that both labour demand and pay levels are likely to be more advantageous for nurses than for childcare professionals.

Table 5.3. **Scenarios for labour supply and demand in public-service professions**

	2004		Total change 2005-15, %		Total change 2005-15, thousands
	Labour force, thousands	Share employed in the public sector, %	Labour force[1]	Public-sector labour demand implied by demographic changes in service needs[2]	Additional labour requirements in order to meet demographic changes in service demand[3]
Doctors	18	69	8	7	–0.5
Nurses	56	85	–1	8	4.4
Social/healthcare assistants	86	80	8	9	–1.1
Teachers in compulsory education	78	80	–11	–5	5.3
Childcare professionals	95	82	17	–10	–23.5

Note: Total employment in the public administration and personal services was 984 000 in 2004. This includes a number of other professions, most of which are relatively fungible between sectors, whereas the five professions included in this table are rather specific.

1. Scenario based on the assumption that age/gender-specific transition rates remain constant at their 2000-04 averages: for example, the number of 25-year-old males completing education as teachers is a constant share of the 25-year-old male population; the number of 59-year-old females retiring from the nursing profession is a constant share of the 59-year-old female nurses.
2. Demand for doctors, nurses and social/healthcare assistants is assumed to evolve proportionately to the number of people in different age groups weighted by their relative use of healthcare. Demand for teachers and childcare professionals is assumed to evolve proportionately to the number of children in the relevant age bracket.
3. Absolute difference between the change in labour demand due to demographics and the change in labour supply.

Source: OECD calculations based on Ministry of Finance (2007) *Budgetredegørelse 2007*, which draws on a 33% sample of the Danish population.

At the same time, the changing composition of the healthcare workforce offers opportunities to advance the adoption of improved treatment practices. From the international comparison as well as the supply and demand scenarios discussed above, it might seem that the composition of the Danish healthcare workforce is skewed with too few nurses as compared to the number of physicians. However, the general trend in healthcare goes in the direction of increasing the number of physicians relative to the number of nurses, partly reflecting changes in medical technologies with less invasive surgery and less and shorter hospitalisation. Denmark may simply be ahead of other countries in this regard and, with the supply of physicians set to grow relative to that of nurses, the country is in a good position to benefit from continued advances in medical technologies.

Even if the shortages for health professionals are not as severe as in many countries, expansion in healthcare provision has to be implemented with the recruitment situation in mind. Towards 2015, demands for improvements in service standards going beyond the demographic increase in demand would primarily have to be accommodated *via* enhanced efficiency. Moreover, the current implementation of much more rapid treatment of cancer may require either increased working hours or that human resources can be freed up *via* better organisation and work practices.

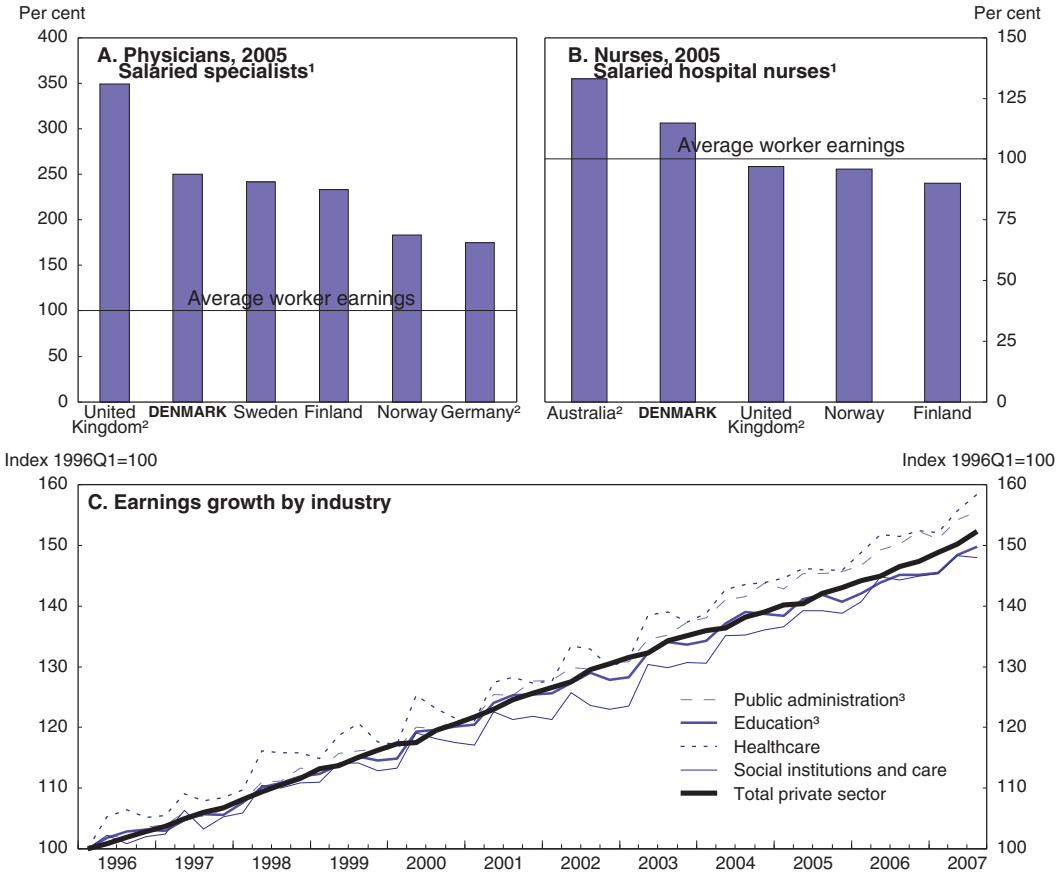
A central part of the government's Quality Strategy for improving public services is to work with unions to adjust the workforce and improve its skill levels (Government, 2007c; Annex 5.A2). The large number of initiatives taken as part of this process will no doubt imply valuable improvement, notably for sickness absence which is substantially higher in the public than the private sector. Meanwhile, the effectiveness might be a lot greater if also reforming public sector pay schemes with more flexibility to reward and nurture effort of individuals as well as groups. On this point, the agreement and the Quality Strategy simply note that existing collective agreements give some room for result-based bonuses

and rewards other than pay. A more ambitious approach might have been warranted, and enhanced pay flexibility should therefore remain on the agenda for future action.

Should health professionals be paid more?

Both physicians and nurses are relatively well paid, and simplistic attempts at attracting staff to the public healthcare sector such as by raising their pay levels should therefore not be needed. Salaried specialists and hospital nurses earn 150% and 15%, respectively, more than the average full-time employed person, and thereby both groups are relatively well paid compared to their colleagues in most of the other OECD countries for which data are available (Figure 5.9).[14] In line with the tradition that has emerged in the private sector labour market, pay increase strategies should focus on making clearer at the workplace level a basic connection between efforts to improve efficiency and pay outcomes.

Figure 5.9. **Earnings of healthcare professionals**



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1. The relatively narrow selection of countries shown reflects limited data availability. Data for the earnings of self-employed specialists and general practitioners are not available for Denmark in a comparable form. The earnings (remuneration) of physicians and nurses recorded in the OECD Health Data (used in the figure as numerator) are consistent with the concept of "gross earnings" used in the OECD taxing wages statistics (used in the figure as denominator). Both concepts exclude employer paid contributions, meaning that differences in the organisation of pension systems do not affect cross-country comparability of the relative earnings of health professionals.
2. For Australia, Germany and the United Kingdom, data refer to 2004.
3. Average of central and local government.

Source: *OECD Health Data*, October 2007 and Statistics Denmark.

Productivity, contestability and incentives from funding mechanisms

Productivity has grown considerably over recent years, making it possible to offer treatments to more. For the hospital sector, systematic productivity measurements were introduced in 2003 and, in December 2007, benchmarking of productivity at the level of each ward within hospitals became publicly available. For the hospital sector as a whole, productivity increased 2% annually during the three-year period 2004-06. The number of doctors and nurses employed at public hospitals increased 2.9% and 1.1% annually in the 2002-05 period and, combined with the productivity increase, this has allowed treatment activity to expand strongly. The number of persons having surgery increased by 4.4% annually 2002-06, and the share of the population being at hospital for surgery or other forms of treatment rose from about 39% in 2002 to about 41% in 2006 (Ministry of Health, 2007; Ministry of Health and Prevention, 2007).

Compared to other countries, it seems that the Danish hospital sector has reached a high level of efficiency. Comparisons based on the DRG system find that the unit costs associated with standard procedures such as cholecystectomy, coronary bypass, lens surgery and vaginal delivery are now among the lowest both in a Nordic and European context (Kittelsen *et al.*, 2007; Erlandsen, 2007). These findings are highly encouraging, even though it is hard to know whether the favourable comparisons would generalise and hold for the full spectrum of healthcare activity. In any case, variation across hospitals within Denmark are still substantial: the productivity level of the best quartile is about 30% higher than the least productive quartile.[15] This leaves scope for improvement: if below-average hospitals could advance towards best practice or just to the current national average, it would unleash a considerable additional productivity gain for the hospital sector as a whole (Ministry of Health and Prevention, 2007).

Activity-based funding for hospitals: the DRG and DAGS systems

Increase reliance on activity-based funding mechanisms appears to be an important reason behind the impressive productivity outcomes. During the 1990s, some of the counties started to allocate funding using DRG-based measures of treatment activity. In the annual budget agreements, central government has encouraged further development in this direction and, from 2007, the five regions are supposed to allocate half of the funding for hospitals *via* activity-based mechanisms (Ministry of Finance, 2006). At their disposal, they have a national DRG system comprising 600 treatment groups for in-patients categories and a similar system, called DAGS, comprising 100 ambulatory treatment groups. It is commonly agreed that, in a context where an upward drift in aggregate spending is acceptable, or even desired, activity-based funding is highly effective at boosting treatment activity in healthcare. Partly because it ensures that effective units can grow, something that can otherwise be a problem if providers are given fixed budgets. Using the unsynchronised introduction of activity-based funding in the fourteen counties, it is possible to estimate how much of the observed productivity increase can be ascribed to the funding reform: the best existing study argues that the effect is sometime overestimated by government, but nevertheless finds a statistically significant and positive effect when controlling for county-specific conditions (Bech *et al.*, 2006; Pedersen *et al.*, 2006).

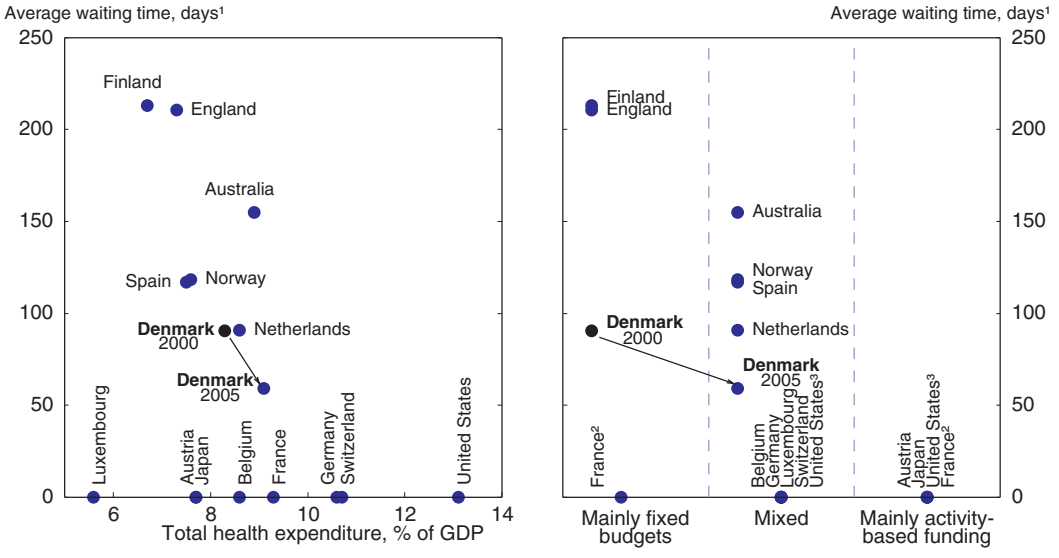
Waiting times have shortened by one week each year for typical treatments, showing that the policy direction followed in recent years has been successful. Indeed, cross-country evidence shows that increased resources combined with activity based funding mechanisms is the right recipe for achieving shorter waiting lists (Box 5.3; Figure 5.10).

Box 5.3. **Activity-based funding, incentives and waiting times in healthcare**

Making funding for hospitals and doctors' individual pay depend on activity can bring an important contribution to tackling waiting times by creating incentives to use existing capacity better and treat more patients. A recent OECD study has compared countries with and without waiting times for elective surgery and found that countries are less likely to report problems with waiting times if they rely mainly on activity-based funding for hospitals rather than mainly fixed budgets and if they pay hospital doctors on a fee-for-service basis rather than a salary basis. The difference is statistically significant when controlling for other factors affecting supply and demand of healthcare including public and private spending, hospital capacity (number of beds), number of doctors and population age structure (Siciliani and Hurst, 2003). The finding is illustrated in Figure 5.10: while high spending can eliminate waiting times as shown in France, Germany, Switzerland and the United States which are all countries that spend a large share of their GDP on healthcare and do not report waiting time problems, spending differences are not a sufficient explanation as Belgium for example, without waiting times, spends no more than Denmark, Netherlands and Australia all of which have had substantial waiting time problems. What appears to be equally important is the incentives provided by funding mechanisms and *none* of the four countries that had mainly activity-based funding in 2000 reported waiting time problems – despite the fact that Austria and Japan had comparatively low levels of spending. A correlation of average waiting times with doctors' pay being either mainly salary, mixed or mainly fee-for-service gives similar results to that in Figure 5.10. Other policy levers to reduce waiting times include clinical guidelines for prioritizing patients as applied in New Zealand (Hurst and Siciliani, 2003).

Figure 5.10. **Waiting times, spending and incentives**

2000



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1. Mean waiting times for persons admitted for inpatient surgery. Simple average for hip replacement, knee replacement, cataract surgery, varicose veins, cholecystectomy, and inguinal and femoral hernia.
2. In France, public hospitals have fixed budgets, while private hospitals treating publicly funded patients receive activity-based funding.
3. In the United States, Health Maintenance Organisations use mixed funding mechanisms, while the public Medicare programme uses activity-based funding.

Source: *OECD Health Data 2003* and Siciliani and Hurst, 2003.

Another important element has been the way in which a "maximum waiting time guarantee" has been introduced: from 2002, patients were offered an extended choice including free-of-charge access to private hospitals in Denmark or abroad if the public health care system was unable to provide treatment within two months. Because the person's home region is obliged to carry the cost of this private treatment, it entails a very clear incentive for the public healthcare system to achieve durable reductions in waiting times. From October 2007, the extended choice applies after just one month.

Given the rather successful implementation of activity-based funding, a question could be raised as to whether the share of hospital funding allocated *via* activity-based mechanisms should be increased further. The answer is probably "no". With around half of hospitals' current budgets allocated *via* activity-based formulas, Denmark is at the middle of the range of OECD countries (Erlandsen, 2007). Going higher might not enhance efficiency but rather cost pressures, and it might also distort priorities at hospitals as elective surgery and treatments become more rewarding than complex cases where full-fledged activity-based funding is not feasible. Indeed, when the expansion of activity-based funding was prepared some years ago, the intention was to reach, but stay with mixed funding structures (Ministry of Finance, 2003). At a more detailed level, activity-based funding for hospitals may be refined by applying funding rates clearly motivated by marginal costs (Ministry of Health, 2006).

The challenge now is to ensure that the achieved reduction in waiting times are not lost again as patients with less severe conditions and needs join the queue – a tendency that has often been seen in Denmark as well as other countries. A classic example was the ten-fold increase in cataract surgery in one county during the 1990s which resulted in waiting lists getting longer.

Meanwhile, the role of private-sector healthcare providers could be expanded to ensure contestability and spur innovation. The maximum waiting-time guarantees have led to involvement of private hospitals and clinics as patients have a right to choose certain private hospitals when the public system is unable to offer treatment within the guaranteed time period. It could also be considered to introduce contracting with private sector providers, as in the United Kingdom with the so-called fast-track treatment centres (OECD, 2005d). Compared internationally, the Danish hospital system is characterised by relying predominantly on public-sector providers. This pattern is also observed in long-term care, although some Danish nursing homes are organised as foundations and are therefore counted as private (Figure 5.11).

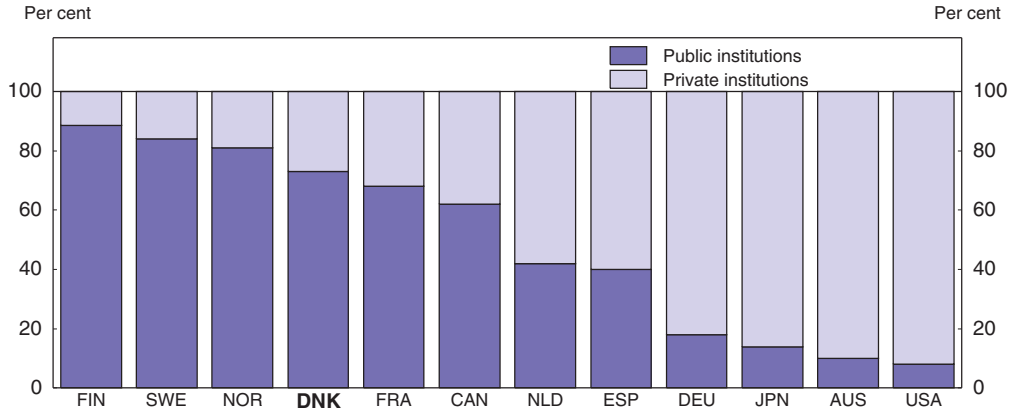
Choice in long-term care

Intensive competition in health and long-term care may not be desirable as it can nurture supplier-induced demand in services where it is hard for users to assess their own needs, but there is a wide empirical literature indicating that some contestability does enhance efficiency relative to having publicly funded services being provided by local monopolies. The real challenge is to craft the mechanisms that can best create such contestability given the characteristics of different services. Choice appears to work better than contracting in services like long-term care where quality is hard to measure but easy to experience for users (Box 5.4; Lundsgaard, 2003).

Since January 2003, municipalities have had an obligation to contract with private providers willing to offer long-term home care at a price equal to the cost level of the public

Figure 5.11. **Involvement of non-public providers in health and long-term care**

Nursing homes for older persons, late 1990s[1]



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1. Based on the number of users in each type of institution. Private institutions include both non-profit institutions and private firms.

Box 5.4. **User choice among public and private service providers**

Turning public funding into service provision involves a basic principal-agent relationship: How can government as a *principal* best organise service provision in order to align the incentives facing service-supplying *agents* to the objectives underlying public funding? In other words, what funding allocation formulas, rules on competition and user choice, ownership forms and management instruments are best equipped to: *i*) transform broader policy goals into a clear demand for what services to supply (where, when, to whom) and operational objectives in day-to-day activities; and *ii*) ensure that the actual economic incentives facing institutions and their employees reward work effort and management leading to improved service provision and cost efficiency?

The heart of the problem is that most publicly funded services are relatively complex and characterised by strong information asymmetries. Therefore, it is not feasible – or prohibitively costly – to give detailed instructions for service provision under all imaginable circumstances and to perfectly monitor compliance with such a complete contract or set of instructions. In practice, principals are forced to allow agents considerable flexibility, and to substitute for the inability to monitor activities in detail by optimising the incentives faced by agents – such as by funding based on observable outcomes and performance measures or *via* competition. The character of information asymmetries and the appropriate incentive mechanisms depend on service characteristics. Services like long-term care for the elderly are "soft" in the sense that service outcomes can be difficult to quantify. Service provision also has to respond to individual needs, and involves a unique interaction between the people providing and using the service. The services to be provided can therefore only be specified in broad terms, and it is inherently hard to monitor activities and performance. Consequently, it is hard for the principal to know whether agents are operating efficiently. Allowing individual choice among alternative service suppliers may mitigate this problem by delegating part of the role as principal from government to users. Provided that users base their choice on criteria that are consistent with the objectives underlying public funding, it may create clearer demand signals. And to the extent that intangible service aspects and quality may be experienced, the competition to attract users entails incentives to improve service provision and cost efficiency.

agencies. Previously, publicly funded care was provided *via* a public monopoly agency in most municipalities. Only a handful of municipalities tried involving alternative providers of long-term care. During 2002, all 270 municipalities were obliged to calculate the average costs per hour of home care for their own provider, and then announce that hourly price publicly along with what quality requirements providers would have to fulfil.[16] These cost/price calculations and service conditions are updated every year. Interested private providers (non-profit foundations, self employed and corporations alike) can then seek approval, and each municipality has an ongoing obligation to accept providers that satisfy their criteria. Finally, persons found eligible for publicly funded home care on a permanent basis have a right to choose between the approved private providers and the incumbent municipal agency.

During the first year, the number of approved providers grew rapidly, reaching close to 200 by the end of 2003. Most entrants were small companies such as existing cleaning firms. During 2003, these firms expanded their geographical reach, having contracts with two municipalities on average at the end of 2003. The use of private providers for publicly funded care is clearly largest for practical help. In March 2006, 21% of those receiving publicly funded practical help on a permanent basis had chosen a private provider, up from 10% in March 2004. Meanwhile, only 4% of those receiving publicly funded personal care on a permanent basis, had chosen a private provider, up from 2% in March 2004. By March 2006, 74% of the municipalities (covering 86% of the total 75+ population) had at least one private provider of practical help. Meanwhile, only 37% of all municipalities (covering 63% of the total 75+ population) had at least one private provider of personal care. One reason for the larger use of private providers in practical help can be that choice had existed in this area in a limited number of municipalities already before 2001, whereas it was entirely new for independent private agencies to provide personal care.

The interesting question from a policy perspective is whether the choice mechanism has led to effective contestability and driven productivity improvements in the sector as a whole. It may be too early to fully evaluate this question but, already at this stage, interesting lessons can be drawn from how firms enter the market. There is a slight negative correlation between municipal hourly costs and the share of older persons choosing to receive care from a private provider, and this could be a sign that contestability works with firm entry driving down municipal costs. Of course firms should be expected to seek out municipalities with high costs offering a high hourly price, but in equilibrium, this may be offset by a cost-saving reaction of municipal agencies when exposed to competition. Meanwhile, there is a clear positive correlation between firm entry and average income in the municipality, in particular for firms providing practical help where older persons with higher income might often be interested in purchasing supplementary service on top of what is publicly funded, such as cleaning of the whole house or gardening. Political economy factors matter, but as found in studies of private-sector involvement in other services, it is not so much that left-wing dominated municipal councils imply fewer private providers, it is rather that a large fraction of public employees and benefit recipients in the electorate that implies less private involvement (Christoffersen and Paldam, 2003).

Users appear to be quite satisfied with having a choice among alternative providers, feeling comfortable having more influence on the care they receive (Ankestyrelsen, 2005, 2007a and 2007b). Among those having a private provider, 73% indicate that they are "very satisfied" compared with 54% for those having a municipal provider, while for both

categories, only 1% are "very dissatisfied". Apparently the choice of provider reflects a large degree of inertia. The main reason given by the elderly for having the municipal provider is that it has always been like that.

Technology adoption and coordination across the health system

An important determinant of the overall quality and cost-effectiveness of healthcare is how treatment is allocated among alternative providers representing different modes of provision.

Often, health conditions can be treated in many different ways, for example by surgery, medication or other forms of therapy. These alternatives can have widely different costs, but the mechanisms by which funding is allocated in the healthcare system may bias treatment choices one way or another relative to what might be dictated by a balanced assessment of costs and consequences for the patient concerned. Moreover, advances in medical technology and treatment practices often imply that conditions that have so far been treated *via* invasive surgery requiring lengthy hospital stays can now be treated with simpler interventions that can be carried out in an ambulatory setting. The capacity of the healthcare system to reallocated funding and activity to those providers and settings that are best placed to use the simpler or improved techniques is then vital.

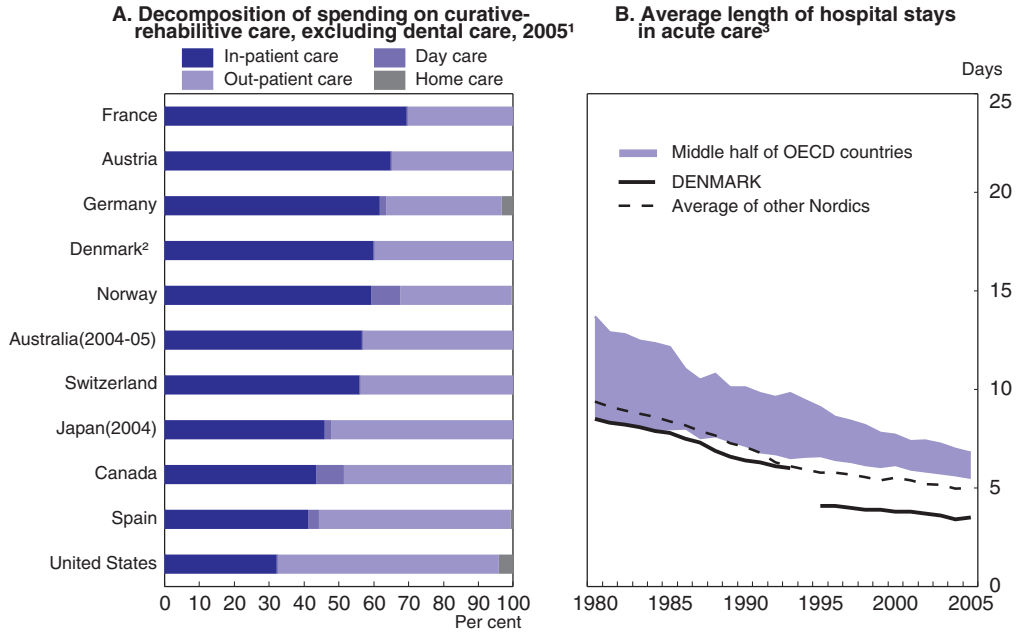
One way to assess the situation is by comparing how shares of treatment activity vary internationally across different institutional settings. Compared to other countries for which data are available, there is a tendency for the Danish healthcare system to put more weight on *in-patient* care typically implying that the patient stays in a hospital or clinic overnight. About a quarter of total activity in Danish hospitals, measured by spending, is *out-patient* (ambulatory) care. When visits and consultations with independent specialists, general practitioners and other health professionals are included, this share stands at 40%. Even so, the weight put on out-patient and day care in countries like the United States, Spain, Canada and Japan is far higher than this (Figure 5.12). Meanwhile, data sources on the volume of surgical procedures indicate that Denmark has a larger share of day surgery than most other countries.[17] Given the connection between these issues and adoption of new medical technologies, the observed patterns raise a question about whether the current Danish system puts too much weight on treatments, other than surgery, carried out in an in-patient setting.

Investments in healthcare equipment and facilities

This question is particularly important in light of the planned large-scale investment in new healthcare facilities including hospital buildings. The public discussion about an investment plan for hospitals has frequently focused on buildings appearing as old, but it is essential to keep in mind that the real issue may well be that to provide high quality healthcare, still fewer hospitals are needed with less bed capacity. Investments should therefore be preceded by careful assessment of future needs associated with changing treatment patterns, and probably a gradual implementation over the planning period 2009-18 would help to avoid a repetition of some of the glaring mistakes that resulted from rapid spending growth in the 1960s and 1970s. One example was Herlev hospital which was constructed as a prestigious institution, but where the upper eight floors were not taken into use for several years.

Meanwhile, the average length of hospital stays would indicate that treatment practices applied within hospital are quite modern. Indeed, the average length of stay in

Figure 5.12. **In-patient *versus* out-patient treatment and average length of hospital stays**



StatLink http://dx.doi.org/10.1787/263781763317

1. Curative-rehabilitative care covers all sorts of health care except long-term care. Given the special nature of dental care, it is excluded for the purpose of this figure. Total of public and private spending.
2. For Denmark, day cases are not reported separately but, supposedly, as part of out-patient care. However, it cannot be excluded that day surgery is sometimes categorised statistically in a different way than in other countries included in the figure.
3. Acute care includes all curative care of non-mental illness and injury. It is much wider than the Danish concept *akut behandling* which in English would be emergency. Acute care also includes child birth, elective surgery and diagnostic procedures. It excludes rehabilitation, palliative or long-term nursing care.

Source: OECD Health Data 2007, October 07.

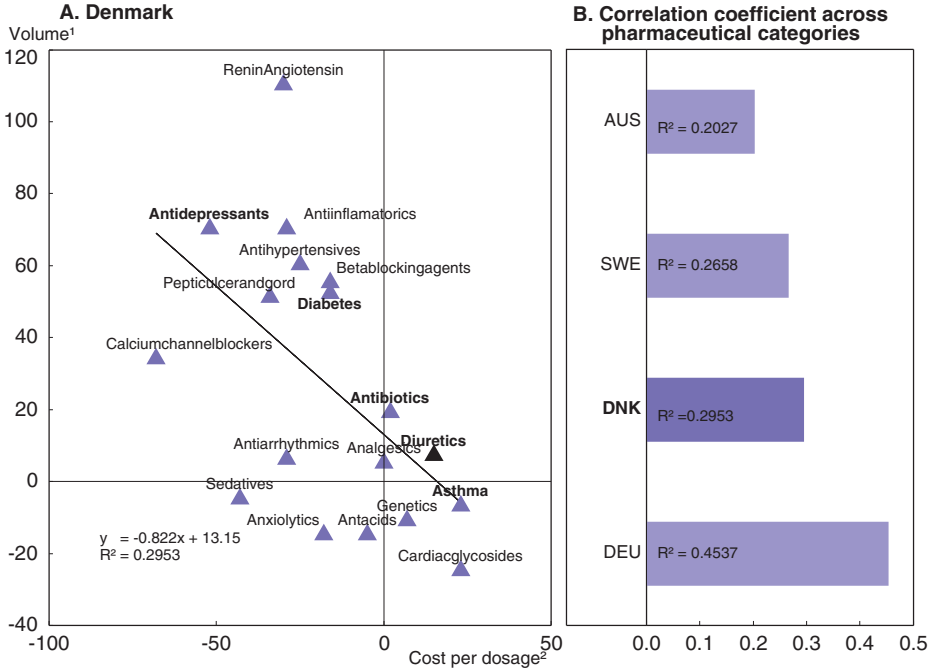
acute care has been among the shortest in OECD countries for several decades (Figure 5.12). This may reflect that cost-containment policies introduced in the 1980s and activity-based funding based on the DRG system introduced gradually starting in the late 1990s have promoted a focus on shortening hospital stays.[18] This direction is continued in current policy developments where so-called *accelerated patient treatment* is seen as a central way of improving both objective and perceived quality.

Pharmaceuticals

The use of medication and the rising cost to public budgets has been an issue of much debate in recent years. As illustrated earlier, spending on pharmaceuticals is lower in Denmark than in most other rich OECD countries, but it is an important cost driver nevertheless. Use of new and better drugs is the key to achieving improvements in treatments practices and also helps to save money when replacing more invasive and expensive treatments. Interestingly, the Danish medical system appears to have been rather cost conscious when adopting new technologies as pharmaceutical usage has increased most for the drug categories that have seen falling average costs – here measured, imperfectly, as costs per daily dosage (Figure 5.13). The strength of the correlation between cost and volume change falls in the middle of the range observed for a couple of representative countries.

Figure 5.13. **Correlation of cost and volume movements for pharmaceuticals**

Percentage change from 2000 to 2005



StatLink http://dx.doi.org/10.1787/263786478182

1. Defined Daily Dosages (DDD) per 1 000 inhabitants.
2. Total spending for the pharmaceutical category per DDD, deflated by the consumer price index.

Source: Calculations based on *OECD Health Data 2007*, October 07.

The retail market for pharmaceuticals was partly liberalised in 2001 when a large range of over-the-counter drugs were allowed to be sold outside pharmacies at prices that could be set freely. Subsequently prices on certain drugs fell. The liberalisation of the retail market was confirmed in a political agreement in 2006 at the same time as the market for veterinary drugs was liberalised. However, the market for prescription drugs remains heavily restricted by government objectives of equal access to and equal prices of these drugs in all areas of the country. Both the number and location of pharmacies, profit-margins and end-user prices are fixed by the authorities. This excludes competition in end-user prices and prevents efficiency gains – for instance from the use of Internet – and discounts on pharmacies' purchases from wholesalers from being passed on to consumers. Pharmacies are also subject to an aggregate cap on gross profits, set in negotiations with the Minister of Health. The pharmacies with the largest turnover (benefiting from their geographical monopoly in areas where demand is big enough for an additional pharmacy to be profitable) are required to subsidise those with the smallest through an equalisation scheme, in order for otherwise unprofitable pharmacies – typically situated in sparsely populated areas – to be able to stay in the market. As argued by the 2005 *Survey*, options for introducing more competition would include replacing fixed prices with maximum prices near current price levels – so that all changes would be Pareto improvements, *i.e.* no consumer would lose out – and allowing free entry subject to certain requirements on standards being met, as has been the case in Iceland since 1996. The equalisation scheme should also be modified to remove its inherent bad incentives. Services in sparsely populated areas could be guaranteed *via* tenders or block grants to pharmacists operating

in these areas. Such block grants could be partly or fully financed by fees paid by other pharmacies. The current restriction on ownership of pharmacies by pharmacists should also be lifted, as it holds no obvious merit.

Health and employment

Wide labour-market participation is necessary for fiscal sustainability and thereby for publicly funded services, including good-quality healthcare, to continue to be affordable for society. The health system itself has a role to play to promote labour market inclusion, by helping people with health problems to maintain a foothold in the labour market whenever possible. From 2001 to 2007, the share of 15-64 year olds receiving some form of sickness or disability related benefit increased from 9.6% to 11.2%. Yet, statistics on treatment activity do not show signs of the healthcare system having responded to this development, as the number of hospital admissions as well as physician contacts has increased considerably more for persons aged 65 or older than for persons of working age (Table 5.4). Healthcare might make a stronger contribution to employment, in particular if it focused more on managing and preventing the health problems that are the main causes of poor labour market outcomes and responded better when people are out of work due to health problems.

Table 5.4. **Sickness-related benefits and healthcare utilisation**

	Recipients aged 15-64			Cases per 100 persons in the age group		
	2001	2007		1997	2005	Change, %
Stock of recipients[1]						
Sickness benefits	64 000	82 000	Hospital admissions			
Vocational rehabilitation	27 000	22 000	20-64 year olds	16.2	16.4	2
Flexjob, employees	13 000	44 000	65+	44.1	50.2	14
Flexjob, unemployed	1 000	13 000	Visits to physicians outside hospitals and other contacts covered by the public health insurance			
Disability pension	238 000	243 000				
Total	343 000	404 000				
as % of 15-64 year olds	9.6	11.2				
Inflow of new recipients[1]			20-64 year olds	748	822	10
Disability pension	14 400	14 200	65+	1 225	1 540	26
Flexjob	7 900	9 400				

1. The stock of recipients is measured as full-year equivalents. The inflow is measured as the number of cases (persons) given access during the year.

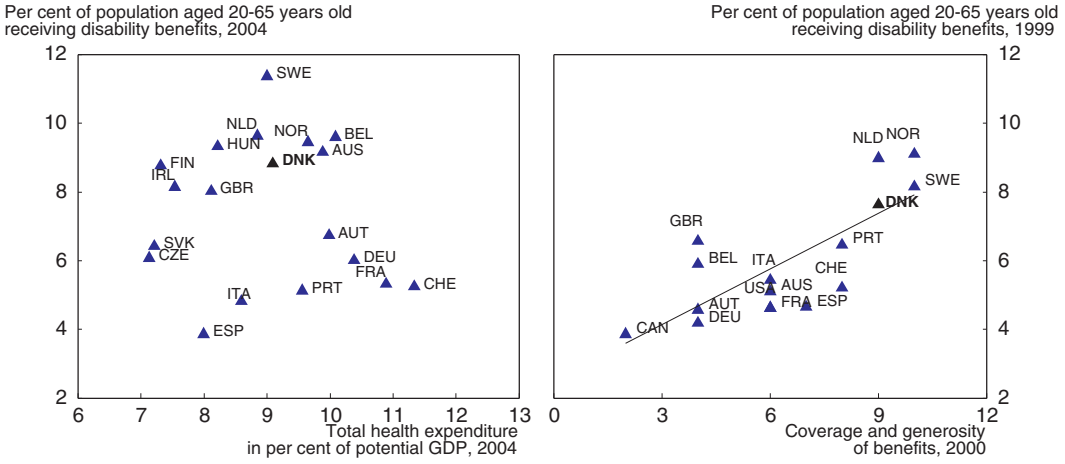
Source: Government (2007d) *Mod nye mål – Danmark 2015*, Ministry of Social Affairs *et al.* (2007) *Redegørelse om udviklingen på førtidspensionsområdet og det rummelige arbejdsmarked* and OECD calculations based on Statistics Denmark.

Most recently, short-term sickness absence has risen strongly; in the third quarter of 2007, it was 16% above the level observed one year earlier, and long-term sickness absence is also growing (Economic Council of the Labour Movement, 2007). In the context of the strong economic boom, there are now more people receiving sickness benefits than unemployment benefits. The recent initiative to give sickness absence high priority as an area for reform of employment policies is therefore welcome: the new government programme has established a target of a 20% reduction by 2015 (Government, 2007a).

Realistically, however, more healthcare provision does not automatically curb inflows to sickness and disability benefits. A simple international comparison shows no

correlation between the level of healthcare spending and the share of working-age populations receiving disability benefits. This would be either because the cross-country differences in spending do not result in more treatment or because the effect of healthcare is compensated for by other factors. By contrast, the coverage and generosity offered by benefit schemes can explain a large part of the cross-country difference in the number of recipients (Figure 5.14). These relations underscore that healthcare cannot be an easy way to avoid addressing issues of access and generosity of benefit schemes – indeed, health problems often become entwined with decay of skills and motivation in the complex processes that can lead to prolonged detachment form the labour market.[19]

Figure 5.14. **Healthcare provision and disability benefit rates**



StatLink http://dx.doi.org/10.1787/263817006761

Source: *OECD Health Data 2007*, October 07, OECD (2007b), *Going for Growth* and OECD (2003), *Transforming Disability into Ability*.

To assess what healthcare can do, the first step is to clarify what causal links exist between health and work. First, health problems during childhood and youth can have substantial adverse effects on employment outcomes *via* lower accumulation of human capital. Moreover, it is clear that poor health can have direct adverse effects on employment outcomes, both in terms of earnings and the risk of being out of work. The strength of the causal links from work activity to health status is associated with more analytical uncertainty. At the extremes, inactivity causes decay while overload and stress increase the risk of cardiovascular diseases etc. But episodes of work and unemployment as such may not matter much for health: research based on the very rich Danish datasets that allow linking individual information on healthcare and employment, finds that unemployment following displacement is not correlated with diseases associated with stress sufficiently severe to result in hospitalisation (Browning *et al.*, 2006).[20] Meanwhile, the declining role of hard manual work, changing organisational structures and work practices may alter the composition and nature of health effects from being in and out of work. Improving safety at work and preventing decay still warrant attention as with the Foundation for Vocational Prevention (*Forebyggelsesfonden*) established in 2007.[21] Yet, the main challenge may well be that conditions reflecting lifestyle and diseases due to factors outside the workplace have implications on each person's capacity to enter and stay in the labour market.

Disease patterns and employment outcomes

About one in five adults have some form of handicap limiting their functional capacity, and half of them are working. In 2005, an employment strategy for persons with disability was introduced. The strategy focused on raising awareness about the nature of various disabilities and how those persons affected can become valuable workers despite their disabilities (Government, 2004). One reason for expecting that soft measures of awareness creation would have effects is that even persons with benign functional limitations are substantially less employed than the average population. The strategy appears to have come at the right time, because following modest increases for some years, the share of disabled in work increased from 51% in 2005 to 55% in 2006 on the back of the strong economic expansion and labour shortages. Those with mental health problems have the poorest outcomes: only 39% are employed compared to 56-63% for other disabilities, and at 29% the fraction of employment contracts being subsidised is relatively high. To what extent this can be explained by differences in work capacity is hard to know, but barriers generated by attitudes also matter: when colleagues are asked about their attitude towards working with someone blind, using a wheelchair or having strong mood variation, the latter group is much less welcome than the former two (Miller *et al.*, 2006; Høgelund and Larsen, 2007; Larsen *et al.*, 2007).[22]

An increasing share of those entering the permanent disability pension are registered as suffering from mental health conditions. From being about equal in size in 1999, mental health problems have become twice as important as musculoskeletal conditions as reason for leaving the labour market permanently on a disability pension. Now, the top five conditions motivating permanent disability pension are all mental (Table 5.5). A large and

Table 5.5. **Medical conditions motivating disability benefits**

Proportion with mental health conditions among those entering disability benefits in 1999, per cent		Top-15 main diagnosis of those entering the Danish disability pension, per cent1	1999	2004	2006
Switzerland	34	Post-traumatic stress disorder	1.8	5.7	6.8
Netherlands	33	Recurrent depression	1.8	3.7	4.0
Australia	32	Schizophrenia	3.8	3.6	4.0
Germany	28	Personality and behavioural disorders other than dissocial	2.1	3.4	3.9
Denmark	27	and emotional unstable personality			
France	27	Mental retardation	3.1	3.0	3.9
United Kingdom	26	Polyarthrosis (*slidgigt*)	1.9	2.3	3.1
Canada	25	Stroke (*blødninger og blodprop i hjernen*)	4.0	4.2	3.2
Norway	25	Lumbago due to displacement of intervertebral disc *(diskusprolaps*)	2.8	3.0	2.9
Sweden	24	Anxiety except phobic, obsessional and other specific anxieties	0.8	1.4	1.9
United States	22	Aggressive, borderline and similar unstable personality	1.0	1.3	1.6
Austria	17	Alcohol dependence	0.8	1.5	1.6
		Harmful use of alcohol	1.4	1.4	1.5
		Multiple sclerosis	1.8	1.3	1.4
		Chronic obstructive lung disease	1.2	1.2	1.3
		Paranoid psychosis	0.9	0.9	1.2
		All mental and behavioural disorders	27	37	44
		All diseases of musculoskeletal system and connective tissue	25	22	22

1. The categories listed are the fifteen most frequent out of the 275 categories used for classifying Danish disability pension cases. This classification has a unique correspondence to the more detailed ICD-10 classification.

Source: Updated from OECD (2006), *OECD Economic Survey of Denmark* with 2006 data from the National Appeals Board.

growing share of disability benefit recipients having mental health problems is a trend also seen in other OECD countries.

Could the health system be made more responsive?

Such dramatic change would seem to indicate that the administrative procedures for admission to disability pension are not based on a thorough understanding of the person's health condition, implying premature decisions that ignore the potential for healthcare treatment to improve the person's situation sufficiently to avoid permanent disability pension. It would seem very unlikely that the underlying prevalence of diseases should be changing at such speed. It is difficult to know how the underlying prevalence of mental health problems has evolved over time, but for Norway a recent government report has argued that the similar Norwegian rise in disability pension motivated by mental health is likely to reflect other factors as systematic assessments indicate a constant prevalence of the major mental health conditions over the 1998-2005 period for which data are available (NOU, 2007). What happens may be that in cases of complex co-morbidity, there is an increased likelihood of noting a mental health issue as the dominant diagnosis. Municipal social administrations can make the final decision to put a person on disability pension *without* involving medical professionals. Although medical professionals typically will be consulted, this may lead to more persons being labelled with mental and behavioural problems, and – more worryingly – that the individuals concerned are not getting the appropriate help in terms of treatment and rehabilitation. Indeed, professionals as well as associations of the mentally ill point to a lack of specialised knowledge among municipal social workers, so that opportunities are missed for helping the persons concerned back to work and permanent disability pensions are granted in cases where they may not be the best solution.[23]

A key concern here is that current arrangements allow prolonged sickness absence without ensuring that the person concerned goes through an assessment including medical specialists to thoroughly identify the real nature of any health issues, and making sure that treatments that would be effective at reducing the obstacle created by health are readily available. A recent systematic study found that one in two on long-term sickness absence have some form of mental health problem, but only half of them are diagnosed. The authors of the study recommended simple screening methods as a basis for early referral to treatment.[24] It will probably help that mental health patients will now gradually be allowed to choose hospital in a comparable way as for non-mental treatment: choice is introduced for children and adolesents in 2008 and extended to adults from 2010. Non-mental health problems may be equally important, and in many cases health problems may be combined with skill shortages or lack of motivation, making it clear that a broadly based approach is needed.

To improve the situation further, the following could be considered:

- Based on a national strategy, each regional authority should have a clear plan to make sure that the preventive and curative treatments that are important for helping to stay in work and not under-prioritised. The coordination committees involving all municipalities within each regional authority should play an important role in this context as activation of those who are out of work due to sickness is a municipal responsibility. If not, it might be that current prioritisation focuses on severe symptoms whereas many of those health problems that cause loss of attachment to employment appear less dramatic. The health issues that are important for employment are typically not life threatening: monotonic use of equipment (office computers, production machinery or lifting etc. in human services) leading to musculoskeletal problems, or

lifestyle issues (excessive alcohol intake or lack of physical activity) leading to frequent short-term absence being the start of losing attachment to the job. Therefore they may attract less attention in the medical profession. Consequently, deliberate planning may be needed to ensure that they are prioritised. Such planning should also ensure rapid adoption of the new technologies that can ease hearing and visual impairments.

- Funding mechanisms between regions, municipalities and central government could also be adjusted to advance these priorities. In particular, municipalities could carry more of the costs for benefits and flexjob subsidies, thereby making it more attractive for them to enhance their capacity to understand and help resolve health-related employment problems. Employing a trained physician at the municipal job centre, for example, has been found to greatly enhance the identify appropriate employment opportunities for clients. When carrying more of the costs of benefits, municipalities should also have clearer instruments to guide the availability of vocational healthcare services. One option would be to let municipalities spend part of their current funding contribution for the regional authorities on vocational health services from alternative providers, if not satisfied with the region's offer in this area.
- Sickness absence from work for more than a month or two should initiate a coordinated health assessment involving the person's general practitioner, municipal caseworker and relevant specialists. In particular, it is important to assess whether the sickness is likely to go away or is the beginning of a longer absence. In case of the latter, then a process with rapid access to specialist treatment should start. If continuing for longer, a more thorough assessment might be initiated of whether treatment is likely to improve the situation, whether treatment could be continued while gradually returning to work, or whether the person should consider shifting profession. The risk in the current system is that, because of limited dialogue between municipal officials in charge of benefits and activation programmes and the health system (the person's general practitioner and subsequent specialists), there may be only a late and piecemeal identification of the actual health problem. Some people may be very motivated and dedicated to pursue recovery while others may be less persevering and tend to lose belief in their own ability to succeed. As the sickness spell prolongs, skills and contact with the workplace is lost.
- When there is a need for adjustments in the workplace, it is obviously important to involve the employer in the dialogue. Some progress has been made with pilots in this field, such as with the so-called round-table model. Consideration could be given to differentiating employer co-financing of sickness benefits depending on participation in such forms of dialogue.
- Finally, research into the links between health and work could be strengthened to benefit from the rich individual level health data. Currently, a number of individual researchers use these data, but it still happens in a fairly fragmented way. Institutional restructuring around some of the current health and social/employment research institutes might be a way of enhancing the use and benefit from the rich datasets that exist.

Are all benefit and subsidy schemes optimized from a social insurance perspective?

Meanwhile, none of these recommendations can substitute for a careful review of whether gatekeeping and subsidy/benefit levels would need adjustment to stem the inflow to expensive schemes, an issue that was analysed extensively in the previous *Survey* (OECD, 2006). This concerns, in particular, the flexjob scheme where the public subsidy

currently offers complete coverage of the income loss associated with reduced work capacity. Consequently, employers, as well as the persons concerned, have a clear incentive to seek a flexjob, rather than taking another job that might be easier to manage but pays less. As health conditions are ultimately hard to assess objectively, some element of self-insurance might be warranted to prevent overuse of the scheme: the salary under a flexjob should be lower than for a normal unsubsidised job. For example, flexjobs could pay a wage for the hours worked and an unemployment benefit for the hours not worked. In general, the maximum flexjob wage subsidy should be scaled down further to be equal to, or less than, the disability benefits. Separately, the benefit received while undergoing rehabilitation might also need to be reduced to ensure that it pays for participants to accept jobs they might be offered.

Conclusions

In a context where costly new medical technologies rapidly expand the range of conditions that can be treated, the Danish model with universal public health insurance can only be sustained if cost-efficiency is raised continuously *via* a broadly based policy approach (Box 5.5).

Box 5.5. **Recommendations regarding health, healthcare and sickness-related employment problems**

Lifestyle

- The government's increased focus on nutrition and physical exercise is well chosen, but promoting moderate and sensible use of alcohol, notably among youth, should also have higher priority in public health policy.

Financing of healthcare

- Tax-financed healthcare, as currently in place in Denmark, is a relatively well-functioning and simple way of providing health insurance to all citizens. Meanwhile, public funding must be prioritized for where it is most needed.
- Introduce co-payments for visits to general practitioners and specialists as in other Nordic countries. Keep co-payments for pharmaceuticals, dentists, etc., broadly as they are today.
- Change regulations in dental care so that the current fixed-price setting is replaced by maximum prices.
- Restrict public funding for long-term care to those elderly who have more substantial care needs: in particular, the large group that currently receives free-of-charge practical help at home for less than two hours a week could pay for it themselves.

Provision of healthcare: staff, incentives and structural change

- Retention and recruitment of nurses might be a concern when large cohorts retire in the coming years. A first priority should be to increase average working hours.
- Develop public health sector pay schemes more in line with trends in the private sector with elements of team and individual pay flexibility, making it easier to nurture skill development and effort. Pay flexibility should also be used as a way to elicit greater labour supply of the existing health workforce.

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Box 5.5. **Recommendations regarding health, healthcare and sickness-related employment problems** *(cont.)*

- Refine the activity-based funding model for hospitals by applying funding rates clearly motivated by marginal costs.
- Expand the role of private-sector healthcare providers to ensure contestability and spur innovation. Contracting with private providers, such as with the UK fast-track treatment centres, should be considered.
- Ensure that municipalities fulfil their obligation to publish their hourly costs for long-term home care more systematically *via fritvalgsdatabasen*, thereby enhancing transparency for entrepreneurs wishing to provide publicly funded long-term home care.
- Expand the use of medical technology assessment to ensure that cost-saving innovations are implemented.
- Implement the planned investments in new medical facilities gradually, to adjust continuously to changing medical technologies. Avoid overly prestigious investment plans that risk cementing current organisational structures and treatment practices.
- Encourage people to take more responsibility for managing their health condition. As more of those with permanent health problems now have higher education, they can be given a larger responsibility for monitoring and managing their conditions. Involve the increased number of retirees in informal care provided in the community as a supplement to municipal long-term care provision.
- Replace the fixed-price system with a set of maximum prices and allow free entry into the retail market for pharmaceuticals.

Sickness- and disability-related employment problems

- Establish a national strategy to identify and prioritize the preventive and curative measures that will help maintain labour market attachment. Give the new coordination committees, involving all municipalities within each regional authority, a clear responsibility for the co-operation between healthcare providers and municipal job centres administering benefits and activation for persons with sickness or disability.
- Let municipalities carry more of the costs for benefits and flexjob subsidies, and give municipalities clearer instruments to guide the availability of vocational health services.
- Develop the use of models – like the so-called round table for dialogue between the employer, job-centre caseworkers, physicians and the employee – to ensure early action when sickness absence reaches a duration that implies the risk of drifting into long-term absence and loss of labour market attachment.
- Consider differentiated employer co-financing of sickness benefits depending on participation in roundtables or similar dialogue.
- Reduce the maximum flexjob wage subsidy to be equal to the disability pension or lower. Moreover, the salary under a flexjob should be a bit lower than for a normal unsubsidised job. For example, flexjobs could pay a wage for the hours worked and an unemployment benefit for the hours not worked.
- Reduce the benefit received while undergoing rehabilitation to ensure that it pays for participants to accept jobs they might be offered.

Notes

1. Estimations by the association of local authorities indicate that the intensive smoking by youth during the 1960s and 1970s are now starting to show up in the form of rapidly increasing needs for expensive medical treatment to alleviate respiratory problems as the persons concerned are ageing.
2. Aside from liver cirrhosis, excessive alcohol consumption increases the risk for heart, stroke and vascular diseases, as well as for certain cancers.
3. It should be noted, though, that this econometric result is associated with some estimation uncertainty, as shown by the vertical line in Figure 5.3 being rather wide for Denmark.
4. Eurostat requires that member countries gradually move towards using deflators for public consumption that are based on genuine measures of output volume. Some countries, such as the United Kingdom, have already taken this process relatively far (OECD, 2005d, Box 3.1 about the Atkinson review; ONS, 2004). Given the practical difficulties involved, Denmark, however, has an exemption from the Eurostat requirement. National accounts are therefore based on the technical assumption of zero productivity growth in public services, meaning that public consumption deflators match the wage and price deflators for the inputs used.
5. A striking recent example is a pharmaceutical now applied in emergency departments in Danish hospitals to stop bleeding for heavily wounded patients at a cost of € 20 000 per injection.
6. The effect is relatively strong compared to the similar scenario for health care, because a zero price elasticity is assumed meaning that the volume of long-term care demanded does not decline at all in response to upward-trending relative price of care.
7. The RAND experiment remains one of the few existing studies to document the effect of user charging for healthcare. It found that charges do not have to be very high in order to have effect: Those having 25% out-of-pocket co-payments had 27% fewer out-patient medical contacts than those having free-of-charge care. Thereby, their usage was not much different from those paying all the costs (95%) out-of-pocket themselves which had 40% fewer out-patient medical contacts than those having free-of-charge care. Meanwhile there was no difference in the intensity or costs per contact. No difference in the evolution of health status could detected between the groups facing different copayment structures (Manning *et al.*, 1987; Newhouse *et al.*, 1993).
8. Using the system of health accounts it is possible to decompose health spending by function, providers and financing source. Building on international definitions established during the 1990s, such health accounts have been developed for a number of countries in recent years (Orosz and Morgan, 2004 and Nielsen, 2004).
9. As long-term care systems are very different across countries, data are less readily comparable than for other parts of health care. However, Denmark, along with some other Nordic countries, differ so much from other OECD countries that the issues of data noise is of little importance.
10. Individually-paid supplementary insurance is taken out by about a third of the population, covering part of the copayments and also expenses on glasses, but it is not tax favoured.
11. In Austria, 19% of the population aged 65 or older receive public support for home care, but in the form of a cash benefit (*Pflegegeld*) which may be spend on formal care or stay within the family as a compensation for informal care provided by relatives. As this form of mixed formal/informal care it difficult to compare to the Danish situation, Austria is not included in Figure 5.6.
12. A survey of GP tasks across Europe suggest that the average working hours for GPs in Denmark are not different from other European countries (Boerma, 2003).
13. The latest data available, which are from around 2000 and refer to "health professionals except nursing", ISCO (222), show a balanced situation: 10% of those practicing in Denmark were foreign-born and, at the same time, 10% of the Danish-born practiced abroad (OECD, 2007c).
14. Strictly speaking, this may not hold if comparing earnings net of income taxes. With the strong progressivity of the Danish tax system, the differential between physician and average full-time earnings may be smaller in Denmark than for example Finland. Being close to average earnings, the comparison for nurses would not be affected as much by such differences in tax progression.
15. This comparison excludes one outlying top performer (*Bræstrup Friklinik*) that exceeds the national average productivity level by 40% as well as two outliers at the bottom (*Lemvig* and *Tarm*) operating only at around 60% of the national average productivity level.
16. Legislation (L130) was presented to Parliament in February 2002. After being passed in Parliament, the detailed regulations were announced in early autumn, with the law coming into force

January 2003. Providers can have contracts for one or more of the five distinct services within home care covered by the legislation: personal care in daytime; personal care outside daytime; practical help with domestic tasks; meals on wheels; meals that are not transported to the home. The analysis in this chapter focused on personal care and practical help only.

17. The IAAS Survey on ambulatory surgery and World Wide Day Surgery Activity indicate that 55% of all surgical procedures and 79% of the surgical procedures that are typical for day surgery are actually carried out as day cases in Denmark. Only USA and Canada have higher shares.

18. To some extent, average length of stay will be biased downwards by the tendency to rely more on in-patient care than in some other countries. Given the very short average length of stay, other factors must also be at play, as discussed in the text.

19. Ironically, the rise in income benefits and subsidies motivated by sickness and disability has happened despite healthcare's increasing capacity to treat disease. As illustrated in the first part of this chapter, the frequency of premature deaths from cancers, cardiovascular diseases, etc., have declined considerably. In principle, lower mortality could imply that more live on with disease and disability, but this would not seem to be a sufficient explanation, as average self-reported health has not declined (Figure 5.1).

20. Specifically, the study follows 200 000 Danish men from 1981 to 1999, finding no indication of a higher likelihood for being hospitalised for stress-related diseases of the circulatory or digestive system, such as hypertension, heart disease, gastric catarrh and ulcers during the four years following displacement.

21. The foundation was established as part of the June 2006 agreement to reform the Voluntary Early Retirement Pension. Based on a DKK 3 billion capital, the foundation can pay out DKK 200-350 million a year to support projects promoting prevention as well as vocational rehabilitation in low-paid professions (*www.forebyggelsesfonden.dk*).

22. It should be noted that part of the findings in the three studies might be biased by including only severe cases of mental health problems: The sample corresponds to that merely 1.5% of the adult population should have functional limitations associated with mental health problem, compared to 19% for other conditions. This is far below the prevalence considered in international studies (Ormel *et al.*, 1994), and the low employment frequency reported for those with mental health problems may therefore reflect that they represent a hard core of severely affected individuals. However, this cannot explain why 64% reply that they would be worried about having a colleague experiencing strong mood variation, compared to just 29% and 21% being worried about having a blind or wheel-chair using colleague.

23. Based on the increasing number of persons aged below 30 being admitted to disability pension with mental health conditions, psychiatrists have been suggesting that disability pension was in some cases granted on a temporary basis to avoid life-long retirement (Jyllands-Posten, 29 April 2007).

24. Reported by Jyllands-Posten, 5 November 2007. The study was based on 1 100 cases.

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ANNEX 5.A1

Illustrative model for long-run trends: is healthcare spending driven by income or technology?

To consistently disentangle the linkages between technology, income and healthcare spending, it can help to use a stylised model framework built to reflect the key characteristics of the Danish health system. H is healthcare demand measured in volume (a variable that is unobservable in practice) and Y is non-health national income. P_H is the relative price of healthcare services, as the price of non-health output is used as numeraire, $P_{nH} = 1$. Since the purpose of this model is to illustrate trends in aggregate healthcare spending, P_H is the total of publicly and privately funded costs associated with providing one unit of health care. W_H is the wage for healthcare professionals and W_{nH} is the wage rate for non-health professions.

Three aspects of technology are distinguished: T_A measures the state of general technology which can be applied in all sectors of the economy such as IT and organisational practices, T_{HF} measures the frontier of health conditions being treatable given the state of medical technology at a particular point in time, and T_{HC} measures advances in cost-saving healthcare technologies and practices that can replace expensive treatments.

Building on these variables, four structural equations are sufficient to characterise the economy, as for simplicity the model abstracts from capital as well as changes in demographics and disease patterns.*

Healthcare demand: $H(T_{HF}, Y, P_H)$. New technologies making it possible to treat more conditions will increase the volume of healthcare demand, but depending on health technology assessment and gate-keeping arrangements, the pass-through may be less than complete: $0 < \frac{\partial H}{\partial T_{HF}} \leq 1$. The genuine income elasticity of healthcare demand is $0 < \frac{\partial H}{\partial Y}$, and the price elasticity of healthcare demand is $\frac{\partial H}{\partial P_H} < 0$.

Relative price of healthcare: $P_H(W_H, T_{HC}, T_A)$. The production value of the Danish health sector can be decomposed as 32% intermediate inputs and 68% gross value added.

* The model can be augmented to illustrate how more or less employment-oriented healthcare provision will affect GDP and thereby the affordability of healthcare for society, as discussed in the *Survey*. Such an augmentation would, however, require the assumption of specific functional forms making the model less generic which is why it has not been pursued here. For the same reason, the model abstracts from shifts in employment between the health and non-health sectors, and it ignores the fact that income generated in the health sector would also matter for the income effect in healthcare demand, as income received by health professionals would also shape their own demand for healthcare. These extensions would, however, not change the above results.

Abstracting from capital, it follows that $\frac{\partial P_H}{\partial W_H} = 0.68$. Depending on the ability of healthcare providers to adopt cost-saving treatment practices and general technologies, $-1 \leq \frac{\partial P_H}{\partial T_{HC}} \leq 0$ and $-0.68 \leq \frac{\partial P_H}{\partial T_A} \leq 0$.

Non-health production function: $Y = T_A$ as the population and employment are normalised to 1.

Labour market equilibrium: $W_H = W_{nH} = T_A$ as labour is fungible between healthcare and other sectors in the long run, and wages in the non-health sector are determined by market forces and thus evolve in line with productivity.

The elasticity of healthcare demand with respect to price to income is hard to estimate empirically because health systems rarely offer suitable natural experiments. Some of the best available evidence therefore is still the RAND health insurance experiment where randomly selected families in the United States during the 1970s and 80s were exposed to health insurance plans with varying co-payments for similar services (Manning *et al.*, 1987; Newhouse *et al.*, 1993). Their findings indicate that, with given technologies and healthcare prices, persons with higher income tend to demand more healthcare, but not much more. In other words, the genuine income elasticity of healthcare demand is well below unity. For the purpose of this illustrative model, $\frac{\partial H / H}{\partial Y / Y} = 0.7$ capturing the combined effect of different care demand for given symptoms and different demand for the services delivered alongside care (single room, flexibility, etc.). For the price elasticity of healthcare demand, the RAND research group summarised its findings as $\frac{\partial H / H}{\partial P_H / P_H} = -0.2$.

The effect of income growth with unchanged healthcare technologies and treatment practices

Combining the above equations, the model can be solved to assess how healthcare spending as a share of GDP evolves in response to aggregate income growth that is driven by general technological advances such as organisational innovations and information technology. For simplicity, the variables' initial values are indexed as $P_H = 1$, $Y = 1$, implying that $H = 0.091$, being the GDP share of total public and private healthcare spending in 2005.

$$\frac{d\frac{HP_H}{Y}}{dT_A} = \frac{dH}{dT_A} + H\left[\frac{dP_H}{dT_A} - \frac{dY}{dT_A}\right] = \left[\frac{\partial H}{\partial Y}\frac{dY}{dT_A} + \frac{\partial H}{\partial P_H}\frac{dP_H}{dT_A}\right] + H\left[\frac{dP_H}{dT_A} - \frac{dY}{dT_A}\right]$$

$$= \left(\frac{\partial H}{\partial Y} - H\right)\frac{dY}{dT_A} + \left(\frac{\partial H}{\partial P_H} - H\right)\left[\frac{\partial P_H}{\partial W}\frac{\partial W}{\partial T_A} + \frac{\partial P_H}{\partial T_A}\right]$$

The first half of the last expression reflects the fact that higher income means that healthcare demand will grow, but also that a given level of health care spending will constitute a smaller share of the larger GDP. The second half reflects the fact that the relative price of healthcare can change due to wage demands, but also if the general technologies are adopted by healthcare providers; changes in the relative price have a direct effect on the GDP share via the costs of a given volume of healthcare and an indirect effect via price-induced changes in healthcare demand. Two reference cases can be distinguished:

- A value of $\frac{\partial P_H}{\partial T_A} = 0$ implies that advances in general technologies are not adopted at all in the health care sector. Productivity improvements only appear via falling prices for inputs of a given quality purchased from other sectors. With the parameter values

mentioned above, $d\frac{HP_H}{Y}/dT_A = 0.022$ implying that a 10% increase in aggregate productivity, which typically accrues over 5-10 years, would result in a ¼ percentage point rise in the GDP share of healthcare spending. In spite of healthcare demand being relatively income inelastic, the even lower price elasticity results in a "Baumol cost disease" as the rising relative price of healthcare due to the absence of productivity improvements in that sector is not offset by reduced demand.

- Alternatively, $\frac{\partial P_H}{\partial T_A} = -0.68$ implies that the healthcare sector adopts new general technologies at the same rate as other sectors, or maintains a stable delay or lead in this regard. In this case, $d\frac{HP_H}{Y}/dT_A = -0.027$ implying that a 10% increase in aggregate productivity would result in a ¼ percentage point reduction in the GDP share of healthcare spending.

In brief, this analysis illustrates that, even with extreme assumption about the possibility or capacity for the healthcare sector to make or not to make use of the underlying general technological advances, aggregate income growth, should not be expected to move the GDP share of healthcare spending by much it should take several decades for this mechanisms to generate a 1 percentage point change.

The effect of new healthcare technologies and treatment practices

By contrast, it is conceivable that innovations in healthcare technology and treatment practices can generate rapid shifts in the GDP share being spent on healthcare.

$$\frac{d\frac{HP_H}{Y}}{dT_{HF}} = \frac{\partial H}{\partial T_{HF}} \quad and \quad \frac{d\frac{HP_H}{Y}}{dT_{HC}} = \frac{dH}{dT_{HC}} + H\frac{dP_H}{dT_{HC}} = \left(\frac{\partial H}{\partial P_H} + H\right)\frac{\partial P_H}{\partial T_{HC}}$$

It is frequently argued that the pressure from patient lobby groups implies that all new treatments that expand the range of health conditions for which medical treatment is feasible will be taken up, $\frac{\partial H}{\partial T_{HF}} = 1$, meaning that such innovations create a strong upward pressure on healthcare spending. At the other extreme, if developments in cost-saving healthcare technologies and practices can replace expensive treatments, the relative price of healthcare would fall. As reflected in the last expression above, if the associated saving on the cost of providing today's volume of healthcare were to be partly offset by higher demand (as persons with less severe conditions might demand treatment), the net effect would be reduced spending: with the parameter values indicated earlier, $d\frac{HP_H}{Y}/dT_{HC} = -0.073$, implying that adoption of cost-saving practices giving a 10% reduction in the relative price would result in a ¾ percentage point fall in the GDP share of healthcare spending. What path of healthcare spending is realised will thereby depend very much on how the relative rates of innovation in frontier-enhancing *versus* cost-saving medical technologies.

ANNEX 5.A2

Work-force initiatives in the June 2007 tri-party agreement and the quality strategy for public services

In June 2007, a major agreement was entered between the government, the local/regional authorities and the unions covering virtually all parts of the public sector workforce.* The tri-party agreement and the quality strategy do not address pay levels or structure but only issues about work organisation and skill development. Most elements cover the four-year period 2008-11 or the eight-year period 2008-15. Progress will be monitored and discussed annually with a more comprehensive evaluation undertaken in 2011. The budgetary costs of the initiatives amount to a cumulative DKK 7.6 billion in 2008-11, equal to 0.1% of GDP each year, implying a sustained lift if public consumption by 0.4%.

- **Training and recruitment.** Future staffing and skill needs should be projected in more systematic ways as a basis for scaling the educational offer. Admission of youth to the studies of social/health assistant and childcare should be expanded. All persons aged 25 or more having more than one year's work experience should receive the adult training salary if entering a vocational secondary education programme such as to become social/health assistant. At DKK 17 000 a month in 2007, this benefit is equal to the ceiling on unemployment benefits, *i.e.* 60% of the average full-time worker (AW) earnings. It is about twice as high as the training salary paid to those below 25 in similar training, and more than three times higher than the public grant paid to those pursuing higher education whether above or below 25 years. These measures account for half of the total costs of the agreement. In addition, funding will be set aside for initiatives to retain seniors, including the creation of special posts for seniors.
- **Life-long learning, innovation and staff involvement.** Funding for participation in shorter training programmes will be increased, and talks with each employee about individual competency development should be held more regularly, at least once a year. User and staff-driven innovation should be explored more.
- **Working environment and sickness absence.** Satisfaction among staff should be measured at regular intervals, at least every 3 years, and specific problems concerning the working environment should be followed up in a more structured way. Each workplace is to enhance its efforts to reduce sickness absence based on benchmarking

* On 17 June a first agreement was made with the unions covering blue-collar and academic staff (LO and AC) and on 1 July this was followed by a second agreement with the unions covering nurses, police, etc. (FTF). For simplicity, this box describes the two agreements combined.

and dialogue, including earlier consultation about adjustments of job functions when sickness absence of a staff member is prolonged.

- **Management.** A new masters programme will be established in public-sector management. Networking and dialogue about good public-sector management should be enhanced, and each manager should go through evaluation every three years, involving also the view of their staff.

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Chapter 6

Pension savings and capital taxation

The Danish pension system is well-developed and almost unique in the OECD. It combines widespread take up of defined contribution pension schemes with high contribution rates set in collective agreements. The original targets for contribution rates have been reached and the system delivers good results, but there are a number of changes that could make it more robust and efficient. The flexibility of the institutional structure could be increased and, while leaving the key parameters of the pension taxation system as they are, other aspects of capital taxation could be improved.

The development of pension savings in Denmark has reached an important juncture for a number of reasons. First, the Welfare Agreement of 2006 settled the basic parameters of the public pension system, which is intended to provide a minimum universal level of retirement income. Second, contribution rates in the occupational pension savings framework have now reached their intended levels. Third, the recent EU ruling on the taxation of foreign pension funds operating in Denmark required some reconsideration of the tax arrangements for pension funds and may provide scope for increased foreign competition in the pension savings system. Finally, the new Tax Commission, established to make recommendations on reforms to income taxation, will inevitably have to consider capital taxation, since tax rates on capital income are linked to those on labour income. This raises the issue of the relationship between taxation of pension savings and other forms of savings. This chapter considers developments in pension savings and income, the flexibility of the institutional framework for pension savings, and the links between the taxation of pensions and other capital income.

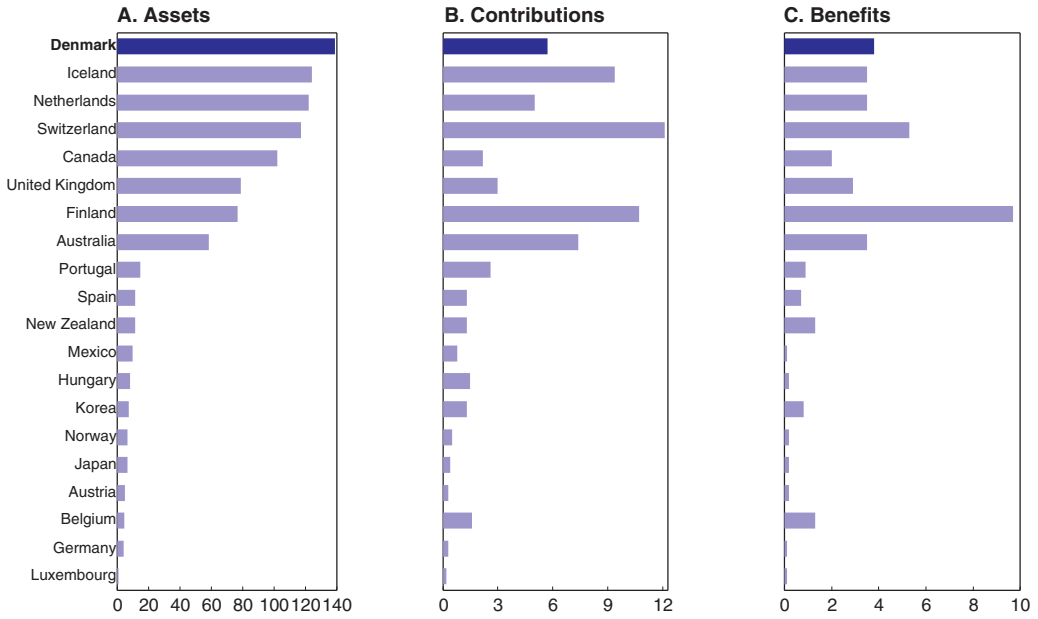
Developments in pension savings

The current Danish pension system was broadened in the early 1990s, with the aim of increasing national savings and supplementing state-provided retirement incomes. In an agreement between the Danish Federation of Trade Unions and the Danish Employer's Confederation, the existing public pension (*folkepension*) was supplemented by a defined-contribution system based on collective agreements, building on similar arrangements already in place for some government and white-collar workers. The Danish system is rather different from that of many other OECD countries. The system relies on defined-contribution schemes, unlike many other countries where defined-benefits schemes are more common. Another key difference – one which makes the Danish system almost unique – is that high contribution rates, asset levels and replacement rates are achieved mainly through collective agreements rather than through mandatory schemes. While mandatory contribution schemes exist, their role in the overall system is small. Denmark now has one of the highest levels of pension assets as a share of GDP in the OECD (Figure 6.1).

The redistributive element of the pension system – a basic old-age pension, supplemented by an income tested pension supplement and a supplementary pension benefit – is available to citizens from the age of 65 and financed by the central government (Table 6.1). In all, a single pensioner with no income from any other source who has been resident in Denmark for 40 years can earn pension entitlements (before tax) of around 37% of average earnings.[1] In addition, a pensioner may also receive personal, heating and health allowances from their local municipality. There are policies to encourage people to stay longer in the labour market and also policies encouraging early retirement. People over 65 years old, who worked more than 1 500 hours in a calendar year, receive an entitlement (called the "waiting percentage") to higher pension payments upon retirement. On the other hand, a voluntary early retirement scheme (VERP, *efterløn*) exists,

Figure 6.1. **Contributions, assets and benefits paid in relation to private pension products**

Per cent of GDP, 2005[1]



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1. "Private pension products" includes pension funds, pension book reserves, pension insurance contracts and other. That is, the occupational and personal elements of the private insurance pension arrangements discussed in Table 6.1. The figure only includes OECD countries for which data is available for all three series. The value to consumers of pension assets, contributions and benefits will depend on how they are taxed, but this is not taken into account in the figure.

Source: *OECD Global Pensions Database* and OECD, *OECD Economic Outlook* No. 82.

allowing for an early pension at the age of 60, with a benefit linked to the unemployment benefit (Box 6.1). However, there is also a gradually increasing tax free bonus available for those waiting until at least the age of 62 before entering early retirement and a new proposal has been put forward to provide a "tax-free year", up to the value of DKK 100 000, for 64 year olds who have been working continuously since, at least, the age of 60.

There are two types of insurance pension arrangements in Denmark: those that involve the government and those that do not. Insurance pensions that do not involve the government are either based on an employment relationship, in which case all elements of the pension (contribution rates, life and disability insurance) are typically the same for each employee in the scheme, or purely private arrangements entered into between the individual and a financial institution. Pensions can be in the form of an annuity or a lump sum capital payout (so-called capital pensions) and there is a large but declining share of pensions that provide a guaranteed return. There are a number of insurance pensions that involve the government, the most important of which is the Labour Market Supplementary Pension Fund (*Arbejdsmarkedets Tillægspension*, ATP), but these are small elements of the overall system.

Pension contributions

Around 88% of Denmark's 2.8 million employees contributed to one or more pension schemes in 2005. Roughly 2 million contributed to an occupational scheme and roughly

Table 6.1. **Description of the Danish pension system**

Pension element	Coverage	Contributions/asset management	Means testing/taxation treatment
Redistribution, government			
Old-age pension (*Folkepension*)			
– basic amount	Universal, but dependent on years of residence, with the maximum pension reached after 40 years of residency.	Pay-as-you-go by the central government.	Reduced by 30% of earned income above DKK 252 400; taxed at personal income marginal tax rates (except the labour market contribution).
– pension supplement	As above	As above	Reduced by 30% of total income (other than the basic pension), or 15% if spouse or partner receives a social pension, above DKK 55 700 for singles and DKK 111 800 for couples; taxation as above.
– supplementary pension benefit	As above	As above	Reduced incrementally to zero as income, other than the basic pension, rises between DKK 16 100 and 55 700 for singles or DKK 31 800 and 111 800 for couples and/or if assets exceed a set amount; taxation as above.
Insurance, private			
Occupational	Employees who belong to a union or workplace that has negotiated a labour agreement governing pension contributions – about 73% of the working population.	Contributions between 9% and 17% of income; ⅓ paid by employer, ⅔ paid by employee; assets managed by "lateral" and company pension funds, life insurance companies, banks and other credit institutions.	Pension contributions deductible for income tax but not for the labour market contribution (for capital pension the deductibility is capped and contributions are included in the base for the top tax hence could be taxed at 15 %); fund earnings taxed at 15% (including unrealised capital gains); annuity pension income taxed at personal marginal tax rates (except the labour market contribution); capital pension payout taxed at 40%.
Personal	Anyone who has individually (*i.e.* not through their employer) agreed to purchase a pension product – about 37% of the working population.	Contributions decided by individual; assets managed by life insurance companies, banks and other credit institutions.	As above
Insurance, government			
Labour market supplementary pension scheme (*Arbejdsmarkedets Tillægspension,* ATP)	All employees aged between 16 and 64 working more than 9 hours per week; recipients of unemployment benefits, sickness and maternity benefits, social assistance, rehabilitation benefits, and disability pension benefits; self employed people can make voluntary contributions.	Contributions around 1% of income based on hours worked. Contributions for unemployment benefit recipients and sickness benefits are twice the amount for employed. ⅔ paid by employer,⅓ paid by employee; assets managed by ATP fund, an independent statutory institution. Board members are appointed by government.	As above
Special Pension Savings Scheme (SP) (*suspended)*	All employees, self employed people and some transfer payment recipients.	If applicable, contributions are 1 per cent of income, paid fully by the employee/transfer recipient. Part of ATP but with separate asset management and reporting.	As above
Employee Capital Pension Fund (*Lønmodtagernes Dyrtidsfond*, LD)	2.5 million people working from September 1977 to August 1979 were owed a cost of living allowance, but the government replaced this with a supplementary pension. 1.2 million accounts still active.	No contributions since September 1979. LD is an autonomous institution with a board including government and union representatives.	As above
Supplementary Labour Market Pension Scheme for Disability Pensioners (SAP)	Persons aged 18 to 65 whose capacity for work is materially reduced for physical, mental or social reasons. Contributions to SAP are voluntary.	Contribution 2.8% of disability pension. ⅔ paid by government, ⅓ paid by individual.	As above
Public sector employee schemes	Most government employees are covered by collective agreement pension schemes similar to those in the private sector. A small group of civil servants are covered by defined benefit arrangements.	For collective agreement schemes, same as for insurance, private schemes. For defined benefit schemes, no contributions or assets.	For collective agreement schemes, same as for insurance, private schemes. For defined benefit schemes, benefits are linked to final salary and length of service.

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Box 6.1. **The voluntary early retirement pension after the 2006 welfare agreement**

The comparatively low employment rate of those aged above 60 in Denmark is predominantly a result of the voluntary early retirement pension (VERP, *efterløn*). Over half of those aged in the 63 to 65 year range have left the labour market to join this programme, which was originally designed to provide for early retirement for seniors worn out after a long career of manual labour and to "make room" in the labour market for younger workers. At present, the VERP is available to workers aged between 60 and 64 and pays 91-100% of the unemployment benefit maximum, which is about half of the average workers' earnings. To be eligible, the worker must have been a member of a recognised unemployment insurance fund for at least 25 out of the last 30 years. In addition, a contribution to the scheme is required (on top of the regular unemployment insurance contribution). There is also a gradually increasing tax free bonus available for those waiting until at least the age of 62 before entering early retirement.

To prepare for reform, the government established a Welfare Commission, which recommended abolishing the voluntary early retirement scheme (Welfare Commission, 2006). Parties representing about 90% of the votes in the Parliament concluded an Agreement on Future Prosperity, Welfare and Investments in the Future (The Welfare Agreement) in June 2006. Despite the Welfare Commission's recommendation, the Welfare Agreement retained the VERP, but the eligibility age is to be raised from 60 to 62 years between the years 2019 and 2022, and the eligibility age for the public old-age pension will be raised from 65 to 67 years between 2024 and 2027. From 2025, the age thresholds in the retirement system will be indexed to the average life expectancy of 60 year olds. That is, if life expectancy does not change, the early retirement age stays at 62 years and the pension age at 67. If life expectancy for 60 year olds increases, the VERP eligibility age will be raised first, taking effect from 2025 (a decision on the adjustment process will be made in 2015). If the VERP eligibility age is raised, the same adjustment will be made to the old age pension, taking effect from 2030. The combined period of payment of the VERP and public old-age pension is expected to be around 19½ years in the long run.

The Welfare Agreement also requires that contributions to the VERP will have to be paid for 30 years, compared to 25 years today, and that these contributions must have commenced by the age of 30 at the latest. Workers who have been working since a relatively young age will be given the chance to opt-in to the scheme at any time up to 15 years before they reach the early retirement age, but will receive correspondingly lower benefits when taking early retirement. It will also be possible to supplement early retirement benefits with labour income for persons with relatively low hourly wages.

Source: Welfare Commission (2006), Government (2006).

1 million contributed to a personal scheme (Forsikring and Pension, 2007). The self employed can set up a personal private pension contract and make voluntary contributions to ATP. There are around 1 million working-age people who are outside the labour market or unemployed, some of whom will be contributing to the ATP or SAP. Total pension contributions have almost doubled since the late 1990s, and the share of contributions that is directed to occupational schemes has risen, while the share directed to private schemes has fallen. The share of contributions directed to capital pension schemes has fallen dramatically (Table 6.2).

Table 6.2. **Pension contributions**

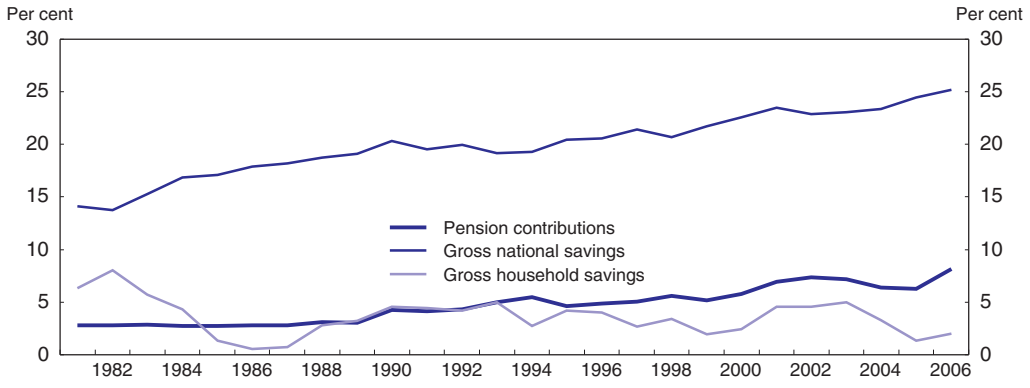
			1998	2002	2006
Total pension contributions		*DKK billions*	62.3	81.6	107.9
		% of GDP	5.4	5.9	6.6
		% of household gross disposable income	10.6	12.6	14.2
Proportions of the total					
	Capital pensions		32.4	18.6	15.6
		Occupational	14.2	10.0	8.4
		Personal	18.1	8.6	7.1
	Annuity or periodic payment		47.5	64.2	77.8
		Occupational	38.2	51.7	63.0
		Personal	9.5	12.5	14.7
	ATP and SP		20.1	17.2	6.7
			100.0	*100.0*	*100.0*
Proportions of the total					
	Total occupational		52.6	61.8	71.5
	Total personal		27.6	21.1	21.9
	ATP and SP		20.1	17.2	6.7
			100.0	*100.0*	100.0

Source: Ministry of Taxation, Statistics Denmark National Accounts and OECD calculations.

Contribution-based pension schemes were first established for professional, academic and public sector workers, so these schemes are presently more mature than schemes for less skilled occupations. Since women have lower labour force participation rates and earn less on average than men, they also make smaller pension contributions. The rise in pension contributions has been associated with an increase in gross national savings, although the increase in savings reported in the National Accounts is more closely related to savings in the corporate and general government sector (Figure 6.2).

Figure 6.2. **Gross savings and pension contributions**

Per cent of GDP[1]



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1. "Pension contributions" is the social contributions received by the insurance companies and pension funds sector. This does not include private individual pension arrangements with a bank.

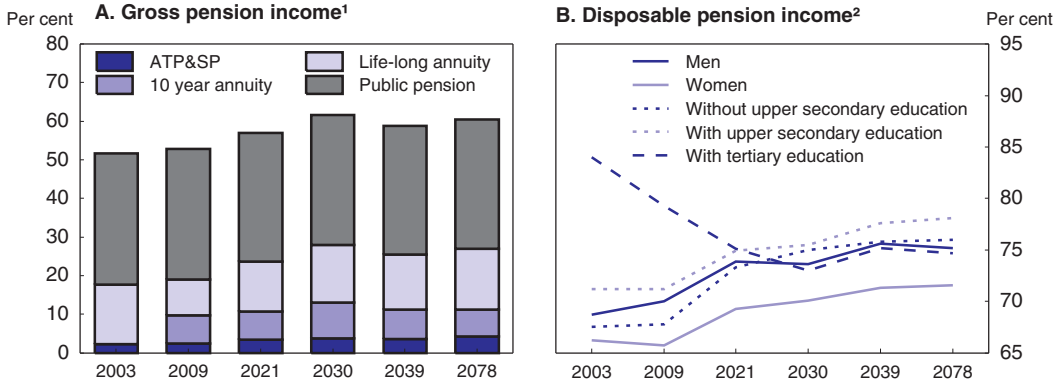
Source: Statistics Denmark National Accounts.

Pension income

Pension income is generally high in Denmark compared to many other countries, due to the combination of the broad-based public pension and the widespread coverage of income related insurance schemes. After transfer payments, people aged 65 and over are at even lower risk of poverty than the rest of the population (Eurostat, 2007). The risk of poverty amongst people over 65 year olds is the lowest in the EU-25, equal to Norway, and less than half the average for the EU-25. Income inequality amongst pensioners is lower in Denmark than amongst the working population (Verbist, 2005). Denmark, Germany and Luxembourg, are the only three of a sample of 15 European countries for which this is the case.

Pension incomes are expected to rise in real terms over the next 50 years, both in absolute terms and relative to income from work, due to the increase in private pension arrangements and income from the ATP (Figure 6.3).[2] The proportion of total retirement income that comes from the old-age pension is expected to decrease, but the public pension will remain a significant part of most retirees' income well into the future. The increase in pension incomes will be largest for lower-skilled workers, because they were amongst the last to build up substantial contributions to employment-related schemes (Government, 2005). The income dispersion among people aged 66 and over is expected to increase between 2001 and 2020, then fall to below the 2001 level by 2040. The initial increase results from the fact that higher income earners have more scope to increase their pension savings in the near term since schemes for these people, in general, were created earlier than scheme for the rest of the population (Government, 2005). Indexation of pensions to wages growth, rather than inflation, implies that pensioners are benefiting from general productivity growth as much as wage earners. As the demographic structure changes and the number of retired people increases, this implies a potentially large fiscal impact. However, in combination with the growing share of private pension income, the recent change to the retirement age significantly reduces the risk of a major fiscal impact by effectively fixing the number of years in retirement as a proportion of the number of years in work (Box 6.1).

Figure 6.3. **Projected pension income**



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1. Received by the average person in retirement relative to average gross personal income for the 25-64 year olds.
2. Relative to disposable income while working (excluding capital income) for 25-64 year olds. The comparison is standardized for household size taking account of children and the likelihood of living alone.

Source: Welfare Commission (2006).

Calculations based on people working a full working career show gross and net replacement rates that are about 60% higher than the OECD average for low income workers and about 15% higher than the OECD average for high income earners (Table 6.3).[3] Replacement rates are the highest in the OECD for workers earning half of average earnings at 119.6% on gross basis and 132.7% on a net basis. However, it is important to note that these figures are based on a full working life of contributions to an occupational scheme (Figure 6.4). Since the broad occupational pension system has developed over the last 15 years, there are not yet people that have a full career of occupational pension contributions, so the figures for Denmark in Table 6.3 and Figure 6.4 should be regarded as projections of future replacement rates. Given the narrow earnings distribution in Denmark, there are not likely to be many people with regular full-time employment earning half average earnings. Rather, people at this income level are likely to be in part-time or less regular employment, and their replacement rates are therefore likely to be less than suggested in Table 6.3.[4]

Table 6.3. **Illustrative calculations of gross replacement rate by earnings**

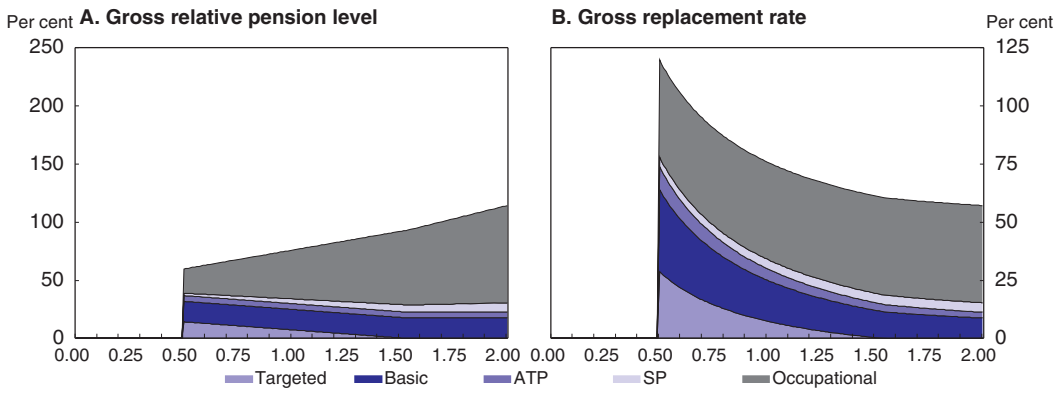
% of average gross earnings

	Individual earnings, multiple of mean						Individual earnings, multiple of mean				
	0.5	0.75	1	1.5	2		0.5	0.75	1	1.5	2
Australia	70.7	52.3	43.1	33.8	29.2	Netherlands	80.6	81.5	81.9	82.4	82.6
Czech Rep.	78.8	59.0	49.1	36.4	28.9	Norway	66.4	61.2	59.3	50.2	42.7
Denmark	**119.6**	**90.4**	**75.8**	**61.3**	**57.1**	Sweden	79.1	66.6	62.1	64.7	66.3
Finland	71.3	63.4	63.4	63.4	63.4	United Kingdom	53.4	37.8	30.8	22.6	17.0
France	63.8	51.2	51.2	46.9	44.7	United States	55.2	45.8	41.2	36.5	32.1
Germany	39.9	39.9	39.9	39.9	30.0	OECD average	73.0	62.7	58.7	53.7	49.2

1. The calculations include all mandatory public and private pension schemes and voluntary schemes with coverage of at least 90% of the employees (including Denmark, the Netherlands and Sweden). For Denmark, the calculations include the basic and targeted elements of the public pension, the ATP, the SP and a 45 year history of contributions to an occupational pension at a contribution rate of 10.8%.

Source: OECD (2007).

Figure 6.4. **Illustrative calculations of components of the pension level and replacement rate**[1]



StatLink http://dx.doi.org/10.1787/264024122834

1. The horizontal axis is individual earnings as a proportion of the earnings of an "average worker". In Panel A, the vertical axis shows the level of pension income as a per cent of economy-wide average earnings. In Panel B, the vertical axis shows the pension level as a per cent of the individual's earnings in work.

Source: OECD (2007).

Given the importance of private defined contribution pension schemes, periods out of the labour market can have a significant effect on pension income.[5] Women may have lower replacement rates since they tend to have lower incomes on average, work fewer hours and have more breaks from work. Partly offsetting this, in general, women have higher life expectancy and therefore receive public pension benefits for a longer period than men and benefit from the use of unisex life tables in determining pension annuities. In addition, women receiving maternity benefits are required to contribute to the ATP scheme and, in a number of pension schemes, pension contributions are still paid during periods of maternity (and paternity) leave. Self employed people may make lower pension contributions than employed people since they are not part of the institutional structure for occupational pension schemes, but they may also be saving through accumulating capital in their business. Policy changes were introduced in 2004 to make it easier for self employed people to change the amount of pension contributions as business income changes (Government, 2005). Recipients of unemployment benefits and other social benefits are required to contribute to the ATP scheme, although the contribution is relatively low, around 3.5% of the transfer income. The SAP scheme was also specifically introduced in 2003 to supplement the pension contributions of people on the disability pension (*førtidspension*), acknowledging the risk of relatively low pension income since people can move onto disability pension at a relatively young age and stay on it for the rest of their working-age lives.

People on public welfare benefits face a pension replacement rate that is significantly below the replacement rate faced by a worker earning half average earnings in Denmark, but their gross replacement rates are close to the OECD average for a worker earning half average earnings.[6]

The importance of the occupational schemes in the Danish pension system suggests that labour market policies are the best way to raise pension savings for people with weak labour market attachment. For example, labour market programmes could focus more on women in the late working age years (say 55 to 64) who currently have lower participation rates than men of the same age, compounding the loss of pension accumulation that may have resulted from their absence from the workforce in child bearing years (Frericks *et al.*, 2006). Policies to move more people from unemployment or social assistance into work are discussed extensively in Chapter 3. Alternatively (or as well), social benefit recipients could be obliged to contribute more to a pension fund than is currently required to increase their retirement income (they currently have the option of making voluntary contributions). Making contributions during working age years would allow the individual to benefit from compound interest (that is, the accumulation of interest on interest that occurs in investments where the capital is not drawn down for a long period) and provide a supplement to the public pension in retirement. However, contributions would have to come either from their existing benefits, in which case their immediate standard of living may be lowered, or from the government, in which case the overall benefit would be raised. The latter could reduce the incentive to move off benefits and into work. Also, people who move between work and income support from time to time may be able to save enough during periods in work to allow for short periods of reduced pension contributions, although this requires a degree of flexibility in the structure of pension contributions.

If the pension system develops as outlined in Table 6.3 and Figure 6.4, in the future people with below average earnings during working years might expect to have very high replacement rates by international standards. In addition, these calculations do not take

into account the value of other cash and non-cash benefits that are provided to pensioners, such as housing, home help, heating and health allowances. The expected high replacement rates suggest that some of these special benefits afforded to pensioners could be phased-out in the long run, as recommended by the Welfare Commission (Welfare Commission, 2006).

Flexibility and market openness

A well-functioning pension savings system must be sufficiently flexible to suit the needs of different people. Market openness could facilitate this by allowing competing pension institutions to offer alternative schemes. The changes following the recent EU ruling on the tax treatment of foreign pension schemes set the scene for more foreign entry which could, over time, become a constructive force enhancing flexibility and choice in the pension system (Box 6.2). Yet a number of features of the pension system still limit flexibility and, as the system matures, it is timely to ask if they are all warranted. To assess that question, the following aspects should be considered:

- Choice of savings profile – the share of gross income to save and how that could vary over time;
- Choice of pension payments profile and insurance coverage – whether pension income should be in the form of a lump sum, an annuity, or a fixed-period annuity; whether

Box 6.2. **Response to EU ruling on taxation of contributions to foreign pension funds**

The European Court of Justice (ECJ) ruled in January 2007 that Denmark had failed to fulfil its European Union obligations by only granting tax deductions and tax exemptions for pension institutions established in Denmark. A political agreement was reached in late June 2007 on how to bring tax law into compliance with the ECJ ruling. The current tax model will be maintained, with the main elements of the agreement being as follows:

- From January 2008, pension savings made with financial institutions in other EU member states will be given the same tax treatment as Danish funds, provided that the institution is recognised in its home country, satisfies the general requirement on solvency that applies to Danish pension savings institutions and that it commits to inform Danish tax authorities, to pay pension returns tax and to withhold taxes when making payments to pension savers.
- To facilitate the opening to foreign pension savings institutions, the focus of taxation will be shifted from the pension institution towards the individual. For existing Danish pension schemes, this will take effect from January 2009. This has a number of technical implications. It creates an issue with undistributed bonus entitlements, which will be dealt with by imposing a slightly higher tax rate on earnings from this source (16.5%) than earnings from other sources (15%). Another implication is that the current tax exemption for pension institutions' investment in rental properties and indexed bonds will be ended.
- At the same time, Denmark will seek renegotiation of the bilateral tax agreement with France and Spain. This is not directly related to the ECJ ruling, but the issue has been raised in addressing international aspects of pension taxation.

Source: European Court of Justice (2007).

there should be elements of insurance, such as against disability or provisions for spouse and children in case of premature death;

- Choice of investment strategy – how much to invest in high-risk *versus* low-risk assets; and
- Choice of fund or provider – selecting the institution managing the pension savings.

The occupational pension schemes have gradually become more flexible. The basic setup remains: collective agreements settle not only the contribution rates for employers and employees, but typically also require that the savings are made in the pension fund established by the relevant union. However, occupational pension funds are increasingly allowing members to choose among alternative investment allocation strategies. In particular, many pension funds allow members to choose among alternative pension payment profiles and types of supplementary insurance coverage (Ministry of Economic and Business Affairs, 2007). Concerning the mandatory schemes, a wider set of choices relating to investment and management has been introduced for SP accounts, and LD members are now allowed to move their assets to another fund altogether.

Choice of savings profile

Effectively, if pension savings through a collectively-agreed occupational pension scheme do not meet an individual's preferences, adaptation takes place via voluntary individual pension schemes established in addition to the occupational schemes and via other savings held outside the pension system. In this respect, general financial market innovations have helped by making it easier to borrow and invest. For example, deferred amortisation loans make it easier for homeowners to accommodate undesired contribution or pension payment profiles by adjusting mortgage repayments over time. Tenants, however, have less flexibility.[7] For many, flexibility comes at the cost of increasing the complexity and transaction costs associated with pension arrangements. Only the relatively small segment of employees having individually agreed occupational pension schemes, typically private-sector executives, can achieve substantial flexibility without having to combine multiple schemes. Some union-established funds allow their members to make additional contributions, but not all do. Developing flexibility in terms of the time profile of savings contributions and pension payments might therefore be a priority for the occupational pension system in general.

Choice of insurance coverage

Increasing choice over insurance coverage would allow a closer match to individuals' insurance preferences. Some people may be over-insured with the current arrangements. For example, people with no dependents might prefer not to have life insurance but rather have higher take-home pay and consumption during their working years. The current occupational pension schemes avoid the costs associated with collecting the information required to price each individual's insurance contract based on their unique circumstances and preferences, but at the expense of some members effectively paying for a greater level of insurance coverage than they want. It is therefore not surprising that the most popular element of choice is whether or not to have insurance coverage for a spouse: it is offered by two thirds of the pension funds, and about a third of their members make use of the possibility to opt out of spouse coverage (Ministry of Economic and Business Affairs, 2007). Half of the pension funds also allow members a choice with respect to disability insurance coverage, but that could have more complicated effects. By bundling insurance products,

such as life and disability insurance, occupational pension schemes offer the same insurance policies to all members, regardless of their risk profile. Persons with health problems have a higher risk of disability before reaching normal retirement age, but that may be compensated by the likelihood that they would die earlier than others and thereby collect less pension payments. In this sense, occupational pension funds entail a "solidarity" element between members of the community (Danish Insurance Association, 2004). Nevertheless, it would seem advantageous to further develop insurance coverage flexibility in areas where there is not a solidarity concern. For example, the choice of whether or not to have insurance coverage for a spouse and children could be extended to all pension funds.

Choice of investment strategy

Investment choice allows the asset portfolio to be tailored to suit the individuals' preferences over risk and return. For example, it is natural to have a portfolio composition with higher risk and higher return when the individual is young, but then shift towards a portfolio that has lower risk and more stable cash flows when approaching retirement age (Whitehouse, 2003). Moreover, the optimal risk profile taken in pension schemes also depends on what other assets and liabilities the person and family hold outside their pension schemes, such as owner-occupied housing. For a couple, which has normal pension savings from full-time employment at average earnings, the value of an owner-occupied house can easily vary from 15% to 45% of their total pension wealth at the time of retirement.[8]

However, most people prefer to delegate the choice of investment strategy to professional fund managers. Indeed, merely ¼ per cent of the members of occupational pension funds have taken up the increased possibilities for choice of investment strategy made available in recent years (Ministry of Economic and Business Affairs, 2007). There is also a risk that lack of financial literacy might lead some to mismanage their assets, take excessive (or too little) risk and end up with inadequate pension savings. Experience with investment choice in the LD showed that those members who exercised their right to decide on the asset allocation of part of their portfolio achieved lower returns over the 5 year period to 2004 than investors who had retained the default portfolio chosen by the LD administrators (LD, 2004). This may be because investors tended to take a backward-looking approach, rather than adapting to changes in the market in real time (it should be noted that the LD investors that chose part of their own portfolio did better than the default portfolio over 2005 and 2006). Too many choices can also be a problem. In Sweden, the Premium Pension System has a central government-managed administration, but individuals can choose to put together a diversified portfolio from a choice of around 700 funds. The large number of funds has tended to have an immobilising effect, as individuals are overwhelmed by the range of choice so tend to opt for the default government-managed fund. When the system was first introduced, 68% of participants chose their portfolios, but this proportion fell initially to 20% and then to 10% over a number of years (Sunden, 2006).

Choice of fund or provider

Allowing employees to choose among pension funds for their collectively agreed contributions, as also recommended in the 2005 *Survey* (OECD, 2005), would introduce an element of contestability. Even if only a small number of members choose to move their

pension assets, this might still encourage funds to improve services. However, transaction costs might rise. In fact, administrative costs are higher in the market-based funds than in the non-market funds as they are currently operated (Annex 6.A2). This may be because the market-based pension funds are the element currently giving flexibility and therefore clients often come with wishes for tailored products that quite naturally raise costs compared to a standardised offer. But it could also reflect advertising expenses or the costs of transfers between funds.

Allowing choice among pension funds would, in some cases, ease labour mobility. If changing job between professional areas, employees typically end up with multiple pension accounts. Pension scheme members can transfer their savings between funds when changing profession, but this generally entails a fee charged by the fund they leave. It is encouraging that these fees have fallen considerably over recent years. In 2003, the cost of moving a pension account worth, for example, € 80 000 could be as high as 4.2% of the account value, *i.e.* € 3 400, but today the fee would be a maximum of 1.5% of the account value. Moreover, many occupational pension schemes require new employees to wait for a period before commencing pension contributions. Waiting periods are not regulated and vary from fund to fund. In the private sector, the waiting period is typically 6-9 months, although transferability of waiting times means that this is usually only an issue when first entering the labour market. In the public sector, there are a number of employee groups that do not have a waiting period, while others face waiting periods of one to four years and these are not necessarily transferable (Government, 2005).

Another issue related to choice of fund is that pension funds may hold more liquid and less risky assets to cover the likely payouts associated with members moving between funds. This would lead to lower returns since pension funds normally take a longer time horizon, and therefore can tolerate higher short-term risk. This problem could be mitigated by allowing funds to suspend transfers if there is likely to be a financial impact on the fund, for example, if liquidating assets would crystallise losses (Commonwealth of Australia, 2003). A related issue is that a significant (although falling) proportion of pensions have a guaranteed return, so the individual does not bear the interest rate risk. Guaranteed return products create a problem for portability of assets between pension funds, since undistributed profits or "collective bonus reserves" are not transferred between funds (International Monetary Fund, 2007b).

On balance, occupational pensions based on collective agreements provide a solid backbone to the pension system. The challenge is that they do not become unnecessarily inflexible. Allowing contestability will most likely not entail large reallocations given the mature state of the system.

Consumer information

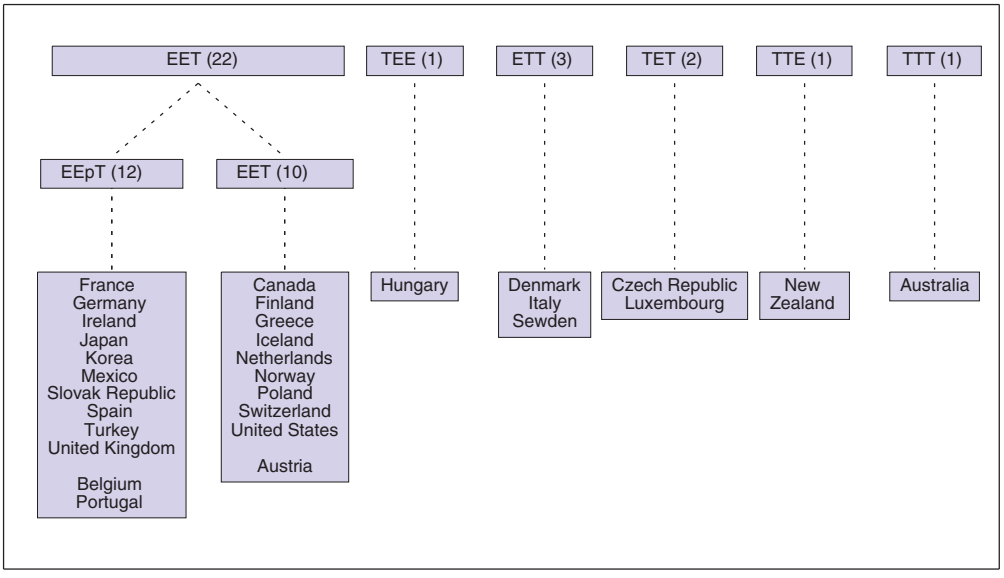
Choice of fund and choice of investment rely on consumers having enough information to adequately assess the merits of alternative service providers or investment strategies. Recent government initiatives in this area include the Portal for Pensions, the Money and Pensions Panel and the Pension Market Council.[9] In addition to these government initiatives, the Danish Insurance Association is also implementing a range of transparency measures, providing better information to customers (Danish Insurance Association, 2006).

Taxation of pensions and other capital income

In November 2007, the Danish government announced the establishment of a Tax Commission to make recommendations on reforms to income taxation. While the Commission will focus on income from work, notably regarding marginal tax rates, this will inevitably lead to some consideration of capital income taxation, since the tax rates on capital income are linked to those on labour income. Notable elements of the capital tax system are the differences between taxation of savings within and outside the pension system, and the difference between taxation of positive and negative capital income. The new Tax Commission provides an opportunity to assess whether these differences remain appropriate.

As in most other OECD countries, contributions to pension savings are exempt from income taxation, while pension benefits are taxed as income when they are paid out to the retirees. In addition, investment returns are taxed as they accrue inside the pension funds. This latter feature is economically sound, although it is shared with only a few other OECD countries (Figure 6.5). As a slight departure from the ETT structure (where pension contributions are not taxed, but pension fund earnings and pension scheme benefits are taxed), the 8% labour market contribution is paid also on pension contributions, but not when pension scheme benefits are paid out to retirees. Aside from this, contributions for annuity pensions are fully deductible in the tax base for personal income taxation, meaning that the value of tax deductibility is equal to the marginal tax rate that the person is subject to. Similarly, benefits paid out from annuity pensions are subject to personal income taxation, and thereby at a marginal rate determined by the total of pension

Figure 6.5. **Country grouping according to the tax treatment of private pensions**[1]



1. Abbreviations are E (exempt), pT (partially taxed, only in the EET system), T (taxed). The three stages are contributions, fund earnings and benefits or income in retirement. For example, an EET system taxes benefits but not contributions or fund earnings. The employee's contributions are partially exempt or receive tax credits in Austria, Belgium and Portugal. Mexico and the Czech Republic provide a state subsidy to contributions.

Source: Yoo and De Serres (2005).

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benefits and other income the retiree might have. For capital pensions, which are pensions that will be paid out as a lump sum, the rules are slightly different, as there is a fixed Kroner limit on the amount of contributions that can be claimed as a deduction from income. Moreover, contributions cannot be deducted from the upper layer of the progression steps in the income tax schedule, meaning that high-income earners pay 15% top tax on their contributions to capital pensions. This partial deductibility recognises that lump-sum payments from capital pensions are not taxed on a progressive scale, but at a flat rate of 40%. Both annuity and capital pension savings can be withdrawn at any time, but they are subject to a tax of 60% if withdrawn before the individual is 60 years old; this age threshold will grow in line with that for the voluntary early retirement pension from 2019 onwards (Box 6.1).

Overall, the effective taxation of private pensions is higher than in other OECD countries, but it is lower than for savings held outside pension schemes (Box 6.3 and Figure 6.6). This results from the combination of two factors. First, the tax rates on capital income outside pension funds are significantly higher than the tax rates on pension fund earnings (Table 6.4). Second, because of the progressive income tax scale, some groups face higher marginal tax rates during working life than during retirement, and deferring taxation therefore implies a tax advantage. However, means testing of the pensions

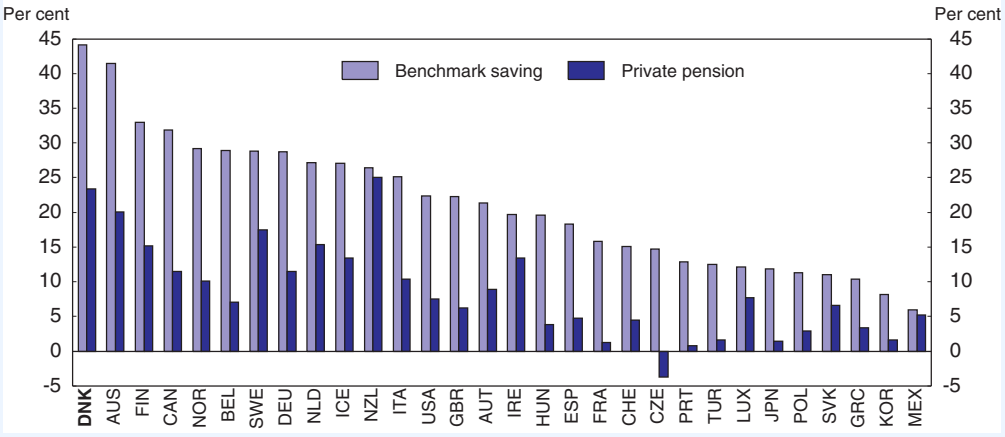
Box 6.3. **Effective tax rates on private capital pension and benchmark savings**

A recent OECD study considered the tax treatment of private pension savings in order to estimate the lost revenue from concessional pension taxation (Yoo and de Serres, 2005). For the purposes of that analysis, the study compares the effective tax rates on private pension savings and a benchmark portfolio of assets held outside the pension system. The calculations consider 9 five-year age cohorts from 19-24 to 60-64 who are assumed to make an initial one-off contribution to either a pension fund or a portfolio of assets comprising bank deposits, shares and bonds. For the benchmark portfolio, the initial contribution is reduced by the amount of income tax that would have to be paid on the income before it could be invested. Since the pension contribution is tax deductible, the initial asset is the full amount of the contribution. The initial investment then grows in line with an assumed fund earnings rate (the same for both the benchmark portfolio and the pension fund) less the tax payable. In the case of Denmark, the pension fund tax rate is 15% while for the benchmark portfolio the tax rate is the average marginal income tax rate that applies to that age group. Since earnings tend to rise with age, the marginal tax rate is higher for the middle-aged cohorts than the younger ones. At age 65, the asset is assumed to be withdrawn as a lump sum and invested in an annuity, but the effective tax rate calculation does not consider what happens after this. It does, however, include the tax paid on capital pension payouts. Both the fund earnings and the tax paid are then discounted to present value and the present value of the total taxes paid is divided by the present value of the asset and earnings to give the effective tax rate shown in Figure 6.6. The younger cohorts have a lower present value of taxes paid, since the lump sum tax on withdrawal is further into the future and so is reduced more in the present value calculation. The figure shows the average of the effective tax rates over the 9 age cohorts. The figure slightly underestimates the effective tax rate on pensions since the calculation ignores the fact that, when calculating the liability for the top tax, contributions to capital pension funds are not deductible and so the tax payable by several of the older cohorts is understated.

Box 6.3. **Effective tax rates on private capital pension and benchmark savings** *(cont.)*

Figure 6.6. **Effective tax rates on private pension and benchmark savings**

Age group average



StatLink http://dx.doi.org/10.1787/264087270212

Source: Yoo and De Serres (2005).

While Figure 6.6 is calculated using a lump sum or capital pension, annuity pensions are becoming more common in Denmark. When comparing annuity and capital pensions from the time of retirement on, it is generally the case that annuity pensions generate lower tax liabilities than capital pensions. A capital pension taxes the total pension asset on retirement at 40% and then subsequently the individual is liable for income tax on positive capital income from investing the remaining pension asset – that is, the individual pays income tax rates similar to those applying to labour income on the investment earnings. However, drawing down the asset after it has been invested outside the pension system is not taxed. For an annuity pension, the assets remain in the fund and so investment earnings continue to be taxed at 15%. The payout of the asset as an annuity is taxed at the marginal income tax rates applying to labour income (except the labour market contribution). For all but very high income earners, the extra investment earnings that result from the fact that a larger asset is left in the fund by avoiding the 40% capital tax, combined with the 15% on fund earnings, more than offsets the effect of paying income tax on pension payouts.

supplement and the supplementary pension benefits can (and often will) counterbalance this. Figure 6.6 is based on contributions to a capital pension fund and therefore does not completely capture all of these effects. In comparison to Sweden, which has virtually the same tax treatment of pension accumulation, Denmark has higher effective tax rates on both pensions and other savings due to higher capital income tax rates applying to capital income outside pension funds and higher income tax rates applying in retirement.

There are arguments in favour of this differential tax treatment. To some extent, the concession is compensation for the fact that private pension income is taken into account in the means test for some public welfare benefits (the pension supplement, personal, heating, health, and rent allowances). In addition, it has been argued that tax incentives

Table 6.4. **Nominal and real tax rates for capital income**

Per cent

				Interest rate and inflation as 1995-99 average	Benchmark	Interest rate and inflation as 2006-07 average
			Nominal interest rate[1]	5.94	5.00	4.21
			Inflation	2.15	2.00	1.80
			Real interest rate[2]	3.71	2.94	2.37
	Tax base 2007 (DKK billion)	Nominal tax rate 2008			Real tax rate[3]	
Positive net capital income[4]						
– if paying top tax	12	59.7		95.6	101.5	106.2
– if paying bottom tax	22	39.0		62.4	66.3	69.4
Negative net capital income[5]	76	33.5		53.6	56.9	59.6
Shares – high rate[6]	17	45.0		72.0	76.5	80.0
Shares – low rate	30	28.0		44.8	47.6	49.8
Pension savings	117	15.0		24.0	25.5	26.7

1. The nominal interest rate is based on a 10-year 5% mortgage bond for the 1995-99 period and a 10-year 3% mortgage bond for the 2006-07 period.
2. The real interest rate is calculated as (1+nominal interest rate)/(1+inflation rate)-1.
3. The real tax rate is the tax paid on the nominal return on the asset as a proportion of the real return, calculated as (nominal interest rate*tax rate)/(real interest rate).
4. For taxpayers whose income from capital, held outside pension funds and excluding shares, exceeds their expenditure related to capital (*e.g.* interest paid on loans): "if paying bottom tax" refers to tax payers who have positive net capital income and are liable to pay the bottom progression step of the income tax scale; "if paying top tax" refers to taxpayers who have positive net capital income and whose total income puts them in the top progression step of the income tax scale. Hence, taxpayers in the "if paying top tax" group are also included in the "if paying bottom tax" group and so the tax base figures are not additive.
5. For taxpayers whose capital expenditure (*e.g* interest paid) exceeds their capital income (from assets held outside pension funds and excluding shares).
6. From 2008, the upper bracket for share income is split in two: for income from shares in the range €6 200 – €13 400 the rate remains 43%, but above that a rate of 45% was introduced. The 2007 tax base is for the new upper and middle income brackets combined.

Source: OECD (2006); Ministry of Taxation; Statistics Denmark.

are needed to encourage workers to extend their savings horizon. However, it is not clear that the tax concession on pension savings increases overall savings. Studies in other countries suggest that tax favoured savings vehicles only have a minor impact on overall savings, but are effective at channelling savings into retirement incomes (Attansio *et al*., 2004 and Borsch-Supan, 2004). If the objective of tax policy is to promote savings, low uniform tax rates on all forms of private saving are probably most effective (Sørensen, 2001). For a large part of the labour force, pension savings are effectively compulsory, so it is difficult to tell whether the observed increase in pension savings is driven by the tax treatment or the unique institutional framework in Denmark.

Meanwhile, taxes on capital income outside the pension system are probably too high. Basing taxation on nominal capital income simplifies the system, but implies that investors pay tax also on the part of the return that is not genuine income but merely a compensation for the reduction in the assets' real value caused by inflation. To adjust for this, nominal tax rates have to be rather low in order to generate appropriate real tax rates (Sørensen, 2001). At present, this is not the case and real tax rates are over 100% for some assets (Table 6.4). Taxing different forms of savings at the same, or similar, rates reduces the likelihood of distortions in asset allocation due to tax arbitrage.[10] Overall, lower taxes

on capital income would be likely to reduce distortions in asset allocation and the amount of resources devoted to finding ways to minimise tax liabilities.

Neutrality of the capital tax system would also be improved by raising property taxes. As pointed out in the previous *Survey*, a real estate tax rate of about 1½ per cent would be required to achieve neutrality with respect to the interest deductibility of negative capital income (discussed further below). Currently, the effective real estate tax rate is merely around ½ per cent (OECD, 2006). While the recent developments in the housing market suggest that caution should be observed regarding the timing and extent of changes, the concessional tax treatment of housing remains an issue.

As mentioned previously, one element of the concessional tax treatment of pensions is that pensioners with less than 100% replacement rates may face lower marginal tax rates on retirement. Under the new marginal income tax brackets that apply from 2009, retirement could mean going from paying a marginal income tax rate of 59.7% to a marginal tax rate of 39.0%, by moving from the top tax bracket to the bottom tax bracket (since the middle and top tax brackets will be aligned) and no longer paying the labour market contribution. This is an additional argument for reducing the high marginal tax rate of the upper the income tax bracket (Chapter 4).

Tax treatment of negative capital income outside pension schemes

The Danish tax system allows interest expenses to be deducted from income when calculating income tax liability. The fact that negative capital income is not deductible for the purposes of central government income taxes means that the value of the deduction is limited to about 33.5% of income, while the nominal tax rate on positive capital income can be as much as 59.7%.[11] This means that there is generally no tax advantage to be gained by borrowing to invest, except through the pension system where fund earnings are taxed at 15%.

Financial innovation may increase the likelihood of geared pension investments. Mortgage liberalisation has led to increased use of deferred amortisation loans (*pauselån*), as discussed in Chapter 1, effectively allowing consumers to borrow at a tax-subsidised rate and invest in pension funds where returns are taxed at a concessional rate.[12] There is no readily available data on the extent to which individuals are borrowing and effectively channelling the funds into pension schemes, but there are several issues associated with a significant trend in this direction. First, increasing geared investment in pensions may erode the capital tax base over time because pension funds are likely to invest in all the same assets that an individual might but will be faced with lower tax liabilities. Second, there is a potential loss of productive resources in that people have to spend time "working out the system" in order to benefit. Third, there is an important equity consideration, since the people that are more likely to be able to spend the time and resources finding beneficial tax strategies are more likely to have higher incomes.

The main concern with reducing the value of the tax deductibility of negative capital income is the impact on people who have recently taken on large debts under the current tax regime. For example, a young family may have budgeted to be able to afford a mortgage of a certain size based on the existing negative capital income tax rates and reducing the value of the deductibility of negative capital income may put at risk their ability to service their loan. Also, reducing the tax value of negative capital income might be immediately capitalised through a reduction in the growth of assets purchased with borrowed funds. This is most likely to affect house price growth, since a large share of many people's

liabilities is mortgage debt. Changes in housing-related taxation should therefore be introduced with due attention to the economy's cyclical position. One option in this regard is phasing in tax changes over an extended period of time.

Conclusions

The Danish pension system is well developed and has led to pension assets, replacement rates and wealth projections that are amongst the highest in the OECD. Since the system has matured, it is an opportune time to consider how it will develop going forward. Minor changes to the system may make it more robust (Box 6.4). The gains from the occupational system will be more widely shared if more people have stable labour market attachment. At the same time, the projected high replacement rates suggest a reduced need for some of the special benefits for pensioners in the long run. The desire for greater flexibility and choice in pension arrangements is natural as the system develops and people come to understand it better. Continuing focus on these issues should enhance this generally well-designed system without undermining the significant and valuable role played by social partners.

The main problem is associated with taxation of capital income outside pension funds. It is not clear why in some cases normal real returns on investments should be taxed at rates that approach or even exceed 100%. Such real tax rates, and the gap between the tax treatment of negative capital income (typically interest expenditure) *versus* taxation of pension schemes, create distortions by complicating individual savings allocation and encouraging tax planning. Starting from this situation, simplification of capital taxation outside pension funds, including lower effective deductibility of interest expenditure, could even increase revenues (Ministry of Taxation, 2007), and it could thereby help finance tax cuts to stimulate labour supply (Chapter 4).

Box 6.4. **Recommendations regarding pension savings and capital taxation**

Pension coverage and adequacy

- Continue to focus on labour market policies to increase employment of people marginally attached to the labour market, since this will also lead to increased pension income adequacy (Chapter 3).
- Consider, in the long run, phasing out special benefits that are provided to pensioners in addition to the public pension.

Flexibility and market openness

- Continue to enhance flexibility and individual choice in the occupational pension system, particularly in terms of the time profile of pension contributions and the level and type of insurance coverage included in the pension contract. Allowing employees to choose the fund in which their collectively-agreed pension contribution are placed might also be considered – it would most likely not entail large reallocations given the mature state of the system, but it would create contestability.
- Continue public education campaigns on financial literacy and consumer information on pension products.

Tax treatment of capital income

- Consider reducing the tax rates on capital income outside the pension system, including the tax value of negative capital income (typically interest expenditure).

Notes

1. The basic pension was DKK 59 424 per year in 2007, approximately 18% of average earnings. The pension supplement was DKK 59 820 per year for single pensioners and about half that amount for married or co-habiting pensioners. In addition, the supplementary pension benefit was DKK 7 600, paid once a year. Pensions, like other transfer payments, are indexed annually in line with wages in the private sector, but discounted by up to 0.3 percentage points. The money saved by discounting the indexation of transfer payments is contributed to a pool used to finance measures in health, social and labour market policy.

2. In Figure 6.3, Panel B, the calculations standardise for household size, meaning that the disposable income of a pensioner is scaled down relative to a working age person if they have no dependents or live alone. The modest fall in the series for people with tertiary education reflects an anticipated increase in the proportion of women in this category, since they have a higher life expectancy than men and so a higher probability of living alone.

3. The gross replacement rate is pension income as a proportion of income during working years. The net replacement rate is pension income as a proportion of income during working years taking account of taxes paid both during working years and in retirement.

4. It should also be noted that the income tests on the basic pension and pension supplement are different for married or cohabitating couples, while the figures on gross and net pension wealth and replacement rates are for a single individual.

5. Starting work at 25 rather than 20 reduces gross replacement rates by around 5 percentage points for all income levels, although the loss is slightly higher for the high income earners as private pensions are a larger proportion of their pension income (OECD, 2007). Periods of absence later in working life have a smaller impact, since they entail a smaller loss of compound interest. However, multiple periods of absence from the labour market will lead to even lower replacement rates in retirement.

6. It is possible for public welfare benefit recipients to be receiving something in the order of 50% of average earnings. Given that the public pension entitlement (basic pension, pension supplement and supplement pension benefit) amounts to about 37% of average earnings for a single person, an individual moving from social assistance benefits to public pension benefits on reaching retirement age would face a replacement rate of around 75%. Unemployment insurance benefits can be up to 90% of pre-unemployment income, up to a maximum of DKK 683 per day or around DKK 178 000 (in 2007) per year (about 50% of average earnings). For maternity leave, salaried employees are entitled to 50% of their normal wages from four weeks prior to giving birth and up to 14 weeks after if not covered by a contract with better terms. Wage earners who are not entitled to wages during illness receive sickness benefits (*sygedagpenge*) from their employer for the first two weeks and then from the local authority. The sickness benefit maximum level is similar to maximum for unemployment benefits (although the benefit payments will stop if they have been paid for 52 weeks over an 18- month period) (Ministry of Science, Technology and Innovation, 2007).

7. If a homeowner saves by repaying debt and accumulating mortgage equity, the returns in the form saved interest payments are taxed at only 33%, being the tax rate applied if having negative net capital income. Oppositely, if a tenant saves by accumulating interest-bearing assets outside pension funds, the returns are taxed by much more as shown in Table 6.5.

8. With a full-time average earnings history, each have pension wealth of 3.9 million. In the capital region, average house prices per square meter were DKK 24 000 in the third quarter of 2007 (Danish Mortgage Credit Association, 2007) corresponding to DKK 3.4 million for a typical house of 140 square meters. In the region on Northern Jutland, a similar house is valued DKK 1.3 million. That home equity matters for desired risk profile can be seen from the fact that strong house price growth during recent years has led a number of homeowners to take out additional mortgage debt to finance investments in stocks and other assets. By creating a mirror position to the bonds they hold in occupational pensions funds, such arrangements are effectively a way of altering portfolio compositions, but in a way that incurs more transaction costs than if it could be done inside pension schemes.

9. Information in Danish about the Pension Market Council can be found at *www.ftnet.dk/sw1238.asp*.

10. It has also been argued, based on the idea that the efficiency impact of small tax changes is equal to the change in net government revenue resulting from behavioural responses, that reductions in capital income taxes provide greater efficiency benefits than cuts to labour income taxes (apart from reductions in the top tax bracket), taking into account the impact of lower capital income taxes on household savings, business investment, residential investment and portfolio composition (Frederiksen, 2003).

11. Positive capital income (for example interest earned on bonds) is added to wage and other income for the purposes of calculating municipal and church tax (which average 25% across municipalities), the national health contribution (which is 8%) and state income taxes. Negative capital income (for example, interest paid on mortgages) is subtracted from wage and other income when calculating municipal and church taxes, and the national health contribution (Ministry of Taxation, 2007a) but not state income taxes.

12. For example, consider a 55 year old who has been working, earning DKK 400 000 per year and contributing to a pension scheme at the rate of 4% of his income since he was 25 and receiving contributions from his employer of 8% of his income. At 55, he can choose to continue this strategy or borrow DKK 1.5 million to upgrade his house. If the borrows, he can take an interest–only loan, deferring any capital repayment for 10 years (that is, until he retires), and invest the amount he would have repaid in his pension fund (1/30th of the loan principal). Since he receives an income tax deduction from investing in his pension fund, it is assumed that the value of this deduction is also invested in the pension fund. Further, it is assumed that the pension fund earns the same rate of return as the interest cost of the loan. Upon retirement, he converts his pension savings into an annuity that pays the same fixed amount each year for 20 years. He repays the principal of the loan over the same period. The borrowing strategy raises pre-tax income by about one-fifth. Total tax paid in the borrowing strategy is higher, but it is much more heavily distributed to the post-retirement years. This means that the net present value of taxes paid by the individual is over DKK 50 000 lower in the borrowing strategy. Presumably, the individual would be required to share this gain with the financial institution that provided the loan and so financial institutions have an incentive to promote such strategies. In addition, the individual enjoys a better house, although this would probably increase his liability for housing taxation (which has not been taken into account in the above calculation). The benefit of this strategy in terms of reduced tax liability is even greater if the individual is investing in a capital pension, since the loan repayments can be offset against the capital income in retirement for capital income tax purposes. However, the income gain is not as large in this scenario since the 40% tax on initial pension payout reduces the interest accrual after retirement.

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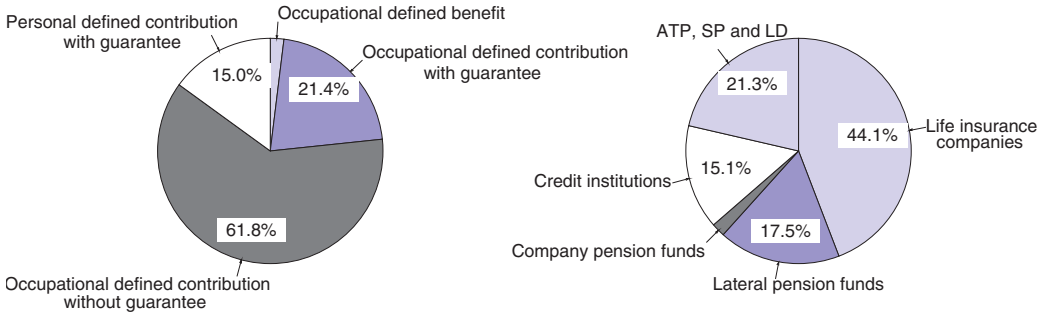
ANNEX 6.A1

What do operating costs say about pension funds' efficiency?

Total assets in the pension sector were around DKK 2 291 billion or 140% of GDP in 2006 up from about DKK 515 billion or 62% of GDP in 1990 (Stougaard, 2001). This is the highest proportion of GDP for OECD countries for which data are available. Over 80% of pensions assets are held in occupational schemes, including the ATP, SP and LD (Figure 6.A1.1). Occupational schemes are provided by life insurance companies, general or "lateral" pension funds, company pension funds and credit institutions. "Lateral pension funds" are pension fund that are part of a collective agreement covering a number of firms. This contrasts to "company pension funds" which have been established under a collective agreement covering just one firm. Individual pension schemes are provided by life insurance companies and credit institutions. In 2005, there were 34 life insurance companies, 29 lateral pension funds and 44 company pension funds. The total number of providers in each of the above categories has fallen over the last 5 years (although the number of general pension funds has only fallen by 2). The top pension funds/life insurance companies hold 60% of the market (gross premiums as a per cent of total) and the top 10 hold about 80% of the market. The 44 company pension funds hold only 1.9% of

Figure 6.A1.1. **Pensions assets, 2006**



StatLink http://dx.doi.org/10.1787/264105044488

Source: OECD Global Pension Statistics Database and Danish Financial Supervisory Authority.

total pension assets, but three of these (related to the telecoms operator, TDC) account for more than half of total company pension fund assets.

There are few international comparative studies of pension fund costs. A set of papers (for an example, see Whitehouse, 2003) calculate net present value type models of the impact of fees on pension accumulation for a range of countries (which do not include Denmark). The models incorporate fees on contributions, management charges on fund assets, and entry and exit charges, in order to calculate a "charge ratio". This is defined as one minus the ratio of accumulated pension asset net of charges to the accumulated pension asset without charges. The Danish Financial Supervisory Authority publishes an "expense ratio", which is the ratio of administrative charges to pension fund contributions. This has averaged a little below 6% over the last 5 years for pension funds and life insurance companies. If this were the only type of cost incurred by pension funds, it would be comparable to a charge ratio of the same amount, since a contribution charge simply reduces the final pension accumulation by the same proportion as the charge. On that basis, Danish pension funds appear to have low costs, compared to the charge ratios quoted for other countries. However, the expense ratio includes only administrative expenses and does not include expenses related to investment of pension assets. These expenses are simply extracted from the return on assets, so pension scheme members receive a rate of return less investment expenses. Hence, the expense ratio underestimates pension funds costs, compared to the figures quoted in Whitehouse (2003).

At present, the pension schemes that are more likely to be open to competition have higher costs than the schemes that are more closely linked to occupational pension schemes. The Danish Financial Supervisory Authority classifies pension providers into three broad categories – market life insurance companies (which provide pension schemes not linked to a collective agreement so are more likely to be open to competition), and lateral pension funds and non-market life insurance companies (which, in general, provide occupational schemes). Banks and company pension funds have been excluded from the following analysis. Banks are excluded because there is no way to distinguish their pension activities from other banking activities. Company pension funds are excluded because they are a small share of the market, so do not significantly affect the results.

The average expense ratio (operating expenses divided by gross premiums) across these three groups was 5.8% over the period 2002 to 2006. Lateral pension funds averaged 3.1%, non-market life insurance companies averaged 3.9% and market life insurance companies averaged 7.8%. Looking at expenses per policy holder, lateral pension funds have averaged DKK 629 over the last 5 years and non-market life insurance companies averaged DK 603 on average over the last 5 years. Market life insurance companies averaged expenses per policy holder of DKK 1 214 over the same period.

There are a number of factors that may affect the cost structures of pension funds. A higher number of individual benefit payouts falling due in the short term suggests increased administrative costs, since, in general, there is more administration associated with benefit payments than receiving contributions. The size of the fund in terms of assets managed should be negatively related to administrative and asset management costs. Large funds should be able to achieve economies of scale in administration of individual accounts and more sophisticated asset management (including bargaining power in outsourcing negotiations). Investment shares of different asset classes will also affect asset management costs. Some categories of assets, for example real estate, involve higher

transaction costs because they are less liquid and/or transparent markets (Gerber and Weber, 2007). In addition to these drivers, it may be that higher costs are associated with higher investment returns. That is, higher costs may relate to more skilled investment managers or more "active" funds management.

Data on Danish pension funds do not provide clear guidance on the differences in costs between market and non-market pension funds. Market life insurance companies have significantly higher ratios of benefit payments to gross premiums than general pension funds and non-market life insurance companies (an average of 80% over the last five years compared to less than 50% for lateral pension funds and non-market life insurance companies), consistent with higher costs. However, the non-market schemes actually have a lower level of assets than the market based funds, suggesting that economies of scale do not explain the cost differences. In 2006, there were 26 market life insurance companies, which had on average around DKK 28 billion in assets each. There were eight non–market life insurance companies, each holding on average DKK 34 billion in assets. 28 lateral pension funds held an average of DKK 14 billion in assets each. Overall, asset allocations are similar across the three types of pension providers. Table 6.A1.1 shows the asset allocation of lateral pension funds, non-market life insurance companies and market life insurance companies. The main differences are that market based life insurance companies have a lower share of capital investments (shares, etc.) and a higher proportion of bonds. The only feature of market life insurance companies' asset allocation that suggests higher costs is that they make more use of derivatives than the non-market funds. Investment returns between the three different types of pension providers are not markedly different: over the period 2002 to 2006, the return on investments after tax and investment management expenses averaged 7.2% for lateral pension funds, 6.1% for non-market life insurance companies, and 6.4% for market life insurance companies.

Table 6.A1.1. **Portfolio allocation in pension funds, 2006**

Per cent of total investments

		Lateral pension funds	Non-market life insurance companies	Market life insurance companies
Land and buildings, including real-estate companies:		***11.9***	***5.7***	***6.8***
Capital investment:		***34.3***	***30.5***	***22.0***
	Listed Danish shares	5.7	4.0	5.4
	Unlisted Danish capital investment	1.4	0.5	1.3
	Listed foreign capital investment	25.4	22.8	11.9
	Unlisted foreign capital investment	1.5	2.8	2.3
	Other subsidiaries	0.4	0.4	1.1
Bonds:		***50.3***	***52.8***	***64.8***
	Government bonds	18.8	8.8	22.3
	Mortgage bonds	20.4	26.8	26.8
	Indexed bonds	4.5	4.2	8.1
	Corporate bonds investment grade	1.1	8.0	2.8
	Corporate bonds non investment grade and emerging market bonds	5.2	5.0	3.4
	Other bonds	0.3	0.0	1.4
Other:				
	Other financial investment assets	2.4	9.9	3.3
	Derivatives	1.1	1.1	3.1

1. Subtotals do not add due to rounding.
Source: Danish Financial Supervisory Authority.

There is also significant variation in the expense ratios across funds and over time. In the non-market funds (lateral pension funds and non-market life insurance companies), the standard deviation of the expense ratio has been between one and just over two over the last few years, excluding a number of extreme outliers. For market life insurance companies, the standard deviation has been over four, suggesting a wider range of variation in expense ratios in this group. However, both the market and non-market categories have both "expensive" and "cheap" funds.

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