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Foreword

The Nordic way of combining market mechanism and public intervention in organising the economy has received considerable positive attention recently. The Economist used the headline “The next supermodel” for its special report on the Nordic countries in February 2013. This admiration notwithstanding, the Nordics have been hit hard by the global and European crisis. Furthermore, like other developed economies, they face important challenges going forward, stemming from technological change, globalisation and ageing.

This was the backdrop of the “Norwell” research project on the Nordic model. The Research Institute of the Finnish Economy ETLA undertook to coordinate at the request of the Nordic Council of Ministers (NCM). The results of the project are reported in this book.

The overall message is encouraging. Yes, a Nordic Model still exists, even if it perhaps is less unique and less uniform than commonly thought. And yes, the Nordics are challenged in many ways and given the large size of the public sector more seriously in some regards than many other developed economies. To sustain the model, reforms are needed, in different ways and degrees in different Nordic countries. However, the Nordics have also demonstrated a significant capacity to reform and adjust. Their starting points are also in many respects strong. Thus, while difficult times lie ahead for some of the Nordics, there is no reason to believe that the Nordic countries would not prove resilient also in the coming years.

We want to thank all the contributors for their dedication and excellent co-operation. Similarly thanks go to the members of the reference group consisting of the representatives of the Nordic social partner organisations and the Secretariat of the NCM for very good and informal, “Nordic”, co-operation. Finally, we are very grateful for the financial assistance of the Nordic Council of Ministers which made this exercise possible.

Helsinki, 6 April 2014


Tarmo Valkonen


Vesa Vihriälä

Summary

This book takes stock of the Nordic model and discusses the policy challenges from an economic point of view. The book is organised in three parts. Part I analyses the recent performance of the Nordic countries from a comparative and mainly macroeconomic perspective and identifies major challenges. Part II contains concise thematic analyses on competitiveness, pensions and longevity, health care, immigration, school dropouts, young pensioners and taxation. Finally, Part III looks more in depth at the key challenges and discusses the need and options for policy reforms.

Part I shows that the Nordics are not quite as unique or as uniform as often claimed. Many countries post equal or higher standards of living and many have almost equally low income differentials. However, it is still legitimate to talk about the Nordic model. The combinations of high average living standards, low income disparities and low levels of poverty reached by the Nordics are among the best in the world. Furthermore, these outcomes have been obtained through institutions and policy orientations that have distinct Nordic characteristics: flexicurity in the labour markets, large investments in human capital, extensive work-oriented public safety nets financed by high taxes, efficient public sectors including the tax systems by international standards, acceptance of structural change supported by a high degree of trust in the society.

While the macroeconomic performance of the Nordics was very good in the decade prior to the global crisis, the Nordics were not spared from its effects. Iceland and Finland have been hit especially severely, for different reasons. However, the strong starting points with regard to employment and public finances have cushioned the impacts. Unemployment has remained well below the European average and – with the exception of Iceland – drastic policy measures have not been necessary. Yet, the effects of the crisis on employment and public finances have coincided with the strengthening of some secular trends such as the impact of population ageing on labour supply and technical change that destroys non-routine jobs. The question of how the Nordics adjust to these changes in the economic environment has therefore become more pressing.

A slowdown of productivity growth is a problem in the Nordics as in other developed economies. A specific issue for the Nordics is the small

size of the individual economies, which accentuates the challenge of promoting growth-enhancing innovations. Similarly, the pressure on public expenditures remains severe due to the ageing of the population and the combination of the so-called Wagner's law and Baumol's disease, while tax competition puts downward pressure on many tax rates. Policy reforms are needed to address these challenges. However, Part I concludes on a confident note: the high degree of trust in the Nordic societies is a valuable asset in adjusting to any pressures of change. The thematic analyses in Part II provide new insights into a number of interesting developments and policy issues.

Competitiveness: The competitiveness of the Nordic economies has varied substantially over time. Firm-level studies show the importance of creative destruction for productivity growth. The results emphasize on one hand flexibility in the labour market and on the other the need for policies that provide adequate short-term income security for the unemployed, incentivize search for jobs and offer re-education to those with outdated skills.

Pension policy: Many of the fiscal problems due to population ageing could be alleviated by higher retirement ages. It seems, however, that the prospects of smaller pensions do not urge the employees to postpone retirement enough if the choice is voluntary. Policy reforms that link the earliest eligibility ages for old-age pensions to longevity would secure the income level of the pensioners at the same time as they strengthen public finances.

Health and long-term care: The continuous growth of public health and long-term expenditure partly reflects the preferences of the citizens and enhancing technological possibilities to improve welfare. But the trend for rapidly increasing unit costs together with an increasing number of customers due to population ageing sets limits to the capacity of public sectors to fulfil the expectations. Therefore we need at the same time explicit prioritization, more efficiency in public provision, non-ideological choices in the use of private production and increasing cost-sharing in the financing of the services.

Immigration: Integration of European labour markets offers opportunities to alleviate labour-market and fiscal problems caused by population ageing. At the same time, the large cross-country differences in wages and social insurance standards also put pressure on existing welfare state institutions. This may create a need for a tighter link between contributions paid and benefits received for example in unemployment protection.

Young pensioners: An individual level study shows that there is inter-generational transmission of disability pension dependence and school-

to-work transitions entail risky elements. It seems also that the vocational rehabilitation currently in use does not improve the employability and employment of the individuals treated as much as expected.

School drop-outs: The Nordic countries rank among the best in terms of unemployed as a percentage of the youth non-student population. The positive news is also that many of those who have not completed secondary-level education by age 21 will do so later and the difference in labour market outcomes is surprisingly small. But for those at risk of ending up as NEETs (“not in education or employment”), a regular follow-up after completion of compulsory education would be very useful to facilitate early interventions.

Taxation: Globalization both increases the mobility of tax bases and provides more taxable income and consumption due to gains from increasing trade. To preserve the ability to finance the large welfare states, it is vital that the tax and transfer systems are designed to keep the employment rates high. The social security safety net must be kept employment-oriented. Alternative sources of income (to income taxation), such as taxation on property or user payments would be very useful.

Part III looks more in depth into the policy challenges outlined in Part I and discusses what could and should be done in various policy areas. The basic policy conundrum is that the demand for public safety nets and services tends to increase while the capacity to tax tends to decrease due to increasing mobility of important tax bases. The evaluation of six policy areas suggests that while the relative position of the Nordics is good in many fields, there is room for improvement in all areas, to different degrees in different countries. Adjustments in a realistic scale is considered sufficient to meet the challenges and if well implemented would not radically change the way the Nordic societies function.

Even more efforts should be put on *skill-formation*, and the emphasis of government interventions should be in the early years of life. While equal-opportunity education and life-long learning should be the catch words, the role of government financing should progressively decline with age. At universities, academic excellence should be given a clear priority to any other objectives.

High participation in the labour markets requires determined measures to compensate for the negative impact of ageing on *labour supply*. Elevating the statutory retirement ages and reducing the attractiveness of the early exit routes from the labour market is central in this regard. Making better use of immigrant labour resources is also important.

Labour market institutions and practices should be reformed to minimise *unemployment*. Wage flexibility and high mobility across occupations and in space is called for. Policy should not aim at protecting jobs but at helping people to adjust. Only the combination of high labour supply and low unemployment allows reaching the employment rates that are needed to finance the public expenditure levels necessary for the Nordic model. High employment rates are also important for keeping income disparities in check.

Fostering *innovation and structural change* continues to be a central part of the Nordic model aiming at a competitive standard of living. More public R&D funding is unlikely to be the right way forward, given the high level of such spending to begin with. The Nordic governments should continue to refrain from trying to “pick the winners” and focus on horizontal efforts to create good framework conditions for innovative economic activity.

Given the increasing mobility of important tax bases and the detrimental incentive effects of high taxes, increasing the overall tax ratios can hardly be the solution to the public finance pressures, even if the level of taxation is also a matter of political preferences. The focus should be on improving the *efficiency and robustness of the tax system*. Tax reforms should aim at stimulating labour supply, labour mobility, risk taking and capturing value in the global value chains.

Given the large size of the public sectors, improving the *efficiency of the production of public services* is an essential part of an adequate policy response. While there is no single superior way of organising public services, better use of market mechanisms would most likely help, as would an open-minded application of digital technology. A prerequisite for any successful reform is improved information about the quality of services.

To sustain the model, reforms are needed, in different ways and degrees in different Nordic countries. The adjustment needs are greatest in Finland and Iceland. Fortunately, the Nordics have demonstrated a significant capacity to reform. Their starting points are also in many respects strong. Thus, while difficult times lie ahead for some of the Nordics, and some widening of income disparities may be unavoidable, the message of the book is that refocused and recalibrated in a realistic scale the Nordic model has good chances of thriving well into the future.

Part I

1. How well is the Nordic model doing? Recent performance and future challenges

Lars Calmfors¹

1.1 Introduction

The Nordic welfare model has received a lot of international attention during the whole postwar period. In the 1950s and 1960s it was regarded as a success because of its ability to combine rapidly rising living standards with the build-up of a generous welfare state. Then there followed a period in the 1970s, 1980s and early 1990s with low growth and great macroeconomic problems which brought the model into disrepute. But recently there has been renewed international interest in the Nordic model.² This has happened because macroeconomic performance was very favourable from the mid-1990s till the beginning of the international economic crisis in 2008. Public finances have also remained stronger in the four largest Nordic countries than in most other European countries during the crisis.

The traditional picture of the Nordic model has been one where a generous welfare state based on universalist principles, implying generous transfers to households and publicly provided services financed by high taxes, offers generous social protection at the same time as encompassing labour market organisations play a major role in regulating the labour market in a corporatist fashion.³ At the same time the Nordic

¹ Professor at the Institute for International Economic Studies (IIES), Stockholm University. I am grateful to Torben M. Andersen, Sixten Korkman, Tarmo Valkonen, Vesa Vihriälä and other participants in the ETLA Norwell workshop in Helsinki 30 October 2013 for helpful comments, to Sinikka Littu and Georg Marthin for research assistance, and to Katrin Friberg and Hanna Christiansson for secretarial assistance.

² A typical example is a series of articles in *The Economist* (2013).

³ See e.g. Andersen *et al.* (2007), Gylfason *et al.* (2010), Eklund (2010), Berglund and Trägårdh (2011), Korkman (2012), and Korkman and Suvanto (2013).

economies have been open to trade and technological change. This is likely associated with high levels of spending on human capital investment, including child care, education and R&D. The model has delivered high income per capita, high employment, an equitable income distribution and gender equality.

The four largest Nordic countries all endured severe macroeconomic crises in the 1975–1995 period (see Eklund 2011 and IMF 2013 for brief accounts). In the late 1970s and early 1980s Denmark was the Nordic country with the most severe inflation and unemployment problems. This led to the adoption of a hard-currency option (pegging to the D-mark), a policy of fiscal restraint and government interventions in the wage-setting process. Norway was exposed to a banking and real estate crisis in the late 1980s. After that, incomes policies, with an explicit role for the government in wage negotiations, were used to restore international competitiveness and more restrictive fiscal policies were followed. In the early 1990s, Finland and Sweden suffered deep recessions after a period of rapid credit expansions in the aftermath of financial market deregulations resulting in strong booms, house price bubbles and large real exchange rate appreciations. The recessions involved large-scale bank failures. In Finland the downturn was reinforced by the collapse of trade with the Soviet Union. The recessions triggered large nominal exchange rate depreciations in both countries that restored international competitiveness and fiscal consolidation processes were initiated.

Starting in the 1990s, major economic reforms were implemented in all the four largest Nordic countries. Fiscal rules were tightened: in Norway with the aim of using oil and gas revenues to accumulate government wealth for the benefit of future generations; in Denmark, Finland and Sweden first in order to consolidate public finances after the earlier fiscal crises and later with the aim of building up buffers to help handle future strains from ageing populations. Markets for both products and services were deregulated and exposed to more competition. Labour market reforms, mainly involving less generous unemployment insurance (except in Norway) and more emphasis on activation measures (in all the four largest Nordic economies) were implemented. Wage-setting processes became more decentralised and allowed more flexibility for individuals, especially in Denmark and Sweden, although large elements of co-ordination through pattern bargaining were retained.

Developments have also differed between the four main Nordic countries in important respects. Norway has remained outside the EU. Finland has joined the euro, Denmark pegs its currency to the euro, whereas Sweden and Norway have flexible exchange rates and inflation targets. Labour

market reforms have been most extensive in Denmark (already in the 1990s) and in Sweden (mainly after 2006), whereas they have been of much less scope in Norway. GDP rises in Norway have to a large extent been based on oil and gas revenues, while growth in Sweden and Finland has been very R&D-intensive and associated with the ICT sector.

Iceland forms a particular case with a gradual transition from a heavily regulated economy to a more market-oriented one in the 1990s and early 2000s (see e.g. Gylfason *et al.* 2007 and OECD 2011). Newly privatised banks were allowed to expand at a rapid pace, both domestically, fuelling an unsustainable credit boom, and abroad, until their assets stood at around 900% of GDP in mid-2008. The three main banks collapsed already in the beginning of the international financial crisis in 2008, which threw Iceland into a deep recession of a similar type as Finland and Sweden experienced in the early 1990s, but of a much larger magnitude.

Among the Nordics recent macroeconomic developments have been most favourable in Norway and Sweden, where GDP has increased above the pre-2008 levels. This is not the case in Denmark and Finland where the downturns have been more protracted. In Denmark this was due to a strong real appreciation, eroding international competitiveness, during the preceding overheating of the economy and the unwinding of the earlier property price boom with substantial falls in house prices which have depressed aggregate demand. Finland has suffered from severe structural shocks in the ICT, paper and pulp, and steel industries.

It is obvious from the above review that there have been large changes in the Nordic economies over the last two decades. Some developments have been common to all the Nordic countries, while in other respects the countries have followed different paths.

This chapter has three main objectives:

1. To sort out in what respects the Nordic countries differ from other countries and how similar the Nordic countries are to each other. Do the Nordics still represent a group of countries that are distinct from other comparable countries?
2. To discuss the economic developments in the Nordic economies over the last two decades compared with other countries. This analysis will look both at developments in 1990–2007 before the international economic crisis and at how well the Nordic economies have fared during the crisis.
3. To identify major challenges facing the Nordic countries in the future which need further analysis.

1.2 How special are the Nordic countries?

This section looks at both economic outcomes and structural characteristics of the Nordic economies. This is done mainly with the help of diagrams that include the Nordics as well as comparable EU countries (the older member states) and the US. Diagrams as well as tables are placed at the end of the chapter.

1.2.1 *Economic outcomes*

In terms of *GDP per capita* (Figure 1a), the Nordics as a group beat all the comparison areas except the US. Iceland, Finland, Denmark and Sweden all belong to a group of mid-income countries together with the UK, France, Belgium, Germany, the Netherlands, Ireland and Austria, whereas Norway, due to its oil and gas incomes, has the highest income among the countries shown in Figure 1b after Luxembourg.

The Nordic countries stand out as a distinct group when it comes to *income equality*. Here they form a well-defined cluster. Among the countries in Figure 2b, Norway, Iceland, and Sweden are the ones with the lowest Gini coefficients for household disposable incomes. Finland ranks 5th after the Netherlands and Denmark 9th after also Belgium, Austria and Luxembourg. Whereas the average Gini coefficient for the Nordic group is 0.25, it is 0.32 for Southern Europe, 0.34 for the UK and 0.48 for the US. Only Continental Europe with a coefficient of 0.28 is close to the Nordic group.

The overall *employment rate* (employment in per cent of working age population 20–64 years old; see Figure 3) is higher in the Nordic countries than in all the four comparison areas. The similarities among the Nordics with respect to employment are the greatest when it comes to female employment (Figure 4). Here the five Nordic economies rank the highest (the order is Iceland, Norway, Sweden, Finland and Denmark) with employment rates between 70 and 80%. The similarities of the Nordic countries are also evident for employment of persons 55–64 years old (Figure 8), where Iceland, Sweden and Norway form a top trio with employment rates between 70 and 80%. Employment rates for this group are considerably lower, around 60%, in Denmark (ranked 5th) and Finland (ranked 8th).

In terms of total employment (20–64 year olds; Figure 3b) Iceland, Norway and Sweden are ranked 1st, 2nd and 3rd, respectively, with employment rates around 80% of the working-age population, and Denmark and Finland somewhat lower, 7th and 9th respectively, with

employment rates in the 70–75% interval. Nordic employment performance is most “normal” when it comes to employment of 25–54 years olds (Figure 7), where the Nordics belong to a larger group of countries, including also Austria, the Netherlands, Germany, Luxembourg, France, UK and Belgium, all with employment rates in the 80–85% interval.

Although similarities between the Nordic countries are great when it comes to employment, differences are large with respect to *working time*. Hours worked per employed person (Figure 9b) differ widely among the Nordics with Denmark and Norway at the lower end (1 400 hours per year and ranked 16th and 17th, respectively, among the countries shown) and Iceland at the higher end (1 700 hours per year and ranked 4th). The Nordic countries are more similar with respect to hours worked per person of working age, still with Iceland having most working hours (Figure 10b). Comparing the Nordics as a group with other areas, working time per person in the working-age population (Figure 10a) is higher only in the US. But working time per employed person (Figure 9a) is lower than in all the comparison areas except Continental Europe. The longer working time per person of working age than per employed person in the Nordics relative to other countries is to a large extent a reflection of high female employment, which is often in part-time jobs.

Public finances are currently much stronger in the Nordic group than in the comparison countries. This applies to both general government net lending (the fiscal balance) and consolidated gross government debt (Figures 11a and 12a, respectively). However, Iceland is in a very different situation after its economic collapse in 2008. Figure 12b shows that the four largest Nordic economies all had consolidated gross government debt ratios in the range of 25–60% in 2013, below the EU debt ceiling of 60% of GDP. Of the countries shown in the diagram, only Luxembourg had a lower gross consolidated government debt. But the debt ratio in Iceland is almost 95%, which is close to the figure for Spain, one of the crisis-stricken eurozone countries. The Finnish debt ratio is also increasing and is likely to exceed 60% in 2014.

1.2.2 Structural characteristics

Looking first at the *size of government*, the Nordic countries stand out as the group with the highest share of government employment in total employment (Figure 13a). The Nordic group also has the highest tax revenues relative to GDP although Continental Europe comes close (Figure 14a). This conforms to the established picture of the Nordic model. However, total government expenditure as a percentage of GDP today is

as high in Continental and Southern Europe and almost as high in the UK as in the Nordic countries (Figure 15a). This is partly a reflection of the recent deeper cyclical downturns in the comparison countries, which have raised government expenditure relative to GDP as there are no automatic cuts in government spending in downturns (rather transfers, such as unemployment benefit payments, increase). Figure 15b indeed shows that government expenditure have risen relative to GDP between 2000 and 2013 in the US and in all EU countries included except Germany, whereas this has not happened in Sweden. As shown in Figure 16a, social protection cash transfers are also larger in both Continental and Southern Europe than in the Nordic countries. Moreover, tax revenues are only somewhat smaller in Continental Europe than in the Nordic countries (Figure 14a).

Figures 13b–16b also show important differences between the Nordic countries as to the size of government. Total government expenditure as a share of GDP (Figure 15b) is much smaller in Norway (ranked 15th among the 18 countries in the diagram)⁴ and Iceland (ranked 12th) than in Finland (ranked 2nd), Denmark (ranked 4th) and Sweden (ranked 6th). Iceland (ranked 12th) is far below the other Nordic countries in terms of tax revenues in per cent of GDP (rank 1st for Denmark, 5th for Sweden, 6th for Finland and 8th for Norway; Figure 14b). The Nordic countries are most similar when it comes to government employment, which is higher in the four largest Nordic countries than in all the other countries in the diagram (Figure 13b). But there is a large dispersion among the Nordics when it comes to social protection cash transfers, which are quite low in Iceland, Norway and Sweden (Figure 16b).

Figure 17b shows that Sweden, Denmark and Finland have high marginal income tax rates in an international comparison (around 55%; the countries are ranked 3rd, 4th and 5th in the diagram, respectively). The top rates are considerably lower in Norway and Iceland, which reduces the Nordic average so that it is about the same as the averages for Continental Europe, Southern Europe and the UK (Figure 17a).

An interesting observation is that the Nordic countries are not unique when it comes to the redistributive effects of the tax and transfer sys-

⁴ It could be argued that it is misleading to relate Norwegian government expenditure to overall GDP, including oil revenues, as the policy is to use these temporary incomes to build government net wealth that can be tapped in the future. As Figure 15b shows, Norway instead comes in second among the countries shown when government expenditure is calculated as a percentage of mainland GDP. The picture for Norway with respect to social protection cash transfers also changes significantly when they are related to mainland instead of overall GDP (Figure 16b).

tem. This is illustrated in Figure 18, which gives the difference between the Gini coefficients for household market and household disposable incomes. Among the Nordics taxes and transfers do most redistribution in Finland (though not as much as in Belgium). But the amount of redistribution in the other Nordic countries does not stand out. In particular it is lower in Iceland and Sweden than in most of the other European countries shown. A likely explanation of the surprisingly low amount of redistribution in the Nordic countries is the success in reaching high employment rates. As a large fraction of population has earned incomes, the need for social transfers is reduced at the same time as these groups also pay at least some taxes. The fact that Finland displays the highest redistribution effect is consistent with this explanation, since Finland has the lowest employment rate among the Nordics.⁵

Figure 16 together with Figures 19–20 illustrate some aspects of *social protection*. Total social protection transfers (including both cash and in-kind transfers (via public consumption) are high relative to other countries in Denmark, Sweden and Finland (Figure 16). Looking at the government(sponsored) unemployment insurance, the Nordic countries as a group have the highest net replacement rates (after-tax unemployment compensation relative to the previous after-tax wage) for both short-term and long-term unemployed (Figures 19a and 20a).

But for short-term unemployed (Figure 19b), Sweden has, after the reforms of unemployment insurance and the introduction of earned income tax credits in recent years, become an outlier among the Nordics with a replacement rate around 67% (and rank 14th among the countries in the diagram), whereas replacement rates are 70–80% in the other Nordic countries (with Denmark ranked 2nd, Iceland 5th, Norway 6th and Finland 8th). For long-term unemployed (Figure 20b), there is more homogeneity among the Nordic countries, although they do not top the ranking (net replacement rates for long-term unemployed are higher in Ireland, the Netherlands and Luxembourg). Finland, Denmark, Iceland and Norway are clustered together with replacement rates in the 65–70% interval. Sweden is less generous than the other Nordic countries also with respect to the long-term unemployed (a replacement rate around 60%), but ranks higher in this respect relative to the other countries in the

⁵ It should be noted that the difference between the Gini coefficients for market and disposable incomes is an imperfect measure of the redistributive effects of the tax and transfer system, as these also affects market incomes. For example, generous unemployment benefits are likely to raise wages of the low-paid relative to those of the high-paid.

diagram than for the short-term unemployed. Figures 20a and 20b serve to illustrate the universalist character of the Nordic welfare model: high social protection also of groups marginally attached to the labour market. But as can be seen, such fairly generous protection of the long-term unemployed is also the case in several other European countries.

There are large similarities among the Nordic countries also with respect to other *labour market institutions*. This applies in particular to trade union density, which is much higher in the Nordic group than in the comparison regions (Figure 21a). The Nordic countries top the ranking in Figure 21b with a density of around 80% in Iceland and densities close to 70% in Finland, Denmark and Sweden. Norway has a trade union density of 55% but still ranks as number 5 of the countries shown. Although unionisation has fallen over the last twenty years in the Nordic countries, and particularly in Denmark, Sweden, and Iceland, this has not affected their relative positions (see also Schnabel 2013).

Unlike with trade union membership, the Nordics do not stand out as a group of their own regarding the coverage of collective agreements. It is higher in Sweden, Finland and Iceland (85–90% of the work force, but not as high as in Austria and Belgium; see Figure 22b) than in Denmark and Norway (70–80%, which is also below the figures for France, Spain, the Netherlands and Italy). Looking at the Nordics as a group (Figure 22a), it turns out, somewhat surprisingly, that the coverage of collective agreements is somewhat lower than in Continental Europe. Traditionally, the four largest Nordic economies have been characterised by highly co-ordinated wage bargaining (with tri-partite negotiations involving also the government in Finland and Norway). In recent years co-ordination has been weakened (especially in Denmark), but important elements still remain mainly through pattern bargaining with the manufacturing sector acting as norm setter.

Figure 23 shows the most recent OECD indicators of the strictness of employment protection for permanent workers and workers on temporary contracts, respectively. For permanent workers employment protection is in a middle range for all the Nordic countries (stricter than in the US, the UK and Ireland, but less strict than in most Continental and Southern European countries). Among the Nordics Sweden has the strictest and Finland the least strict regulation for permanent workers. With the exception of Norway all the Nordic countries have low degrees of employment protection for workers on temporary contracts. This is in particular the case for Sweden and Iceland. The traditional view has been that Denmark has significantly less employment regulation than the other Nordic countries. However, the revised OECD data shown in

Figure 23, taking account not only of legislation, but also of collective agreements and case law, no longer provides such a picture.

A common trait of the four largest Nordic countries is the emphasis on active labour market programmes designed to help the unemployed find jobs. The various measures in Table 1 all indicate that such programmes play a larger role in the Nordics than in the comparison countries (although the importance is somewhat lower in Finland than in the other Nordic countries). The focus on activation measures together with less strict employment protection than in Continental and Southern European countries makes it reasonable to talk about a common *flexicurity* model for the four largest Nordic economies.

When it comes to *product market regulations*, the Nordics as a group appear more regulated than both Continental Europe and the UK (Figure 24a). Sweden, Norway and Iceland are considerably more regulated than Denmark and Finland according to a recent OECD indicator (Figure 24b). It should be kept in mind though that measuring accurately the degree of product market regulation is difficult.⁶ In terms of *foreign trade dependence* the Nordic countries form a middle group together with Austria, Germany, Portugal and Spain (Figure 25b).

When it comes to R&D expenditure, Finland, Sweden, and Denmark are at the top, all with such expenditures at or above 3% of GDP, whereas Norway spends only about half that amount and finds itself ranked as low as 13th of the countries shown in Figure 26b. As a group the Nordics spend more in terms of GDP than all the other regions shown except the US (Figure 26a).

It has become popular to compare the “competitiveness” of various economies by constructing summary measures aggregating a large set of factors. These measures should not be taken too seriously as it is not obvious exactly what they reflect and the factors included can sometimes appear quite ambiguous.⁷ Still, it is noteworthy that the four largest Nordic economies often come out high in such comparisons, as shown by Figure 27, although the rankings differ between measures.

⁶ The most recent version of the OECD indicator of product market regulation puts the Nordics in different positions than an earlier version. According to that the Nordic countries formed a close cluster with a moderate level of product market regulation.

⁷ For example, the IMD Business School's World Competitiveness Index “ranks the ability of nations to create and maintain an environment which sustains the competitiveness of enterprises” (IMD 2013). Another index, the World Economic Forum's Global Competitiveness Index aggregates factors “that determine the level of productivity of a country” and which “set the level of prosperity that can be reached.” “A more competitive economy is one that is likely to grow faster over time” (WEF 2013).

Another prominent feature of the Nordic countries is the high degree of organisational and technological change. This is highlighted by Figure 28, which shows the percentages of workers reporting that they had been subject to substantial organisational and technological changes in their workplace.

1.2.3 *The Nordic model*

The conclusion from the review above is that the Nordic economies are similar in many respects, but that there are also important differences. The most distinct feature of the Nordic economies in terms of economic outcomes is the high degree of income equality. All the Nordic economies are also high-employment ones. The Nordics stand out the most for their high employment of females and older people, whereas they appear as more “normal” Western European economies when it comes to employment of prime-aged people (25–54 years old). But in terms of working time, there are large differences between the Nordics. The four largest Nordic countries all have low government debt, whereas the government debt-to-GDP ratio in Iceland is quite high. This could be taken to suggest that there is no particular Nordic trait resulting in good public finances, but that fiscal outcomes are more associated with the timing of economic and financial crises: earlier crises have helped shape a consensus on the need for fiscal discipline in the largest Nordic economies, whereas Iceland is still suffering the fiscal consequences of the recent financial melt-down (see also Eklund 2011 and Calmfors 2013).

The Nordic economies have a number of structural characteristics that motivates the talk of a Nordic model. Although there are differences, a common trait is the flexicurity focus on facilitating adjustment in the labour market through active labour market programmes and fairly low employment protection. The Nordics are also characterised by high trade union membership and high coverage of collective agreements, although they do not form any group distinct from other comparable European countries in the latter respect (coverage is higher in several other countries).

The Nordic countries are still characterised by “big government”. This applies in particular to government employment, which is higher than in comparable countries. But the Nordics are no longer unique with respect to overall government expenditure (which reflects high government transfers in several other European countries, but also that government expenditures have risen relative to GDP since the onset of the financial crisis) and tax revenues. Income protection for individuals in

the case of unemployment provided (or sponsored) by the state is fairly generous, although this is the case also in the Continental European countries. Somewhat surprisingly, the total redistributive effects of the tax and transfer system are not particularly large in the Nordic countries. This probably reflects high employment which reduces the need for such redistribution.

A variable where (the four) largest Nordic countries differ a lot from other European countries is one that could be regarded both as a structural characteristic and an outcome variable: *trust*. Trust is a structural feature to the extent that it lowers transaction costs as well as facilitates decision-making in various areas (in both the private sector and politics). It has indeed been claimed that a high level of trust promotes good economic outcomes (see, for example, Blanchard *et al.* 2013 and Bützer *et al.* 2013). But trust can also be seen as an outcome variable, as outcomes that are regarded as desirable by most people are likely to foster a high degree of trust. Table 2 shows that the four Nordic countries exhibit the greatest degree of trust among the countries included independently of whether it is measured as general trust in people, trust in politicians or trust in the legal system.

To sum up, it makes sense to talk about a Nordic welfare model where the state offers a safety net to its citizens at the same time as both product and labour markets are fairly flexible. The model also includes high investment in human capital of various forms through spending on child care, education and R&D. Overall, the Nordic model seems to foster a high level of trust in society which makes it easier to accept openness to foreign trade and technological change. But at the same time it should be realised that in many respects, such as the size of government, the degree of income protection and importance of collective agreements, similarities with other comparable European countries, like Austria, Belgium, Germany and the Netherlands, are great.

1.3 Developments since the early 1990s

This section looks more closely at macroeconomic developments since the early 1990s.

1.3.1 Developments over the 1990–2013 period

Figure 29 shows that GDP growth in Norway and Iceland has been higher than the EU-15 average (and in Germany) over the whole 1991–2013 period. All the Nordic countries also suffered severe set-backs with GDP falls in 2009. The fall was by far the largest in Iceland where it was a consequence of the severe financial crisis and where it continued also in 2010. Finland, Sweden and Denmark also had sharp falls. But in Sweden output rebounded strongly again with GDP in 2013 being 5.4% above the pre-crisis level in 2007. This did not happen in Finland, where output in 2013 was still 5.5% below that level. This is explained by the exceptional structural shocks that have hit the ICT, paper and pulp, and steel sectors in this country.⁸ Over the whole 1991–2013 period GDP growth in Finland exactly matched average EU-15 growth. After the contraction in Denmark in 2008–2009, the recovery there has been sluggish, still leaving output in 2013 below its pre-crisis level. This is largely explained by the strong real exchange rate appreciation during the preceding boom, the bursting of a house price bubble and the high degree of trade integration with the eurozone. GDP grew considerably less in Denmark than in the EU-15 over the whole 1991–2013 period. Norway has had the most even development over this period and suffered only a small setback in the beginning of the recent crisis.

Labour productivity measured as GDP per employed person has increased faster than the EU-15 average (and in Germany) in *all* the Nordic countries over the 1991–2013 period, but with considerably higher productivity growth in Finland and Sweden than in the three other Nordic economies (Figure 30). As should be expected during a cyclical downturn with labour hoarding, labour productivity has stagnated from 2008 onwards in all the Nordic countries.

⁸ The main explanations are dramatically falling market shares for the Nokia-led ICT cluster, falling output in the paper and pulp industry due to falling world demand for these products and oversupply in global steel markets. In all, the value added of the manufacturing industry declined by a third from late 2008 to early 2013. In the same period the fall in Sweden was 7% and in Germany value added in manufacturing increased by more than 5%. The (direct) negative contribution of the collapse in manufacturing in Finland was some 6% of GDP (Holmström *et al.* 2014).

Table 3 decomposes growth of GDP per hour into contributions from changes in labour composition, ICT capital, non-ICT capital and total factor productivity in a number of countries for the 1995–2007 and 2008–2013 periods. In the first period, Finland and Sweden stood out as the countries with the highest total factor productivity growth. Only Austria and Germany came close. In contrast, total factor productivity growth during this period was low or non-existent in Norway and Denmark. In these countries the main contribution to labour productivity growth came from accumulation of non-ICT capital. Hence, the growth models of the four largest Nordic countries have been very different. The table also decomposes labour productivity growth in 2008–2013 into contributions from various factors, but this is less revealing for growth patterns as the period is characterised by low resource utilisation.

Looking at aggregate labour market developments (employment as a percentage of working-age population and unemployment as a percentage of the labour force in Figures 31 and 32, respectively), the deep downturns in the first half of the 1990s in Finland and Sweden are clearly visible. Subsequently, up till the beginning of the worldwide economic crisis in 2008 labour markets in these countries recovered as did labour markets in the EU-15, although the Finnish and Swedish recoveries were stronger. Denmark also had a strong labour market recovery up till 2008, but after that the labour market situation deteriorated substantially. The deterioration in the labour market was even more pronounced in Iceland during its deep financial crisis. Norway has had the most stable labour market developments with a fall in unemployment around the mid-1990s and subsequently very low levels around 4%.

Figures 33–35 show developments of youth unemployment, unemployment of low-skilled workers and long-term unemployment. Although youth unemployment in Sweden and Finland fell after the crisis in the beginning of the 1990s, it remained higher than in the EU-15 until 2010–2012. The development in Sweden is particularly noteworthy: a strong upward trend from 2000, which contrasts with developments in the other Nordic countries. Norway, Denmark and Iceland all have had rather low youth unemployment, although levels have risen during the recent crisis. Despite a compressed wage structure, unemployment of unskilled workers has been lower in all the Nordic countries, except in Finland before the recent crisis, than in the EU-15, but developments over time have been similar. Although long-term unemployment has recently shot up substantially in Iceland and Denmark, it has been consistently lower in the Nordic countries than the EU average. The likely

explanation is a larger use of active labour market programmes to prevent long periods of unemployment (see Table 1).

There was a strong trendwise improvement in government net lending in all the Nordic countries from the first half of the 1990s till the beginning of the international crisis in 2008 (Figure 36). This improvement was stronger than in the EU-15. This was due to both stronger discretionary consolidation efforts and larger automatic stabilisers, i.e. larger automatic responses of the fiscal balance to cyclical output variations, associated with the large size of the public sector (see e.g. Swedish Fiscal Policy Council 2009, 2011). Because of its oil and gas revenues Norway ran large fiscal surpluses (of the order of magnitude of 8–18% of GDP in 2000–2008), but surpluses emerged in the other Nordic countries, too. These developments are reflected in declines of government net debt between the mid-1990s and 2007/08 in all the Nordic countries (Figure 37). Net government debt was negative, i.e. the government had positive net financial wealth, in all the Nordic countries except Iceland before the crisis.

The financial crisis in Iceland led to a dramatic worsening of the fiscal balance in that country between 2007 and 2008 (of around 19% of GDP) because of government support to the failing banks and dramatically falling tax revenues. The outcome was a fiscal deficit of 13.5% of GDP in 2008. However, subsequently the deficit has been cut very significantly (amounting to only 2.7% of GDP in 2013). During the crisis there have also been large deteriorations of the fiscal balances in Denmark, Finland and Norway. The deterioration has been the smallest in Sweden. Deficits have emerged in Denmark, Finland and Sweden, whereas Norway still had a fiscal surplus of more than 11% of GDP in 2013. The described developments of the fiscal balance during the crisis are reflected in the developments of the government net financial position. In Iceland, there has been a huge increase in debt. The government net financial position has also deteriorated significantly in Finland and Denmark, whereas it has stayed more or less constant in Sweden. In Norway, the fiscal surpluses have meant that government net financial wealth has continued to increase.

Figure 38 shows that not only Norway, but also Sweden, Finland and Denmark have had large current account surpluses for most of the 1990–2013 period, indicating an excess of domestic saving over investment. Here Iceland is the odd man out with large current account deficits over the last 15 years. Sweden and Norway have sustained their current account surpluses during the recent crisis, whereas the earlier surplus in Finland has turned into a small deficit. In Denmark the cur-

rent account surplus has even increased during the crisis, as households have tried to restore their balance sheets after the fall in house prices through increased saving, at the same time as investment has fallen. A similar process – but of much greater magnitude – has taken place in Iceland, where the current account deficit has fallen from around 25% of GDP in 2008 to around 4% in 2013.

Figure 39 shows the development of the international competitiveness of the Nordic economies (relative unit labour costs) since the early 1990s. In Finland and Sweden relative unit labour costs fell substantially in the first half of the 1990s due to large nominal exchange rate depreciations. There was a smaller fall in relative unit costs in Iceland.

In Norway relative unit labour costs have instead been increasing since the early 1990s. This can be seen as a Dutch disease phenomenon (oil wealth driving up aggregate demand and hence domestic wages and prices relative to other countries). In Iceland and Denmark relative costs increased up till the beginning of the financial crisis. This was a response to strongly overheated economies. Icelandic relative costs then fell dramatically when the nominal exchange rate depreciated. Danish relative costs started falling first in 2010, when the prolonged downturn caused slower wage growth. Developments in Finland and Sweden have been less dramatic with a tendency for relative costs to fall in Sweden and to rise in Finland up till 2009/2010. Subsequently, relative unit labour costs have risen somewhat in Sweden and fallen in Finland. In the latter country the profitability of export firms has fallen more than the relative unit labour cost indicator suggests due to a more general decline of the prices of many Finnish export products.

The relative cost developments are reflected in the developments of export market shares shown in Figure 40. In both Denmark and Norway export market shares have trended downwards from the early 1990s. The development in Iceland has been similar, although there has been a sharp turnaround after the large fall in relative costs during the financial crisis. Finnish and Swedish market shares increased in the 1990s, but have fallen from 2000 onwards. The swings in Finland have been much more pronounced than in Sweden. Finnish market shares increased by nearly 40% between 1991 and 2002. But the subsequent decline has been equally dramatic. These developments are mainly explained by the shifting fortunes of the Nokia-led ICT cluster (Holmström *et al.* 2014).

1.3.2 Relative performance of the Nordics

After the crises in the early 1990s up to the beginning of the Great Recession in 2008 economic developments were favourable in the Nordics relative to those in comparable European countries. This holds for GDP, productivity, employment and public finances. Wide-ranging product market deregulations likely contributed to growth.⁹ So did probably also comprehensive tax reforms (including a broadening of tax bases, a lowering of tax rates and the introduction of a dual tax system with lower – nominal – taxation of capital incomes than of labour incomes) in the four largest Nordic economies in the early 1990s. Other contributing factors may have been creative destruction of stagnating firms during the crises in the early 1990s and more of individual wage setting stimulating individual effort (see e.g. Calmfors 2013a as well as Korkman and Suvanto 2013). Finland and Sweden were well placed to develop ICT technology because of the strong market positions of Nokia and Ericsson.

A contentious issue is what explains the favourable employment developments in the Nordic economies from the mid-1990s up to 2008. Well-functioning labour markets are often advanced as an explanation. An alternative explanation is a strong recovery of aggregate demand during this period (in Finland and Sweden associated with large nominal exchange rate depreciations in the early 1990s). The tension between these two explanations is well illustrated by Denmark, where it has been a commonplace to attribute the earlier rise in employment to comprehensive labour market reforms including less generous unemployment benefits (especially for young people) and a larger focus on activation measures. However, in retrospect it appears that much of the strong employment rise in Denmark may have been associated with a boom fuelled by fast credit growth and leading to a housing price bubble, which resulted in a deep recession and a large employment fall when it burst.

How well have the Nordic countries been doing during the current economic crisis compared to other countries? Table 4 summarises developments of GDP, the labour market (employment, labour force participation and unemployment), public finances (government net lending and consolidated government gross debt) and income distribution (Gini coefficient and P90/P10 household disposable income ratios) over the period

⁹ It is well-established that competition-enhancing product market deregulations stimulate productivity growth (see e.g. Wölfl *et al.* 2010). This occurs through several mechanisms: lower barriers to entry, more efficient resource allocation, stronger incentives to innovate and faster diffusion of new technology.

since 2008. Because the Icelandic situation has been so special, averages are given for the Nordic countries both including and excluding Iceland.

Compared to Southern Europe the Nordic countries as a group have, of course done much better in terms of GDP, employment, unemployment and government debt developments. But relative to Continental Europe, the deterioration of the economic situation has in several respects been larger in the Nordic countries (both including and excluding Iceland). Averages for both the employment and the labour force participation rates have fallen by more in the Nordic countries than in Continental Europe. Unemployment has risen by more. Government net lending has fallen by more. GDP has developed more weakly. The only variable in the table where developments have been more favourable concerns government debt which has increased by less in the Nordic countries (both when including and excluding Iceland) than in Continental Europe.

Table 4 also repeats the differences in developments among the Nordics during the current economic crisis discussed above. In terms of changes in GDP, the employment rate, the labour force participation rate and government net lending, Sweden comes out much better than the other Nordic countries. Unemployment has also increased less in Sweden (and Finland) than in Denmark and Iceland, but the increase has been even smaller in Norway despite the fact that employment developments have been better in Sweden. The explanation is that labour force participation has fallen by less in Sweden than in Norway (see also Section 1.4.5). Consolidated gross government debt has been more or less stable in Sweden during the crisis, whereas it has increased considerably in Iceland, but also in Finland and Denmark. Debt developments have, due to oil and gas revenues, been even more favourable in Norway than in Sweden (a large reduction in consolidated government gross debt).

Finland and Iceland have had the most unfavourable GDP development, with falls of 5.2 and 4.1%, respectively, over the 2008–2013 period. However, among the Nordic countries the employment rate has fallen and the unemployment rate has increased the most in Denmark.

Changes in income distribution (the last two columns in Table 4) appear to have been small everywhere. The largest change has occurred in Iceland, where the Gini coefficient fell by 3.3 percentage points in 2008–2012. The explanation is the reduction in incomes of “capitalists” in this country during the deep crisis.

The comprehensive labour market reforms, including less generous unemployment insurance, the introduction of large earned income tax credits and more narrow gateways to sickness insurance and disability

pensions are probable explanations of the relatively favourable macroeconomic performance in Sweden in recent years (Swedish Fiscal Policy Council 2010, 2011). Also a versatile production structure has contributed to the relative success of Sweden, particularly in comparison to Finland, which has been very vulnerable to the recent declines in its ICT, forest and steel sectors.

1.4 Future challenges

What are the prospects for a continued strong economic performance in the Nordic countries? It is important to identify future challenges to such a development. Below challenges in five areas are discussed:

1. Productivity growth
2. Human capital accumulation
3. The tax system
4. The sustainability of public finances
5. Employment

1.4.1 *Productivity growth*

A first challenge is to sustain high productivity growth. As discussed in Section 1.3.1, the earlier experiences of the Nordic countries have been diverse. Finland and Sweden had the highest labour productivity growth in 1995–2007 based on high total factor productivity growth. The ICT sector played an important role in these developments. Productivity growth was slower in Norway and in particular in Denmark.

During the crisis labour productivity growth has been weak in all the Nordic countries as elsewhere and total factor productivity growth has been negative (see Table 3). The question is whether this only represents cyclical developments, because firms have chosen to retain staff for the future instead of adjusting employment fully to the downturn in the economy, or whether it also represents a lower trend increase in productivity. A worrying sign is that labour productivity actually fell in both Norway and Sweden already *before* the outbreak of the international financial crisis (see Figure 30). OECD (2012b) also finds some evidence in favour of structural breaks indicating lower trend growth of labour productivity in Finland.

A possible hypothesis is that technological developments, contributing to labour productivity growth, are now slower than earlier, espe-

cially in the ICT sector (Konjunkturinstitutet 2012). A strong version of this hypothesis is Gordon (2012), who claims that the computer and internet revolution in the US represented only a temporary deviation from a slowing trend increase in productivity that has now come to an end because inventions since 2000 have mainly centred on entertainment and communication “that do not fundamentally change labour productivity.” There is also a risk of long-run effects from the prolonged economic downturn: lower investment has meant less rapid capital deepening at the same time as the speed with which new technology is being introduced has slowed down. In Finland aggregate productivity growth is hampered both because productivity growth in the ICT sector is lower than before and because the sector (where productivity growth is still higher than in the rest of the economy) has shrunk in size (OECD 2012b).

The prospect of slower technological progress in coming years suggests the need to promote productivity growth in other ways. As investment in immaterial assets (software, data bases, R&D, design, product development, organisational change, etc.) seems to be an important driver of productivity growth (van Ark *et al.* 2009, Corrado *et al.* 2012), more such investment could help keep up productivity growth. OECD reports on Denmark and Finland have pointed to the potential for higher productivity growth in the service sector in these countries through enhanced competition and deregulation: this could entail the opening-up of government-dominated sectors, in particular the health sector, to more of private provision and the loosening of zoning and planning restrictions in the retail sector with the aim of increasing store-level scale economies (OECD 2012a,b).

Yet another issue concerns the contribution structural change in the economy (re-allocation of resources) could give relative to within-sector and within-firm productivity growth. This issue is particularly pertinent in Finland, where the setbacks in the ICT, forest and steel industries motivate re-allocations of both capital and labour to other sectors. In the context of structural change the strictness of employment protection may be an important factor. Such regulations increase firms’ costs of adjusting employment and could distort the composition of employment between temporary and permanent workers. They may therefore result in an inefficient allocation of labour and hence lower productivity growth.

It is obviously an important challenge to find the most efficient ways of promoting productivity growth. A particular problem may be the small size of the Nordic economies in a globalised world facing rapid technological change. Given that the Nordics are at the technological frontier in many fields, they need to innovate based on their own R&D

efforts rather than on imitation. Given the small size of the economies, they cannot invest simultaneously in many different fields of innovation activity. On the one hand, this might suggest that innovation policies should be targeted. But on the other hand, government authorities are likely to be bad at forecasting which technologies might take off.

1.4.2 Human capital accumulation

The stock of human capital used in production is an important determinant of labour productivity. According to OECD (2013a) differences in the use of reading skills in production explain about 30% of the variation in labour productivity across countries. Due to matching problems the use of skills is only weakly correlated with skills proficiency in the population. Still, skills proficiency forms the potential for the human capital that can be used in production.

The OECD's PISA studies, which have been conducted every third year since 2000, measure 15-year olds' reading ability and their proficiency in mathematics and science. Figure 41 shows how the relative performance of the Nordic countries in the three fields has developed over time. Overall, Finland has done very well, although results have worsened in the two latest studies. The other Nordic countries have done less well, indicating a substantial potential for improvement. A – perhaps – surprising finding is that Finnish students appear to be the least happy ones at school (only around 65% state that they are happy compared to around 85% in the other Nordic countries) despite the good study results (OECD 2013b). A possible interpretation is, of course, that there is a trade-off between effort and having “a nice time” at school.

In the PISA studies Iceland and Denmark have done substantially worse in reading and science than in mathematics, whereas Norway and Sweden have done worse in mathematics and science than in reading (although the relative reading performance of Swedish students is about the same as the science performance in the latest study). Looking at trends, Denmark has improved over time in science but deteriorated in math. However, what stands out most is the strong downward trend for Sweden in all three measures. This has triggered an ambitious school reform programme in Sweden encompassing inter alia measures to enhance the competency of teachers, to create more of a career ladder for them involving higher pay in the case of promotion, the introduction of grades for pupils at lower levels than before and a new grading scale, initiatives to strengthen skills in mathematics, science and technology, the introduction of more national tests, changes in vocational education

including the introduction of a new apprenticeship system (see Swedish Fiscal Policy Council 2011 for a survey of these reforms). So far, these reforms have not reversed the downward trend for Sweden in the PISA studies, which is a clear indication of how difficult it can be to achieve fast results in this field.

The OECD has recently also carried out a first study (PIAAC) of the skills proficiency of the adult population (16–64 years old) in various countries (OECD 2013a). The survey looks at numeracy, literacy and problem-solving capacity in technology-rich environments in 2011/12. Numeracy and literacy measure similar capacities as mathematics and reading in the PISA studies. Problem-solving in technology-rich environments is defined as “the ability to use digital technology, communication tools and networks to acquire and evaluate information, communicate with others and perform practical tasks.” Table 5 shows that the Nordic countries come out much better in the PIAAC study than in the PISA studies. Finland still performs the best among the Nordic countries, but Sweden, Norway and Denmark also come out very well here. The difference for Sweden between the PIAAC and the PISA studies is striking. The better results of the Nordic countries for the adult population in the PIAAC study than for young people in the PISA studies could to some extent reflect a higher quality of education in the past than now. But in all likelihood a large volume of adult education is an important explanation, as there is a strong correlation between this variable and the skills proficiency of the population (OECD 2013a).

The most important challenge in the field of education is to reach the partly overlapping groups of young people who drop out of the school system, immigrants with a foreign-language background and employees in elementary occupations (where low proficiency in numeracy, literacy and computer skills may hamper the introduction of new technology and organisational structures that raise productivity). A crucial issue is which types of programmes are the most effective in helping low-performing students: Is it early-prevention programmes targeting such students at a very early stage (possibly already when they are just deemed to be at risk of later failure) or is it late-prevention programmes for children who fail to progress at a satisfactory speed? A clear conclusion from available research seems to be that any such programme should be initiated during the first years of primary school or possibly already in child care (OECD 2013b). Another issue is how to find the balance between targeting low-performing schools and targeting low-performing students within schools. This will depend on the extent to which low performance is concentrated by school. The latest PISA study

finds some evidence suggesting that school systems with high student performance (in mathematics) tend to allocate resources more equitably between advantaged and disadvantaged schools (OECD 2013b).

1.4.3 The tax system

Taxes that are not lump-sum impose welfare losses because they create wedges between private and social returns that affect behaviour. As a result many socially desirable market transactions will never come about. In particular high labour taxes distort individuals' choices between, on the one hand, market work and, on the other hand, leisure and household work. Incentives for education, work effort and promotion are also distorted. Capital income taxation distorts the incentives for saving and investment.

Figure 14 showed that the four largest Nordic countries all have high tax revenues relative to GDP (in the range of 43–48%). Figure 42 shows that developments in the Nordic countries have differed over time. During the last decade the ratio of taxes to GDP has fallen substantially in Sweden and Finland, whereas it has remained fairly stable in Denmark, Norway and Iceland.¹⁰

The overall tax level is determined by the political preferences for public consumption and income redistribution. These preferences differ among countries and over time. However, it is always desirable that the tax system is as efficient as possible so that the costs of raising a given amount of revenues are minimised.

A number of difficult challenges for the tax systems in the Nordic countries can be identified. Capital income taxation provides a good illustration of difficult efficiency-equity trade-offs. A usual finding is that capital income taxes are more distortionary than other taxes (e.g. Sørensen 2010). This is because savings appear to be relatively sensitive to changes in the return. In addition a tax on savings affects labour supply as the return to the labour income that is saved is reduced. Efficiency considerations therefore speak in favour of low capital taxation. Another argument in favour of this is that stronger incentives for saving would reduce the risk that households over-borrow and thus the risk of financial crisis. But, on the other hand, lower capital income taxes would in-

¹⁰ The effects of the size of the government sector on growth are a controversial research issue. Bergh and Henrekson (2012) argue that the reduction in the size of government and tax revenues as a percentage of GDP in Sweden has been an important factor behind the higher growth from 1995 onwards.

crease income inequality. This may be considered particularly problematic as income inequality in the Nordic countries has been trending upwards over the last two decades and this seems to a large extent to be related to increased inequality of capital incomes (see e.g. Roine and Waldenström 2011 and *Finanspolitisk redogörelse* 2013).

Another important challenge is how to cope with the increased international mobility of some tax bases. High international capital mobility implies that high corporate taxation in an individual country (or set of countries) will lead to a re-allocation of the capital stock to other countries, the costs of which will largely be borne by wage-earners in the form of lower real wages (see e.g. Arulampalam *et al.* 2007). This implies that there will be large benefits for an individual country of lowering the corporate tax, whereas the benefits are much smaller if there is a general international trend towards such tax decreases.

International mobility of high-skilled labour will also over time make it more difficult to maintain the high marginal tax rates for high-income earners in the Nordic countries.¹¹ Overall, a common assessment is that the distortionary costs of high labour taxation on both the quantity and quality (via education as well as effort and acquisition of higher competence at work) are large (Sörensen 2010, Arnold *et al.* 2011). Estimates by IMF (2013) indicate that the top marginal income tax rates in Denmark and Sweden are above the revenue-maximising rates (when taking estimates of the sensitivity of taxable income to marginal tax rates into account but not any effects on migration).¹² In particular, it has been argued that high marginal income tax rates have adverse effects on entrepreneurship and the start-up of new firms (Hansson 2014). But again there are obvious conflicts with equity concerns.

Compared to other taxes, real estate taxes have low efficiency costs. This is because the amount of taxation is difficult to change through behavioural responses. Housing also represents a tax base which is not internationally mobile. A shared problem of the Nordic countries is the favourable tax treatment of owner-occupied housing relative to other types of assets, which promotes residential investment relative to other forms of investment (OECD 2012a,b,c). However, taxes on owner-

¹¹ There has been much less empirical research on the effects of taxes on the international mobility of labour than on ordinary labour supply effects. However, a recent study of the effects of preferential tax treatment for highly paid foreigners in Denmark points to large effects for them but small effects for natives (Kleven *et al.* 2013).

¹² In Norway the top marginal tax rate is somewhat below the revenue-maximising one according to the study. Finland and Iceland were not included.

occupied housing seem to have large legitimacy problems and to be very unpopular among the general public (Swedish Fiscal Policy Council 2011, 2012; Calmfors 2014).

In general consumption taxation is less distortionary than income taxation. This is an argument in favour of greater reliance on consumption taxes. An important observation is that VAT rates in the Nordic countries are lower for food than for other goods, which goes against optimal-taxation considerations. According to them, taxation of goods with low price elasticities (such as food) should rather be higher as distortionary costs are smaller, the more limited behavioural responses are (Swedish Fiscal Policy Council 2011, 2012). However, such considerations seem very much to go against the instincts of many citizens, who tend to dislike taxes on “necessary” activities (Calmfors 2014).

A final important challenge is to design the tax rules for closely held companies such that they balance the objectives of creating incentives for entrepreneurship and uniform treatment of different types of labour incomes in a reasonable way. The four largest Nordic countries all have dual income tax systems with a progressive labour income tax and a proportional capital income tax (which is lower than the highest marginal income tax on labour income). The tax rules for closely held companies define how owners’ incomes are split between labour and capital income for tax purposes. It remains a difficult challenge to design these tax rules such that entrepreneurship is promoted at the same time as tax avoidance through reclassification of labour income as capital income is counteracted (Lodin 2014).

The above considerations suggest that the Nordic countries face difficult challenges with respect to the design of the tax system. Some of the challenges are driven by international developments (greater mobility of some production factors) which speak in favour of lower taxation of highly mobile tax bases and higher taxation of less mobile ones. Others have more to do with the possibility of changing the tax structure such that the efficiency costs of taxation are reduced. Some potential tax changes will involve difficult efficiency-equity trade-offs. Other changes could improve efficiency without any equity costs (and possibly even both improve efficiency and be favourable from an equity perspective). It remains a difficult political challenge to devise efficiency-raising tax reform in such a way that it becomes politically feasible. Especially the Swedish experiences from the great tax reform in 1990/91 point to the benefits of comprehensive reform. This can make it possible to obtain a political majority for it as losers from individual tax changes can then be compensated through changes elsewhere in the tax (and transfer) system (Åsbrink 2014).

1.4.4 Fiscal sustainability

A fourth challenge concerns fiscal sustainability. As in other European countries the old-age dependency ratio (the ratio between people aged 65+ and people aged 15–64 years) is projected to rise substantially over the next 50 years. However, as shown in Figure 43 the rises in the Nordic countries are expected to be substantially smaller than the average rise among EU countries and to reach levels around or slightly above 45% as compared to around 55% in the average EU country. Still these demographic changes imply considerable sustainability problems because of rising costs for pensions, health care and old-age care. Figure 44 shows the European Commission's S2 indicator, which measures by how much taxes in per cent of GDP would need to be raised permanently for governments to stay solvent (that is, meet their intertemporal budget constraints according to which the present value of future fiscal surpluses must at least equal current debt) given projected future expenditure based on demographic developments. As can be seen, there is a large fiscal gap for Finland (around 6% of GDP), whereas the gaps are much smaller in Denmark and Sweden.¹³

The design of the pension system is crucial for fiscal sustainability because it both determines the costs for pensions and influences the tax base through its effects on the age of exit from the labour market. Sweden has opted for a sustainable pension system through *defined contributions*. In the Swedish system there is an automatic mechanism (the “brake”) for adjusting pension benefits so that the capitalised value of contributions plus the assets in the system’s buffer funds do not fall below the value of pension liabilities. The implication is that benefits will gradually be adjusted downwards when longevity increases (Swedish Fiscal Policy Council 2009). Finland and Norway have also introduced links between pension benefits and life expectancy (OECD 2012b,c). It is not clear, however, that such gradual downward adjustments of pension benefits are *politically* sustainable. Nor are they likely to be desirable.

An obvious possibility is to gradually raise the retirement age when longevity increases. Denmark has chosen this solution by explicitly indexing the retirement age to longevity (OECD 2012a). A similar reform is now being discussed in Sweden (Pensionsåldersutredningen 2013). But

¹³ According to national government estimates in the convergence reports to the EU, the picture is even more favourable for Sweden (with a negative S2 indicator, implying room for tax cuts) and Denmark (with a zero indicator, implying that the criterion for fiscal sustainability is exactly met).

it is more complicated there than in Denmark, as there exists no unique formal retirement age in Sweden: retirement is instead an individual decision based on the incentives in the pension system. To achieve a change in the retirement age, a number of parameters would have to be adjusted in the Swedish system: the minimum retirement age (now 61), the age at which employment protection legislation ceases to apply (now 67), the age at which employees are no longer eligible for unemployment and sickness insurance (now 65) and the age at which the guarantee pension is paid out (now 65; such pensions are paid to people who have accumulated the right to only a very low pension in the ordinary system).

Yet another option would be to raise the contributions to the pension system. Anyway it is clear that designing the old-age pension system such that its long-run sustainability is guaranteed remains an important challenge for the Nordic countries.

However, the effective retirement age depends also to a large extent on the design of early retirement schemes. These have been tightened in all the four largest Nordic countries (OECD 2012a,b,c; Swedish Fiscal Policy Council 2009). If the old-age retirement age is raised, there are strong arguments for establishing more generous systems for disability pensions for those who cannot go on working because of health problems, as has been done in Denmark (OECD 2012a). It is, however, a difficult challenge how to trade off income protection for disabled older workers against the objective of raising the effective retirement age, which can easily be jeopardised by broad gateways to disability pension schemes. The obvious way to alleviate this trade-off is to adapt working conditions to the needs of more elderly employees. It remains an open question how government policy best strengthens employers' incentives to do this.

Sustainable pension systems are not enough to address the fiscal challenges from an ageing population as this will also entail rising costs for health and old age care as well as a decrease of the share of the population that is working and paying taxes. An even worse problem likely arises from the coexistence of Wagner's law (according to which government expenditure rises with economic growth because of increasing demand for it) and Baumol's disease (according to which the relative cost of services – including publicly financed ones – rises with growth because productivity increases more slowly in services than in goods production) will create further long-run pressures on public finances. Unless Baumol's disease can be cured through higher productivity growth in the production of public services, these will have to be financed through either more user fees and insurance solutions or higher

taxes relative to GDP. Both solutions have obvious drawbacks. Increased reliance on user fees raises serious equity concerns. Higher tax rates may have adverse effects on growth (see Konjunkturrådet 2014).

Fiscal sustainability problems will be reduced to the extent that employment in general can be increased. An important margin of adjustment concerns the age of entry into the labour market of young people. To the extent that the entry age can be lowered, the need for raising the exit age becomes smaller. This raises important issues of how governments can strengthen the incentives for earlier entry, for example, through reductions of income tax progressivity (raising the return on graduating from studies at a lower age) or more favourable grants to students graduating at a lower age.

To ensure the sustainability of public finances and avoid future government debt crises, fiscal policy in general must be conducted in a responsible way. As discussed in Sections 1.2 and 1.3, the four largest Nordic countries have managed their public finances well in recent years. This is probably to a large extent explained by earlier fiscal deficit problems which have promoted a consensus on the need for fiscal responsibility (Calmfors 2013a,b). Fiscal frameworks have also been strengthened including inter alia the formulation of medium-term fiscal targets and government expenditure ceilings. However, the prolonged international crisis has put pressures on the public finances in Denmark, Finland and Sweden, all of which at present have fiscal deficits (as has Iceland). Fiscal deficits are desirable in the current downturn as they raise aggregate demand. But it should not be taken for granted that earlier prudent fiscal policy will automatically be restored in the future. To guarantee continued fiscal responsibility represents another challenge for economic policy. It could require stronger legal backing for fiscal targets and expenditure constraints, the establishment of guidelines for how deviations from targets are to be handled, and that expenditure ceilings are extended to cover more expenditure categories and impose more restrictions on local governments (the last consideration does not apply to Sweden but to all the other Nordic countries).

In recent years there has been a strong international trend towards establishing independent fiscal monitoring institutions, so-called *fiscal councils* (Hagemann 2010, Calmfors and Wren-Lewis 2011). The hope is that such institutions will strengthen the incentives for fiscal responsibility by increasing the transparency of fiscal policy and raising the rep-

utation cost for governments of fiscal laxity. So far Sweden is the only Nordic country which has established a proper fiscal council.¹⁴ However, also here the role has clear limitations: the council is only commissioned to evaluate the government's Spring Fiscal Policy Bill but not the draft budget before it is decided in the parliament. There are also important questions of how large resources such a council should have in order to function effectively and whether there should be special budgetary arrangements in order to protect the council from political pressures (Calmfors and Wren-Lewis 2011, Calmfors 2012b, 2013).

1.4.5 Employment

During the on-going economic crisis unemployment has increased in all the Nordic countries. Large rises in unemployment tend to become persistent. This is obvious from Figure 32, which shows that unemployment in Finland and Sweden has not come down again to the earlier levels after the crises in the first half of the 1990s. It is an important challenge, especially in Iceland and Denmark where recent unemployment rises have been the largest, to ensure that these rises do not become permanent. According to OECD (2013c) structural unemployment (NAIRU, which is the unemployment consistent with stable inflation) has recently increased in these two countries, but so far not in the other three Nordic countries.

All the Nordic countries have serious structural problems in the labour market. To a large extent they relate to low employment of the low-skilled and of non-European immigrants, groups which tend to overlap. As can be seen from Figure 45, Sweden is the Nordic country with the largest proportion of foreign-born residents from outside Europe (7%) whereas the numbers are much lower in Iceland and Finland (2–3%). In Sweden employment for those with only basic schooling never recovered after the crisis in the 1990s. Instead there has been a continuous downward trend. One possible explanation is a changed composition of this group: the share of foreign-born has increased much more in this

¹⁴ Denmark's Economic Council functions partly as a fiscal council, but the OECD (2012a) has recommended that it be given a clearer mandate to perform such a task (OECD 2012a). Norway has set up an Advisory Panel, which gives "expert judgment and advice" on modelling and long-term simulation issues, as well as on analyses in budget reports and white papers on long-term perspectives. This is a much more limited role than that of a fiscal council (OECD 2012c). Finland is now setting up a fiscal council as part of the economic governance reforms in the euro area, but it seems likely to get a less prominent role than the Swedish council (Korkman and Suvanto 2013).

education group than in groups with higher education (Bengtsson *et al.* 2013). Another possible explanation is that technological developments have raised skill requirements.

Finland and Sweden have higher youth unemployment than the other three Nordic countries (Figure 33). Moreover, Sweden has had a rising trend. It represents a major challenge to reverse this development. Reforms have been undertaken to improve vocational schooling and to introduce apprenticeship education along similar lines as in Denmark (which has much lower youth unemployment than Sweden), but the lesson seems to be that it takes a long time to get these systems to work properly. However, the long-term award especially from well-functioning apprenticeship systems may be high, as there is reason to believe that long-lasting exposure of in particular low-educated youth to a single employer may be much more effective in facilitating the school-to-work transition than more casual contacts with many employers.¹⁵

Denmark and Finland both have considerably lower employment rates among 55–64 year olds than Iceland, Norway and Sweden (Figure 8). Although measures have been taken to reduce the access to early retirement in Denmark and Finland (OECD 2012a,b), it remains a challenge there to increase employment among elderly people. Norway and Denmark have high rates of sickness absence and retirement for disability reasons in common, which are issues that should be addressed (OECD 2012b, c).

It is important to avoid the temptation to see high employment of elderly people as a threat to the employment of young people and to let that motivate schemes for earlier labour market exit of people approaching the retirement age. Previous research summarised in OECD (2013c) as well as new research results there do not find any evidence that employment of older people crowd out employment of youth. If anything, higher employment for older people seems to go hand in hand with higher employment of youth implying that the two categories of workers are complements rather than substitutes in production.

A standard prescription to prevent unemployment from becoming entrenched is to use labour market activation programmes. Unfortunately, large-scale programmes of this type often deliver disappointing results because of locking-in effects and low efficiency. To improve the quality of activation policies is a major challenge. There are a whole host

¹⁵ See Kramarz and Nordström Skans (2013).

of issues that can be raised in this context. How can activation measures for those on sickness insurance and disability pensions with restricted work ability be strengthened without overloading the public employment service with new client groups that divert resources away from those with more work capacity? To what extent can the efficiency of the public employment service be raised through more sophisticated evaluations of the various employment offices, controlling in a systematic fashion for differences between local conditions and client groups? Can the allocation of job seekers between various activation programmes be improved through better use of profiling tools? What are the best ways of organising the institutions serving the unemployed? Should there be single gateways that give the unemployed co-located access to benefits and employment services as has been a feature of recent reforms in Norway and Finland (OECD 2013c)? To what extent should public employment services be contracted out to private providers? Should activation programmes to a larger extent allow unemployed people to access the ordinary school and university system against which there are now often restrictions (because of a fear of unequal treatment of ordinary students and labour market programme participants).

Stricter limits on the maximum duration of unemployment benefits and benefits that gradually fall over an unemployment spell (as were introduced in Sweden in 2007) strengthen the incentives for employment. However, such measures involve difficult trade-offs. Iceland, where the maximum benefit period was extended when unemployment rose in the crisis, provides an illustration: there was a strong insurance motive for this, but at the same time this has weakened the incentives for return to work.

As was clear from Table 4, labour force participation rates have fallen very little during the economic crisis in Sweden. Although this raises measured unemployment now, such increased attachment to the labour market is likely to be beneficial for employment in the long run when labour demand picks up again. The small fall in labour force participation in Sweden can probably be explained by the introduction of a generous earned income tax credit, which increases the return to work, and stricter gate-keeping in the systems of sickness insurance and disability pensions (Swedish Fiscal Policy Council 2010, 2011). Such measures, however, raise important questions about the desirable trade-off between, on the one hand, income protection in the case of sickness, disability and unemployment and, on the other hand, the incentives for employment.

To allow people who want to work to do so is a welfare objective in itself. But higher employment is also a means to achieve fiscal sustaina-

bility as it increases the tax base. This, however, presupposes that increased employment is achieved in ways that give a net improvement of public finances. This is, of course, the case if reduced benefit generosity raises employment. It is not, for example, the case with the Swedish earned income tax credit, the self-financing of which according to various computations is probably only 20–30% (meaning that the direct cost of the tax credit is offset only up to 20–30% by the increased tax revenues from higher employment; see Swedish Fiscal Policy Council 2010, 2011).

Yet another issue concerns employment protection and then in particular the balance between regulation of fixed-term contracts and regulation of open-ended contracts. Especially Sweden, but also Denmark and Iceland, have considerably stricter regulation of open-ended contracts than of fixed-term ones. This may not be desirable as both theoretical and empirical research suggests that more flexible regulation of fixed-term contracts does not raise employment but creates incentives for firms to substitute temporary for permanent workers with low transition rates between these states. This may result in a dual labour market where fixed-term contracts become a trap, with some workers alternating between dead-end jobs and unemployment and receiving little training, rather than a stepping-stone to more stable employment (OECD 2013c). There is also some evidence suggesting that a large gap between stringent regulation of regular employment and loose regulation of temporary employment is associated with weak productivity growth (Bassanini *et al.* 2009).

1.5 Conclusions

The Nordic model has traditionally been seen as one of a generous welfare state based on universalist principles offering a high degree of social protection, financed by high taxes, and involving encompassing labour market organisations which regulate employment conditions in collective agreements. At the same time the model has included openness to foreign trade and technological advances as well as acceptance of the structural change following from this. The model has delivered high living standards and high employment.

Over the last few decades the model has undergone large changes at the same time as other countries have moved in the earlier Nordic direction. Overall, the Nordic countries appear as a somewhat less distinct group different from other Western European countries than was the

case before. Although government employment is still higher than in comparable countries, the Nordics are no longer unique with respect to government expenditure and tax revenues relative to GDP, redistributive effects of tax and transfer systems, and social protection. In these respects there are now great similarities with Continental European countries such as Austria, Belgium, France, Germany and the Netherlands. Although trade union membership is still high, the coverage of collective agreements is no longer higher in the Nordics than in Continental Europe. As elsewhere there have been substantial product market deregulations in the Nordic countries.

It is reasonable to talk about a Nordic *flexicurity* model with a strong focus on labour market activation measures facilitating structural change at the same time as employment protection is moderate: more strict than in Anglo-Saxon countries but less strict than in Continental and Southern Europe.

The Nordic model continues to deliver high employment, especially for females and older people. It also delivers high income equality. At the same time, the Nordics rank high in most comparisons of “competitiveness” and “organisational and technological change.” A distinctive feature is that citizens have a high degree of *trust* in society, which is likely to facilitate decision-making in general as well as adjustment to foreign trade and technological change.

The period from the mid-1990s till the beginning of the financial crisis in 2007/08 was a period with relatively high growth in both output and employment in the Nordic countries. Public finances were consolidated due both to active decisions and strong automatic stabilisers associated with large public sectors. These favourable developments are likely to have reflected fundamental structural factors especially in Sweden, Finland and Norway. In Iceland and, to some extent in Denmark, they to a large extent also reflected unsustainable booms. There were strong adverse effects on output and employment when the booms came to an end with an acute financial and macroeconomic crisis in Iceland and protracted downturns in Denmark and Finland. Sweden and Norway are the Nordic countries that have weathered the international economic crisis the best. In Sweden this has happened at the same time as there have been substantial reductions in the degree of social protection (in unemployment and sickness insurance as well as early retirement). In Norway this has not occurred.

Overall, output and labour market deteriorations, as well as deteriorations in the fiscal balance, have been larger in the Nordics than in Continental Europe during the international economic crisis that started in

2008. The Nordic countries have not been more resilient than those economies during the crisis, but they have benefitted from starting out from better positions.

All the Nordic countries face great challenges for the future. A key challenge is to maintain a high rate of productivity increase as this is the basis for rising living standards. There are worrying signs that the trend growth of productivity may be slowing down. It is not obvious how this should be countered. A particular problem for small economies like the Nordic ones that find themselves at the technology frontier in many fields is that they need to base innovations on their own R&D efforts and not on imitation. Choices need to be made about where to focus innovation activities. It is not obvious what role government policy should have in such choices as government authorities are usually not well suited to picking winning technologies.

In the case of Finland, a particular problem is the need for reallocation of resources from the stagnating ICT, forest and steel industries, which have been hit by exceptional shocks. Coping with these asymmetric disturbances as a member of the Eurozone and thus without access to the tool of an exchange rate depreciation of its own currency represents a major challenge.

A key long-run factor for productivity increases is accumulation of human capital, which requires efficient school systems. Finland has shown excellent results in the past, but performance has deteriorated recently. Swedish school results have exhibited a long-run downward trend, which seems very difficult to break.

More mobile tax bases (firms, capital and labour) will expose existing tax systems to strains, although it is not clear at what pace, especially when it comes to mobility of labour. There is large room for increasing the efficiency of tax systems through lower top marginal labour income tax rates and lower capital income taxation at the same time as consumption and real estate taxes could be raised. However, such tax reform raises serious equity concerns. It is not obvious which trade-offs should be made.

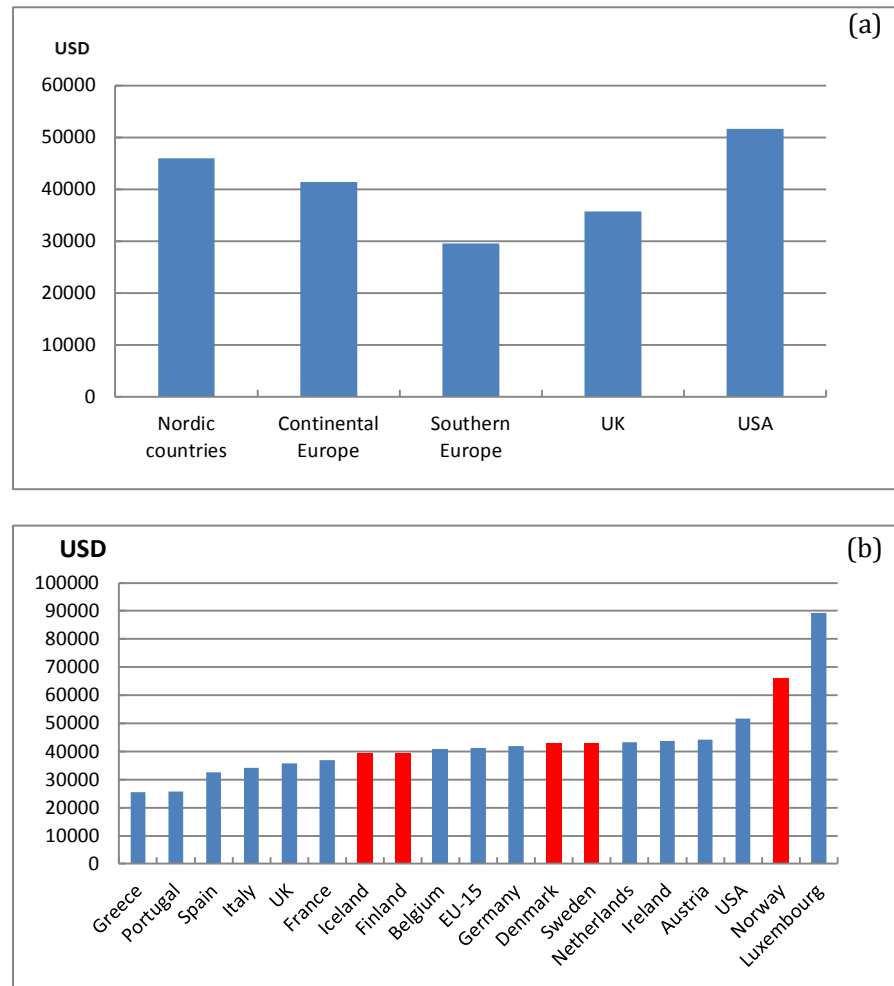
In the future the Nordics will face fiscal sustainability problems. This is partly due to ageing populations. But the greatest problems are the probable increases in the demand for welfare services, the relative costs of which are gradually rising as incomes become higher (the combination of Wagner's law and Baumol's disease). These problems are likely to be less severe than in most comparable countries, but they will still be serious. They will likely require pension reforms linking the retirement age to longevity. If the old-age retirement age is raised, there are strong

arguments for generous systems for disability pensions for those who cannot go on working because of health problems. It is a difficult challenge how to trade off income protection for disabled older workers against the objective of raising the effective retirement age which may require narrow gateways to disability pension schemes. However, pension reforms will not be enough for ensuring fiscal sustainability. There will also be difficult choices between allowing the tax ratio to rise (with potential adverse effects on growth) and introducing more user fees and insurance solutions (with likely adverse effects on equity).

All the Nordic countries face the challenge of reducing unemployment and to prevent the increases of recent years from becoming persistent. Problems are to a large extent centred on low-skilled workers and non-European immigrants, groups which often overlap. Sweden has a worse youth unemployment problem than the other Nordic countries. The problems in the labour market raise a host of questions regarding how labour market activation policies can be made more efficient.

To sum up, it is still reasonable to talk of a Nordic welfare model, although the Nordics today differ less from other comparable European countries than earlier. The Nordic countries have done very well from the mid-1990s till the onset of the international economic crisis in 2008. They have all been hurt by the crisis, but have benefitted from starting out in a better position than many comparable countries. Continued successful economic performance does, however, require that future policy can address a number of challenges. A high degree of trust in society among citizens may be the most valuable asset when trying to meet these challenges, as it is likely to facilitate the adoption of appropriate policies.

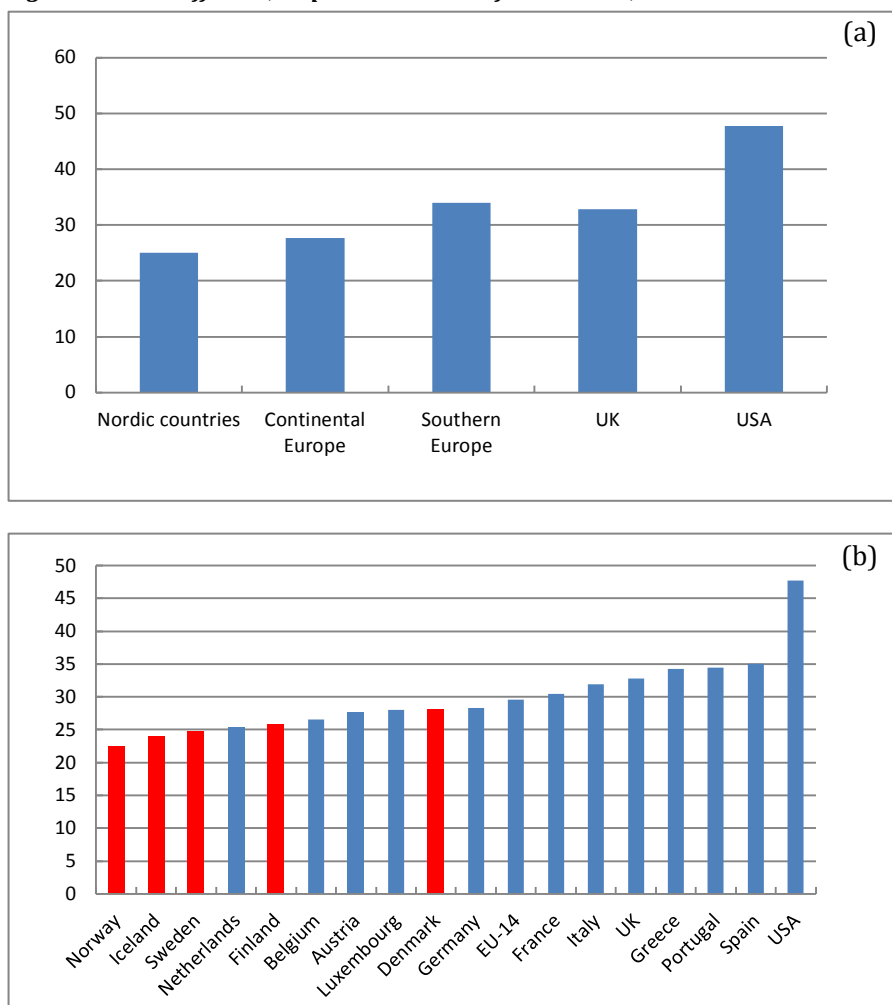
Figure 1: PPP-adjusted GDP per capita, 2012



Note: All aggregates are arithmetical averages. The Nordic countries refer to Denmark, Finland, Iceland, Norway and Sweden; Continental Europe to Austria, Belgium, France, Germany and the Netherlands; Southern Europe to Greece, Italy, Portugal and Spain; and EU-15 to Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden and the UK.

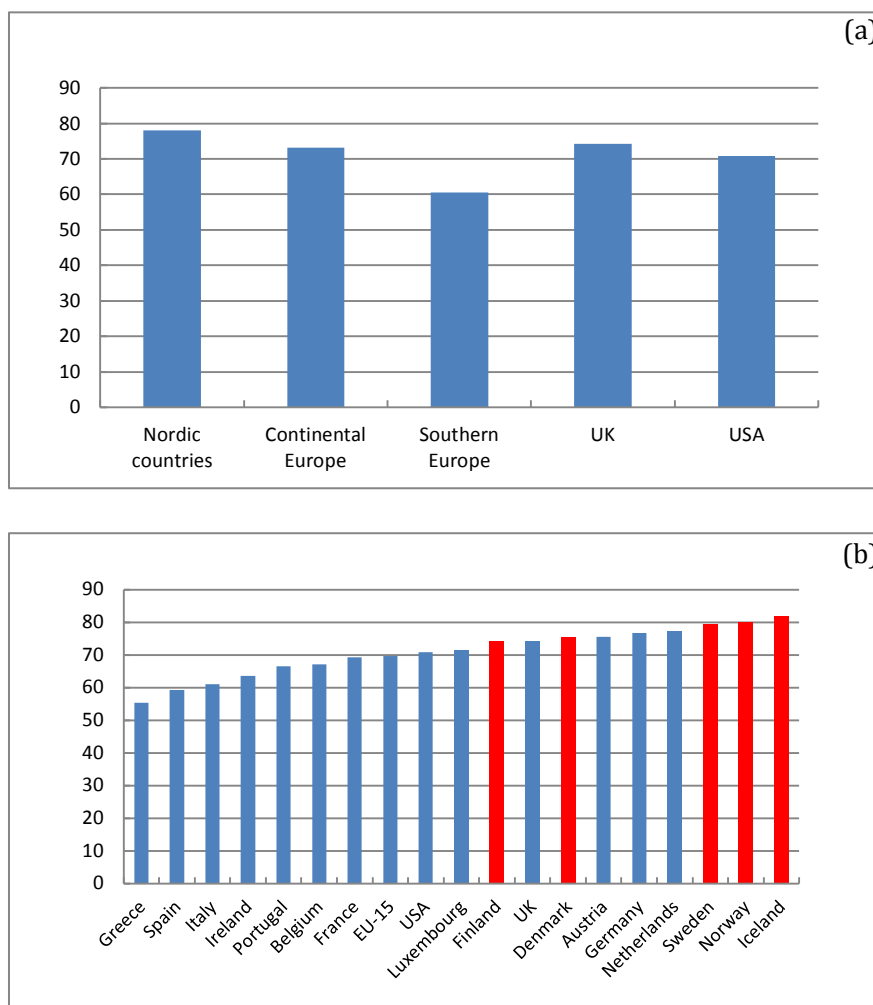
Source: OECD.

Figure 2: Gini coefficient, disposable income of households, 2012



Note: See Figure 1. EU-14 refers to Austria, Belgium, Denmark, Finland, France, Germany, Greece, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden and the UK. The Gini coefficient can take on values between zero (all households have the same income) and one (all incomes go to only one household). The coefficient refers to the whole population.
Source: Eurostat.

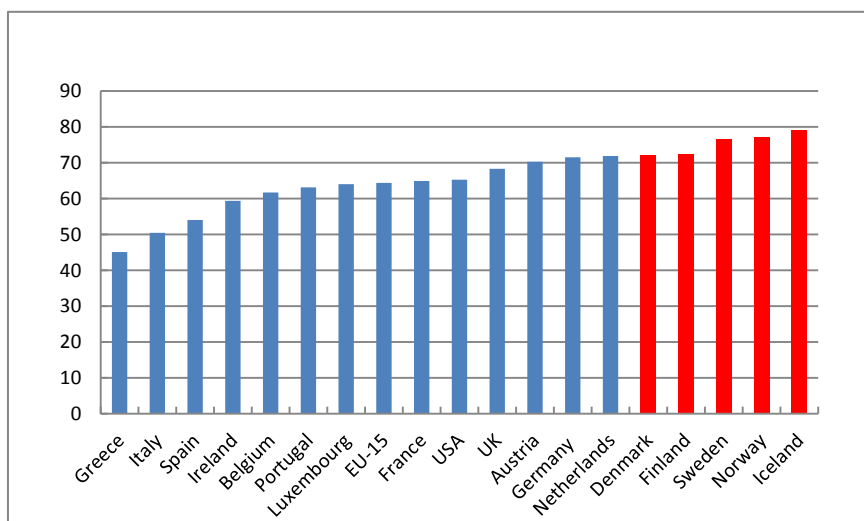
Figure 3: Employment rate, percentage of population 20–64 years old, 2012



Note: See Figure 1.

Source: Eurostat.

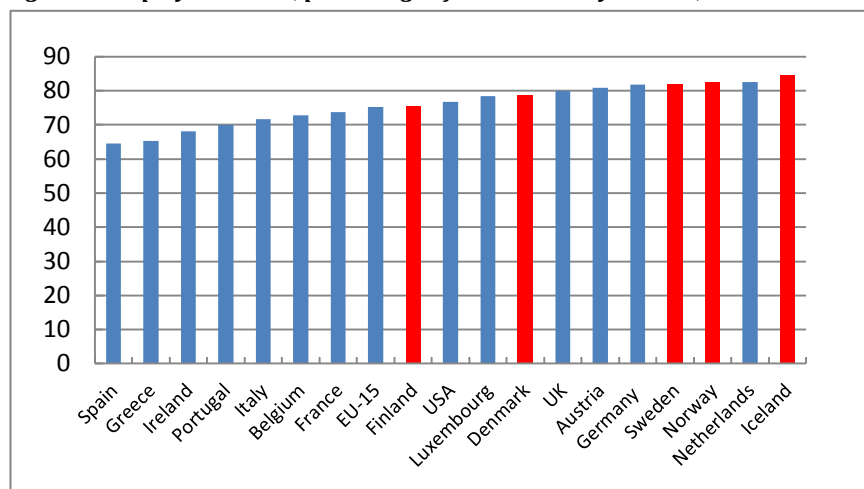
Figure 4: Employment rate, percentage of females 20–64 years old, 2012



Note: See Figure 1.

Source: Eurostat.

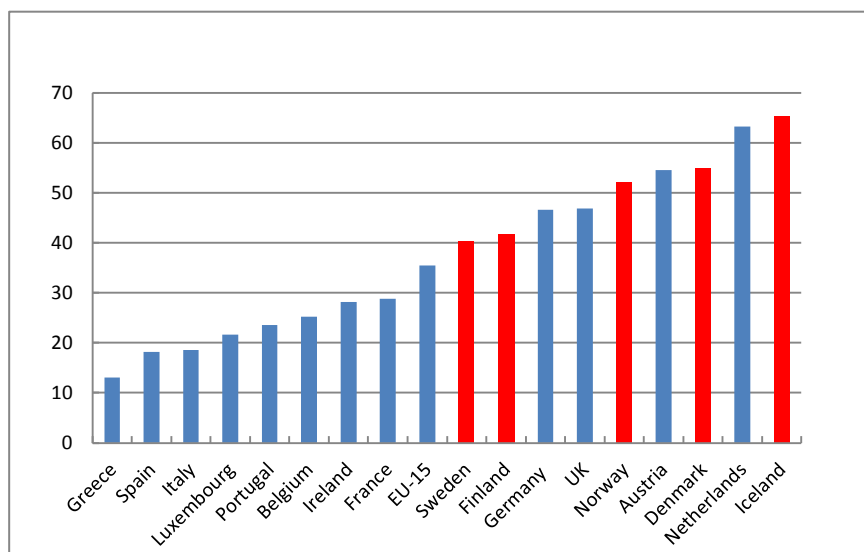
Figure 5: Employment rate, percentage of males 20–64 years old, 2012



Note: See Figure 1.

Source: Eurostat.

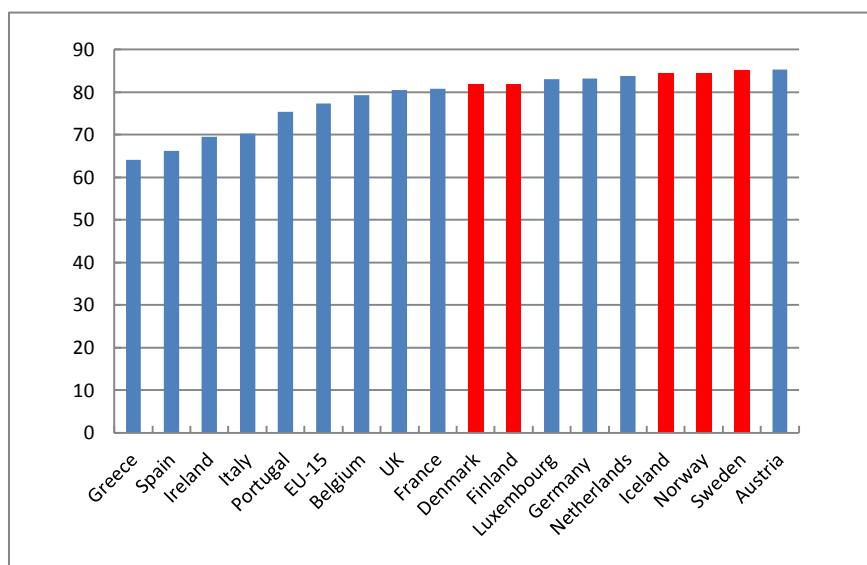
Figure 6: Employment rate, percentage of population 15–24 years old, 2012



Note: See Figure 1.

Source: Eurostat.

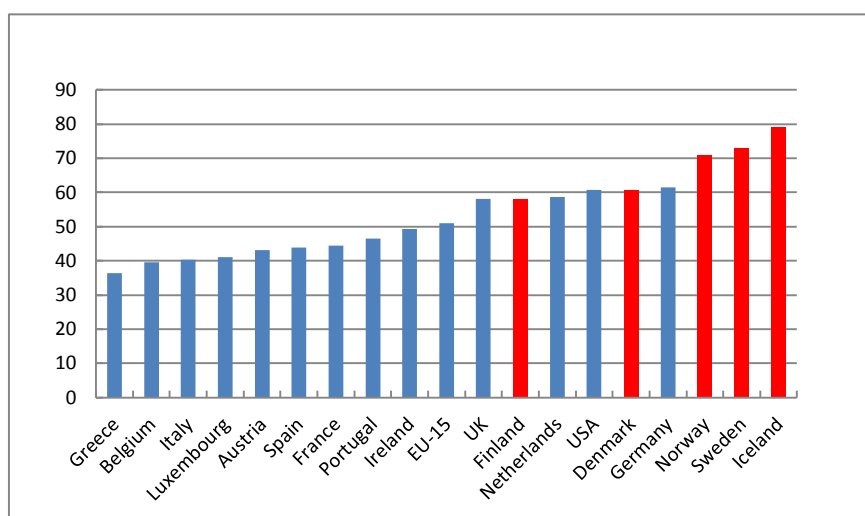
Figure 7: Employment rate, percentage of population 25–54 years old, 2012



Note: See Figure 1.

Source: Eurostat.

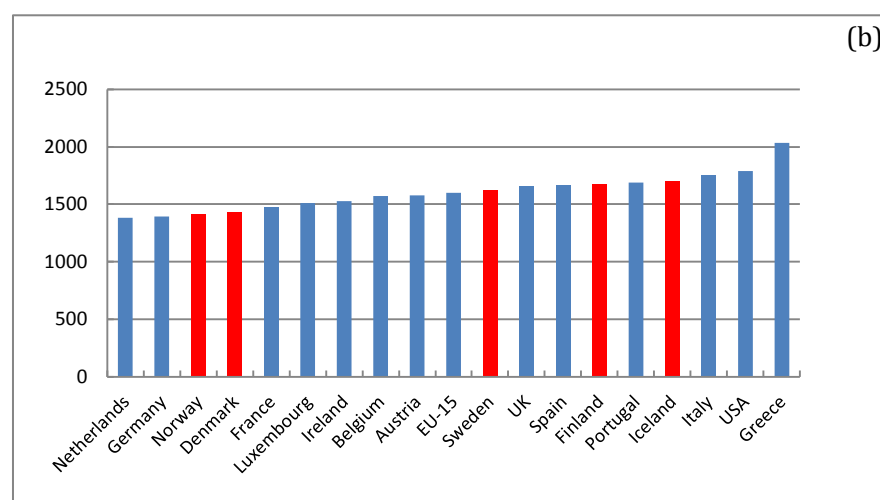
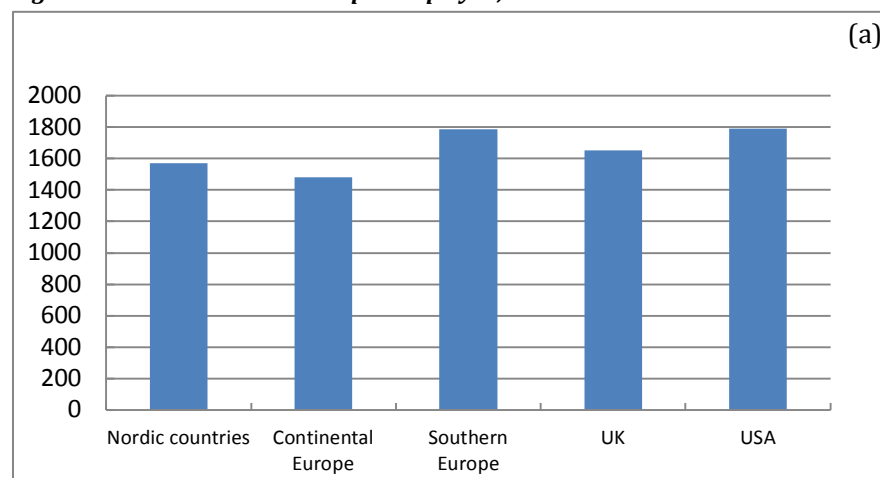
Figure 8: Employment rate, percentage of population 55–64 years old, 2012



Note: See Figure 1.

Source: Eurostat.

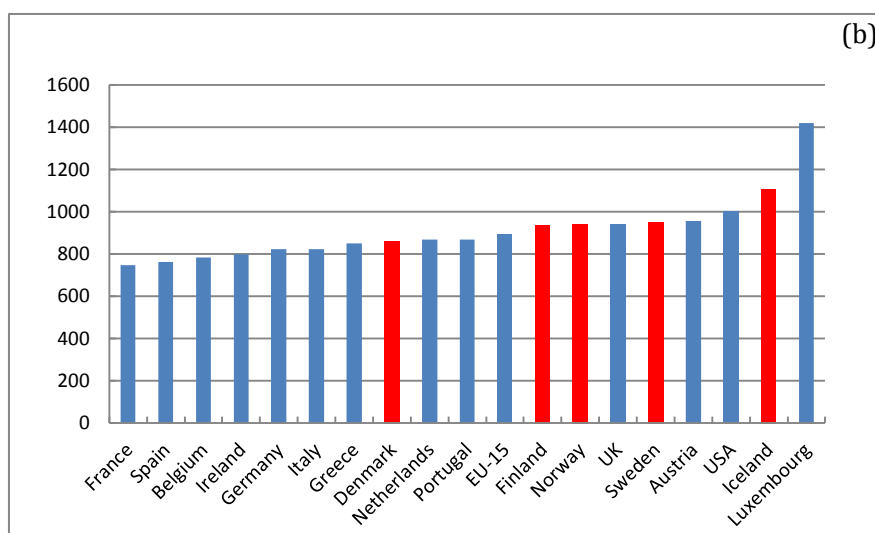
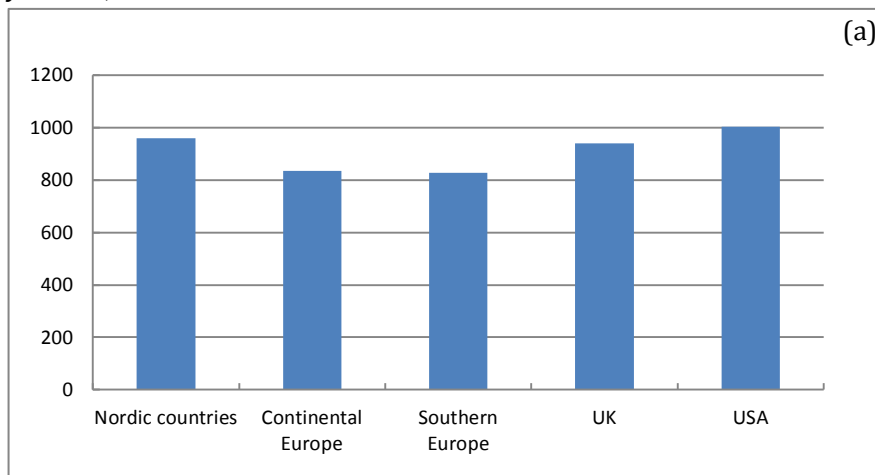
Figure 9: Annual hours worked per employed, 2012



Note: See Figure 1.

Source: OECD.

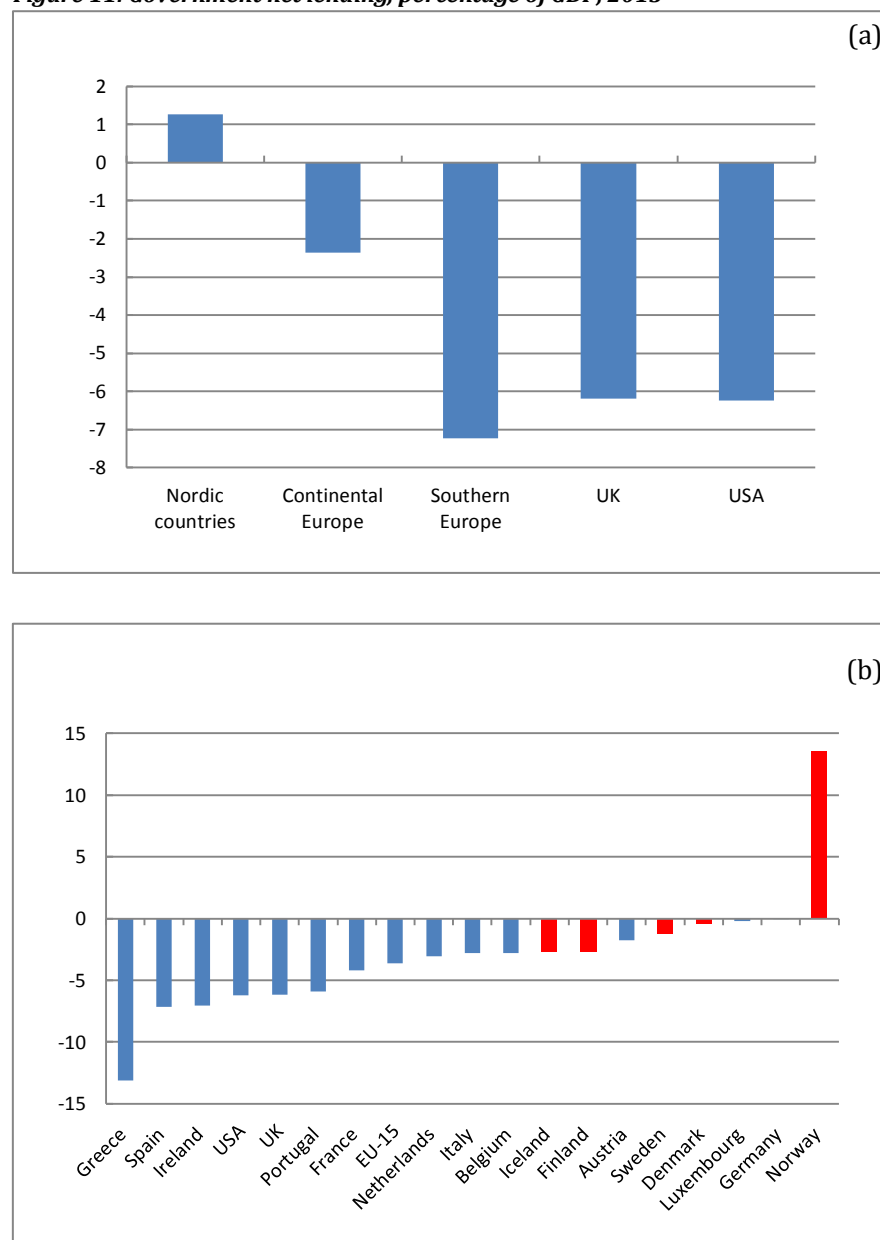
Figure 10: Annual hours worked per person in working-age population 20–64 years old, 2012



Note: See Figure 1.

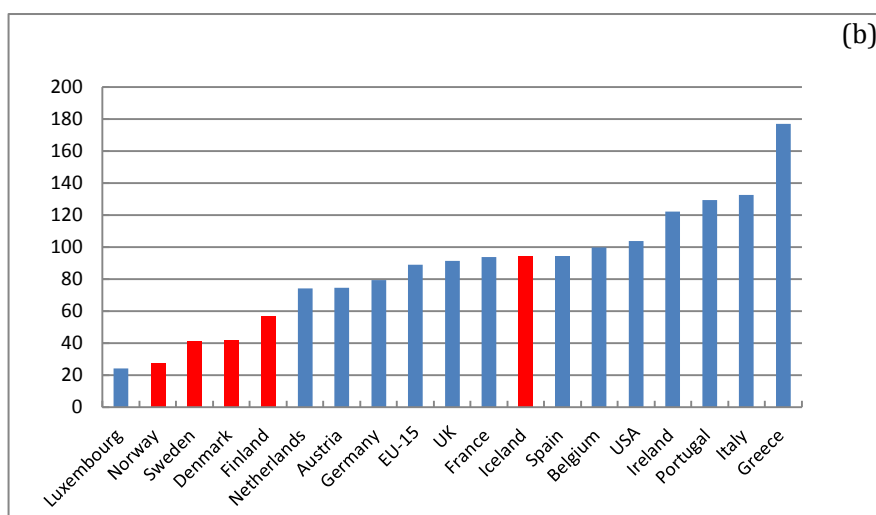
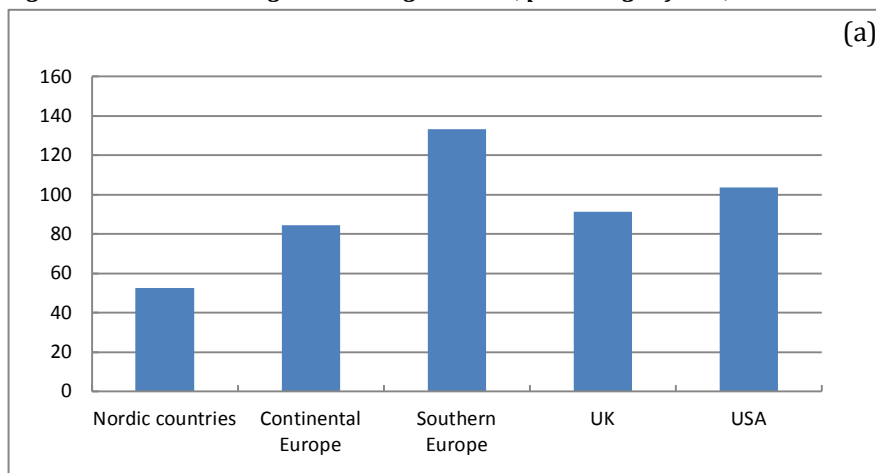
Source: Eurostat.

Figure 11: Government net lending, percentage of GDP, 2013



Note: See Figure 1. 2013 data are preliminary estimates.
Source: Ameco.

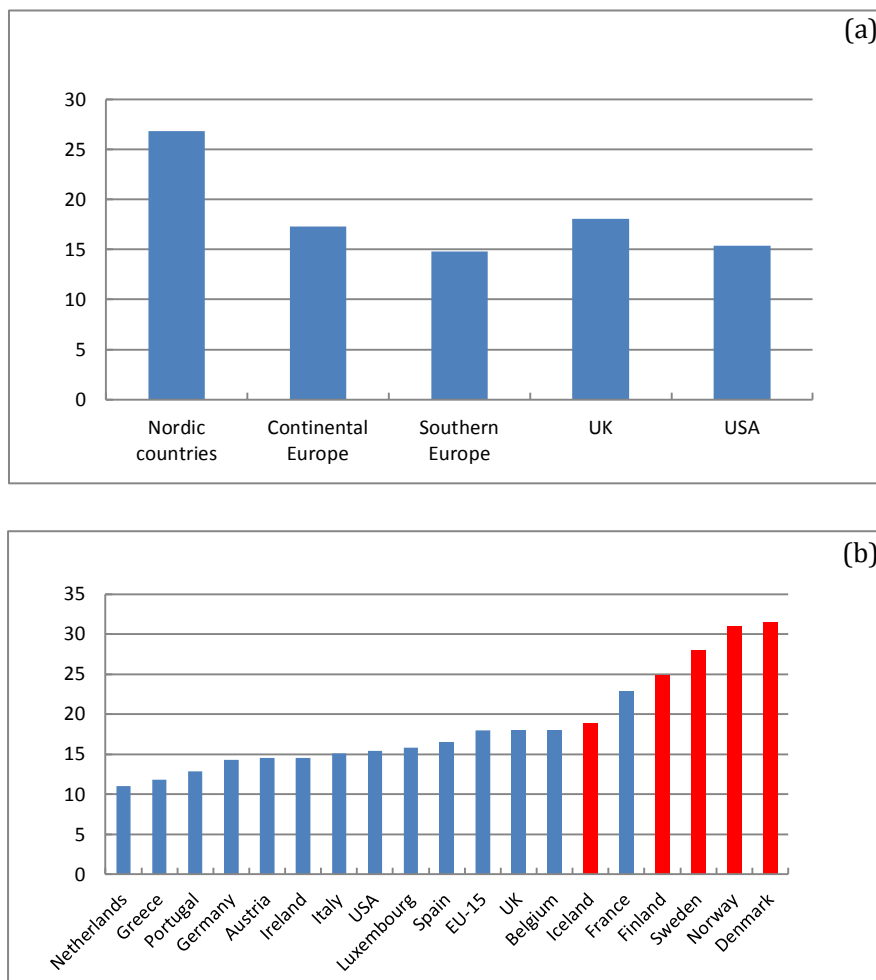
Figure 12: Consolidated government gross debt, percentage of GDP, 2013



Note: See Figure 1. Consolidated general government gross debt (Maastricht debt) is defined as the general government total debt after internal claims and liabilities in the sector have been netted out. 2013 data are preliminary estimates.

Source: Ameco.

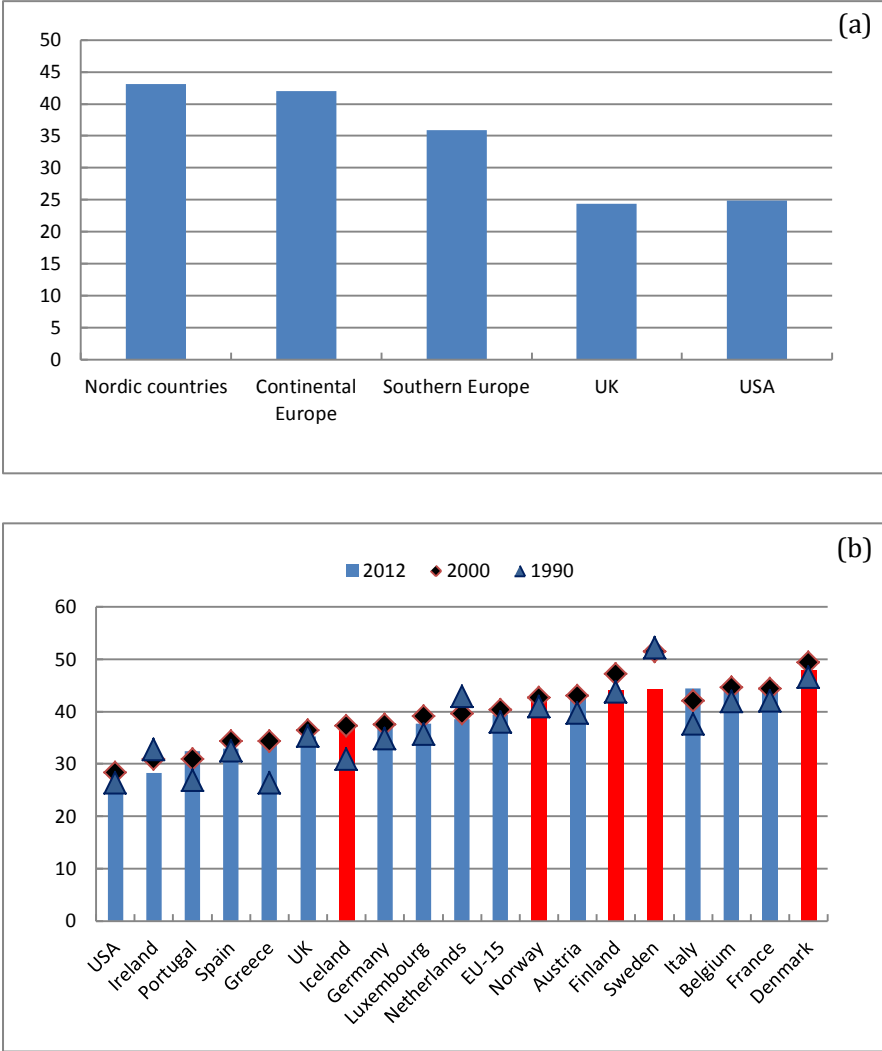
Figure 13: General government employment, percentage of total 20–64 years old, 2012



Note: See Figure 1.

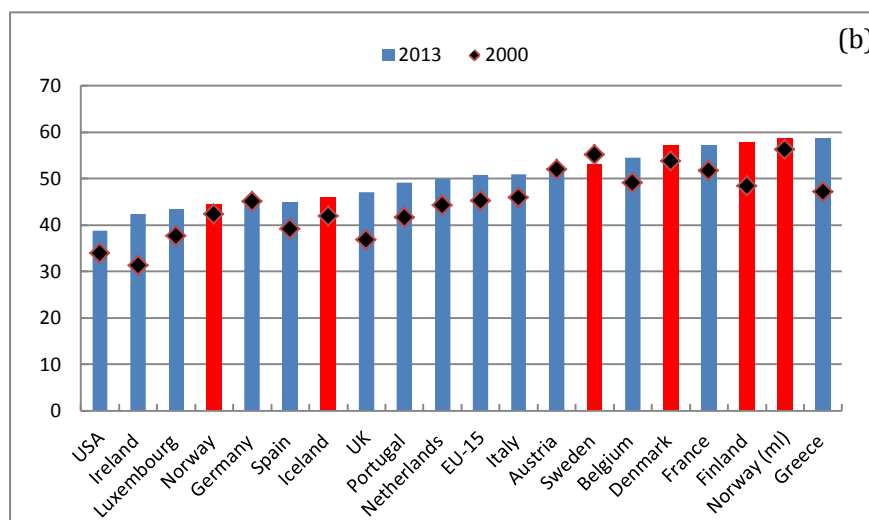
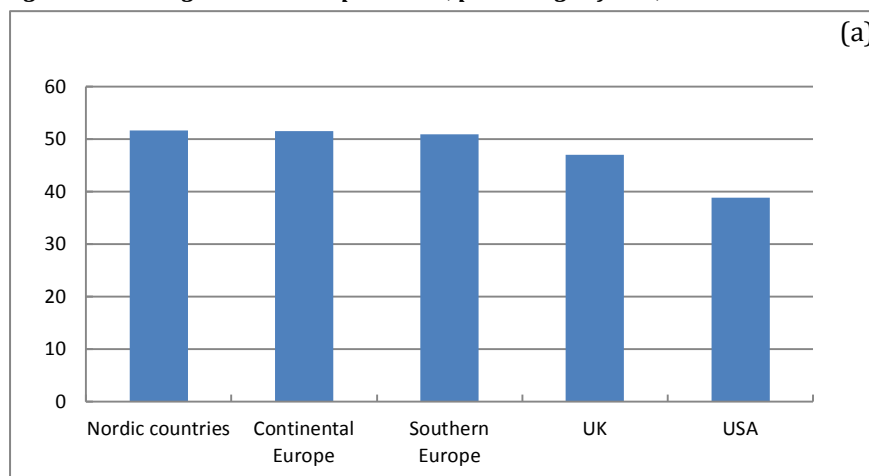
Source: OECD Economic Outlook.

Figure 14: Total tax revenue, percentage of GDP, 2012



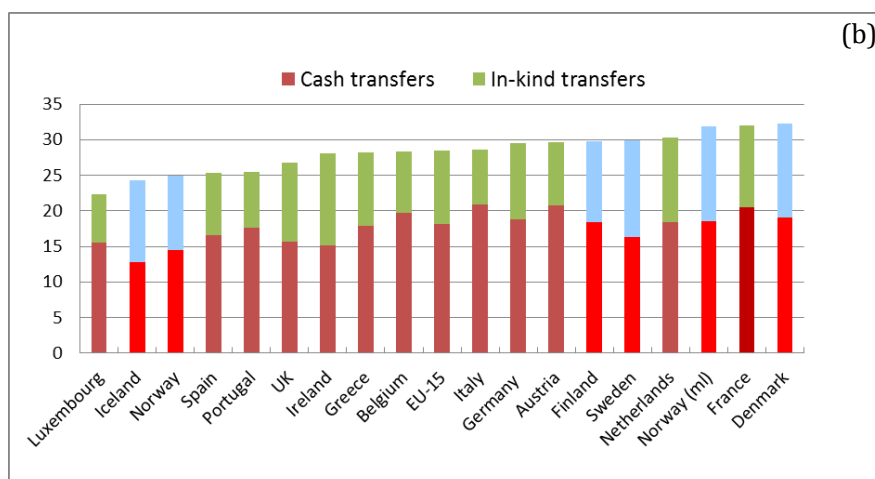
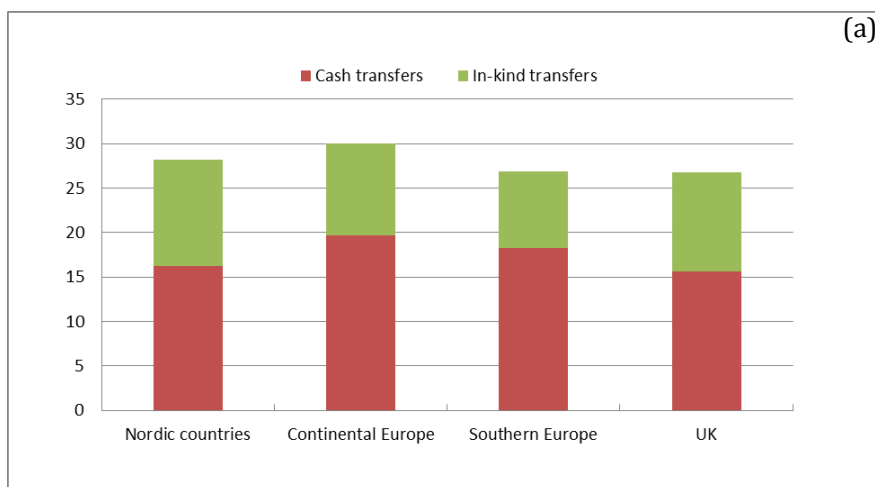
Note: See Figure 1.
Source: OECD.

Figure 15: Total government expenditure, percentage of GDP, 2013



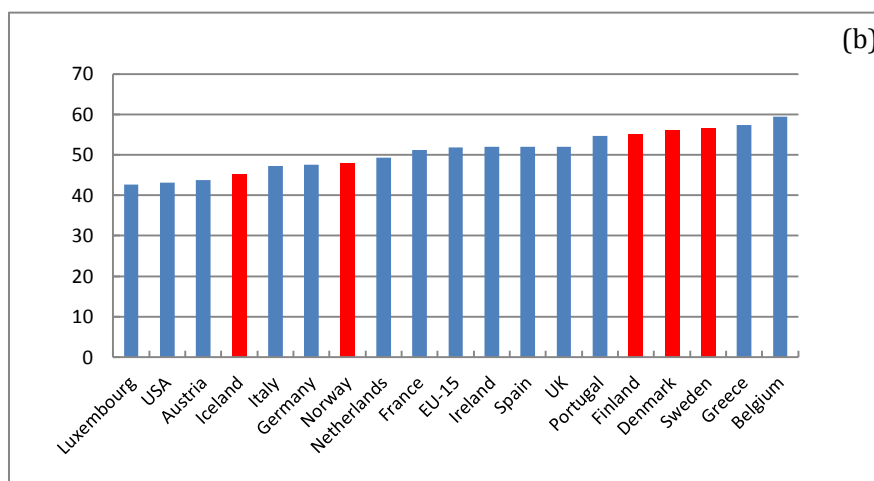
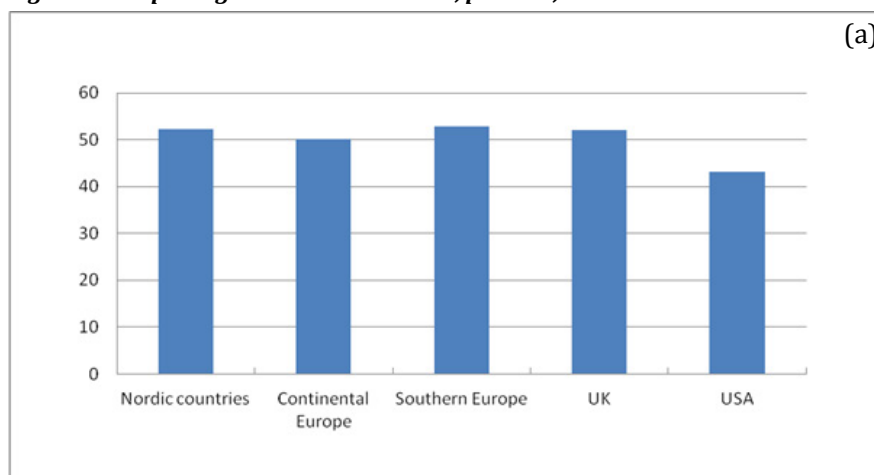
Note: See Figure 1. 2013 data are preliminary estimates. Norway = Mainland Norway.
Source: Ameco.

Figure 16: Total social protection transfers, percentage of GDP, 2010



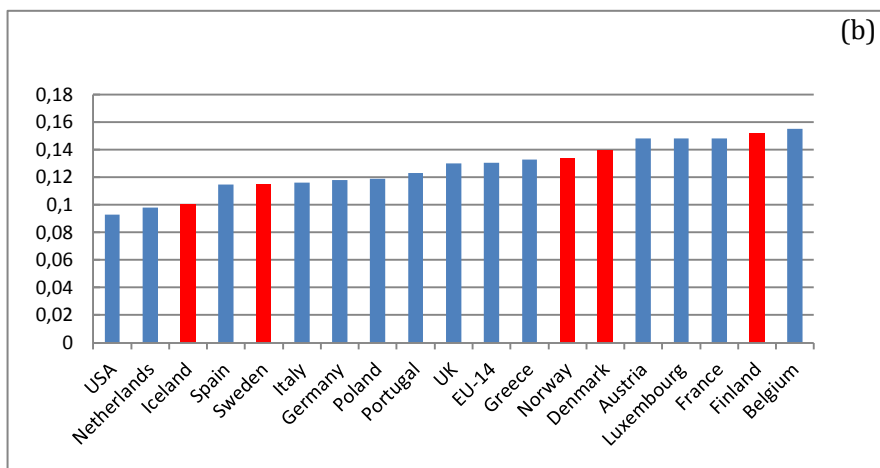
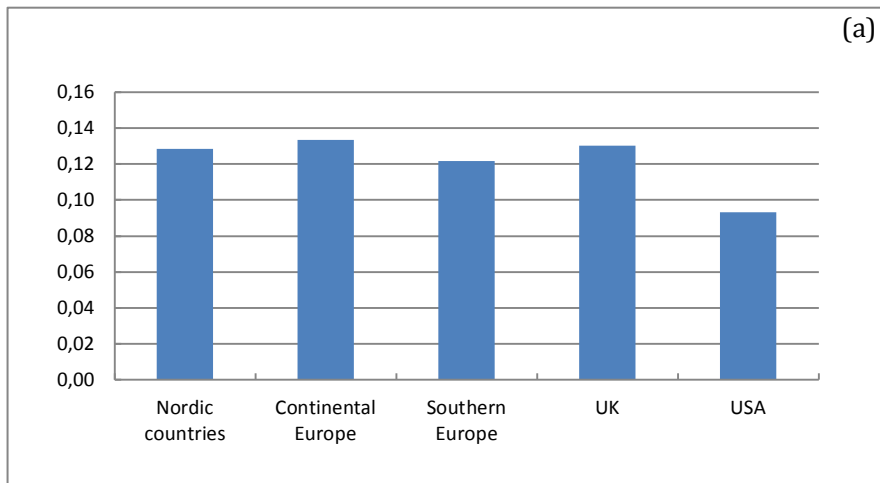
Note: Cash transfers refer to sickness and disability benefits, maternity allowances, unemployment benefits, pensions etc. In-kind transfers refer to public services like education, health and old age care etc. See also Figure 1. Norway = Mainland Norway.
Source: Eurostat.

Figure 17: Top marginal income tax rates, per cent, 2012



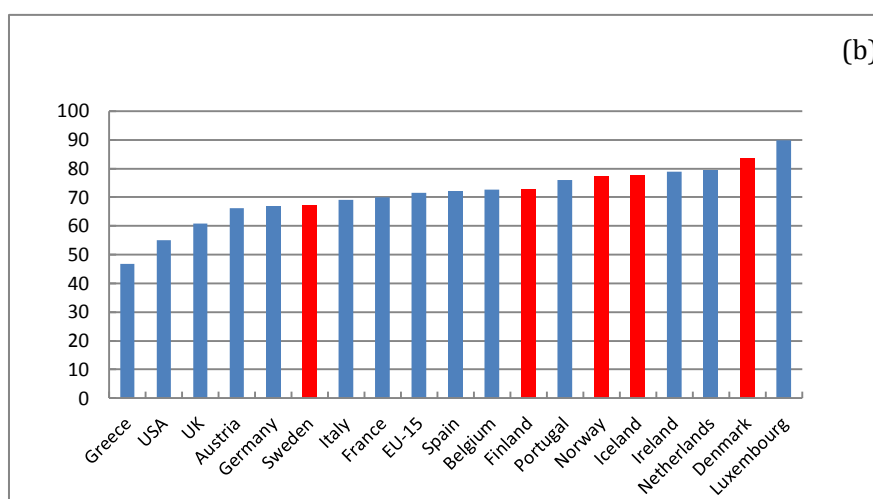
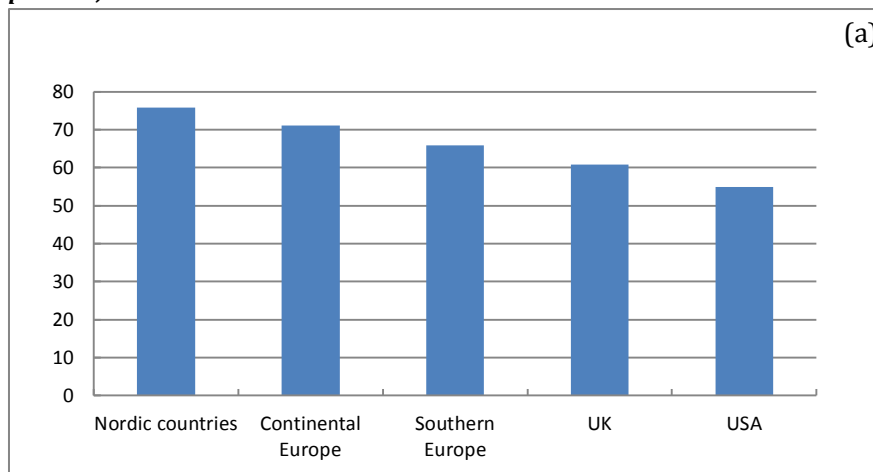
Note: The top marginal income tax rate refers to personal income tax and employee social security contributions (all-in-rate). See also Figure 1.
Source: OECD Taxation of Wage (2012).

Figure 18: Redistribution through taxes and transfers, 2010



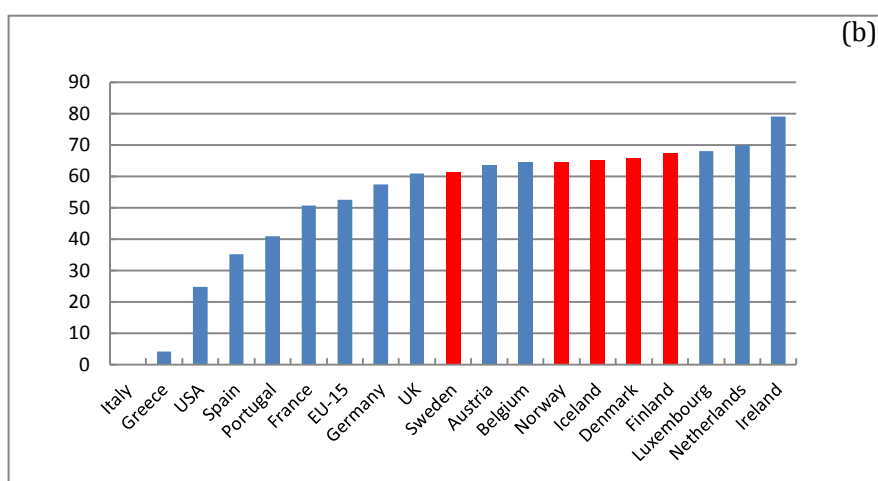
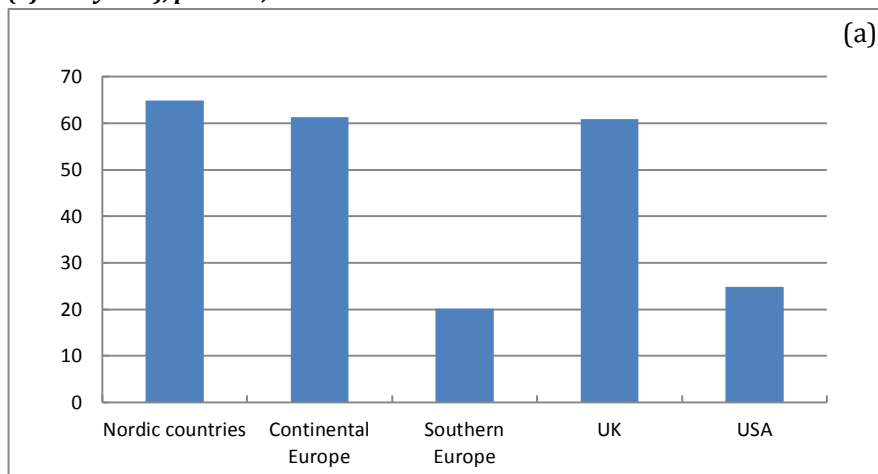
Note: Redistribution is measured by the difference in the Gini coefficient between household market income and disposable income for the working-age population. See also Figure 1. EU-14 refers to Austria, Belgium, Denmark, Finland, France, Germany, Greece, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden and the UK.
Source: OECD.

Figure 19: Net income replacement rate for short-term unemployed (first year), per cent, 2010



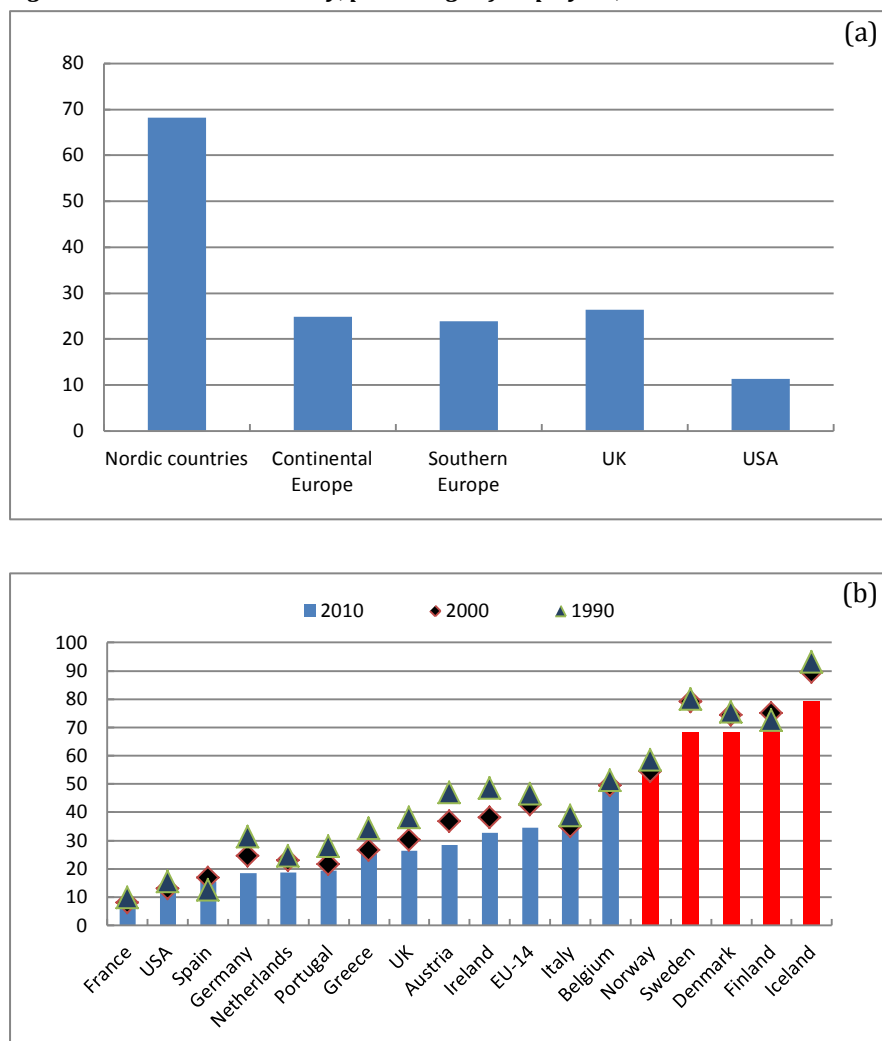
Note: See Figure 1. The net replacement rate is the after-tax unemployment compensation as a percentage of the previous after-tax wage. The replacement rate is calculated as an arithmetical average for singles (at 67 and 100% of the average wage) with no children and with two children and for one-earner couples (at 67 and 100% of the average wage) with no children and with two children. Source: OECD.

Figure 20: Net income replacement rate for long-term unemployed (after 5 years), per cent, 2010



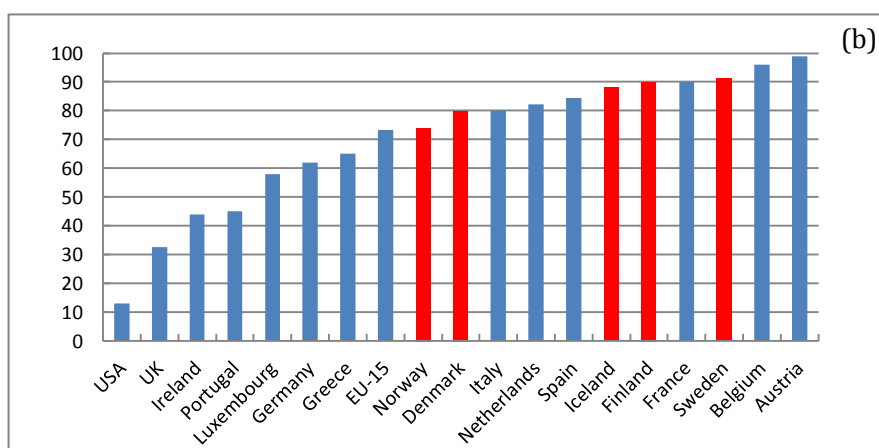
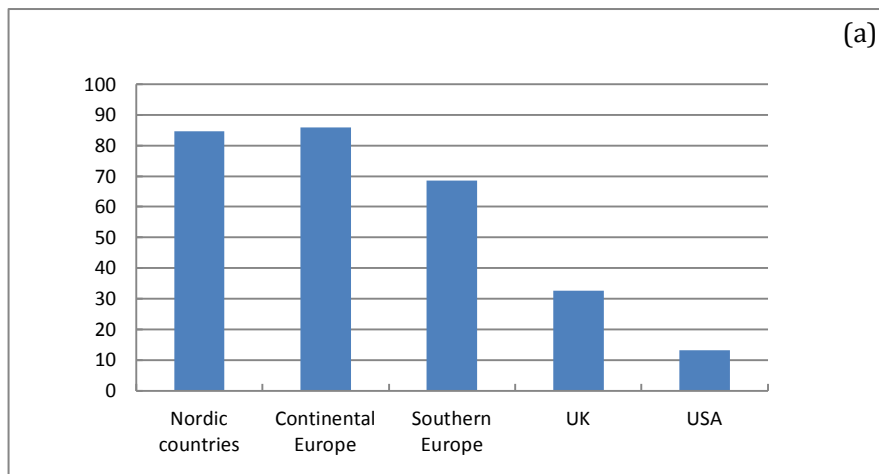
Note: See Figures 1 and 19. The replacement rate is calculated as an arithmetical average for singles (at 67 and 100% of the average wage) with no children and with two children and for one-earner couples (at 67 and 100% of the average wage) with no children and with two children.
Source: OECD.

Figure 21: Trade union density, percentage of employees, 2010



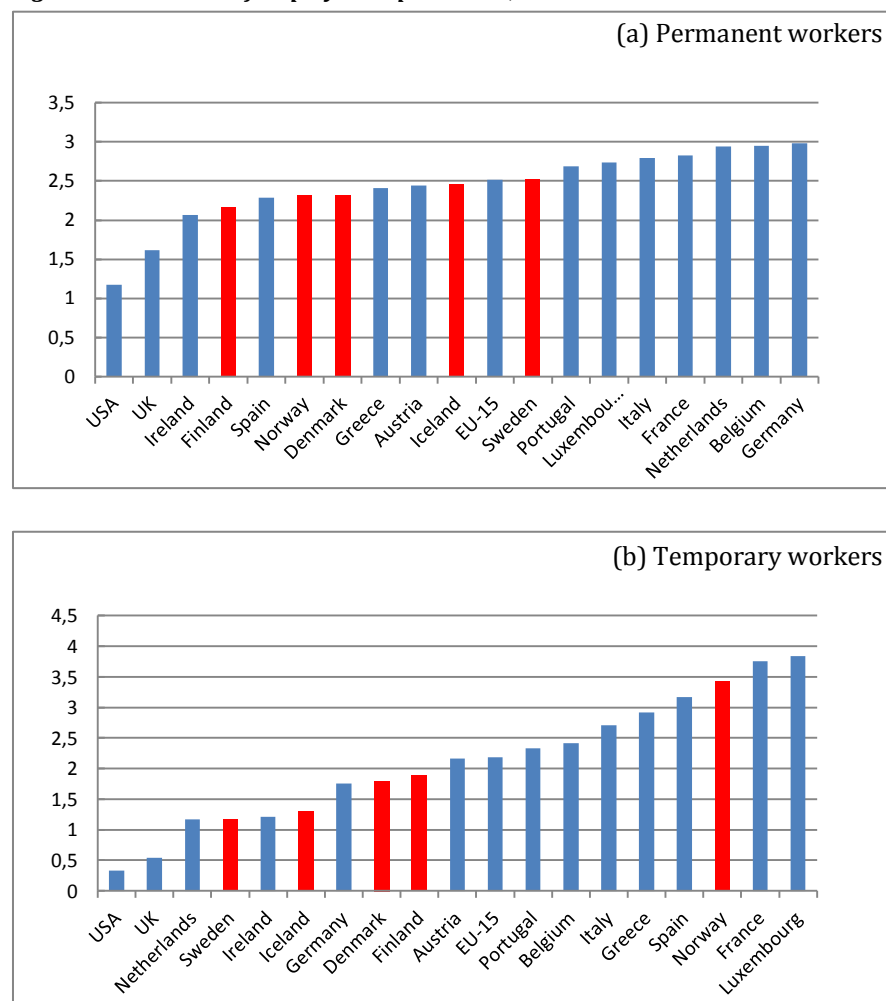
Note: See Figure 1. Trade union density is defined as the percentage of employees who are unionised. EU-14 refers to Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Portugal, Spain, Sweden and the UK. The figure for Iceland refers to 2008. Source: OECD.

Figure 22: Coverage of collective bargaining agreements, percentage of employees, 2010 or latest



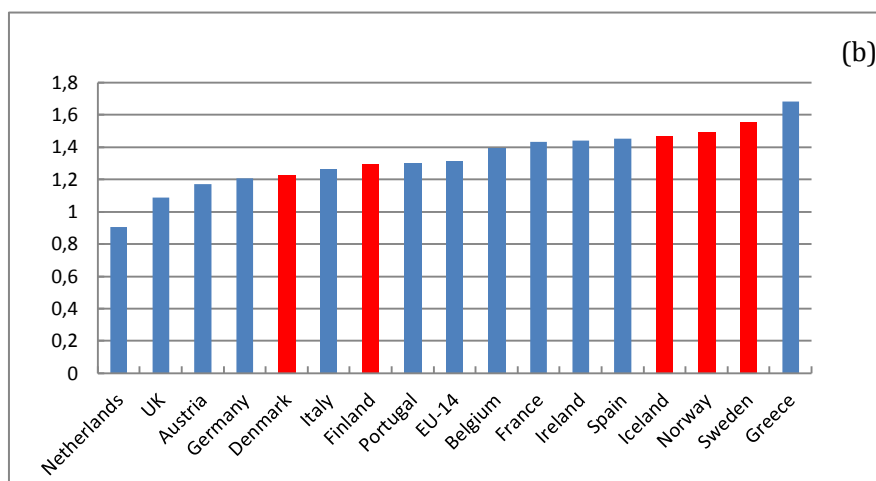
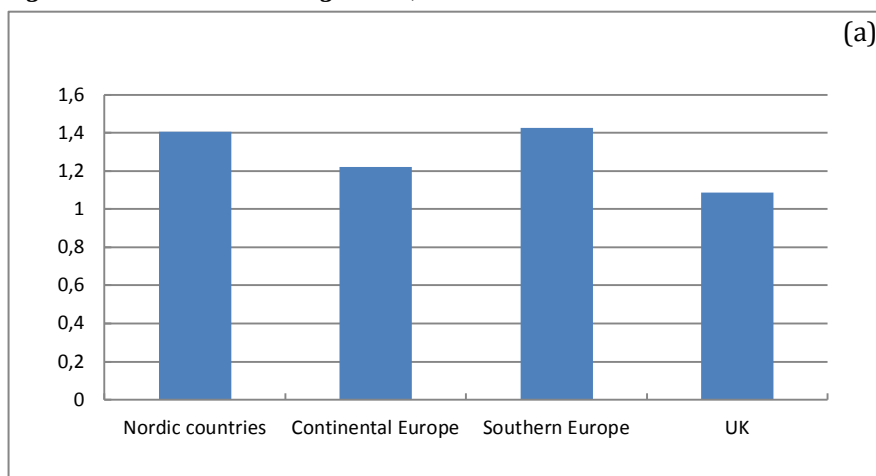
Note: See Figure 1.
Source: OECD.

Figure 23 Strictness of employment protection, 2013



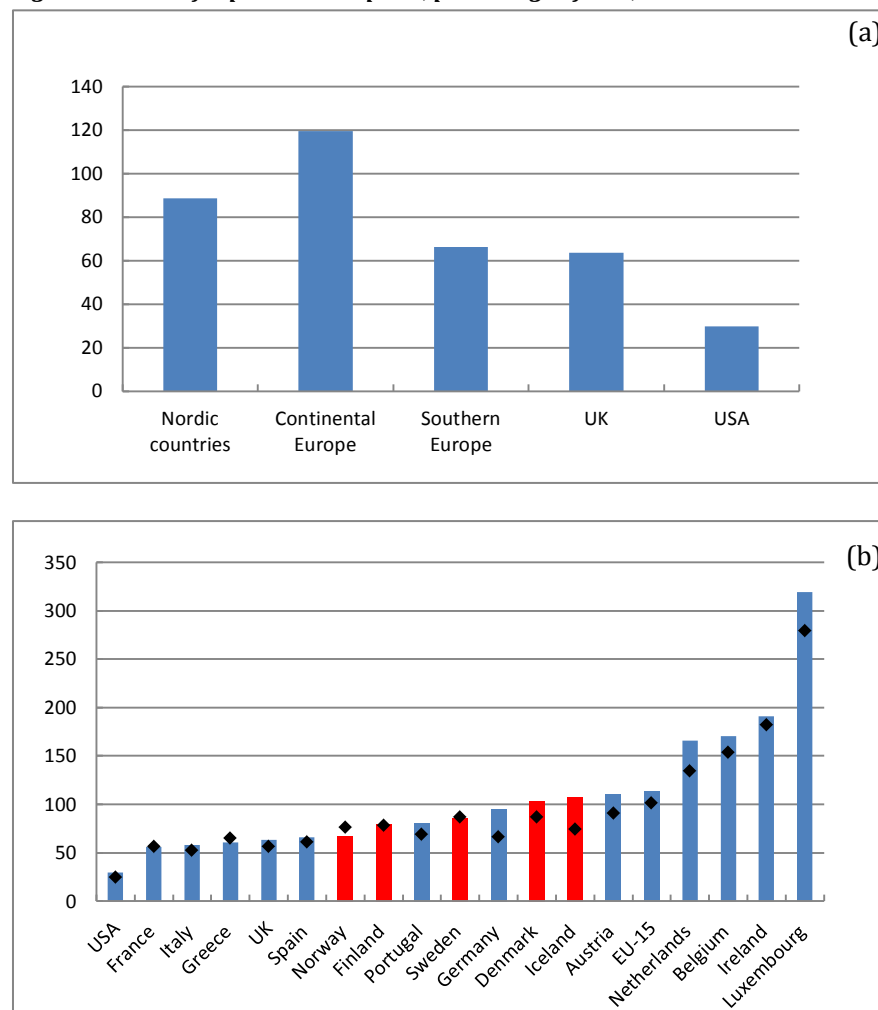
Note: See Figure 1. The strictness measures are synthetic indicators of regulation on dismissals and the use of temporary contracts. The range is 0–6.
Source: OECD Employment and Labour Market Statistics.

Figure 24: Product market regulation, 2013



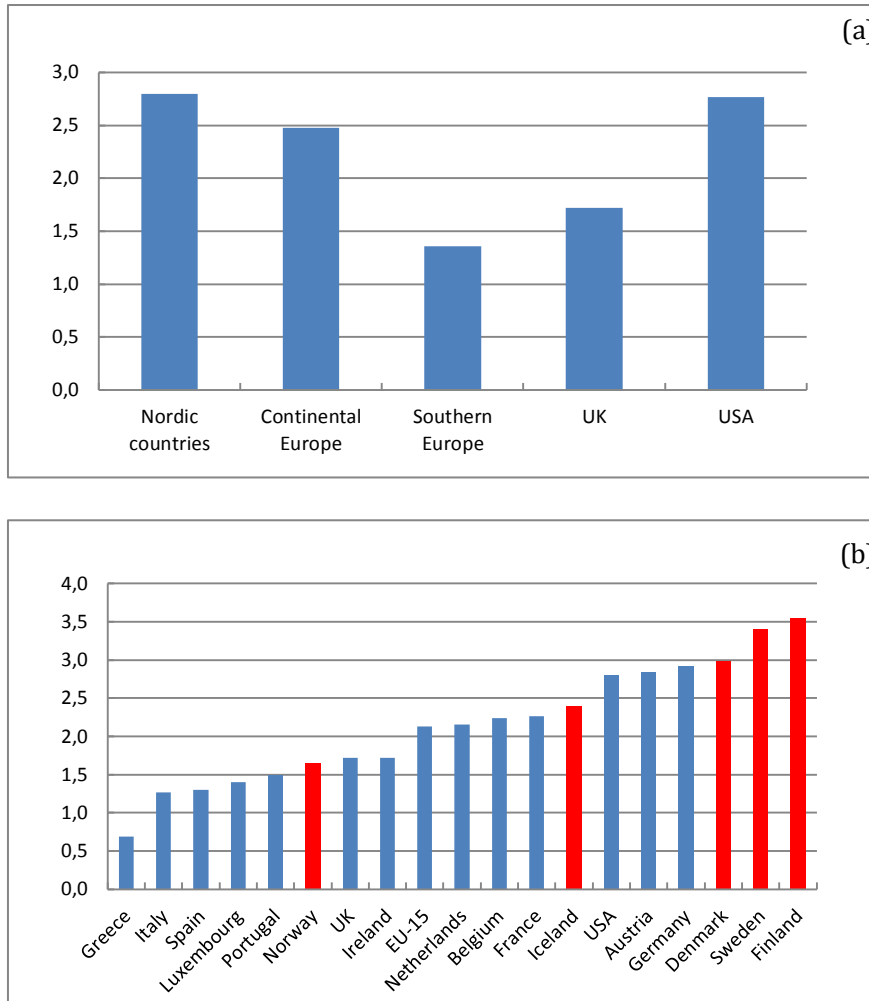
Note: See Figure 1. The indicator is a composite index of a large number of indicators of three dimensions: state controls, barriers to entrepreneurship, and barriers to trade and investment. Source: OECD.

Figure 25: Sum of exports and imports, percentage of GDP, 2013



Note: See Figure 1. 2013 data are preliminary estimates. Norway = Mainland Norway
Source: Ameco.

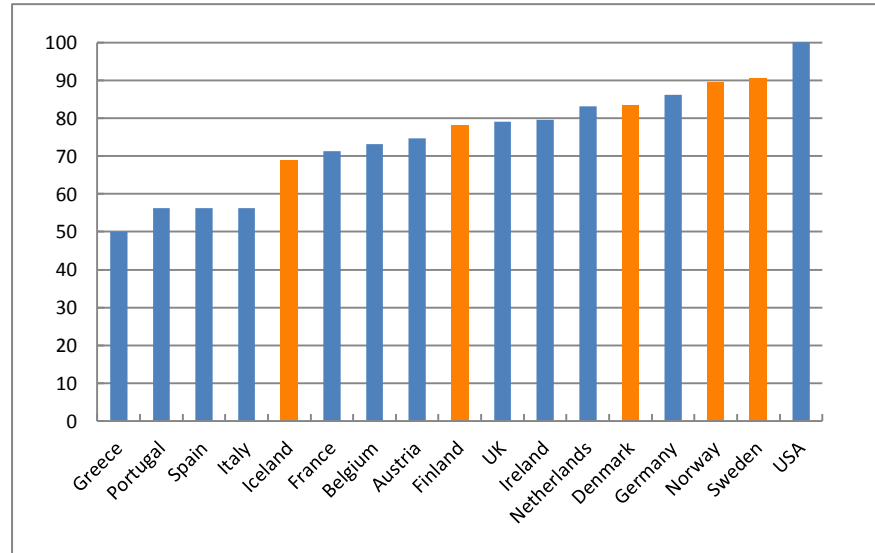
Figure 26: R&D expenditure, percentage of GDP, 2012



Note: See Figure 1. Southern Europe refers to Italy, Portugal and Spain, and EU-14 to Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden and the UK. The figure for Iceland is for 2011.

Source: OECD.

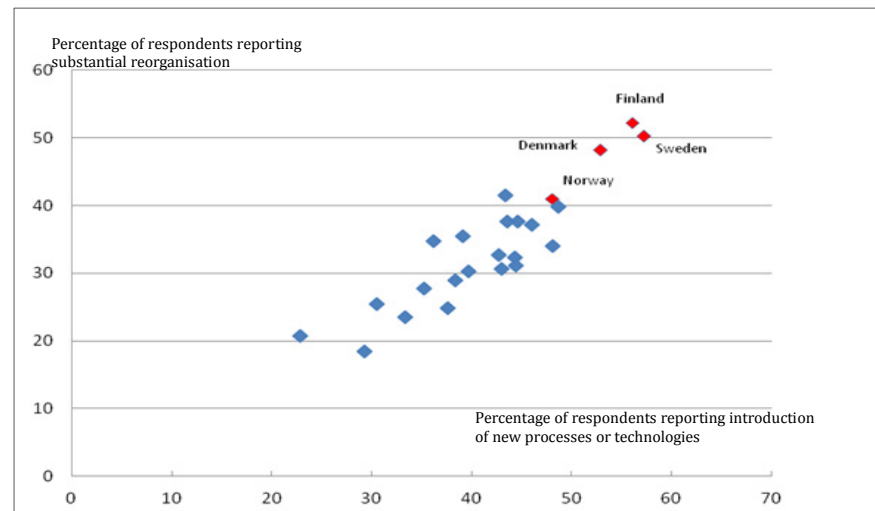
Figure 27: IMD World Competitiveness Index



Note: The index aggregates 110 variables that aim to reflect infrastructure, macroeconomic environment, financial market development, technological readiness, health and primary education, higher education and training, market size, business sophistication, goods and market efficiency, and innovation.

Source: IMD (2013).

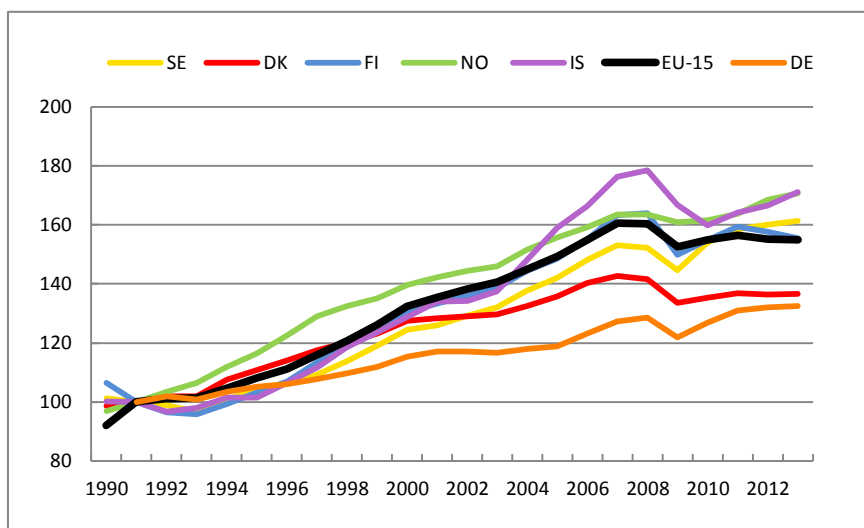
Figure 28: Organisational change and new technology, 2010



Note: New processes or technologies are defined as different kinds of new work processes (for example, teamworking), new monitoring systems, new machinery, new computer software etc. Substantial restructuring or reorganisation is defined as dismissals, reorganisation of business units, closing of a branch, etc.

Source: European Working Conditions Survey (2010).

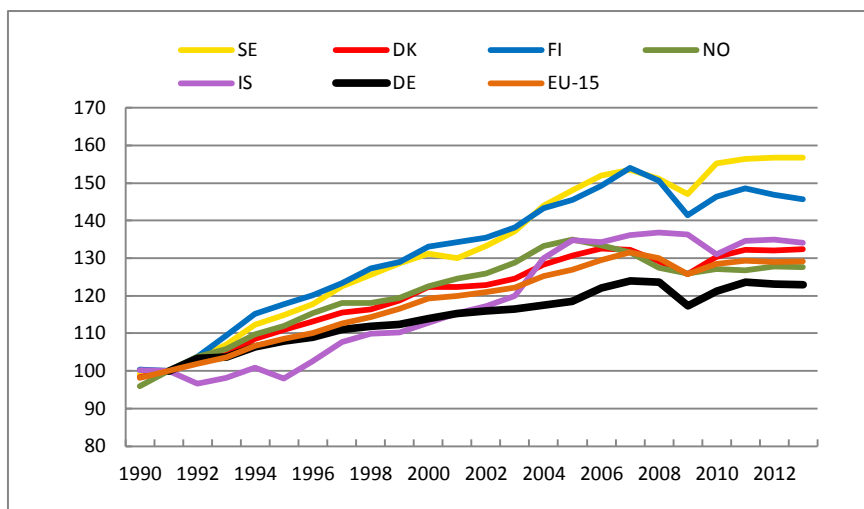
Figure 29: GDP, 1991 = 100



Note: See Figure 1. SE = Sweden, DK = Denmark, FI = Finland, NO = Norway, IS = Iceland and DE = Germany. 2013 data are preliminary estimates.

Source: Ameco.

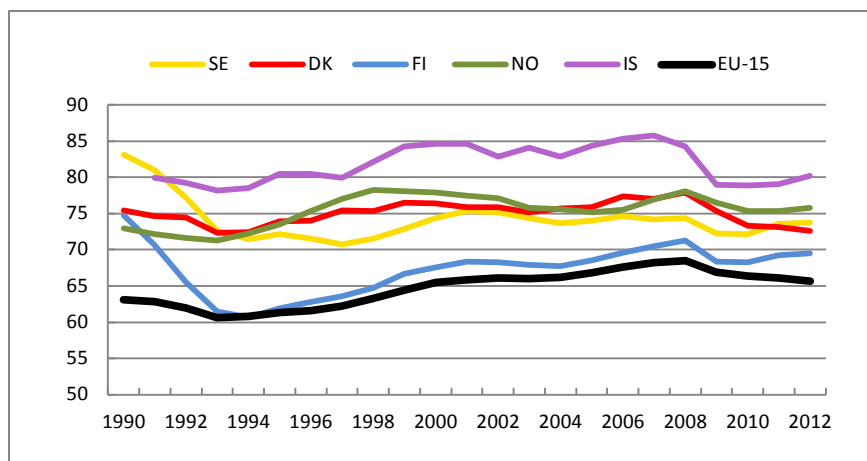
Figure 30: GDP per employed person, 1991=100



Note: See Figures 1 and 29. 2013 data are preliminary estimates.

Source: Ameco.

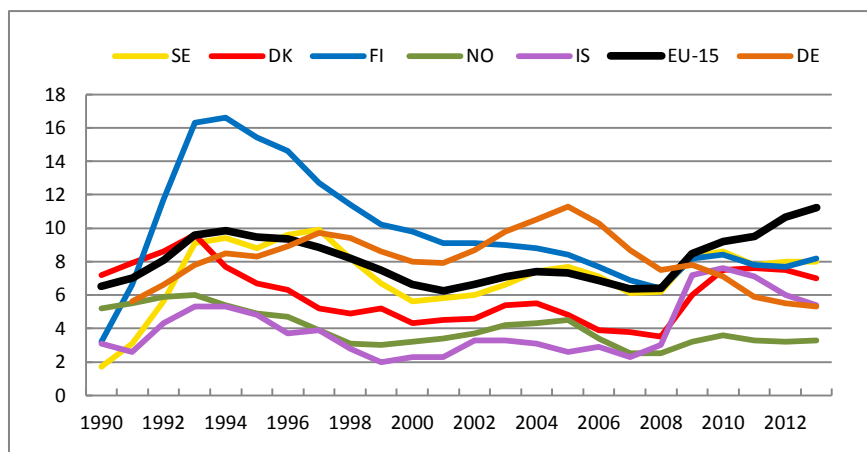
Figure 31: Employment, percentage of population 15–64 years old



Note: See Figures 1 and 29.

Source: OECD Labour Force Statistics.

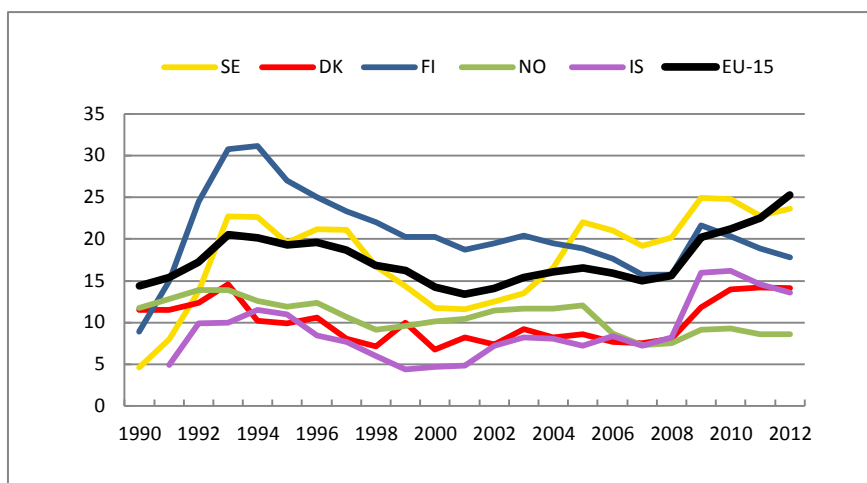
Figure 32: Unemployment, percentage of labour force



Note: See Figures 1 and 29. 2013 data are preliminary estimates.

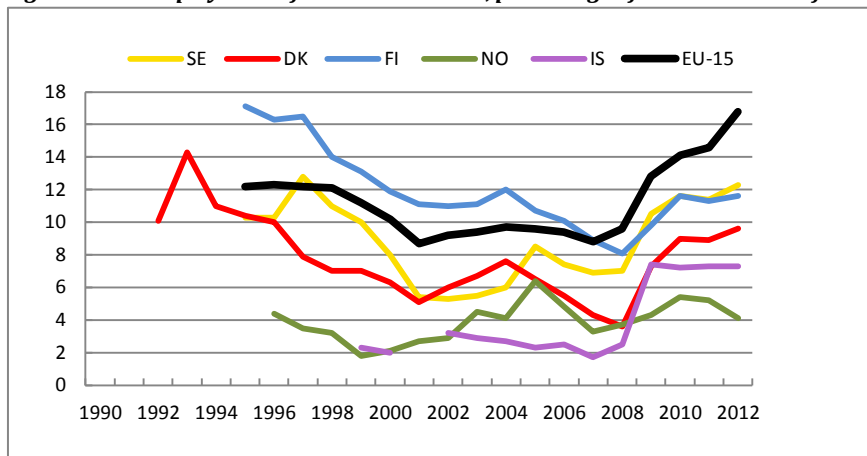
Source: Ameco.

Figure 33: Youth unemployment, percentage of labour force 15–24 years old



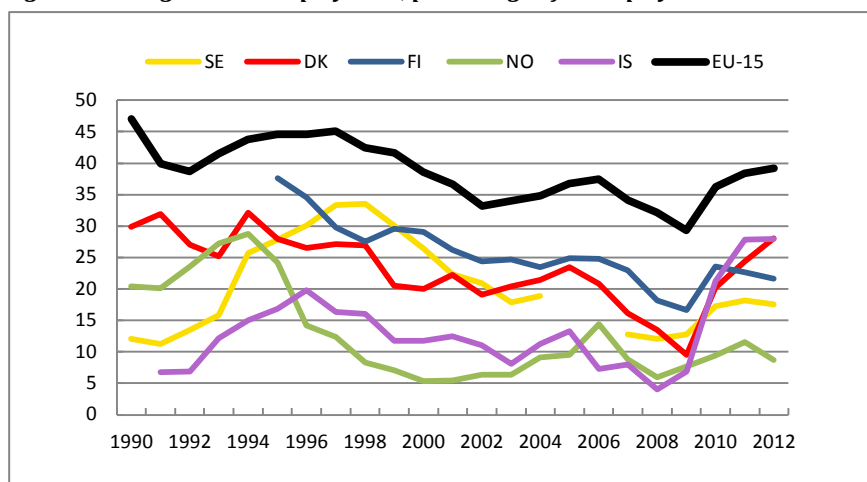
Note: See Figures 1 and 29. 2013 data are preliminary estimates.
Source: OECD.

Figure 34: Unemployment of unskilled workers, percentage of unskilled labour force



Note: See Figures 1 and 29. Low-skilled persons are defined as those with maximum pre-primary, primary or lower secondary education.
Source: Eurostat.

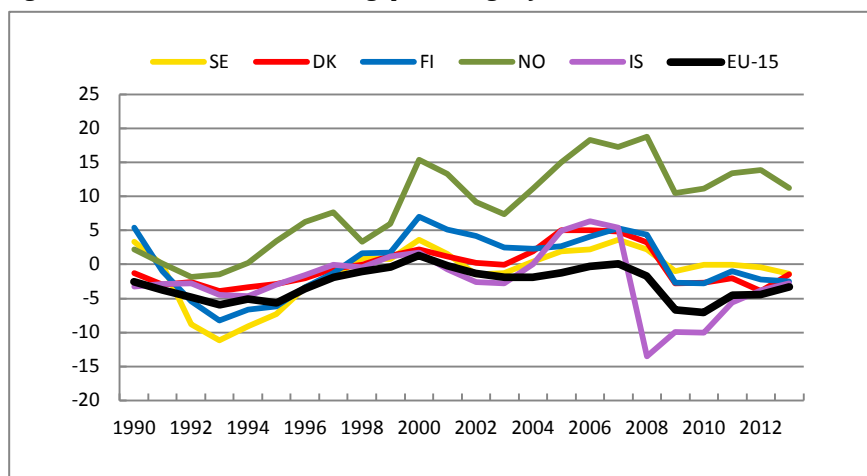
Figure 35: Long-term unemployment, percentage of unemployed



Note: See Figures 1 and 29. Long-term unemployed are defined as those who have been unemployed for twelve months or more.

Source: OECD.

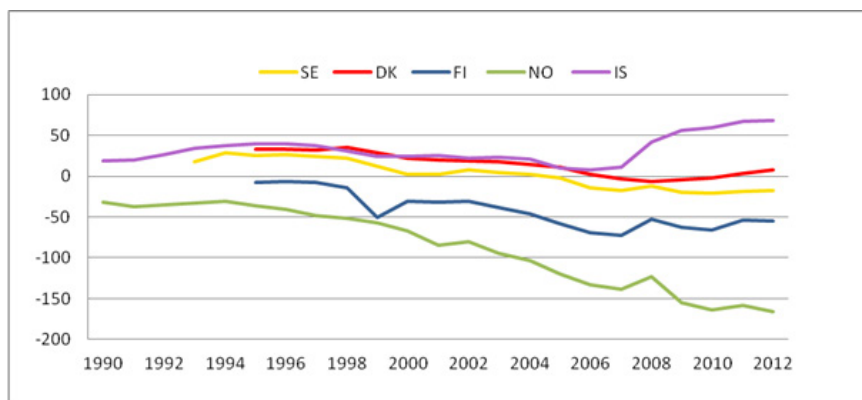
Figure 36: Government net lending, percentage of GDP



Note: See Figures 1 and 29. 2013 data are preliminary estimates.

Source: OECD.

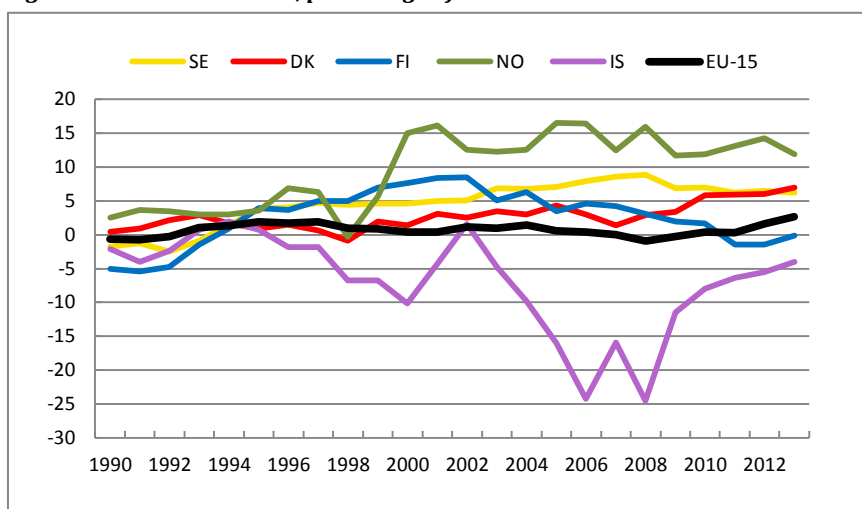
Figure 37: General government net debt, percentage of GDP



Note: See Figure 29. General government net debt is defined as general government gross debt less financial assets.

Source: IMF, World Economic Outlook Database and for Finland Bank of Finland. Consistent data are not available for Finland prior to 1995.

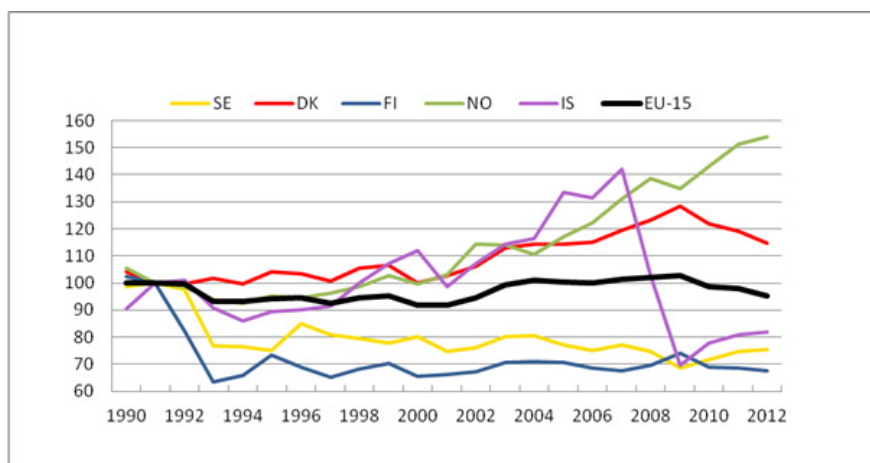
Figure 38: Current account, percentage of GDP



Note: See Figures 1 and 29. 2013 data are preliminary estimates.

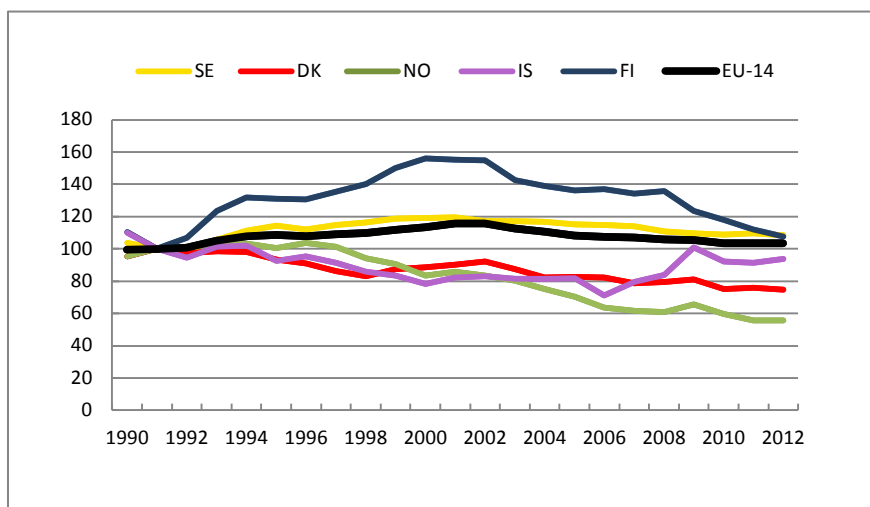
Source: Ameco.

Figure 39: Relative unit labour costs, total economy, 1991 = 100



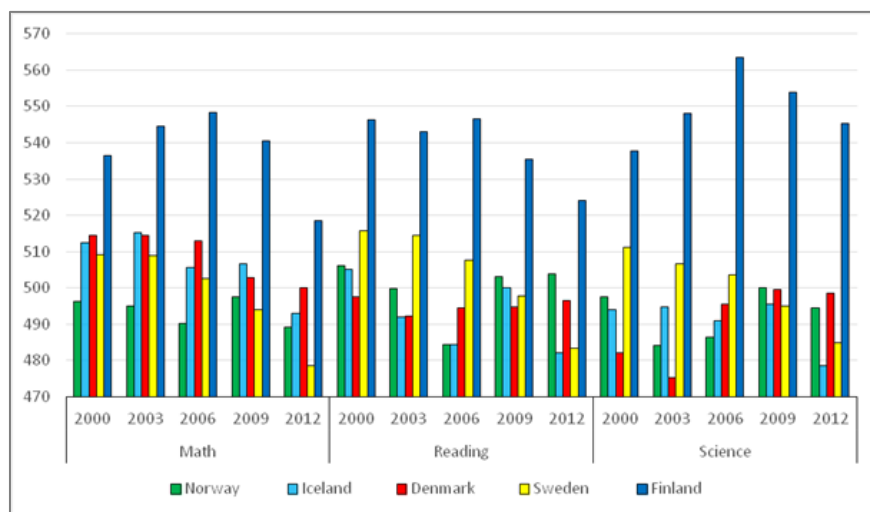
Note: See Figures 1 and 29. Unit labour costs in common currency relative to a weighted average of 34 OECD countries and 15 non-OECD countries (double weighting).
Source: OECD.

Figure 40: Export market shares, 1991 = 100



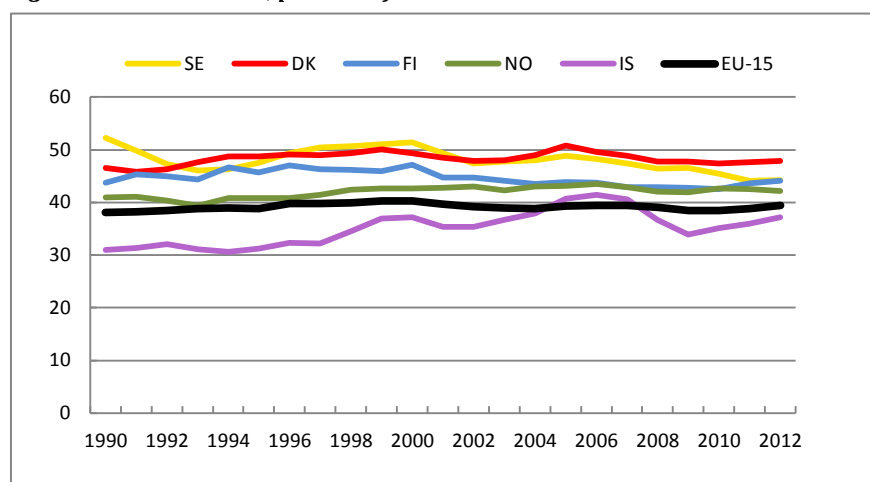
Note: Weighted export market shares (36 countries). See also Figure 30. EU-14 refers to Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden and the UK.
Source: European Commission.

Figure 41: PISA scores in the Nordic countries



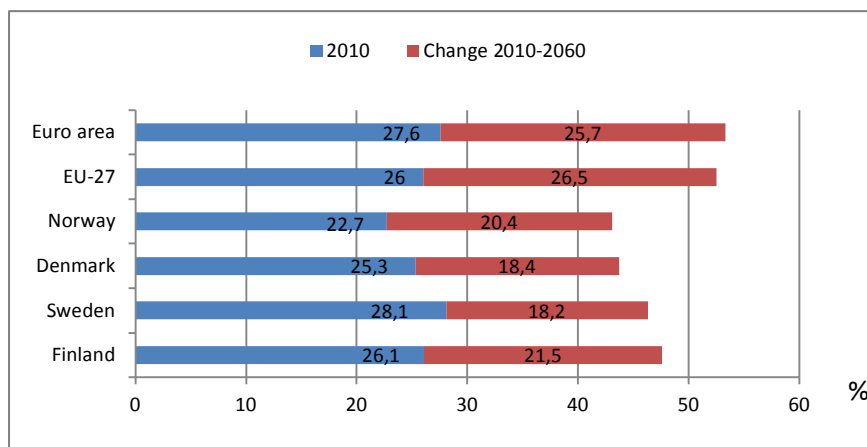
Note: 500 denotes the average score for OECD countries in each study. The staple for each Nordic country thus shows the performance of that country relative to the OECD average in the field that year.
Source: OECD (2013b).

Figure 42: Tax revenues, per cent of GDP



Note: See Figures 1 and 30.
Source: OECD.

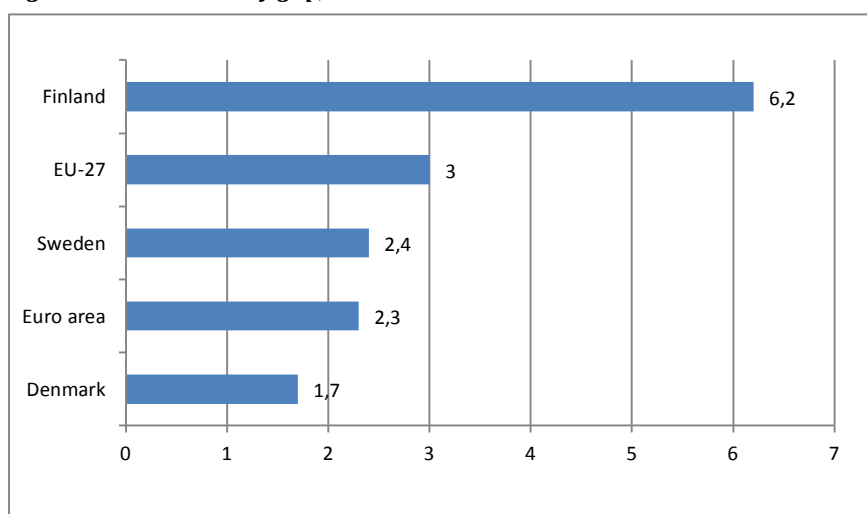
Figure 43: Old-age dependency ratio, 2010 and 2060



Note: The old-age dependency ratio measures the ratio between the population 65+ years old and the population 15-64 years old.

Source: European Commission (2012).

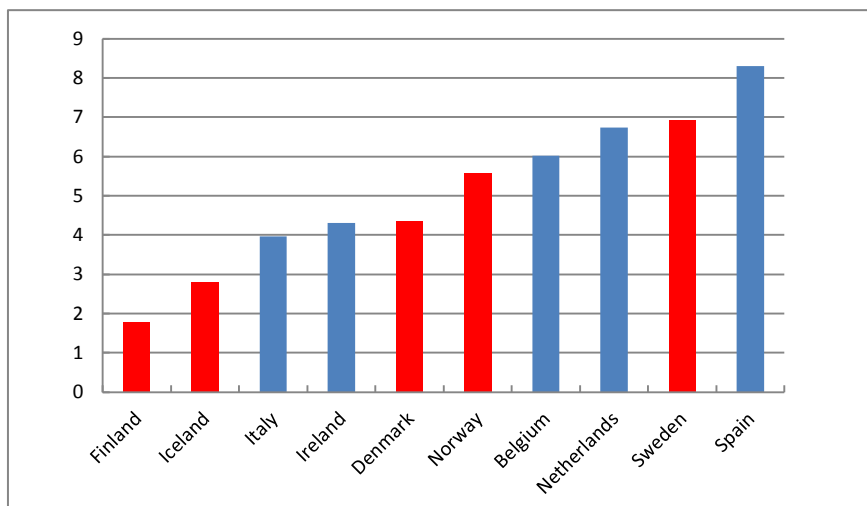
Figure 44: Sustainability gap, S2 indicator



Note: The S2 indicator measures the permanent tax increase in per cent of GDP needed for the government to finance projected future expenditure if the government is to remain solvent.

Source: EU Commission: Report on Public finances in EMU 2013.

Figure 45: Foreign-born outside Europe, percentage of total population, 2012



Source: Eurostat.

Table 1: Expenditure on active labour market programmes, 2011

	Per cent of GDP	Per cent of total expenditure on the unemployed	Share of participants in active programmes in total unemployment
Denmark	2.26	0.58	0.52
Finland	1.02	0.41	0.32
Norway	-	-	0.50
Sweden	1.09	0.63	0.41
<i>Nordic countries</i>	<i>1.46</i>	<i>0.54</i>	<i>0.44</i>
Austria	0.75	0.37	0.36
Belgium	1.59	0.43	0.43
France	0.93	0.40	0.35
Germany	0.79	0.43	0.30
Netherlands	1.11	0.41	0.35
<i>Continental Europe</i>	<i>1.03</i>	<i>0.41</i>	<i>0.36</i>
Italy	0.41	0.23	0.45
Portugal	0.59	0.31	0.36
Spain	0.88	0.24	0.49
<i>Southern Europe</i>	<i>0.63</i>	<i>0.32</i>	<i>0.40</i>
US	0.14	0.20	-

Note: The entries for the Nordic countries, Continental Europe and Southern Europe are all arithmetical averages. The expenditure data for Norway do not include administration and the Public Employment Service.

Source: OECD.

Table 2: The degree of trust

	In people	In politicians	In the legal system
Denmark	6.8	4.9	7.2
Finland	6.5	4.4	6.9
Norway	6.7	4.9	6.8
Sweden	6.3	4.9	6.4
<i>Nordics</i>	6.6	4.8	6.9
Belgium	5.0	3.8	4.9
France	4.3	3.2	4.9
Germany	4.6	3.3	5.4
Netherlands	6.0	5.2	5.8
<i>Continental Europe</i>	5.0	3.9	5.3
Greece	4.0	1.3	3.8
Italy	5.1	2.8	5.1
Portugal	3.7	2.0	3.3
Spain	5.1	2.7	4.3
<i>Southern Europe</i>	4.5	2.2	4.1
UK	5.3	3.3	5.0

Note: The table shows the average score on a 0–10 scale, where 0 is no trust and 10 is complete trust.

Source: European Social Survey (2010).

Table 3: Contributions to labour productivity growth (GDP per employed person)

	1995–2007					2008–2013				
	Labour produc- tivity	Labour compo- sition	Non-ICT capital	ICT capital	TFP	Labour produc- tivity	Labour compo- sition	Non-ICT capital	ICT capital	TFP
<i>Denmark</i>	1.5	0.2	0.5	0.8	0.0	-0.4	0.1	0	0.3	-0.7
<i>Finland</i>	3.0	0.2	0.2	0.8	1.8	-0.4	0.2	0.2	1.0	-1.7
<i>Norway</i>	2.4	0.2	1.6	0.5	0.2	0.5	0.1	1.6	0.4	-1.7
<i>Sweden</i>	2.8	0.3	0.7	0.5	1.4	0.7	0.1	0.5	0.6	-0.6
Austria	2.4	0.3	0.5	0.4	1.2	0.7	0.1	0.3	0.3	0
Belgium	1.6	0.3	0.7	0.5	0.1	0	0.2	0.4	0.5	-1.0
France	1.9	0.3	0.8	0.3	0.4	0.2	0.2	0.6	0.1	-0.7
Germany	1.7	0.0	0.3	0.3	1.1	0.4	0.1	0.2	0.4	-0.2
Italy	1.0	0.2	0.7	0.3	-0.1	-0.6	0.1	0	0.1	-0.8
Netherlands	2.0	0.3	0.5	0.5	0.7	-0.3	0.1	0.3	0.2	-0.8
Spain	1.8	0.5	1.2	0.5	-0.4	0.7	0.3	0.7	0.3	-0.6
UK	2.6	0.5	0.6	0.8	0.7	-0.5	0.1	0.6	0.2	-1.4
US	2.4	0.3	0.7	0.8	0.6	1.1	0.1	0.3	0.4	0.3

Source: The Conference Board, Total Economy Data Base.

Table 4: Changes 2008–2013(2)

	GDP	Employ- ment rate	Participa- tion rate	Unem- ployment	Govern- ment net lending	Consolidated gross govern- ment debt	Gini coefficient	P90/ P10
Denmark	-3.4	-5.4	-2.7	3.5	-4.8	9.0	3.0	0.1
Finland	-5.2	-2.4	-1.7	1.8	-6.8	23.2	-0.4	0.0
Iceland	-4.1	-4.1	-6.1	2.4	10.8	23.9	-3.3	-0.4
Norway	4.4	-2.3	-1.4	0.8	-7.5	-20.8	-2.5	-0.1
Sweden	6.1	-1.2	-0.2	1.8	-3.6	2.7	0.8	0.1
<i>Nordics</i>	-0.4	-3.1	-2.4	2.1	-2.4	7.6	-0.5	-0.1
<i>Nordics excluding Iceland</i>	0.5	-2.8	-1.5	2.0	-5.7	3.5	0.2	0.0
Austria	1.9	0.7	0.4	1.1	-1.3	10.8	1.4	0.0
Belgium	1.3	-1.2	-0.3	1.4	-1.7	10.7	-0.9	0.1
France	0.8	-1.6	0.1	3.0	-0.9	25.7	0.7	0.2
Germany	3.1	3.6	0.9	-2.2	0.1	12.8	-1.9	0.1
Netherlands	-3.2	-2.2	-0.6	3.6	-3.5	15.8	-2.2	0.1
<i>Continental Europe</i>	0.8	-0.1	0.1	1.4	-1.4	15.2	-0.6	0.1
Greece	-22.9	-16.8	-0.1	19.6	-7.6	64.4	0.9	0.2
Italy	-7.6	-3.2	0.0	5.5	-0.4	26.7	0.9	0.1
Portugal	-6.9	-9.0	-2.0	8.0	-2.0	57.7	-1.3	-0.3
Spain	-6.7	-13.2	-0.5	15.1	-2.2	54.2	3.1	0.7
<i>Southern Europe</i>	11.0	-10.6	-0.6	12.1	-0.7	50.7	0.9	0.2
UK	-0.5	-1.3	-0.1	2.0	-1.9	39.5	-1.1	-0.2
US	6.3		-2.0	1.6	0.6	30.5	1.1	0.2

Note: The Gini coefficient applies to household real disposable income. Changes are measured in percentage points. Data for GDP, unemployment, government net lending and consolidated gross government debt refer to 2008–2013 and P90/P10 to 2008–2010. All other data refer to 2008–2012. Sources: OECD, Eurostat and US Bureau of Census.

Table 5: Proficiency of adult populations, average PIAAC scores 2012 (relative rankings in parenthesis)

	Numeracy	Literacy	Problem-solving in technology-rich environments
Austria	275 (6)	269 (8)	284 (5)
Denmark	278 (5)	271 (5)	283 (6)
Finland	282 (1)	288 (1)	289 (1)
France	254 (9)	262 (10)	- (-)
Germany	272 (7)	270 (6)	283 (7)
Ireland	256 (8)	267 (9)	277 (9)
Italy	247 (11)	250 (12)	- (-)
Netherlands	280 (2)	284 (2)	286 (3)
Norway	278 (4)	278 (4)	286 (3)
Spain	246 (12)	252 (11)	- (-)
Sweden	279 (3)	279 (3)	288 (2)
United States	253 (10)	270 (7)	277 (8)

Note: The PIAAC study was carried out in 2011–12. The scale ranges from 0 to 500. Source: OECD (2013a).

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Part II

1. Industry- and firm-level mechanisms of competitiveness

Antti Kauhanen¹⁶ and Mika Maliranta^{17,18}

1.1 Introduction

This section examines the development of real unit labour costs in Nordic countries at the level of industries and firms. Comparisons of changes in real unit labour costs with the main competitor countries provide indicators of conditions of external balance, i.e. competitiveness in the short-run.

In our analysis competitiveness of industries in the short-run depends on three factors: growth of labour costs, growth of labour productivity and change in the price of value added. The most common measure of competitiveness, nominal unit labour costs, ignores the role of change in the price of value added and thus gives a misleading picture of changes in economic conditions for firms prospering in the international markets. Real unit labour costs on the other hand take this into account and measure the profitability of jobs in a given country. This is the measure that deserves a close attention in policy circles.

The framework of our analysis is illustrated in Figure 1.1. The factors of real unit labour costs are examined first by decomposing them into *industry-level* components that consist of 1) labour cost growth, 2) labour productivity growth and 3) changes in the price of value added. To

¹⁶ Chief research scientist at the Research Institute of the Finnish Economy (ETLA).

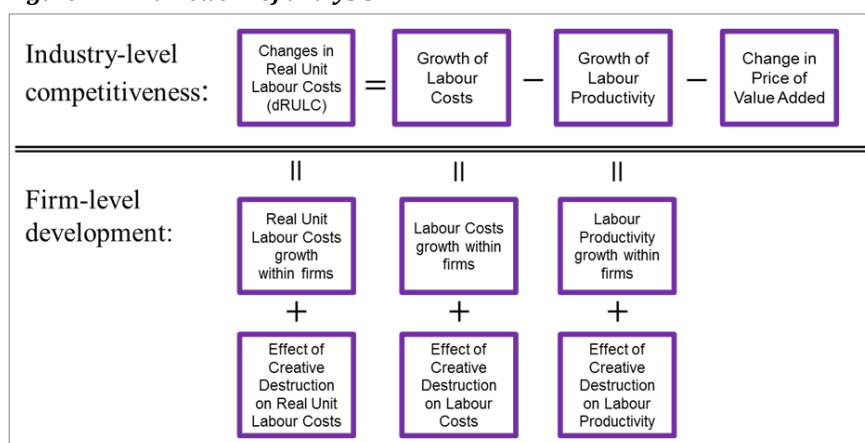
¹⁷ Research Director at the Research Institute of the Finnish Economy (ETLA).

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grasp firm-level roots of competitiveness, industry-level changes in labour costs and labour productivity are further decomposed into two *firm-level* main sources: 1) the contribution of the average growth in the firms (the so-called “within firms” effect) and 2) the effect of firm-level restructuring (“creative destruction”) on labour costs and labour productivity growth. Creative destruction mechanisms involve entries and exits of firms and reallocation of labour between continuing firms. Decompositions are also performed to examine how competitiveness evolves at the level of firms and what is the role of a firm’s competitiveness in the industry evolution.

Empirical comparisons of Nordic countries show the importance of considering labour reallocation in analysis of wage formation and industry competitiveness. An in-depth consideration of reallocation is particularly important because restructuring at the levels of industries and firms is an essential mechanism of sustained productivity growth, i.e. competitiveness in the long run. From the standpoint of policy consideration, the reallocation perspective is crucial due to its close link to product market competition, firm subsidies, wage formation, functioning of labour markets more generally as well as links to various aspects of welfare states, including the social security systems.

Figure 1.1: Framework of analysis



One of the policy lessons is that the evaluation of the wage agreements and the wage formation more generally should be based on indicators that properly take into account the conditions of external balance. It means that the indicators should capture all three factors (including the price of value added) that affect investment and job creation decisions of the firms. In addition, the effects of restructuring should be carefully

considered in interpretation and policy recommendations. For example, official measures for growth of labour costs may include biases due to compositional changes over time and may thus give a distorted view of the development of competitiveness.

1.1.1 Competitiveness in the short- and long-run

Competitiveness is a controversial topic. Krugman (1994) denies the concept altogether. Anyhow, competitiveness has had a central role in macro policy analysis. There seems to be two broad different perspectives that are often confused in the discussion. A long-run view focuses on an economy's capability to strong sustained economic growth. A short-run view, on the other hand, is concerned with conditions of external balance, i.e. the current account. Long-run competitiveness is essentially a maximization problem (with considerations of environmental and social issues) whereas the short-run competitiveness is an optimization problem. From the latter perspective, competitiveness may be deficient or excessive if the difference between the value of exports and imports is too far in surplus or deficit.

By definition, the value of exports depends on the price and the volume of exported goods and services. An increase in the volume of exports may stem from improved cost competitiveness that allows firms to capture market shares by lower prices. Cost competitiveness improves when productivity grows or input prices decline relative to the competitors.

The change in cost competitiveness is traditionally analysed with relative nominal unit labour costs, which compares the differences in the growth rate of labour costs in nominal terms (possibly with an adjustment for changes in exchange rates) and labour productivity (measured in real terms). However, the decision regarding job creation (and destruction) is based on the relative *profitability* between alternative locations. It can be evaluated with the so-called real unit labour costs that take into account of the relative prices of value added, in addition to the price and productivity of labour input. The real unit labour costs measure the profitability of jobs so it can be defined as a measure of "profit competitiveness".

In this study we examine conditions of external balance in Nordic countries on the basis of relative real unit labour costs in manufacturing industries. In the baseline analysis the real unit labour costs of a country

are compared to nine other OECD countries so that each competitor is weighted on the basis of their trade share (exports + imports).¹⁹

1.2 Macro-level components of real unit labour costs

Real unit labour costs (*RULC*) are nominal unit labour costs (*NULC*) (in common currency) divided by the price of value added. Formally this can be presented in log-form as follows:

$$\ln RULC = \ln \left(\frac{\frac{W}{E}}{\frac{(V/p)}{L}} \right) - \ln p \quad (1)$$

$$\Leftrightarrow \ln RULC = \ln NULC - \ln Price$$

where W is labour costs, p is the price of value added, E is the labour input of employees, L is the total labour input (including the contribution of the self-employed), V is the value of value added. It should be noted that *RULC* is the labour income share (W/V) corrected for the contribution of the self-employed:

$$\ln RULC = \ln \left(\frac{W}{V} \right) + \ln \left(\frac{L}{E} \right) \quad (2)$$

RULC consists of three main macro-level determinants: 1) the labour costs, 2) labour productivity and 3) the price of value added:

$$\ln RULC = \ln \left(\frac{W}{E} \right) - \ln \left(\frac{(V/p)}{L} \right) - \ln(p) \quad (3)$$

$$\Leftrightarrow \ln RULC = \ln Labour\ Costs - \ln Productivity - \ln Price$$

¹⁹ The trade shares are determined at the level of industries or at the level of the total manufacturing, depending on whether the unit labour costs are measured with the so-called normalized industry-structures (our baseline analysis) or with more traditional aggregate (sector) numbers.

Typically the analysis focuses on the changes in competitiveness and its components, i.e.

$$\Delta \ln(RULC) = \Delta \ln Labour Costs - \Delta \ln Productivity - \Delta \ln Price \quad (4)$$

where Δ denotes the difference operator. For measuring competitiveness, these changes are compared to a competitor or a group of competitors, where each competitor can be weighted in alternative ways (by use of exports share, for instance). In other words, competitiveness is gauged by *relative* real unit labour costs.

The change in the nominal unit labour costs (NULC) can be presented as

$$\Delta \ln(NULC) = \Delta \ln Labour Costs - \Delta \ln Productivity \quad (5)$$

1.3 Firm-level components of real unit labour cost

As can be read from Equation (4), *industry labour cost growth* ($\Delta \ln Labor Costs$) has a positive and *industry labour productivity growth* ($\Delta \ln Productivity$) has a negative effect on real unit labour costs. The effects on the competitiveness of the firms are, of course, the opposite.

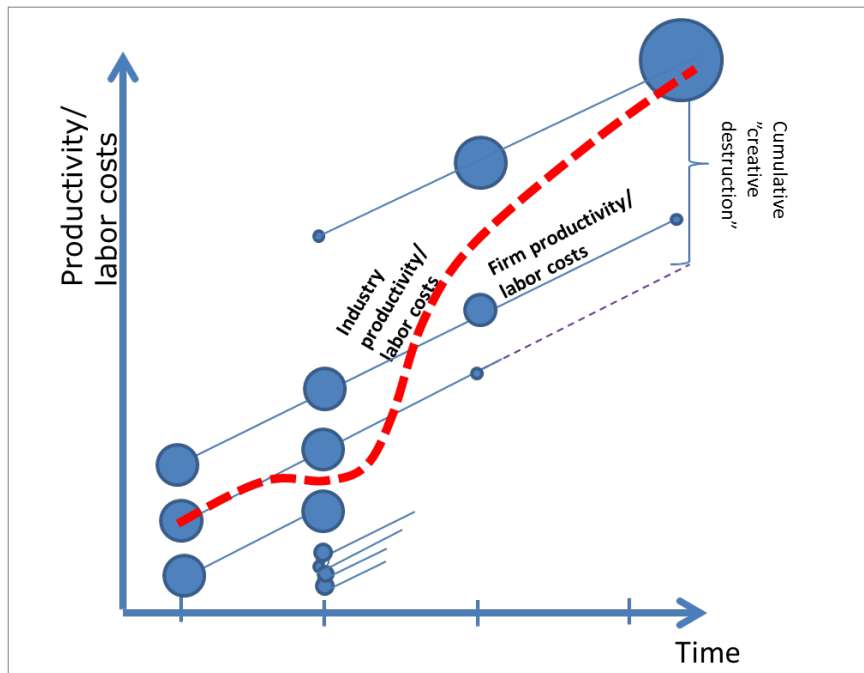
Both industry labour productivity growth and industry labour costs growth takes place through different firm-level mechanisms. Industry-level growth of productivity and labour costs has two main components: 1) growth within firms (i.e. average growth rate of the continuing firms) and 2) growth due to firm-level restructuring (involving entries, exits and reallocation of resources between continuing firms).

The firm-level mechanisms underlying the industry-level development are illustrated in Figure 1.2. The dashed thick line indicates industry-level productivity (labour costs). It is a weighted average of firm-level productivity (labour costs), which is indicated by thin solid lines. The weight of each firm is determined by employment, which is indicated by the size of the ball. In this illustration, the industry-level growth is faster than the firm-level growth (i.e. the slope of the dashed line is steeper than the average slope of thin lines) because of the exiting of low productivity (labour costs) firms, employment growth in high productivity (labour costs) firms and employment decline in low productivity (labour costs) firms (the size of the ball changes).

These mechanisms can be measured from firm-level data by use of the decomposition method advocated by Böckerman and Maliranta

(2012). The basic idea of this version of decomposition is simple. The within component refers to the average productivity growth rate of the (continuing) firms. Each firm is weighted in accordance to an ideal index, i.e. average input share in the initial and end year (see Hyytinen & Maliranta, 2013).²⁰ Industry productivity growth rate is calculated in a way that is equivalent to the aggregate statistics. The creative destruction effect is defined as the difference in industry productivity growth and the within component. The creative destruction effect consists of distinct restructuring component including the entry and exit effects and reallocation of labour between continuing firms. The formal expressions of these components are presented in Böckerman and Maliranta (2012).

Figure 1.2: Illustration of firm-level sources of industry productivity and industry labour costs



²⁰ By definition, only the continuing firms have a growth rate of productivity. This is the logic for focusing on the continuing firms in the measurement of the within component. As a result, the sum of the weights over the continuing firms is one and the within component can be interpreted as a weighted average productivity (or labour costs) growth rate of the firms.

1.4 Empirical analysis of real unit labour costs

1.4.1 *Industry-level analysis*

The aggregate numbers for the relative nominal unit labour costs (which are corrected for the changes in exchange rates) are presented in the top-left panel of Figure 1.3. These series suggest that competitiveness has developed very favourably in Sweden, reasonably well in Finland (until recent years), but less satisfactorily in Denmark and Norway.

The comparisons of the nominal unit labour costs presented in the top-right panel of Figure 1.3 are based on the so-called standardized industry-structures.²¹ In this way we aim to imitate a situation where all countries produce the same (or similar) products and they compete with prices. In other words, the use of a standardized industry-structure is a way to correct potential biases (or sources of potential misinterpretations) in the unit labour costs when at least a part of price changes (and productivity growth) depends on the industry structures.

On the other hand, the use of standardized industry structures for measuring real unit labour costs, in conjunction with aggregate measures, allows us to examine to what extent profitability and competitiveness problems arise from the industry structures, often determined by natural resources or choices made in the distant past history, and to what extent disparity of labour costs and productivity within industries.

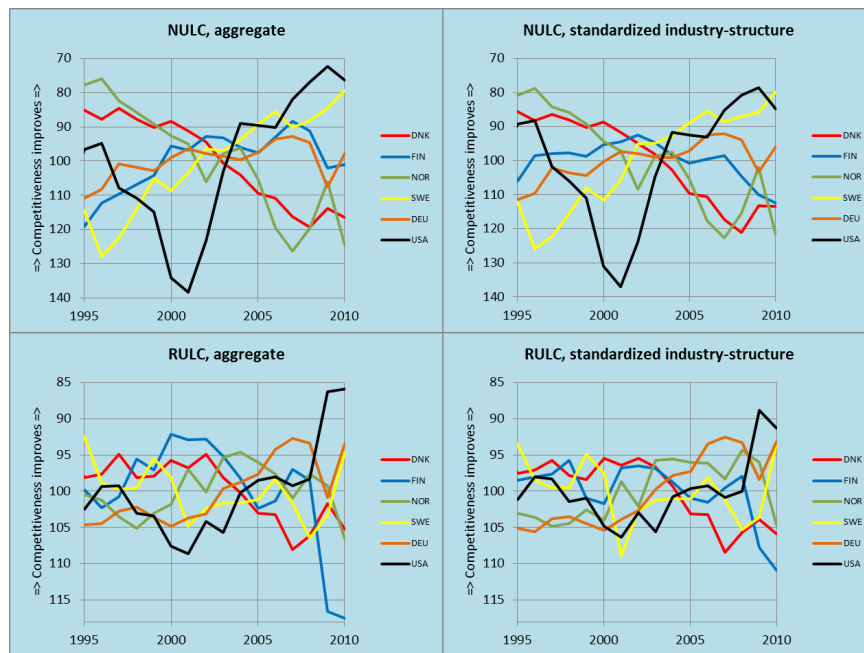
However, here the standardization is made with a reasonably broad industry-classification (the manufacturing sector is split into ten industries). Thus our aim may not have been achieved as well as one could wish. Yet, the use of the standardized industry-structures leads to some striking changes in the results. In particular, now the series shows considerable deterioration for Finland since the early 2000s.

Comparisons made with the relative real unit labour costs are presented in the bottom-left panel. Compared to the NUCL results, the scale of variation is substantially reduced. This indicator shows that the USA, Sweden and Germany have experienced a surge and Finland a collapse in competitiveness. The bottom-right panel presents the comparisons with the standardized industry-structures. The use of the standardized industry-structures does not seem to have a very large impact on the results obtained with the real unit labour costs. Norway has witnessed

²¹ As for further details, see the note under Figure 1.3.

improving competitiveness since the late 1990s (but an abrupt collapse in 2010) whereas Denmark and Finland have experienced a declining trend in competitiveness.

Figure 1.3: Measures of competitiveness, relative to 9 other OECD countries, manufacturing, 1995–2010=100



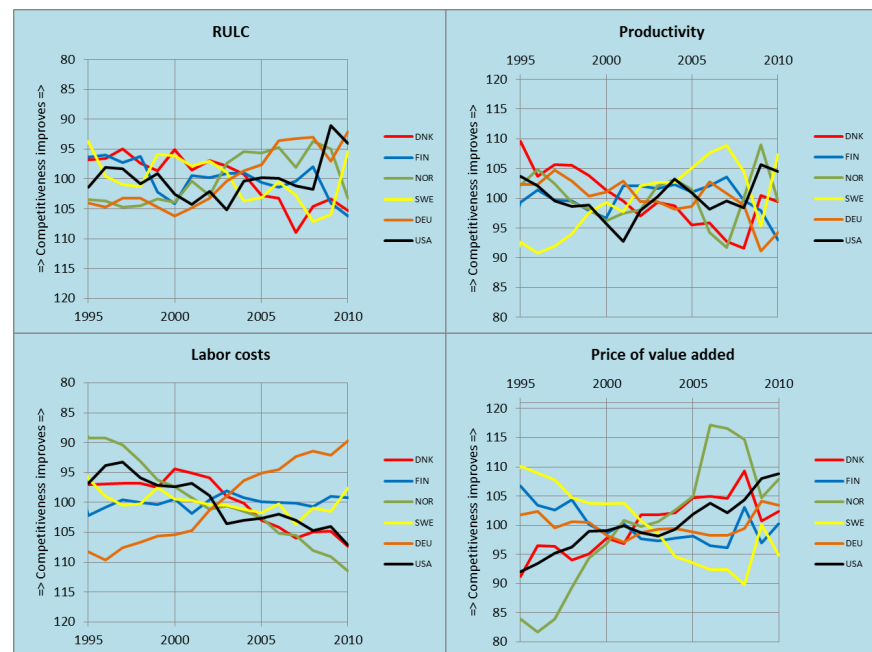
Notes: Based on the computations made by use the OECD's STAN-database and OECD International Trade by Commodity Statistics (ITCS). The "aggregate" refers to total manufacturing. For measures with "standardized industry-structure" analysis is performed separately for ten manufacturing industries. These results are then aggregated by using the average value added shares of ten OECD countries in years 1995–2010. Nominal unit labour costs are corrected for changes in exchange rates. Unit costs are presented with a reversed scale so that upward-sloping line indicates improvement of competitiveness.

Figure 1.4 presents development of relative real unit labour costs (the upper-left panel) and its three components: 1) labour productivity, 2) labour costs and 3) the price of value added. Electrical machinery industry ("26" in NACE 2) is now excluded from the following analyses. One of the reasons is the concern for the comparability of data between countries. The measurement of the quality aspect is particularly crucial in this industry and it is not quite clear whether all countries have been equally successful in making a distinction between quality change and price change.

Again, Denmark and Finland seem to have witnessed a declining trend in competitiveness over time. The same holds true for Sweden

until 2008. Sweden's recent rise in competitiveness is based on its improving relative productivity level and decreasing relative wage level. In addition, the continuous decline in the price of value added has come to its end. In Norway the reasonably favourable development in competitiveness has been based mainly on the increasing price of value added (with strong short-term fluctuation in the 2000's, though). In recent years the development of relative labour productivity has been quite positive, too.

Figure 1.4: Relative real unit labour costs (RULC) and its components, relative to 9 other OECD countries, standardized industry-structures without electronics industry (i.e. exc. "26" in the NACE 2 classification), 1995–2010 = 100



Notes: Based on the computations made by use the OECD's STAN-database and OECD International Trade by Commodity Statistics (ITCS). Analysis is performed separately for ten manufacturing industries. These results are then aggregated by using the average value added shares of eleven OECD countries in the years 1995–2010. The scales are presented so that an upward-sloping line indicates improvement from the point of view of competitiveness.

Figure 1.5 presents results for one relatively large and important manufacturing industry that is the machinery industry ("28" in the NACE 2 classification). The results for one single industry are less accurate than those for the total manufacturing, but they also may indicate interesting patterns in the development. For example, Norway has experienced a quite marked improvement in competitiveness in the latter

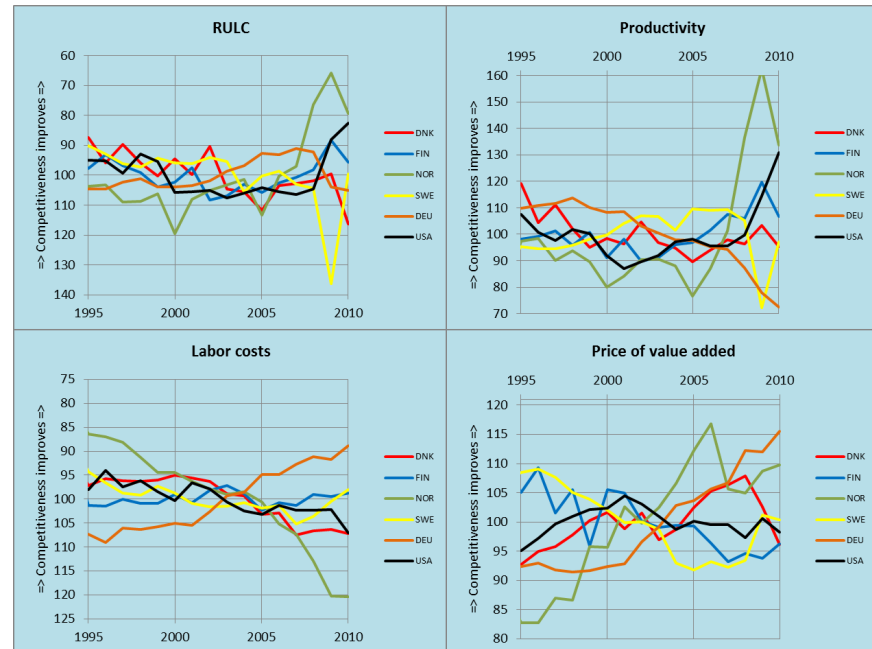
part of the 2000s. It is based totally on the substantial increase in relative labour productivity and the price of value added. At the same time, labour costs per employee have increased and hence negatively contributed to competitiveness.

More generally, the development of relative productivity and the price of value added appear to exhibit mirror patterns in the figure. This may reflect problems in separating the changes in values and prices in a comparable manner among countries. For example, in some country the measured price of value added may increase faster than in other countries because the quality change has not been taken into account as fully as in other countries. As a consequence, the relative price level of the country appears to increase and the relative productivity level decrease. An example of such a phenomenon could be the machinery industry in Germany (or Denmark in years 1995–2008). Put differently, labour productivity growth in Germany may be underrated because the improvement of the quality of output is underrated. As for the development of competitiveness this, however, does not have any effect as long as it is gauged by the relative real unit labour costs.

A comparison of Figure 1.5 and Figure 1.4 indicates that the development of competitiveness and its factors may vary considerably between industries. In other words, the comparative advantages may change over time within a country. However, it is also worth noting that the comparison of these figures also indicates that the development of relative labour costs (per employee) has been quite similar in the machinery industry and other manufacturing industries in all countries.²²

²² Unreported computations for other industries provide further confirmation to this observation.

Figure 1.5: Relative real unit labour costs (RULC) and its components, relative to 9 other OECD countries, machinery industry ("28" in the NACE 2 classification), 1995-2010=100



Notes: Based on the computations made by use the OECD's STAN-database and OECD International Trade by Commodity Statistics (ITCS). The scales are presented so that an upward-sloping line indicates improvement from the point of view of competitiveness.

1.4.2 Firm-level analysis

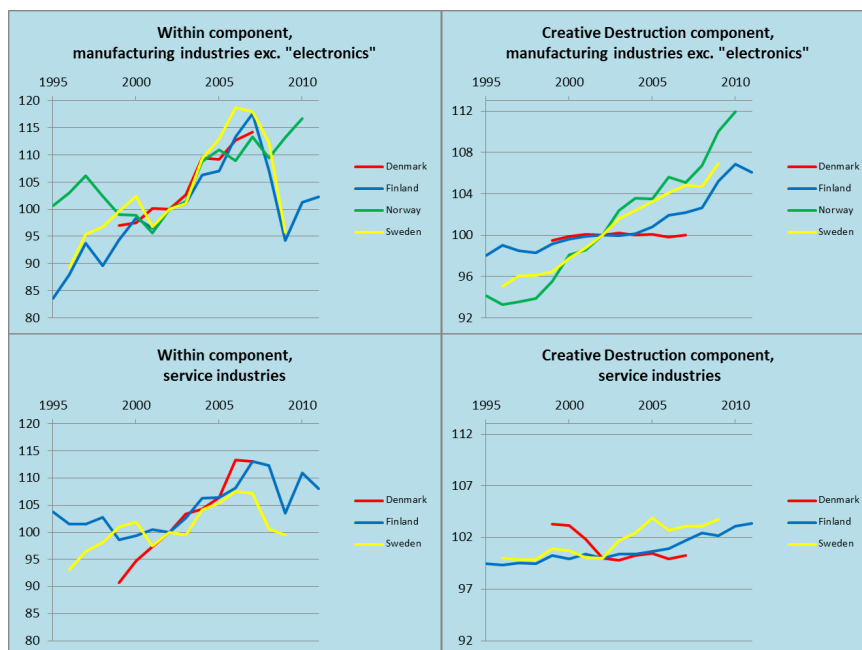
Next we examine the firm-level mechanisms underlying industry productivity and industry labour costs growth that were found to play a role in determining changes in relative real unit labour costs in manufacturing industries.

Productivity

The upper-left panel of Figure 1.6 shows that productivity growth within firms has been quite similar in different countries (except in Norway in the years 1995-2000 and in 2010). However, the creative destruction component has witnessed divergent patterns (the upper-right panel). In Norway and Sweden creative destruction has positively contributed to industry productivity growth in the manufacturing sector industries over the whole period. In Finland, the effect increased before the mid-2000s but in Denmark creative destruction was missing in the years 1999-2007.

The bottom panels of Figure 1.6 provide a comparison between manufacturing and service industries for other countries except Norway. In the service industries productivity growth has been somewhat slower than in the manufacturing industries (lower-left panel of Figure 1.6). However, especially the creative destruction component has been generally smaller in the service industries. Hyytinen and Maliranta (2013) has found similar findings earlier for Finland. On the other hand, as in the manufacturing sector, creative destruction displays divergent patterns across countries.

Figure 1.6: Firm-level sources of industry productivity growth in manufacturing (excluding electronics) and service sector industries on the basis of the standardized industry-structures, 2002 = 100



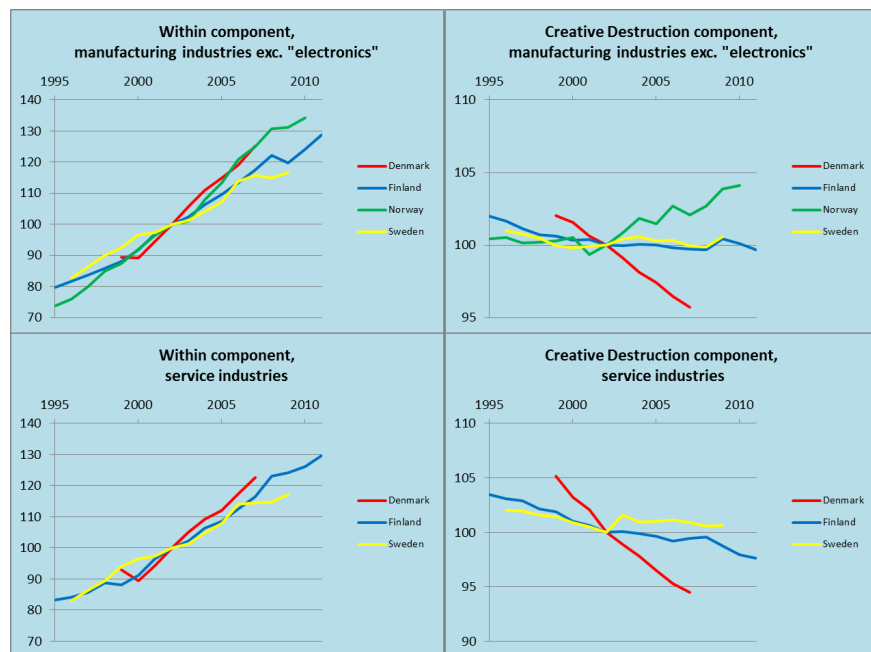
Notes: Based on the computations made by use the firm-level data sets. Analysis is performed separately for ten manufacturing and eight service industries. These results are then aggregated to the sector level by using the average value added shares of eleven OECD countries in years 1995–2010.

Labour costs

Figure 1.7 shows corresponding results for the labour costs per employee. Five interesting findings emerge from the figure. First, the growth of labour costs within firms has been fastest in Denmark and Norway. Second, there was a marked slow-down in labour costs growth within Swedish firms in the years 2006–2009. Third, in each country the growth of labour costs within firms has been very similar in manufacturing and service industries. Fourth, the creative destruction component exhibits, again, quite divergent patterns among countries. In Finnish and Swedish manufacturing industries

the creative destruction component has been very stable but with slight counter-cyclical variation. In Norway the effect has been positive in the manufacturing industries since the early 2000s. In contrast to the other countries, in Denmark the effect has been unceasingly negative in both the manufacturing and service industries. Fifth, a comparison of Figure 1.6 and Figure 1.7 reveals that the creative destruction components of labour productivity and labour cost growth seem to be mutually related but in all cases the component for productivity growth is much larger.

Figure 1.7: Firm-level sources of industry labour costs growth in manufacturing (exc. electronics) and service sector industries on the basis of the standardized industry-structures, 2002 = 100



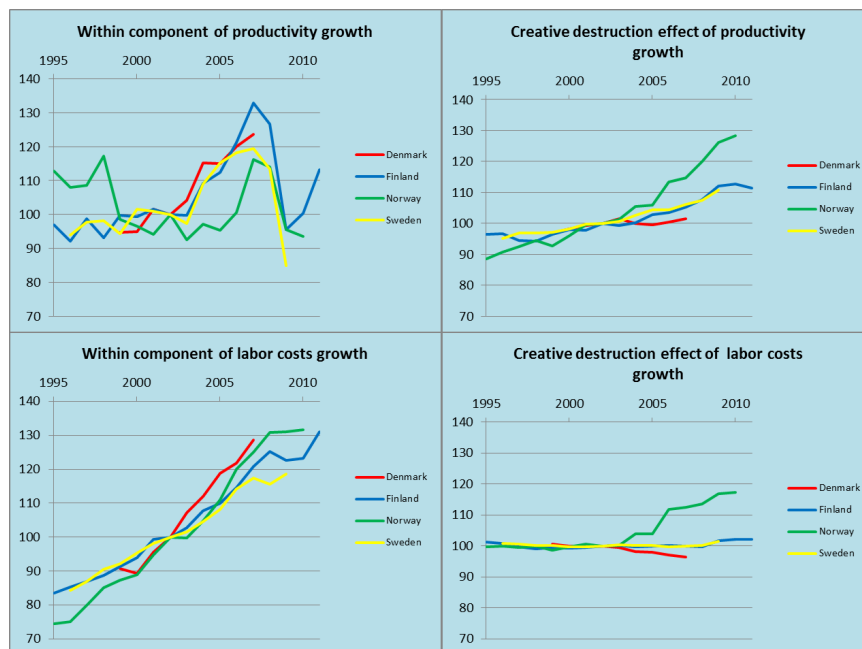
Notes: Based on the computations made by use the firm-level data sets. Analysis is performed separately for ten manufacturing and eight service industries. These results are then aggregated to the sector level by using the average value added shares of eleven OECD countries in the years 1995–2010.

Productivity and labour costs in machinery industry

Figure 1.8 presents the results for the components of productivity and labour costs growth in the machinery industry ("28" in the NACE 2 classification). The general patterns in the results largely correspond to those of the all manufacturing industries that were presented in Figures 1.6 and 1.7. The similarity of the results Finland and Sweden is even striking, given the inevitable inaccuracies of the measurement in narrowly defined industries. In addition, the results for Norway demonstrate how mislead-

ing the industry-level components of competitiveness may sometimes be. As noted in conjunction with Figure 1.5, there has been an outstanding increase in competitiveness (i.e. decrease in relative real unit labour costs) in the machinery industry in the recent years that has been largely based on the surge in the labour productivity. Figure 1.8 suggests in turn that to a large extent the surge derives from productivity-enhancing firm-level restructuring. It also seems to involve creation of high wage jobs and/or destruction of low wage jobs at the level of firms, which explains the surge in the labour costs at the level of the industry (see Figure 1.5).

Figure 1.8: Firm-level sources of labour productivity and nominal industry labour costs growth in machinery industry ("28" in NACE 2), 2002 = 100



Notes: Based on the computations made by use the firm-level data sets and OECD's STAN-database. Analysis is performed separately for ten manufacturing industries. These results are then aggregated by using the average value added shares of eleven OECD countries in the years 1995–2010.

1.4.3 Real unit labour costs

Analogously to productivity and labour costs growth, the growth of the industry-level real unit labour costs (i.e. labour costs per value added) can be decomposed into two firm-level components: 1) the change within firms and 2) the change owing to firm-level restructuring. This provides us a complementary perspective to the analysis of the changes in competitiveness at the level of industries.

Figure 1.9 provides an additional indication from the firm-level data that competitiveness has gradually declined in Finland and improved in Norway in the manufacturing industries when the electronics industry is excluded (see also Figure 1.5).²³ On the top of that, the figure shows that the industry-level changes depend on the balance between mechanisms that typically affect in opposite directions; the development within firms and firm-level restructuring (Böckerman & Maliranta, 2012; Kyyrä & Maliranta, 2008).

The middle panel of Figure 1.9 indicates the general tendency of declining competitiveness within firms (except the years after 2003 in Norway). It means that generally the growth of labour costs exceeds that of labour productivity in the firms when labour costs are measured in the price of value added. In other words, a “typical” or “representative” firm faces declining profitability over time. The decline is stronger during downturns. Obviously, cyclical variation in the changes of the real unit labour costs depends on the cyclical flexibility of wage formation.

The bottom panel of Figure 1.9 shows that, as a rule, firm-level restructuring has a positive impact on the industry-level competitiveness. More competitive firms (i.e. firms with a low labour costs to value added ratio) gain markets shares (in terms of nominal value added) from less competitive firms.

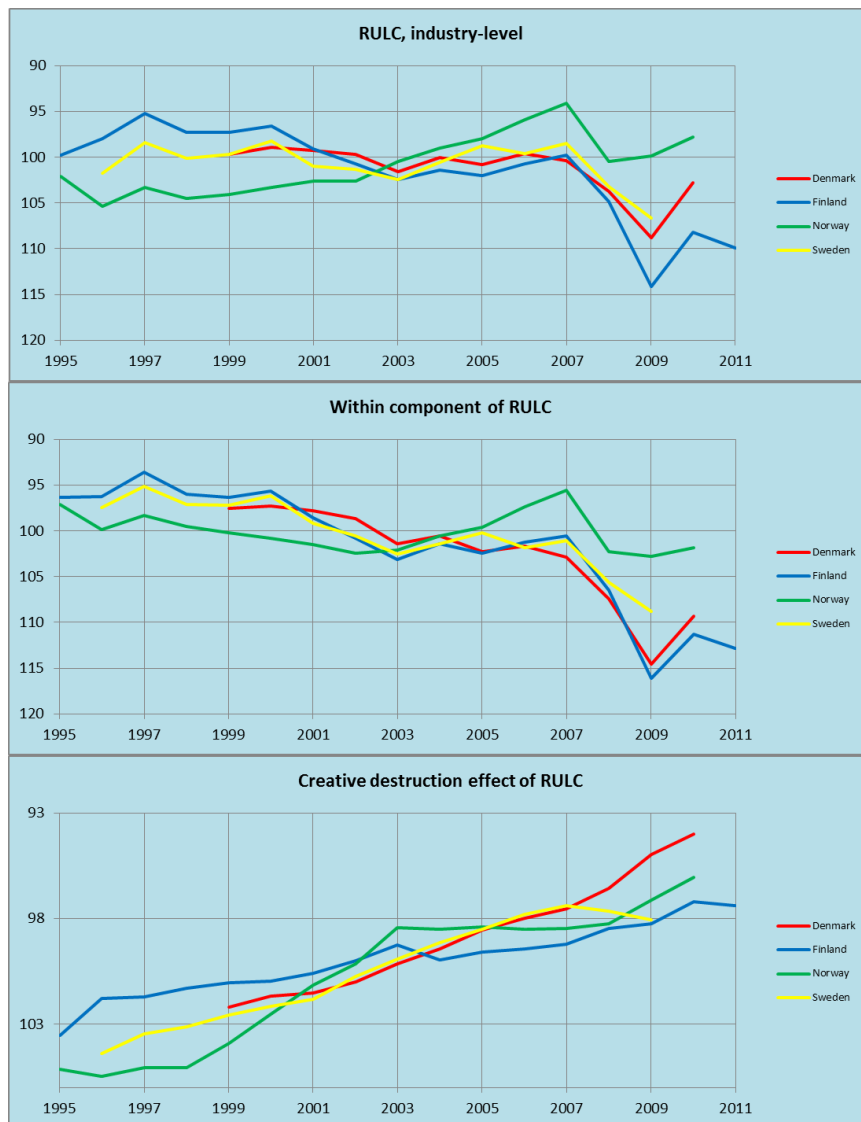
Interestingly, the creative destruction effect of the real unit labour costs is reasonably similar in all these countries. The Danish development merits our closer scrutiny. As indicated in the upper-right panel of Figure 1.7, creative destruction has lowered the labour costs at the level of manufacturing industries, which contributes positively to the industry-level competitiveness. At the same time, the effect of creative destruction on labour productivity has been quite neutral in Danish manufacturing industries (see the upper-right panel of Figure 1.6). The net effect of these two creative destruction components on competitiveness is positive, which is in accordance of the findings made from Figure 1.9.

In other words, it seems that in Denmark market shares (in terms of value added) are captured (lost) by firms that have low (high) relative labour costs and an average relative labour productivity level. Norway seems to be quite different. The upper-right panels of Figure 1.6 and Figure 1.7 suggest that in Norway market shares are captured (lost) by firms that have high (low) relative labour costs but even a higher (low-

²³ When “Electronics” is also included the basic patterns are similar except the decline in competitiveness of Finland is slightly deeper within firms as well as at the level of industries.

er) relative labour productivity level. Finland and Sweden seem to be in the middle in this respect. High productivity firms have increased and low productivity firms have decreased their market shares but there is no significant relationship between the level of labour costs and changes in market shares.

Figure 1.9: Real Unit Labour Costs and its firm-level sources in manufacturing, normalized industry-structures without electronics (1999-2007=100)



Notes: Based on the computations made by use the firm-level data sets. Analysis is performed separately for ten manufacturing industries. These results are then aggregated by using the average value added shares of eleven OECD countries in the years 1995–2010. The costs are presented with a reversed scale so that an upward-sloping line indicates improvement of competitiveness.

1.5 Conclusions

Competitiveness is a concept having implications for policy at multiple levels. Worries over declining competitiveness affects tax policy, industrial policy and technology policy at the national level. Wage bargaining between labour market organizations is also affected by perceptions of changes in competitiveness.

Proper measures of competitiveness are needed for identifying current competitiveness and anticipating forthcoming development. In addition, comprehensive indicators help to identify the main components of the changes. All these elements of indicators are crucial for successful policymaking. To evaluate whether changes in policies are needed, one need to know how and why competitiveness has changed.

Decomposition of the changes in industry-level competitiveness into three components allows more elaborated policy considerations. Two of them are particularly relevant for immediate remedies. Growth of labour costs can be dealt with various labour market policy measures as well as changes in taxation of labour input. Growth of the price of value added in turn can be adjusted by exchange rate policy (if it is not fixed) or by subsidies, taxes and other costs (e.g. trade and transport costs). Improvements of the third component of competitiveness, i.e. labour productivity, by policy tools are more difficult to achieve and the effects can be expected only with a considerable lag. Furthermore, much of the substantial gains materialize through painful restructuring at the level of jobs and firms that also makes these measures politically less appealing.

By use of micro-level data the changes in labour costs and labour productivity can be further decomposed to changes taking place within continuing firms and the effect of creative destruction. The results in this chapter show that industry-level competitiveness is enhanced by creative destruction due to its effect on productivity growth, especially in manufacturing. Creative destruction typically has a smaller impact on labour costs, although there is some variation between countries. Related to this, the results show that for continuing firms, competitiveness declines over time on average. That is, their labour costs increase more quickly than productivity.

Our empirical analysis shows that the development of competitiveness of Sweden (when measured by the relative real unit labour costs) has outperformed that of Norway, Denmark and especially Finland in recent years. Rapid labour productivity growth has been an essential determinant. Firm-level analysis shows that productivity-enhancing restructuring, i.e. the so-called “creative destruction”, has been an im-

portant component of industry productivity growth in Norway and Sweden over the whole period from the mid-1990s to the recent years. In Finland creative destruction gained more strength just before the financial crisis in 2007 and stayed strong at least until 2011. In Denmark there was no indication of creative destruction before 2007, which is the last year for which we have productivity decomposition results.

Analyses of real unit labour costs (i.e. labour income share) with firm-level data indicate that profitability typically declines within incumbent firms (or a “representative” firm) over time. However, in all four Nordic countries examined here the development of profitability is much more favorable at the level of industry than at the level of firms. This is due to profitability-enhancing firm-level restructuring, which means that higher profitability firms have a tendency to increase their market shares at the expense of less profitable firms.

Profitability-enhancing restructuring originates from the fact that productivity-enhancing restructuring is greater than wage-enhancing (or labour costs) restructuring. Although profitability-enhancing restructuring (that improves competitiveness of the industries) has been, more or less, equally strong in all four countries, underlying mechanisms exhibit interesting differences. In Norway, Sweden and Finland firm-level restructuring has had a significant positive effect on industry productivity growth in manufacturing in recent years but much less so for labour costs growth. In Denmark, on the other hand, the effect of firm-level restructuring has been insignificant on labour productivity but strongly *negative* on labour costs growth, which explains a positive restructuring effect on profitability (and competitiveness).

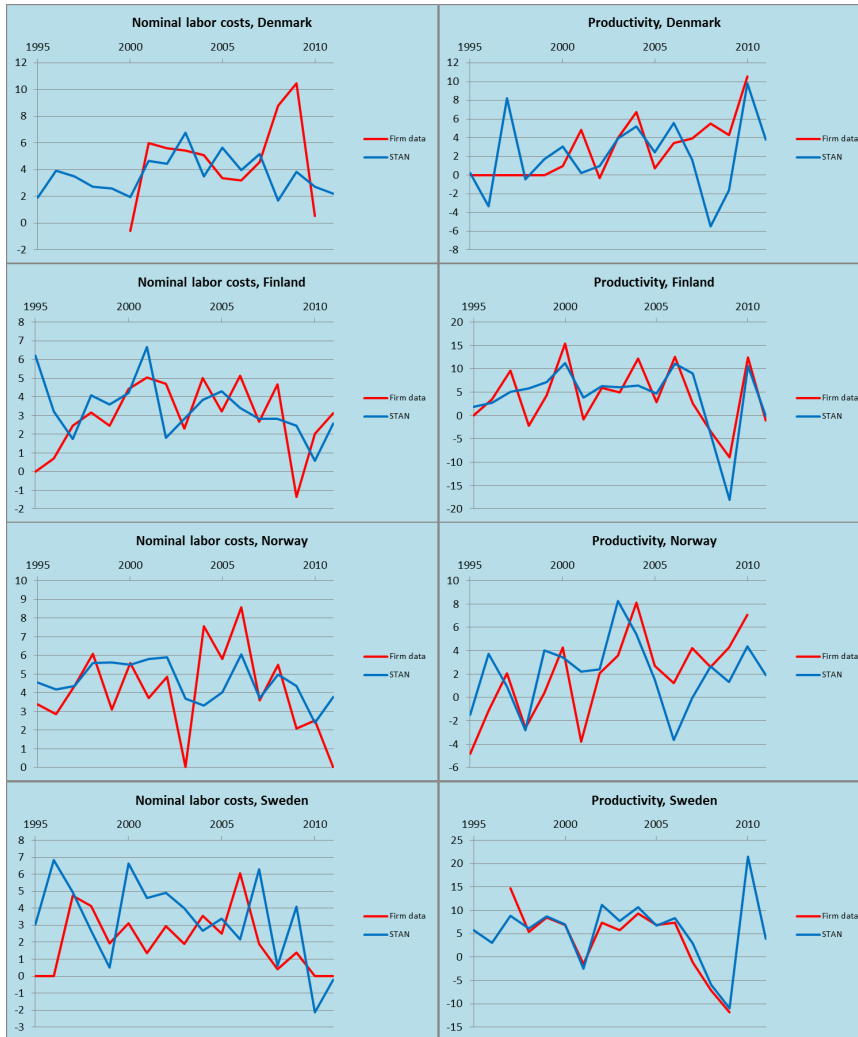
Our results have clear implications for policy: to support competitiveness of industries the barriers to creative destruction should be abolished in order to increase productivity growth. On the labour cost side, the analysis implies that labour costs are growing faster than productivity in continuing firms. This is a fact that the labour market organizations should consider in the bargaining table.

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1.7 Appendix

Figure 1: Comparison of firm- and industry-level data sources, %



2. Pension reforms: Longevity and retirement

Torben M. Andersen,²⁴ Niku Määttänen²⁵ and Tarmo Valkonen^{26,27}

2.1 Introduction

Pension systems should cater to both distribution and consumption smoothing. The distribution motive is to ensure a decent living standard for life for all elderly members of society irrespective of previous savings or labour market attachment. The motive behind consumption smoothing is to ensure that consumption possibilities of retired persons remain at a reasonable level relative to their living standard while working.²⁸

The aim to balance these objectives has prompted a vivid debate on pensions and numerous reforms of pension systems around the world. In the first phase the focus was on the ability of public pension schemes to ensure sufficiently high replacement rates and the fact that funded pension schemes would tend to offer a higher rate of return.²⁹ In the second phase there has been a strong focus on ageing and the need to ensure fiscal sustainability. Life expectancy at birth has been increasing

²⁴ Professor at the Department of Economics and Business, School of Business and Social Sciences, Aarhus University.

²⁵ Research supervisor at the Research Institute of the Finnish Economy (ETLA).

²⁶ Research Director at the Research Institute of the Finnish Economy (ETLA).

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²⁸ This also includes various insurance elements in relation to events which can happen through life, including unexpectedly long lifetime.

²⁹ A funded pension scheme offers the market rate of return on savings, while the implicit return in a pay-as-you-go (PAYG) scheme is the growth rate of the wage sum. In a dynamically efficient economy the market rate of return exceeds the growth of the wage sum, and hence there is a return argument in favour of a funded scheme. This also holds when e.g. longevity is increasing. However, a PAYG scheme may offer more scope for risk diversification, e.g. across generations. See e.g. Barr and Diamond (2006) for a general discussion of the design of pension systems.

already for two centuries, first mainly due to a fall in infant mortality and later also due to reduced mortality in working years. A more recent observation is that mortality rates of elderly people are falling. Population projections have systematically underestimated this trend, and the financial viability of pensions systems has been called into question. This has been an important driver for reforms (see e.g. OECD, 2013c). The bias in projections also explains at least partly why policy makers have been slow to react. Another reason for the lag is the strong path dependency in pension politics.

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

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

The Danish solution to increasing longevity is perhaps the most striking. It aims to keep the expected number of retirement years fixed across cohorts. Statutory retirement ages are indexed (albeit with a lag) to the life-expectancy at the age of 60 so as to ensure the same expected retirement period across generations, i.e. increases in expected longevity lead on a one-to-one basis to an increase in the statutory retirement age. A recent Swedish proposal allocates 2/3 of the increase in expected longevity at the age of 65 (relative to the life expectancy in 1997) to the age limits of the public pension system, see *Pensionsåldersutredningen* (2013). In both cases discretionary hikes in the statutory retirement ages precedes the introduction of the longevity link. The systems in Norway and Finland have built-in incentives for later retirement alongside increases in longevity. At the same time it is noted that this may not be sufficient to ensure fiscal sustainability (see *Perspektivmeldingen* (2013) and *Pension Panel* (2013)). In Finland, the next reform, aimed to be implemented in 2017, is very likely to increase the lowest eligibility

age for old age pensions, but the details and timetable are open. There are no plans for major reforms in Norway and Iceland.

This article analyses the current methods and alternative options to adjust pensions systems to increasing longevity in the Nordic countries. Section 2.2 gives a short account of the demographic forecasts for the Nordic countries. Section 2.3 provides a brief outline of pension systems and recent reforms. Section 2.4 discusses some general principles and issues in relation to adaptation of pension systems to changes in longevity, and Section 2.5 considers various policy issues in relation to pension reforms. A few concluding remarks and policy implications are given in Section 2.6.

2.2 Some stylized facts on Nordic demographics

2.2.1 *Life expectancy continues to increase*

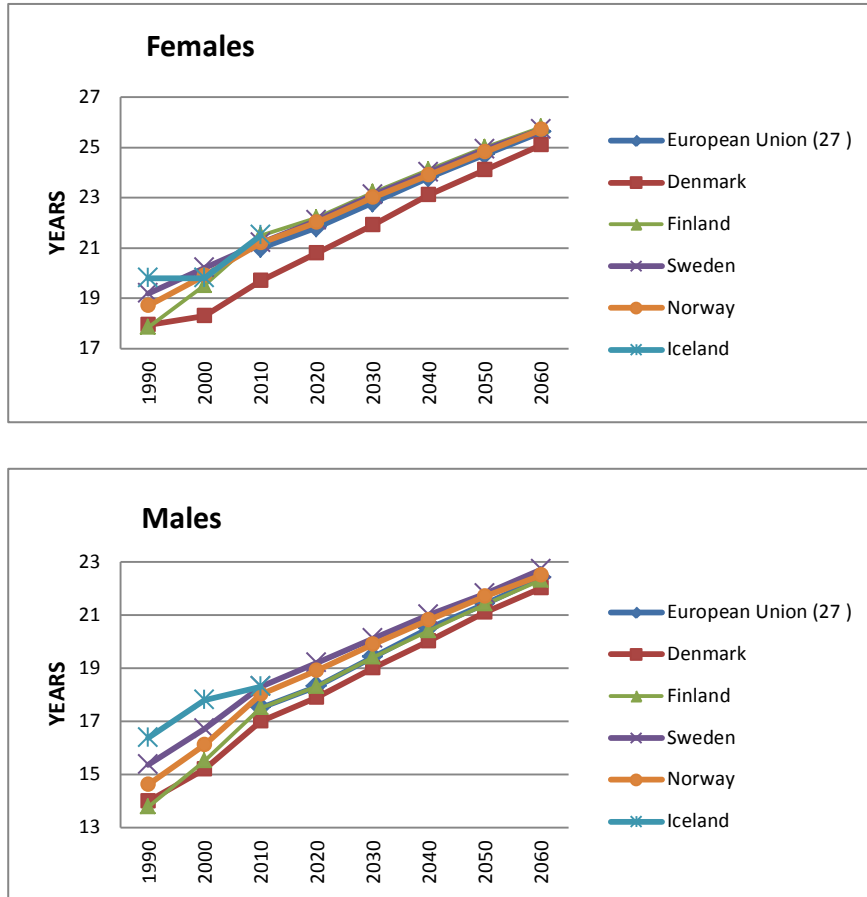
Like many other countries, the Nordics are facing large changes in the demographic structure. In particular, the old-age dependency ratio is increasing. All Nordic countries have relatively high fertility rates and long lifetimes. More variation can be observed in the amount of immigration. Recent decades have shown that future mortality rates are difficult to project and there is no reason to expect that the accuracy of the projections is improving in the future.³⁰ This is a major issue in the planning of pension systems.

We report here a few facts on the demographic development using the latest Eurostat 2010 population projection.³¹ This projection is based on the principle of convergence. It assumes that the rate at which longevity increases in top performers, such as Sweden, will slow down and the others will catch up. For the Nordics this means that the increase in longevity is projected to be the fastest in Denmark, cf. Figure 2.1.

³⁰ Keilman (2008) shows that population projections have not become more accurate over the time.

³¹ These differ from the projections made by the National Statistical Bureaus, but the overall trends are similar.

Figure 2.1: Life expectancy at age 65

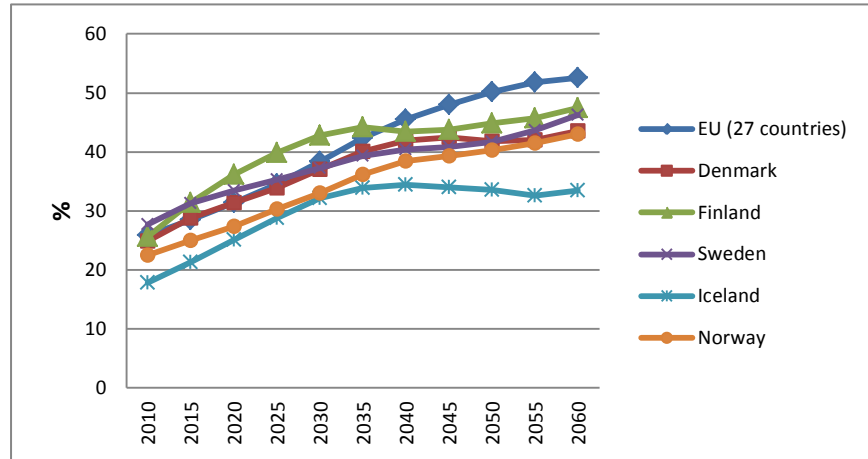


Source: Eurostat Population Projections 2010-based (Europop2010): http://epp.eurostat.ec.europa.eu/cache/ITY_SDDS/en/proj_10c_esms.htm

The projected old age ratios (65 +/15–64) show that a rather uniform change in the population structures is expected to take place during the next 25 years, cf. Figure 2.2. From the 2040s (2030s in the case of Iceland and Finland) the increase in the dependency rate will level off. This is at least partially related to the passing of the baby boom generations, which are of different size in the different Nordic countries. The upward trend in longevity implies that the increase in the dependency ratio has a more permanent nature.

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

Figure 2.2: Old age dependency ratios



Note: Age group 65+ relative to age group 15–64.

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

2.2.2 Longer periods in retirement weaken public finances

In the past there has been a trend increase in the retirement period both due to increasing longevity and lowering of effective retirement ages (e.g. due to early retirement schemes). Table 2.1 calculates the average expected number of years after exit from labour force. This number is somewhat higher than the number of years that a person receives pensions, since in many cases the working career ends due to sickness leave, unemployment or voluntary retirement. In any case, the outcome shows that there are marked differences among the Nordics. For example, the early exit of the Finns gives them the highest number of years after exit, even though the life expectancy of a 60-year old Finn is among the shortest. Finns are in this respect closer to the EU average than the Nordic outperformers. A recent study indicates that in Finland the observed average time in retirement increased from around 9 years in the beginning of 1980s to more than 20 years in 2009 (Järnefelt *et al.* 2013). The main reason for this development was increased use of early exit routes.

Table 2.1: Expected years after exit from labour force, 2009

	Remaining life expectancy at 60	Total life expectancy at 60	Average exit age	Expected years after exit
European Union (27 countries)	23.2	83.2	61.4	21.8
Denmark	22.2	82.2	62.3	19.9
Finland	23.6	83.6	61.7	21.9
Sweden	24.0	84.0	64.3	19.7
Iceland	24.1	84.1	64.8	19.3
Norway	23.8	83.8	63.2	20.6

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

Source: Eurostat.

Table 2.2 shows the public pension expenditure projections of the Commission published in 2012. It is striking that in Sweden and Denmark public pension expenditure is not projected to increase much relative to GDP. Also in Norway and Finland the increasing expenditure rate is not so much due to increasing longevity, but variation in sizes of birth cohorts.

Table 2.2: Projected public pension expenditure 2010–2060, percentage points of GDP

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

Source: European Commission (2012).

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

A simple metric for fiscal sustainability is the needed permanent change in the primary budget balance to ensure that the intertemporal budget constraint of the government is satisfied. According to the most recent official assessments³² Finland and Norway have not yet ensured fiscal sustainability. Finland and Norway would require a permanent

³² As reported in Stability/Convergence Reports to the European Commission, see <http://ec.europa.eu/europe2020/making-it-happen/country-specific-recommendations/>. In the case of Norway perspektivmeldingen (2013).

budget improvement of 4.2% and 3.4% of GDP, respectively. For Denmark the condition for fiscal sustainability is exactly met, while Sweden has a fiscal space of 2.4% of GDP under this sustainability criterion. Compared to most other countries this puts Sweden and Denmark in a position as front-runners in having addressed the sustainability problem. Finland and Norway are also much further ahead than many other countries.

2.3 Current and planned Nordic public pension systems and statutory retirement ages

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

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

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

serves the purpose of consumption smoothing over the life time, and Pillar III allow for differences in individual preferences.

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

Sweden

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

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

The public pension system of Sweden does not have a single statutory retirement age, but minimum ages at which various entitlements apply. It is not possible to withdraw the income pension before the age of 61, the base pension is available at the age of 65 (an implicit norm for retirement for many), and at the age of 67 one is no longer covered by certain labour market regulations (employment protection act). The income pension includes a mechanism which rewards the individual for

postponing retirement (actuarial adjustment). It is an implication that the pension available at a given age is cohort specific since pensions are adjusted for life-expectancy. It was expected that the actuarial adjustment would encourage people to retire later, but the effect has not been large enough (Pensionsåldersutredningen, 2013).

The continuous increase in life expectancy, the insufficient response in employment rates and the consequent outlook of decreasing benefits has provoked concerns regarding the adequacy of pensions. Projections imply that the average pension per person will decline relative to wages, see e.g. Swedish Fiscal Policy Council (2008). That is, although the system includes mechanisms which make it financially viable, it may not be politically viable in the sense that the outcome is unacceptable.³³ A reform committee was established by the government and it presented its proposal in April 2013 (Pensionsåldersutredningen, 2013). One of the main suggestions was to raise the eligibility ages and link them to life expectancy using a new concept of *recommended retirement age*.

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

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

Denmark

In Denmark the pension system has been gradually changing since 1987 via the build-up of mandatory occupational pensions. The first tier pension system consists of a universal base pension and means-tested sup-

³³ In 2010 pensioners were compensated by a tax relief for reductions in pensions implied by the balancing rule in the pension system.

plements. The second tier system consists of quasi-mandatory occupational pension systems.³⁴ Currently the contribution rate is 12% or higher for most parts of the labour market. These pensions are funded. There is also a voluntary early retirement scheme called “*efterløn*”. The system is contribution based but tax subsidized.

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

Recent reforms have addressed the increasing longevity and the related problem of fiscal sustainability. The so-called “welfare reform” implemented in 2006 set the path for increases in statutory retirement ages. The statutory retirement ages will also eventually be linked to longevity. The so-called “retirement reform” front-loaded the phasing in of the changes and tightened the rules of the early retirement scheme further. Specifically, the lowest eligibility age for early retirement will be increased by two years from 2014–17, and from 2018 to 2022 the period is shortened from five to three years. The statutory retirement age for public pensions will be increased by two years in steps from 2019 to 2022. After these transitions, both the lowest eligibility age for early retirement and statutory retirement age for public pensions will be indexed³⁵ to the development in the expected life time for a person at the age of 60.

Changes in the pension ages are announced with a lead of 15 years, implying that the first change will be implemented in 2030 (2027 for early retirement). The indexation formula is such that the expected old age pension period will be 14.5 years in the long run (plus eventual three years in early retirement). Recent population projections indicate that the statutory pension age will be 68 years in 2030. The development of life expectancy and the need for adjusting the retirement age will be checked every five years. Occupational pensions can be withdrawn (without tax penalty) five years before the statutory pension age.

³⁴ These pensions are negotiated between the labour market parties and in this sense voluntary, but participation is mandatory for individuals.

³⁵ The system is semi-automatic, since a change has to be approved in parliament. The changes are smoothed, and the change in one year can never be below 6 months and above 12 months.

Iceland

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

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

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

Norway

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

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

The amount of paid pensions is adjusted in an actuarial way to the retirement age of the individual and the expected lifetime of her cohort at age 61. The combination of a flexible retirement age and the actuarial adjustment is presumed to generate strong incentives to retire later (Christensen *et al.* 2012). The first observations suggests that the abolishment of the generous early retirement possibilities have indeed increased the employment rates in the private sector among the low educated in the age groups at issue. Interestingly, they seem to continue to collect pensions early, which suggests that they increasingly work and collect pensions at the same time (Nordby, *et al.* 2013). These first reactions do not, however, tell much about the influence of the longevity adjustment on retirement age.

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

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

Finland

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

The normal retirement age was 65 years before year 2005 both in the means-tested basic pension scheme and in the earnings-related pensions. It was, however, possible to retire earlier using several options. There were disability pensions with eased access, unemployment pensions and actuarially fair early old age pensions. The reform of 2005 introduced a flexible retirement age between 62–67 years in the earn-

ings-related scheme and abolished gradually the above-mentioned early retirement possibilities. Extending the working career is now rewarded by yearly accrual of 4.5% between ages 63–67. After age 67 no new pension rights are accrued, but a yearly increase of 4.8% for deferred retirement is applied. The reform also introduced a longevity adjustment for pensions. The size of the adjustment is calculated using the observed life expectancy of the cohort at age 62 to the average of that number from years 2003–2007. The eligibility age for full basic pension was left intact.

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

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

Comparative reflections

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

From the point of view of labour supply incentives, the Swedish system looks most promising at first sight. The adopted defined contribution principle and the actuarial adjustments of benefits for both longevity and the retirement age link paid contributions closely to the earnings-related income pensions. But the system also aims to redistribute income with the help of a means-tested guarantee pension and a relatively low ceiling for the income pensions. With these elements the link be-

tween contributions and benefits only applies in a rather narrow income interval. This feature is striking also in Norway (Valkonen, 2012).

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

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

Table 2.3: General eligibility ages in Nordic countries

	Current statutory eligibility age	Expected eligibility age in 2030	Link to life expectancy
Denmark	60*–65	65*–68	Eligibility age
Finland	63–68	63–68	Pensions
Iceland	65–70	65–70	None
Norway	62–75	62–75	Pensions
Sweden	61–67	64**–71**	Pensions/Eligibility age**

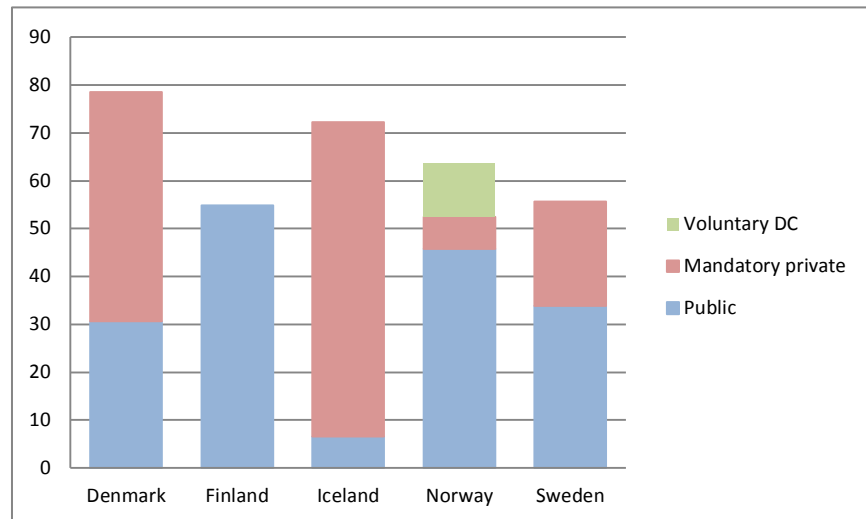
*lowest eligibility age for early retirement scheme “*efterløn*”.

** suggested.

Table 2.3 summarizes key features on statutory pension ages, expected retirement periods and how adjustments to changes in life expectancy are made. Current situations differ a lot between the countries, but it is easy to project that the public pension schemes are converging towards higher eligibility ages.

In Figure 2.3 the pension replacement rates of the Nordic pension systems are compared. The data describes theoretical replacement rates, calculated for a person who works from age 20 until the country-specific statutory retirement age of the public scheme and earns average wage (OECD, 2013c). These results should be considered only indicative, because the calculations include many assumptions. Public pension schemes in the figure covers both basic pensions and statutory earnings-related pensions. In Denmark and Iceland the basic pensions are the only ones in this category. Mandatory private pensions are actually quasi-mandatory, since they are mostly occupational pensions with extensive coverage.

Figure 2.3: Average replacement rates in Nordic countries



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

Source: (OECD, 2013c).

The large variation in the relative shares shows that there is no such thing as a common Nordic pension system. Correspondingly, policies that try to achieve higher retirement ages must be designed country by country. Any policy that aims to increase the employment rates of the older workers must consider also the rules of the private pension schemes in the countries where these schemes are significant. Governments can determine directly the rules of the public schemes, but can also affect the retirement age in the private schemes e.g. by accepting the contributions as deductible in taxation only if the retirement age follows the guidelines provided.

2.4 Adjusting pension systems to longevity: general principles

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

2.4.1 *Adequacy and intra-generational redistribution*

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

2.4.2 *Intergenerational sharing of the aggregate longevity risk*

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

In defined contribution schemes the life expectancy is evaluated at the time of retirement and an increase in expectancy results in adjustment of pensions. In traditional defined benefit systems the contribution rate adjusts to higher pension expenditure. The latter rule is often justified by noting that cutting pensions would hurt the economically vulner-

able elderly. In case of constantly increasing longevity, an increasing contribution rate can also be defended by intergenerational equity.

The recent Nordic pension reforms suggest additional combinations. One of them is life expectancy adjustment of pensions,³⁶ combined with a flexible retirement age. Flexibility provides a possibility to react in late stages of the working career to surprises in life expectancy. Another innovation is a link between life expectancy and the eligibility age for old age pensions.

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

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

Insurance and incentives

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

The concerns about (re)distribution and consumption smoothing raise difficult design issues. The base or guarantee pension is targeted to elderly persons without much savings or previous work experience. In

³⁶ The German pension indexation rule includes an element that considers the change in the dependency ratio, i.e. number of pensioners divided by the size of the labour force. This element limits index increases, if lifetimes become longer.

the sense it is means tested, and higher income/pension savings would imply a reduction in the base pension. This implies that the incentive to retire later or to save for pensions is reduced, in particular for low income groups. However, the means testing of base pensions also has an insurance function since variations in work over the life-span becomes less important for the total pension of an elderly person. This issue can be illustrated by the Danish pension scheme, where the mandatory occupational pension scheme implies that a large share of the population will have substantial savings in a funded scheme. Since the public pension is means tested this implies that increased pension savings is not matched one-to-one in larger total pension entitlements (more labour market pension, less public pension). This increases the effective or implicit marginal tax rate on savings and postponement of retirement. On the other hand, it also implies that the total pension for a relatively large group is relatively insensitive to variation in wage, work, sickness, etc., which reduces pension risk, see Andersen *et al.* (2012). This is an example of a trade-off between incentives and insurance in designing the division of labour between the distribution and consumption smoothing motive in the pension system.

Financial sustainability of the pension system and overall public finances

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

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

Rules vs. discretion

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

2.5 Adjusting pension systems to longevity: some nuts and bolts

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

2.5.1 *Labour supply*

While an actuarial adjustment of pensions to life expectancy can suffice to make the pension system financially sustainable, it is unlikely to induce individuals to lengthen their working lives in line with increasing longevity so as to secure the sustainability of the overall public sector. An actuarial adjustment only takes the present value of pensions and contributions into account. However, for the public sector as a whole, the issue is also about income and consumption tax revenues. That is one reason why some Nordic countries are contemplating linking also the earliest eligibility age for old age pensions (earliest statutory retirement age) to longevity. The question is then how effective such a policy reform would be in terms of increasing employment.

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

earliest statutory retirement age by one year would extend working lives by about 2.5 to 6 months.

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

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

Since the retirement decision is critically dependent on the ability to continue working, it follows that the health status at a given age becomes crucial. It is commonly asserted that health deteriorates with age, and hence disutility from work is increasing with age. This assumption cannot be applied in an unqualified fashion in the presence of a trend increase in longevity. Empirical evidence strongly supports healthy ageing or the so-called compressed morbidity hypothesis. That is, the life extension is associated with a postponement of the age at which morbidity appears, see Payne *et al.* (2007) and Fries *et al.* (2011). Empirical research on the relationship between age and health also confirms this and finds support for the time-to-death approach,³⁷ see e.g. Zweifel *et al.* (2006), OECD (2006), Werblow *et al.* (2009) and Lauridsen *et al.* (2011). Healthy ageing is thus not only pointing to the large potential welfare

³⁷ This approach suggests that a major part of health care costs are linked to proximity of death, not age of a person.

gains from the trend increase in longevity, but claims that labour supply capacity remains intact into higher ages alongside increases in longevity.

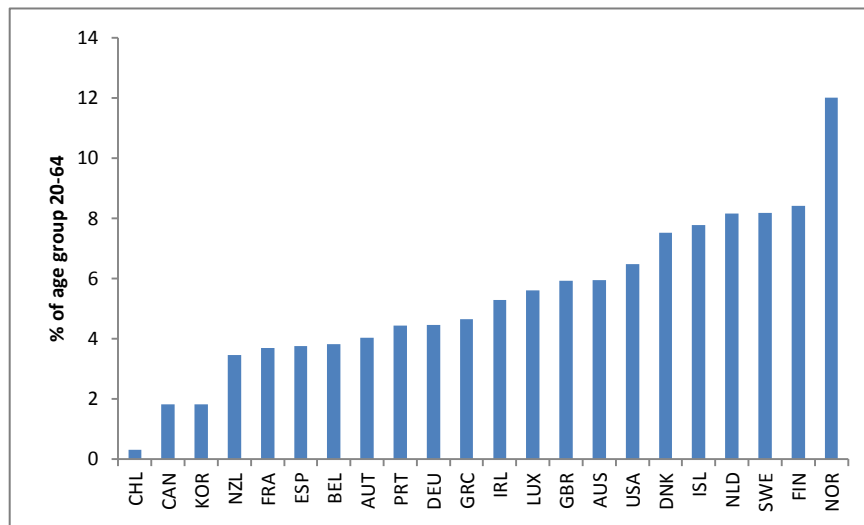
However, not all individuals experience healthy ageing and there is a significant dispersion in longevity across the population. There is a clear socioeconomic gradient in health and thus longevity. This implies that both the initial level and the changes in longevity differ across groups.³⁸ From a distributional perspective this is important since not all have the health to keep working to higher ages, and they may not to the same extent be able to respond to a general increase in the statutory retirement age. It is hard to solve this problem by differentiating statutory retirement ages across groups.³⁹ It is thus to be expected that an increase in the lowest eligibility age for old age pensions would increase demand on other parts of the social safety net, in particular disability pensions.

This raises issues in relation to disability pension systems and their eligibility criteria. On the one hand, it may be questioned whether they are flexible enough. On the other hand, it is a fact that disability pensions are already widely used in the Nordic countries. Figure 2.4 shows the share of the population in the age group 20–64 receiving disability pensions and it is seen that the Nordic countries stand out with high ratios. While it may be expected that the ratios are higher than in most other countries due to more extended welfare arrangements, the large number remains an issue for two reasons. One is the immediate fiscal implications. The other is that it reflects problems in the labour market. Many countries have in recent years experienced a reduced number of people receiving disability pensions due to a physical diagnosis, but an increasing number with a mental diagnosis. Disability pension systems are thus being reformed. A common theme in these reforms is to make the system more flexible. That implies, among other things, that disability pensions are only granted for a fixed time period to allow for a reevaluation of the situation and to have a stronger focus on labour market integration.

³⁸ It is contested whether inequalities in health and longevity across socio-economic groups are increasing or decreasing, see e.g. Pensionsåldersutredningen (2013).

³⁹ As is well-known there is a significant difference in longevity between men and women. The imposition of uni-sex conditions in retirement rules and pension schemes can be interpreted as reflecting political opposition to statutory retirement ages being differentiated across socio-economic groups.

Figure 2.4: Disability pension recipiency ratio, selected OECD countries, 2010



Source: www.OECDilibrary.com

A longer working life also raises questions related to knowledge, skills, productivity and life-long learning. Retirement ages tend to be higher for more educated groups. Alongside upward trends in education this may make it easier to ensure that higher statutory retirement ages translate into employment. However, it is important that the workforce develops its knowledge and other qualifications. A particular problem may be that obsolete qualifications, perhaps induced by structural changes, become a barrier for labour market participation. It is thus to be expected that more focus will be put on life-long learning.⁴⁰

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

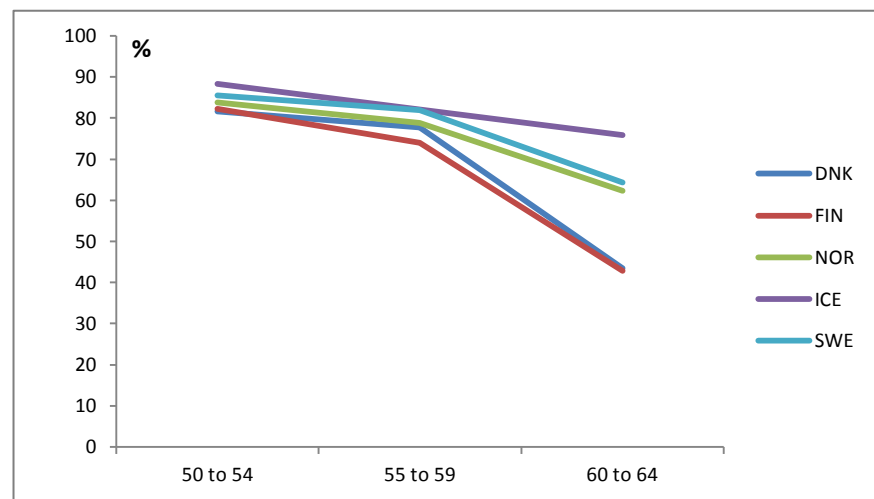
⁴⁰ According to the ELLI-index for life-long learning in the EU, Denmark is ranked 1st, Sweden 2nd and Finland 4th in 2010, cf. www.elli.org

2.5.2 Demand for labour

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

Actual retirement ages are strongly dependent on statutory retirement ages. Figure 2.5 gives the employment rate for the elderly in the Nordic countries and there are striking differences. The countries are very similarly for the age groups 50–54 and 55–59. However, for the age-group 60–64 Denmark and Finland, the two countries with early exit possibilities, have a steep drop in employment rates. This is suggesting that restricting the access to exit routes would translate into higher employment for the elderly. In recent years there has been an increasing trend in employment rates alongside reforms of early retirement schemes. As an example the employment rate for the age group 55–59 has in Finland increased by 22 percentage points in 1998–2013 largely because of abolished early retirement possibilities.

Figure 2.5: Employment rate, age 50–64, 2012



Source: www.OECDilibrary.org

However, there are some concerns about how higher statutory retirement ages will affect labour markets. A classical issue is whether later retirement and thus more work for the elderly will crowd out jobs for youth. Early retirement schemes were introduced by many countries in the late 1970s and the 1980s based on the idea that retirement of older workers would leave more jobs for younger workers. This reasoning

builds on the lump-of-labour argument that there is a fixed number of jobs, and hence more employment for one group will necessarily crowd out other groups. Specifically young and old workers are taken to be substitutes. This argument does not get strong support from empirical studies. In Gruber and Wise (2010) the issue is considered for 12 OECD countries both in terms of country-specific studies and cross-country analyses. None of these analyses find support that old workers crowd out younger workers. If anything, higher employment rates for older people tend to be associated with higher employment rates for younger people. OECD (2013b) finds similar results in a recent study which also includes the experience during the first few years of the financial crisis.

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

2.5.3 *Intra-generational distribution*

Especially reforms that involve raising the eligibility age for old age pensions often raise distributional concerns. Perhaps the most important concern relates to differences in average life span across individuals in different income groups. It is well known that individuals with low edu-

cation, who also tend to have low income, have on average a relatively short life span.

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

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

As noted above, not everyone works until the eligibility age for old-age pensions. Some individuals are on disability pensions and some individuals are unemployed before drawing old age pensions. Increasing the retirement age is bound to increase the number being unemployed or on disability pensions. For instance, some workers lose their job after the current retirement age and are not able to find a new job quickly. Those individuals may see their incomes fall, at least temporarily, compared to a system where the retirement age is left unchanged. This is so if the unemployment benefit is lower than the pension benefit. However, unemployment insurance is progressive in all Nordic countries in the sense that relative to wages it provides a higher after-tax benefit to low-wage workers than for high-wage workers. Therefore, it is clear that unemployment insurance protects especially low-wage workers against the risk of unemployment at old age.

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

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

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

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

There are also gender issues involved. Women live longer than men on average. Therefore, they tend to withdraw pension benefits for a longer time than men. As a result, women should generally prefer an increase in the retirement age to cutting monthly pension benefits. To see this, notice first that in relative terms, a given increase in the retirement age lowers the time that women withdraw benefits less than the time that men withdraw benefits. The logic is the same as in the above example with low and high income individuals. As a result, increasing the retirement age reduces the value of women's lifetime pension benefits less than that of men, again in relative terms. On the other hand, in the absence of behavioural responses, a given proportional reduction in monthly pension benefits reduces lifetime pension benefits by the same fraction independently of longevity.

2.5.4 *Inter-generational redistribution*

The basic logic motivating that retirement ages should be linked to longevity is based on inter-generational distribution concerns. Basically such a linkage ensures that those cohorts gaining from longer longevity are also to stay in the labour market for a longer period. This is particularly important in a tax-financed system since it serves to maintain the relation between the number of years the average person from a given cohort contributes to and benefits from tax-financed arrangements. In the absence of this, some cohorts may gain at the costs of other cohorts. This is most easily seen if the statutory retirement age is fixed. Increasing longevity then increases the retirement period in a one-to-one fashion. The longer retirement period has to be financed somehow and in a publicly financed PAYG system this becomes a burden on other cohorts. There is thus an equity argument that those cohorts benefitting from longer longevity are to carry the financing burden hereof.⁴¹

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

2.5.5 *Design of the link between retirement age and longevity*

There are many possible elements and parameters in the indexation that can be chosen to adjust the speed and cohort wise incidence of the retirement age change. The first choice relates to the baseline life-expectancy.

⁴¹ Note that this not only applies to pensions but also other items like health and old-age care, which may be used more when longevity increases. The precise extent, of course, is dependent on the strength of healthy ageing, cf. above.

As an example, the Swedish proposal scheme uses the observed life expectancy of a 60 year old citizen in 1997 as the point of comparison. The earlier the chosen point is, the bigger the change in life expectancy, since lifetimes have increased continuously during last decades.

The second choice is the measure of life expectancy. Indexation in e.g. the Danish scheme is based on the life-expectancy at the age of 60. This is the so-called period life expectancy given as the average number of years a person would live if he or she experienced the age-specific mortality rates observed at the age of the calculation throughout the rest of their life. This makes no allowance for later changes in (realized or expected) mortality rates. Another choice would be to use so-called cohort life expectancy at birth, which uses age-specific mortality rates allowing for known or projected changes in mortality throughout a person's/cohort's life. In a situation where longevity is increasing, this implies that the period life-expectancy falls short of the cohort-specific life expectancy. Therefore indexation based on period life-expectancy does not fully adjust to the changes in the longevity the cohorts are going to experience, see e.g. Danish Economic Council (2011).

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

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

The fifth design issue is whether the link is automatic or discretionary. Discretionary decision making allows flexibility in case of unexpected situations or changing political preferences. On the other hand, rule-based adjustments avoid continuous political discussions and delays in decision-making. An automatic link allows also more easily a continuous regular adjustment in the eligibility age, which treats different birth cohorts more fairly and generates less pre-emptive actions. In both

cases there is uncertainty in the outcomes. The loss of welfare due to the uncertainty can be mitigated by announcing all changes in the rules well in advance.

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

2.6 Assessing the Nordic solutions

Broadly speaking, there are three main ways to adjust pension systems in the face of increasing longevity. We may increase the contribution rates, decrease monthly pensions, or raise the eligibility age for pensions. For a long time, all Nordic countries used the first solution, although the increases in the contribution rates also reflected the maturing of the pay-as-you-go pension systems. However, allowing the contribution rate to increase much further would be quite problematic. For one thing, the current contribution rates are already quite high. From an individual point of view, a mandatory pension system is similar to forced savings. Further increasing the required savings rate may be welfare decreasing. In addition, extending working lives is important for the overall public finances especially in the face of population ageing. Therefore all the Nordic countries are striving to ensure that retirement ages increase alongside increases in longevity. Pensions systems differ, and therefore the specific approach taken differs across countries. The underlying aim is that increases in statutory retirement ages should translate into later retirement and thus more employment, both of which would safeguard the pensions to be received when retired, and contribute to the financial sustainability of welfare arrangements.

Most Nordic countries have in recent reforms shifted to a system where monthly pensions are adjusted when life expectancy of the cohort increases. This has been done within a system of a flexible retirement age where the individuals can increase their future pensions by postponing retirement. This solution eliminates a large part of the sustainability problem of the pension systems caused by longevity increases. However, it is not without weaknesses. One issue is that so far the longevity ad-

justment and flexible retirement age has not induced individuals to extend their working lives to a substantial degree. As a result, the sustainability of the public economy as a whole is still an issue. Moreover the average level of pensions may become unacceptably low in the long run.

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

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

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3. Public finances, markets and the health and long-term care services

Jukka Lassila⁴² and Tarmo Valkonen^{43,44}

3.1 Introduction

The demand for health and long-term care is expected to increase in the future. This expectation is partly due to the expected ageing of the populations, and partly based on the past growth trend, which many interpret as a sign of general willingness to use a rising share of incomes for these services, especially as technological progress brings new and better treatments available. Furthermore, productivity growth in these services is on average low, which increases the relative price of these services (the so-called Baumol effect). In the Nordic countries this development is likely to have a profound influence on public finances, since most of these services are currently paid by tax revenues. Recent estimates of the European Commission (EC, 2012) show that these public expenditure items will increase in the Nordic countries⁴⁵ 3.1–5.1% of GDP, i.e. by 27–54% by 2060.

This creates a many-faceted challenge. First, taxes in total are already relatively high in the Nordic countries. Thus an urge to curb the rise in expenditure is understandable. This may, however, contradict the second aspect, namely that spending increasingly on health may improve welfare and add healthy years to life expectancy, and thus reflect ration-

⁴² Research Advisor at the Research Institute of the Finnish Economy (ETLA).

⁴³ Research Director at the Research Institute of the Finnish Economy (ETLA).

⁴⁴ We thank Torben M. Andersen, Martti Kulvik, Niku Määttä and Vesa Vihriälä for useful comments. In addition to the funding from the Nordic Council of Ministers, the authors have received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement FP7-SSH-2012-1/No 320333.

⁴⁵ Sustainability Report 2012 of the EC does not include Iceland.

al choices on how to spend the resources in a society where real incomes rise. Intergenerational fairness is also an issue, since population ageing may shift the tax burden of health and long-term care services unjustly between cohorts and generations. Other possible worries include the prospect that the increase in the demand for labour in the care sector will crowd out other production. Technical progress has a dual effect in health care. It makes cost savings possible by increasing productivity, though this may be in the form of rising quality, which is hard to detect, but the extended use of new technologies may also increase costs.

Several strategies have been suggested to meet these challenges. Some of them aim at higher productivity, such as introduction of quasi-markets in public production or outsourcing the services to private producers. Others recommend increasing reliance on private wealth and insurance to top up the publicly financed services. It would alleviate the dilemma between budget restrictions and welfare-improving increases in health expenditure, but is limited by the informational difficulties inherent in health issues that warrant strong public sector presence at least in regulation, monitoring and supervision. A third option is to strengthen the tax base by e.g. longer working lives and increasing immigration. The demand effect may be reduced via user payments, which may be politically more feasible than tax increases. It is not clear, however, on what principles user payments should be introduced, when the services are still to be accessible to all citizens, and distributional concerns should be taken into account.

The aim of this study is to illustrate uncertainties related to the future health and long-term care costs, to assess reforms that aim to limit the growth of these costs and increase tax revenues and to discuss the responsibilities of the public and private sectors in financing and producing these services.

3.2 Health, welfare and the public sector

3.2.1 *Is health a superior good?*

Good health is valuable. And health care is an essential input in the production of health. Hall and Jones (2007) argue that as people get richer and consume more, the marginal utility of consumption falls rapidly. On the other hand, the marginal utility of living longer does not decline. If spending on health extends life, it is no wonder that the willingness to pay for improved health is likely to rise sharply with income. As a result,

the share of health in expenditure grows with income. This is consistent with the development of health care spending as a percentage of GDP in most developed countries since the 1960s.⁴⁶ Thus there principally might not be a problem in the growing GDP share of health expenditure. It merely is a reflection of what people rationally want. There may well be, however, a problem in how to finance this. Another problem is whether people make rational choices involved with health care. The large demand for treatments and medicines that are not evidence-based or clinically proved to be effective is one sign of irrationality. A third problematic issue is moral hazard related to unhealthy life styles, promoted by underpricing in publicly provided care.

3.2.2 Information, risk, uncertainty, and the role of the public sector

There are several reasons, such as informational difficulties, redistribution and externalities related to health, which support the involvement of the public sector in financing and regulation of health services. Individual saving is inefficient, since there is large variation in needs for medical care between individuals. Private insurance is problematic because of adverse selection and moral hazard, and persons with pre-existing health problems are seldom welcome as customers. Events whose occurrence does not depend on whether they occur to others, can be to some extent covered by private insurance, but extensive aggregate health risks, such as epidemics are not insurable. High coverage and redistribution is difficult to reach in private finance. All these problems speak for mandatory arrangements. Furthermore, people in general are not able to make well-informed decisions on health issues, so they would benefit from public monitoring and supervision. For cost-containment, the public sector needs to regulate the supply of services it produces itself or finances but which are produced by the private sector.

Most of the reasons above are also relevant for long-term care services, but to a different degree (see Cremer *et al.*, 2012). The costs come from housing arrangements and nursing, and thus remain well below those of expensive medical treatments. Making informed decisions con-

⁴⁶ There is an extensive literature which studies whether health expenditure increases faster than income (luxury good) or at a slower pace than income (necessity). Studies using individual data typically find low elasticities, but national level studies suggest high elasticities. Getzen (2000) claims that it is the size of national health budget that is relevant for overall health expenditure, not the demand of individuals.

cerning care services is in principle easier for people, unless the incapacity to make decisions is the reason for care need. On the other hand, there is a great deal of evidence that people generally understate the probability and the severity of care need that may occur in the distant future. From an insurer's point of view, adverse selection and moral hazard are relevant problems, and the need for care is often difficult to observe objectively. Thus the mandate for publicly financing the services at least up to a generally accepted minimum level is clear also concerning old-age care.

3.2.3 *How the Nordics organize and finance health care and old age care – a comparative view*

The overarching principles of the Nordic welfare model – universalism and equity – describe well also the goals and main features of the health and old age care systems in the Nordic countries. Equity is promoted both in access and in the care outcomes, even though with varying success. Moreover, progressivity related to tax-financing allocates a major share of the funding burden to affluent citizens. Organization of care is decentralized either to the regional, county or municipal level, but countries have recently tightened the regulatory frameworks to improve equity. The services are produced mainly by the public sector although the share of private production is increasing.

There are many trends that challenge the health care model. The most obvious problems are the increasing costs related both to population ageing and pharmaceutical and technological developments. Other challenges are the intensifying demand for increased individual choices and better access to and quality of care, enhancing possibilities for cross-border service shopping, inefficient use of ICT and insufficient coordination between different tiers of public and private production and between public and private financing of care. The goal of small socioeconomic differences in health outcomes is harder to achieve with health policy since they often stem from differences in lifestyles.

In Finland municipalities have the responsibility to provide and finance health care and old-age care services, but can freely choose whether to produce or outsource them. Primary health care is provided by single municipalities or in co-operation with the others. Specialized health care services are organized by federations of municipalities. Municipal health care is mainly financed by local taxes and block grants from the central government and dominantly still produced by the municipalities even though some outsourcing has taken place.

Citizens can also use private services and apply for a partial reimbursement from the National Health Insurance System. A third increasingly important element is occupational health care, which has expanded its services from prevention also to outpatient treatments. Occupational care is financed by employees' and employers' contributions to National Health Insurance. Private health insurance markets are emerging, but small.

The main problems of health care in Finland are inequality and delays in access to primary care, and by Nordic standards also weaker outcomes, when measured by health or life-expectancy. Several overlapping channels of health care financing create incentives for suboptimal behaviour.⁴⁷ The aggregate costs are still, however, relatively low.

Old-age care is financed by municipalities, but increasingly produced by the private sector and non-profit organizations. Also the municipalities have changed their way of producing long-term care. Retirement homes and wards of health centres have been largely replaced by sheltered housing with 24-hour assistance. One reason for the transition is that in this way municipalities save money, since the customers pay for their housing services and medicines in sheltered housing. The central government has instructed municipalities to substitute institutional care with home care. Municipalities finance LTC services with local taxes and block grants from the central government.

The problems of the current system and the projected large expenditure increases due to population ageing have sparked an extensive reform process. The four largest political parties agreed in March 2014 that the responsibility to organize health and long-term care services will be transferred from municipalities to five new regional organisations in 2017. These organizations are financed by municipalities using weighted capitation principle. Other details of the major organisational and financing reform will be settled during year 2014.

In Sweden provision of health and long-term care is also decentralized. County councils have the main responsibility for providing health care. Services are mainly financed by local taxes and grants from the government. Patients can choose their service provider from a group of qualified providers in primary care. This recent reform has increased the supply of the private services so that a third of primary care practises are currently privately owned (Glenngård, 2013). Even some hospitals

⁴⁷ An example is that separate financing of primary and secondary health care creates a moral hazard to provide a suboptimally low amount of services in primary care.

have been privatized. Patients can contact specialists directly without any permission from a general practitioner, which is one reason why specialized medical care has a large role compared to primary care.

The outcomes of the Swedish health care systems are considered to be excellent in international comparisons. The health status of the population is one of the best in the world and life expectancy is one of the longest. There are, however some problems like differences between regions and hospitals regarding access to some operations and in efficiency and quality of care (Baroni and Axelsson, 2012). These differences are revealed by regular public comparisons. The possibility to freely choose the provider is likely to improve access to primary care and reduce further the relatively small inequalities of the system.

Municipalities are responsible for providing long-term care in Sweden. As in Finland, an increasing share of the services is produced by the private sector. Another common feature is that municipalities pay income transfers to informal caregivers and the terms and the size of the transfers vary between municipalities. The transition from institutional care to home care and sheltered housing has not always been managed well, which has caused queues to institutional care in some municipalities. The costs of health and long-term care are well above the OECD average in Sweden. If related to other Nordic countries, only Denmark allocates as high a share of GDP to those services.

In Denmark regions have the main responsibility for organizing and financing health care. Long-term care is provided by municipalities. General practitioners, who are working as self-employed professionals, have a major role in primary care. Citizens typically register with a GP, who acts as a gate-keeper to specialized services. Regions run hospitals, which arrange specialized inpatient health care. Practicing self-employed specialists and hospital-based ambulatory clinics provide corresponding outpatient care.

Public health care is financed by tax collected by the central government. The revenue is allocated to regions and municipalities using a formula that takes into account age structure, risks and socioeconomic indicators of the population. The municipalities must make a co-payment to the regions for hospital treatment of their citizens (Vrangbaek, 2013).

There are two types of voluntary private insurance available. Supplementary insurance is used to bypass the queues in public hospitals. They are often financed by employers. The more popular complementary insurance is used to finance co-payments for medications and some services.

The health care system scores high in the area of customer satisfaction, but some indicators like healthy life expectancy do not reach the high Nordic standards. Health inequalities are low. Specialized care is concentrated to a few large hospitals, which increases efficiency. The model of organizing primary care is somewhat problematic, since it does not foster coordination of primary and secondary care (OECD, 2013a).

Public long-term care for the elderly is extensive in Denmark. It is financed mainly by local taxes and grants from the central government. User fees and rents comprise a minor share of financing even though the emphasis is centred on home care and sheltered housing instead of nursing homes. There is a free choice of home help providers for those who are eligible. Citizens eligible for institutional care have a guaranteed access within two months.

In Norway municipalities provide and finance primary care. Citizens choose and register with a general practitioner (among those who have contracted with municipalities), who will evaluate the need for care and offer treatments. As in Denmark, this self-employed GP acts also as a gate-keeper to specialized treatments. Services are financed by local taxes and block grants from the central government. Out-of-pocket payments from patients account for a third of the total costs of the primary care provided by general practitioners (Lindahl and Ringard, 2013). The central government is responsible for arranging and financing secondary health care. Four regional non-profit health enterprises run the public hospitals. The central government allocates money to the health enterprises according to a priori assessed needs and activity indicators. Municipalities participate in the activity-based financing of medical treatments of their residents in hospitals. All inpatient care in public hospitals, including pharmaceuticals, is free of charge.

Health policy is relatively successful when measured by health indicators. As in Sweden and Finland, there are, however, regional disparities in access and quality of care. Recruitment of doctors and nurses is sometimes difficult in rural areas.

Municipalities provide and finance long-term care of the elderly in Norway. As in the other Nordic countries, home care and sheltered housing are replacing institutional care. Voluntary organizations have earlier produced a large share of the services, but are increasingly integrated in the public system. As in Finland, out-of-pocket payments can be up to 85% of the patients' income in institutional care, but comprises still a small share of the total costs. The share of GDP spent on health and long-term care services is somewhat higher in Norway than the OECD average.

Iceland differs from the other Nordic countries in several ways. Provision and funding of health and long-term care is largely centralized. Doctors in both primary care and hospitals are salary earners, but outpatient specialized care is provided by self-employed specialists. Even their services are mainly publicly financed. As in Sweden, general practitioners in primary care do not have a gate-keeping role. Therefore it is quite obvious that any problems in access to or in quality of primary care increase demand for specialized care. Health care is financed mainly by general taxation. The share of out-of-pocket costs is comparable to other Nordic countries (Ásgeirsdóttir, 2009).

The health outcomes are excellent in Iceland. Both life expectancy and number of healthy years are high. The spending cuts due to the deep economic crisis have been moderate in the health care sector.

Iceland has a history of arranging old-age care in institutions. Even though the emphasis is now on increasing home care, a relatively high share of the oldest old is still living in nursing homes. Furthermore, there are quite many people on waiting lists. One reason for this situation is that municipalities promote the use of state-financed institutions instead of home help that municipalities finance themselves (Sigurðardóttir, 2013). The total fiscal burden of long-term care is not, however, very large, since the age structure is relatively young in Iceland.

As described above, there are large differences in Nordic countries in organization and financing of health and long-term care, but rather low differences in outcomes. This is probably reflecting the very similar values and goals regarding to health and long-term care. The differences allow learning from the best practices and avoiding weak spots. It seems that free choice of the primary care producer is a permanent element of future health care. If so, promoting competition between the providers and educating customers towards informed choices are needed to fully utilize the potential of the trend. Also the payment arrangements for the private producers are important for keeping the costs in check, the capitation principle being the prime candidate. Gate-keeping practices are another potential driver for low costs. They apply to division of labour between nurses and doctors as well as to access to specialized care.

Utilization of economics of scale and specialization of hospitals have generated positive results both in terms of efficiency and quality. Cooperation between primary care, secondary care and social services are needed to facilitate exchange of information and to provide continuum of services to customers. Also a flexible reallocation of resources between these services should be enabled due to the large uncertainties related to the needs of the future elderly. Incentives to shift responsibili-

ties and costs to other providers in provision and financing of care should be abolished. One step ahead would be to reduce the overlap in financing sources.

In long-term care the key issue is how long the current trend of increasing the share of home care can continue, since the number of elderly living alone is increasing and the working lives of the potential informal working-age carers are becoming longer. There is also a limit in the health and ability status of the customer after which institutional care provides higher quality and is less costly than intensive formal care at home.

3.3 Why health and care expenditure keeps rising?

Expenditure on health has increased rapidly during the last 50 years. The ratio to GDP has risen from below 4% to close to 10% in the Nordic countries. It suggests that the welfare states values health highly.

Table 3.1: Total expenditure on health, % of gross domestic product

	1960	1970	1980	1990	2000	2010
Denmark		7.9	8.9	8.3	8.7	11.1
Finland	3.8	5.5	6.3	7.7	7.2	9.0
Iceland	3.0	4.7	6.3	7.8	9.5	9.3
Norway	2.9	4.4	7.0	7.6	8.4	9.4
Sweden	..	6.8	8.9	8.2	8.2	9.5

Note: For Denmark, the figure for 1970 is actually for 1971.

Source: OECD Health data.

3.3.1 What drives the expenditure?

When discussing population ageing and health and long-term care expenditure, a proper way to start is to acknowledge that rather little is known quantitatively and uncertainty is large. This concerns the understanding of the driving forces and causalities both currently and in the past. Projections for the future are thus based on shallow grounds compared to, e.g., pension expenditure projections, and uncertainties are magnified by the obvious possibility that whatever the current connections are, they may change in the future. The most relevant issues include technological change, Baumol's disease, income effects and demographic effects (see, e.g. de la Maisonneuve and Oliveira Martins, 2013, Häkkinen *et al.*, 2007, and Tuovinen, 2013).

Concerning demographic effects, a basic statistical fact is that per capita health and long-term care expenditure is bigger in older age groups than in younger. The magnitudes vary between countries, and

need not be completely monotonic by age, but usually people over, say, 60 years of age use more of these services per person than people under 60. And because population ageing usually means that the number of people over 60 grows more rapidly than those below 60, the worry about increasing costs is obvious.

Häkkinen *et al.* (2006) used individual-level health and care expenditure for a large sample of persons in ages 65+ in 1998. According to their calculations, 49% of health expenditure and 75% of care expenditure went to persons who died in 1998–2002. Part of the expenditure for those who died during these years, however, obviously had no causal connection with death. A person who died because of lung cancer in 2002 may have been treated for a dislocated shoulder in 1998. Lassila *et al.* (2011) elaborated on the results of Häkkinen *et al.* (2006), assuming that the costs that do not depend on the proximity to death are on average the same per capita, within each age group, for those who died and for those who did not. They estimated that 29% of health expenditure and 51% of care expenditure depended on the proximity to death. This result lowers markedly the sustainability gap for Finland.

3.3.2 *Future health and long-term costs in Nordic countries*

Population ageing has increased interest in the future age-specific public expenditures. The main components of those are pensions and health and long-term care expenditure. International organizations have published country-specific projections for the costs. The idea has been to achieve comparable results by using similar definitions, methods and assumptions for the driving forces of the costs for all the countries. We present two recent projections produced by the Ageing Working Group (AWG) of the European Commission and OECD and discuss their implications. These organizations use the projections to assess the fiscal sustainability of the countries. Projections of AWG are further used, for example, in defining the country-specific Medium-Term Budgetary Objectives of euro area and ERM2 Member States.

Table 3.2 shows health and long-term care expenditure projections produced by AWG and published in 2012. Health cost projections are based firstly on the EUROPOP 2010 population forecast and secondly on information on age-specific public expenditure per capita, provided by the country experts. An important issue is how this link between age and health care demand will evolve in the future. In the reference scenario of AWG it is assumed that half of the gains in life expectancy are spent in

good health. A third component needed for the projections is the future development of unit costs of the health care services, which is assumed to develop at the same rate as GDP per capita. The uncertainty related to the future health care costs has been considered by creating a large amount of scenarios with different assumptions about the influencing factors, their contribution to the expenditure and their future development (EC, 2012).

The process of projecting long-term care expenditure also starts from the population projection, which is used to forecast the size of the future disabled population by age. The data on age-specific unit costs are provided by the country experts and their future values are indexed to growth of GDP per capita. This projection also utilizes the assumption that half of the additional years will be spent in good health and able to function. This calculation gives a forecast for the total in-kind spending on long-term care. Country experts help to divide this amount to informal and formal care costs. The latter will be topped up with a projection of related cash benefits to reach the public LTC expenditure as the final outcome.

Table 3.2: Projected public expenditure, percentage points of GDP, AWG

	Health care		Long-term care		Total	Change	
	2010	2060	2010	2060	2010	2060	2010-2060
Denmark	7.4	8.3	4.5	8.0	11.9	16.3	4.4
Finland	6.0	7.0	2.5	5.1	8.5	12.1	3.6
Norway	5.8	7.0	3.8	7.7	9.6	14.7	5.1
Sweden	7.5	8.2	3.9	6.4	11.4	14.6	3.2
EU 27	7.1	8.2	1.8	3.5	8.9	11.7	2.8

Source: EC (2012).

As seen in Table 3.2, increases in health expenditure are rather modest compared to the growth of old age care costs. This was expected, since a large share of the aggregate health care costs is generated during working years, when the greater part of the birth cohort is still alive. Almost all the demand for LTC only develops after age 75. The future fall in mortality rates is projected to take place after working years, which explains the large growth in LTC costs.

Table 3.3 presents the corresponding projections of the OECD published in 2013 (de la Maisonnette, and Oliveira Martins, 2013). The starting point of these projections is the average expenditure in 2006–2010. This average has been chosen in order to limit the influence of the Great Recession on the GDP numbers. Another noteworthy issue is that the definitions of the expenditure are different compared to the AWG

projection especially in LTC. The OECD only includes expenditure related to institutional care provided in nursing homes and hospitals in this category. This is an obvious deficiency since the services are increasingly based on home care and care in sheltered housing units. The OECD study includes Iceland, which is missing from the projections of the Commission.

Table 3.3: Projected public expenditure. percentage points of GDP, cost containment scenario, OECD

	Health care		Long-term care		Total		Change
	2006–2010	2060	2006–2010	2060	2006–2010	2060	2010–2060
Denmark	6.3	8.3	2.2	2.8	8.5	11.1	2.6
Finland	5.2	7.3	0.8	1.3	6.0	8.6	2.6
Norway	5.1	7.3	2.1	2.7	7.2	10.0	2.8
Sweden	6.6	8.6	0.7	1.1	7.3	9.7	2.4
Iceland	5.8	7.8	1.7	2.2	7.5	10.0	2.5
OECD	5.5	7.9	0.8	1.6	6.3	9.5	3.2

Source: de la Maisonneuve and Oliveira Martins (2013).

Note: in the cost containment scenario it has been assumed that the contribution of technology and relative price effects to expenditure growth converges to zero in 2060.

Also the projection methods differ. The OECD generates health care cost projections using demographic factors, income growth and residual growth. Population projections for the Nordic countries are adopted from the Eurostat. It is notable that the OECD assumes the whole future increase in lifetimes being spent in good health. Therefore proximity of death costs and the numbers of deaths dominate the demography-based future expenditure changes. Income growth influences the demand for services with an elasticity of 0.8. The residual, estimated from past data, is interpreted to consist of the contributions from relative prices and technological progress.

The OECD projects the public long-term care expenditure using demographic factors, such as life expectancy and health expenditure and non-demographic factors, such as income, change in relative prices due to the Baumol-effect and informal care supply. Higher life expectancy is expected to lower the age-specific costs in the future due to the assumed healthy ageing. Larger health care investments are likely to increase the prevalence of nonfatal chronic illnesses and thereby expenditure. The Baumol-effect is caused by low productivity growth in the care sector, which tends to increase the price of care compared to prices of goods if wages are identical across sectors. Actually this assumption is almost equivalent to indexing the price of LTC to wages. Income is expected to increase the demand for quality of LTC. Supply of informal care is ap-

proximated with the change in the labour force share of the 50–64 year old women.

The outcome differs rather much from the one generated by the Commission. The assumption that additional years are healthy mitigates strongly the influence of population ageing in the OECD projections. Defining LTC costs narrowly to include just institutional care operates in the same direction. On the other hand, OECD adds to health care cost projections the impact of the residual explanatory factor, which contributes strongly to the results. Due to these methodological distinctions the OECD study shows much smaller increases in total expenditure and also differences between countries are much smaller between the Nordics, when compared to the AWG projection.

3.4 Financing future health and care expenditure

3.4.1 *How should the costs be allocated between generations?*

If the share of health and long-term care expenditure on total output increases, what if any part of the rise should current generations pay? Not a large part, according to Andersen (2012, p.19:

“...both increasing longevity and a trend increase in the demand for public services are factors benefitting future generations, and if current generations via pre-funding as implied by the S2⁴⁸ indicator are required to contribute to their financing, it may imply a significant intergenerational redistribution.”

This concerns also public health and long-term care expenditure, which have an important role in assessments of fiscal sustainability. Sustainability indicators such as S2 do not provide sufficient statistics for policy interventions that aim at fair distribution of resources between generations. For that purpose it is necessary to separate which part of the projected expenditure increase is allocated to the current generations and which part benefits the future generations.

Andersen continues:

⁴⁸ S2 measures the immediate and permanent increase in total taxes/GDP that is needed to finance the future increases in expenditure so that public net debt returns eventually to the current level. Alternatively, there is an immediate cut in expenditure that generates eventually the same net debt.

“Clarifying an optimal profile for the budget balance and public debt involves issues of intergenerational distribution. Such concerns are also often used to justify policies in this area encapsulated in statements like “not leaving any bills to the children.” However, issues of intergenerational distribution are subtle, and a zero (or constant) net debt is not necessarily tantamount to distributional neutrality.”

“From a policy perspective it is very important to perform such analyses to prepare for the needed prioritization and to inform the general public on what the public sector can be expected to accomplish in terms of service provision. Such analyses are useful in identifying trends which policy makers will have to address, but since they are mainly driven by the fact that future generations are richer and have better options than current generations, it is not obvious that these issues should affect the formulation of short-term budget policies and consolidation targets.”(Andersen, 2012 p.21)

3.4.2 *Paying by longer work careers*

Longevity, health and working lives

Both life expectancy and number of years in good health have increased for several decades. The length of working lives shortened, however, until 1990s mainly due to the introduction of early exit routes from employment. The tightened policies, improved working conditions and advanced ability to work in late working ages turned the tide since and actual retirement ages have increased. But there is a need to employ policies ensuring that retirement ages continue to rise in future, because the ageing of baby boomers and the projected continuous increase in retirement years (see Part II Chapter 2) add to the public expenditure.

A comprehensive study shows the pace at which various health indicators have developed in Finland 2000–2011, see Koskinen *et al.* (2011). Table 3.4 provides examples of some subjective measures of working ability.

Table 3.4: Self-assessed health and working capacity in Finland

	Men 55–64		Women 55–64	
	2000	2011	2000	2011
In good or rather good health, % share	48.7	69.1	52.9	72.9
Fully able to work, % share	54.6	71.0	53.5	69.4
Able to work in same profession after 2 years, % share	78.9	89.7	69.3	82.0

Source: Koskinen *et al.* (2011).

The result of this comparison is that both self-assessed health and working capacity have improved surprisingly fast for people near retirement age in Finland. A comparable positive change in shares has taken place in age group 65–74. Many objective measures of physical ability to func-

tion are in line with these results. Also tests of cognitive capacity show some improvement. These are very good news particularly for the welfare of the citizens, but the development provides also a sound basis to the view that an increasing share of people is able to extend their working lives.

The role and possibilities of pension policies

Continuously increasing healthy life expectancy opens up a prospect of longer working lives. A higher retirement age would not only improve the financial sustainability of the pension systems but also expand tax bases and increase tax revenues, strengthening therefore the resources needed to finance the growing costs of the welfare state.

Pension reforms in EU countries have promoted during the last decades higher labour supply by tightening the link between pension benefits and earned wage income, by reducing incentives to retire early and by limiting access to early exit routes. These measures have proven to be efficient, but further progress in retirement ages requires additional reforms.

Finland, Norway and Sweden have introduced a combination of a flexible retirement age and adjustment of pensions to longevity. When lifetimes increase, the monthly pension will be cut, but people have a possibility to compensate for this by working longer. The experiences from Sweden show, however, that this possibility has not been used as much as expected. The Danish reform introduced a scheduled increase in retirement age and a link between this age and life expectancy. Increases in expected longevity lead on a one-to-one basis to an increase in the statutory retirement age. This is expected to have a profound effect on retirement behaviour. A corresponding recent Swedish proposal allocates 2/3 of the increase in expected longevity to the age limits of the public pension system.

In Finland, the next reform, aimed to be implemented in 2017, is expected to increase the lowest eligibility age for old age pensions, but the details and timetable are open. These examples show that the Nordic countries have recognized the need for ensuring a continuous increase in retirement ages, in concordance with longer lifetimes.

Paying by working longer: the Finnish case⁴⁹

In Lassila and Valkonen (2014) we ask whether longer working lives can bring sufficient tax revenues in Finland to pay for the growing public health and care expenditure that longer lifetimes cause. We picked results from studies concerning retirement decisions and pension policies, the role of mortality in health and long-term care costs, and errors in mortality projections, and combined them into a numerical OLG model where changes in mortality have direct effects both on working careers and on per capita use of health and long-term care services. Although there are huge uncertainties concerning future health and long-term care expenditure when people live longer, our simulations show that with policies directed to disability pension eligibility rules and old-age pension eligibility ages, it seems quite possible that generations enjoying longer lifetimes can also pay for the full costs by working longer.

We considered three alternatives for the future average effective retirement age. In the first, pension rules are not changed but longer expected lifetimes affect retirement decisions of the individuals. In the second, pension age limits are linked to life expectancy – a possible reform that is currently discussed in Finland. The third is a technical “no change” alternative where the average effective retirement age remains at the current level. The first and second alternatives are derived from Määttänen (2014), who studied how policies aiming to extend working lives affect individual labour supply decisions and income distribution of employees close to the earliest eligibility age for retirement. He used a stochastic life-cycle simulation model that depicts the decision-making of wage earners in different situations. The model groups individuals based on age, gender and education. Wage earners face the risk of losing their jobs, the risk of becoming disabled and the risk of a surprisingly long life.

According to the estimates of Määttänen (2014), adding an additional 3 years to the life expectancy of a 30-year-old would extend working lives by 6 months, assuming that any health problems are likewise postponed by 3 years. We used this estimate in the numerical OLG model in such a way that, if pension rules were left unchanged, the change in life expectancy automatically affects the length of working lives in accordance with the ratio depicted.⁵⁰ In the baseline scenario the realized retirement

⁴⁹ This section draws heavily on Lassila and Valkonen (2014).

⁵⁰ It should not, however, be expected that better health would automatically and fully reduce the willingness to apply for a disability pension. According to Börsch-Supan (2007), differences in prevalence of disability.

age will rise by a year and a quarter at every education level from 2013 to 2063. With the ongoing change in education structure and the influence of recently implemented pension reforms, the result is an increase in the actual average retirement age by about two years in 50 years.

In the retirement age reform alternative, the earliest pensionable age is linked to the adulthood life expectancy. Adulthood is defined as having begun at age 18. The pensionable age adjusts every year to changes in mortality so that it divides the expectancy for time lived as an adult to working lives and retirement years at the same ratio (roughly 2:1). If the life expectancy of a 63-year-old grows by just over six years over a period of 50 years, this link would raise the pensionable age by four years. The earliest eligibility age for the part-time pension and the unemployment pathway are changed to the same degree as the pensionable age, since, according to Määttänen (2014), simply raising the pensionable age would not really extend working lives due to an increased use of other exit routes from working life.

Linking the retirement age to life expectancy affects the length of working lives. Based on the model used by Määttänen, raising the lowest eligibility ages for the old age pensions, the unemployment pathway and the part-time pension by two years would extend working lives by 7 months. This estimate has been calculated in a situation where life expectancy has already been extended by three years from the current situation. If longevity increases as projected by Statistics Finland, the retirement age reform raises the average retirement age by over a year by the 2060s, compared to the baseline scenario (see Lassila, 2014, for details).

We then studied the consequences of these three working life alternatives with 500 population paths, where mortalities develop according to a stochastic population projection produced by Juha Alho in 2013, based on Statistics Finland's 2012 projection. We simulated the sustainability of public finances using a numerical overlapping generations model of the type originated by Auerbach and Kotlikoff (1987). It is modified to describe a small open economy and calibrated to the Finnish economy.

We made two sets of sustainability calculations. In the first set, based on the study by Häkkinen *et al.* (2006), proximity to death affects the use of health and long-term care services. The second set of sustainability projections is based on per capita health and LTC costs that stay constant in each age group in the future. These calculations are naïve in the

pensions between EU countries reflect country-wise rules and admission practices, not observed health differentials. Thus constant monitoring and adjustment of rules is required in practice, and the study described above should be interpreted in that vein.

sense that they ignore the concentration of expenditures on the last years of life and assume that the age profile of per capita costs does not change in time (see also Häkkinen *et al.*, 2007).

Life expectancy does not uniquely define what happens in different age groups in the population, and using expectancy calculated for one period leaves out variations in other periods. Thus the relationship between sustainability gaps and life expectancy has variations. The average dependencies are shown in Table 3.5. The numbers in the cells are averages and standard deviations within quartiles of life expectancy. In each quartile Q1, Q2, Q3 and Q4 there are 125 observations, of which the means and standard deviations are calculated.

Table 3.5 shows that if life expectancy increases but working lives do not, i.e. the 'No change in careers' alternative, public finances will certainly be in difficulties, even if proximity of death is fully accounted for. In this alternative the higher the life expectancy, the larger the sustainability gap will be. But even with current retirement rules (if disability rules are adjusted for better health) the lengthening of the careers would make the sustainability situation much better. And with the described retirement age reform, the sustainability gap would not be sensitive to life expectancy.

According to bottom rows in Table 3.5, if health and long-term care expenditure depend entirely on age, as the naïve modelling assumes, Finnish public finances would be in deep trouble. Sustainability gaps would be higher in all work career scenarios, and they would be increasing with longevity even if the retirement age reform is carried out.

Table 3.5: Selected economic variables under different working lives, by life expectancy quartiles

Total life expectancy at 30 in 2063 (TLE)	Q1		Q2		Q3		Q4	
	TLE < 87.3		87.3 < TLE < 89.3		89.3 < TLE < 90.9		90.9 < TLE	
	Mean	Std	Mean	Std	Mean	Std	Mean	Std
Average effective retirement age in 2063								
No change in careers	60.9	0.0	60.9	0.0	60.9	0.0	60.9	0.0
Current retirement rules	61.6	0.23	62.0	0.11	62.3	0.10	62.7	0.22
Retirement age reform	62.4	0.52	63.2	0.26	63.8	0.21	64.7	0.48
Sustainability gap, % of GDP with naïve care need estimates take account of proximity of death								
No change in careers	2.5	0.22	2.8	0.18	3.0	0.16	3.4	0.22
Current retirement rules	2.0	0.15	2.2	0.16	2.3	0.14	2.4	0.13
Retirement age reform	1.5	0.09	1.4	0.10	1.4	0.09	1.4	0.09
Sustainability gap, % of GDP with naïve care need estimates								
No change in careers	4.2	0.65	5.2	0.53	5.9	0.47	7.0	0.67
Current retirement rules	3.8	0.56	4.5	0.48	5.1	0.41	5.9	0.53
Retirement age reform	2.8	0.44	3.4	0.41	3.9	0.35	4.4	0.38

Note: sustainability gap is measured with S2 indicator.

Thus it seems quite possible that longer working lives bring sufficient increases to tax revenues to offset the effects of growing health and care expenditure that longer lifetimes cause. If longer lifetimes will in the future imply a significantly smaller per capita need for welfare services in any given age group than currently, as in the method that includes the proximity of death in Table 3.5, a modest reform in the earliest eligibility ages for pensions would suffice. If the expenditure grows more rapidly, a tighter reform would be needed. There probably is a limit on how long average working careers could and should be obtained with pension policies. If we knew this limit, it would still be uncertain whether the careers would be long enough to cover the growing health and LTC expenditure in all likely alternatives. But in any case they would pay a quantitatively significant amount.

3.4.3 Does immigration help to finance the health and long-term care costs?

Immigration into Nordic countries has increased continuously during the last few decades. The incomers are mostly working-aged people that can have a large impact on the economies and public finances of the host countries. This section discusses the potential of immigration in financing the increasing costs of health and long-term care. We study the issue utilizing a life cycle perspective in which both natives and the foreign born go through childhood, working age and retirement years, interacting in each phase with markets and public finances.

There is a growing literature on the fiscal impacts of immigration, summarized e.g. by Rowthorn (2008), Pekkala Kerr and Kerr (2011) and OECD (2013b). The main message from these surveys is that generally the influence on the public finances of the host countries has been modest. At the same time it has been noted that the result depends on many qualifications of the immigrants such as age, education and employment rates.

The task of measuring the influence of immigration is not easy due to insufficient statistics and methodological problems. An example is that not enough is known about remigration. Any cross-sectional study is likely to give too negative results on the role of the immigrants if a substantial share of those move back to their countries of origin after their working years or after experiencing weak labour market performance. In that case they do not consume the health and LTC resources of the host country during their old age. Another problem is the long horizon needed to evaluate the outcomes, since in optimal data people are fol-

lowed from birth to death. This long horizon also brings about issues like how to deal with economic growth and discounting.

The method we use is based on an overlapping generations model (FOG) calibrated to the Finnish population and economy (for details of the model, see e.g. Lassila, Valkonen and Alho, 2011). These types of numerical OLG models, originated from Auerbach and Kotlikoff (1987), combine the ability of generational accounting models to follow the life-cycle incidence of taxes and transfers and the ability of dynamic general equilibrium models to study how changes in market prices influence the results.⁵¹ Specifically, links between population structure and the pension system and demand for health and long-term care services are modelled in detail. Immigration increases tax revenues and alleviates the crowding-out problem caused by increased labour demand in the health sector. In the model version used, the budgets of the social security institutions and municipalities are balanced period-by-period by adjusting taxes and contribution rates, but the central government keeps the tax rates fixed and allows debt to adjust.

We use simplest possible assumptions about the immigrating population. To be precise, we assume that new immigrants are in all economic aspects similar to the current population. We know well that this practice overestimates the employment rates observed in Finland in cross-sectional studies. On the other hand, the employment rates are likely to be higher later during the working lives of the immigrants and those who are not in the labour force are not eligible for many earning-related benefits. The age structure of the new immigrants follows the net immigration numbers provided by the 2012 population projection of Statistics Finland.

Table 3.6 compares the outcomes of two simulations, one in which the net migration is 17,000 persons/year from 2013 forward and another in which net migration is zero. A large share of those 17,000 belongs to the age group 20–64, which is here considered as the working age population. Immigration increases the working age population by almost 630,000 persons in 2060, which is 24%. Due to the young age structure, they contribute more to GDP and tax revenues than expenditures. Therefore a snapshot from one period gives a quite positive picture of the ef-

⁵¹ A similar method has been used e.g. by Storesletten (2000) and Schou (2006). The most comprehensive model analysis is provided by Schultz-Nielsen and Tranæs (2014), who study fiscal sustainability implications of immigration in Denmark. They divide the immigrants according to countries of origin as Western and non-Western. A reduction of 5000 in number of non-Western immigrants would contribute positively by 0.12 percentage points of GDP to sustainability measured with the S2 indicator. This is largely due to their low employment rate. Western immigrants improve sustainability.

fects. To assess the long-term effect, a sustainability gap from the years 2013–2113 was calculated. The sustainability gap expresses the immediate need to adjust public finances, which would eventually bring the public debt/GDP to its starting level. A long simulation period allows also including the pension and health and LTC costs due to ageing migrants. The sustainability gap decreases by 1,6% in this calculation due to migration.

Table 3.6: The fiscal impact of migration in Finland in year 2060

	Working-age population	Health and LTC expenditure/ GDP	Pension expenditure/ GDP	Total taxes/ GDP	Public debt/ GDP	Sustaina- bility gap (S2)
Baseline projection	3185115	9.3	13.1	45.8	35.4	2.1
Zero net migration	2555628	10.4	14.9	48.0	41.7	3.7

The result requires some explanation. With immigration, educational costs are saved. Another issue is timing of revenues and expenditure. As majority of public expenditure is generated during retirement years and most tax revenues during working lives, the public sector benefits from the expansion of population.⁵² The size of the simulated fiscal effects is comparable to the results of other studies, especially when the assumption of the high employment rate of the immigrants is considered.

The final conclusion is that even increasing the working age population by a quarter would not abolish the current sustainability gap in Finland. On the other hand, a clearly positive contribution is possible to achieve. Our projection for the future increase in health and long-term costs is 1% of GDP in 2010–2060, see Lassila and Valkonen (2013). A yearly increase of 17,000 immigrants would suffice well to finance those costs if employment rates of the future immigrants would be as high as among the native population. On the other hand, this would not be nearly enough if the expenditure projections of EU Commission or OECD would come true.

⁵² This effect is similar to gains of expanding a pay-as-you-go pension scheme by adding young participants in the system. The exact gain depends on the lag between paid contributions and received pensions and the difference between the interest rate and growth rate of the economy.

3.4.4 *Sharing the burden – public and private financing of health and long-term care*

The Nordic countries are well-known for using mainly tax revenues to finance the publicly provided health and LTC expenditure. This allows striving for redistribution both in financing and provision of services. The competing financing system – social insurance – often has a flat contribution rate, but involves also some redistribution because the tax base is earned income. Countries that use tax-financing often restrict the access to care by gate-keeping arrangements. Another typical element is that the services are mainly produced in public sector. The role of social insurance used to be much higher in the 1960s than currently in the Nordic countries (Wagstaff, 2009). Nowadays tax-financing either dominates or is the sole form of public funding of the services.

From the point of view of the user of the services both financing methods provide insurance against high expenditure. Another common feature is deductibles, which allocate part of the costs to the customers. These out-of-pocket payments raise the threshold of using the public services and thereby limit the costs. However, it has been argued that this incentive falls disproportionately on the poor, because the fortunate ones use the services less and can afford the payment.

Table 3.7: Public expenditure on health, % total expenditure on health

	1960	1970	1980	1990	2000	2010
Denmark		83.7	87.8	82.7	83.9	85.1
Finland	54.1	73.8	79.0	80.9	71.3	75.4
Iceland	66.7	66.2	88.2	86.6	81.1	80.4
Norway	77.8	91.6	85.1	82.8	82.5	84.7
Sweden	..	86.0	92.5	89.9	84.9	81.5

Note: For Denmark, the figure for 1970 is actually for 1971. Public funds are state, regional and local government bodies and social security schemes. Public capital formation on health includes publicly financed investment in health facilities plus capital transfers to the private sector for hospital construction and equipment. Private sources of funds include out-of-pocket payments (both over-the-counter and cost-sharing), private insurance programmes, charities and occupational health care.

The type of financing varies between the services provided and between the practices followed in different countries. Table 3.8 illustrates the large share of tax finance in Nordic countries compared to the OECD average, but reveals also large differences between the Nordics. The Icelandic financing scheme most resembles the OECD average, whereas tax-financing is the only source of public financing in Denmark and Sweden. A specific feature in Finland is that occupational health care provides also medical treatments. Firms pay directly more than half of the expenditure in occupational health care, which contributes to the rela-

tively high share of private financing. Another reason is that National Health Insurance reimburses a rather low share of the expenses.

Table 3.8: Health care financing in 2011

	Denmark	Finland	Iceland	Norway	Sweden	OECD34
General government	85	60	51	73	82	35
Social insurance	0	15	30	12	0	37
Private + other	15	25	19	15	18	26

Note: OECD34 is average of 34 OECD countries where data was available.

Source: OECD Health Statistics 2013.

Many of the services in old age care, such as housing and housekeeping, are available in the market and are also used by others than the disabled elderly. Therefore it is not clear how extensively these services should be financed publicly for other than redistributive reasons.

Private health insurance is mainly financed by employers in the Nordic countries and the main aim is to speed up the employees' access to care. In Finland the extended occupational health care serves the same purpose. The popularity of other types of health insurance has increased recently, but only in Denmark is a large share of population covered by them. There is no long-term care insurance in the Nordic markets.

The responsibilities of private and public sector in financing health and long-term care will be continuously put to the test in the future. Population ageing increases the number of people needing the services and technological developments, medicalization and increasing income will enhance the services asked for. It would be very informative for the individual citizens if the public sector could indicate the amount of resources to be allocated, the priority order to be used and the quality of care offered well in advance. That would allow use of private saving and insurance and the development of private insurance markets. Currently the public promise is so vague at least in Finland that any provision to top up publicly financed services with privately financed ones in an informed way is very difficult. Part of the explanation is that municipalities are allowed rather freely to organize health and old age care and the outcomes differ. In this respect social insurance gives citizens better guidance than a tax-financed system.

The possibility to finance privately health care and long-term care services often engenders controversy due to distributional issues. But the fact remains that private financing is increasing anyhow, simply because these services are highly valued. It is better that the roles of public and private money are well defined and designed so that the fortunate ones have incentives to use their own money and thereby limit the tax

burden. An example of this is introduction of vouchers as an alternative to publicly provided services. The vouchers could be priced so that the customers have to use some money out-of-pocket, but they are given a possibility to choose the producer and to top up the services with their own money. Those who have no extra means available or no capacity to make informed choices between the private producers can still rely on public provision.

Since the need for care varies markedly between individuals, complementary care and co-payments for public care are more efficient to finance with private insurance than individual saving if fairly priced insurance is available. This is because individual provisions for the risks require large savings, which may turn out to be unnecessary, if the services are not needed.

3.4.5 *Can we reduce the bill?*

One way of reducing the costs is to try to influence the demand for services. Allocation of resources to prevention may provide some opportunities, but general informing campaigns are not likely to be efficient in all cases. Economic incentives, such as user payments, are known to limit the moral hazard related to demand for the underpriced services. An even more precise instrument would be to differentiate the size of the user payments so that illnesses due to unhealthy life-styles have higher fees. The redistribution problems can be limited by linking the size of the user payments to income and possibly also to wealth. This type of design is, however, quite complicated and disregards the uncertainties related to the links between income, life-style and illnesses. An alternative to differentiated user payments is to increase taxes on goods and services known to be unhealthy. It lowers the need instead of making the use of services more expensive.

Another way to ease the expenditure burden is to continuously increase productivity, but this is easier said than done. An increasing share of health and long-term care services is produced in the private sector. But to operate well publicly financed private production presumes skilled purchasing, competition, regulation and monitoring. There is also a risk that if private producers are rewarded on a fee-for-service basis, the services offered are not always medically justified. Also in public production the emphasis should be on incentives to operate efficiently, but also on respecting the choices of the customers, access without delay and high quality.

Rationing and prioritization of care is one solution to the expenditure growth. Actually it can be considered as an unavoidable feature in a sys-

tem where the services are highly valued and underpriced. Rationed resources must be allocated somehow, and prioritization is an obvious candidate for this task. Breyer (2013) separates several levels and types of rationing. Primary rationing means that society limits the resources used for health care, because there are also other needs. Secondary rationing refers to outright allocation of limited resources, such as donor organs. When public resources are rationed by the society, there is still a question whether a private market for services is allowed. If not, the services are under hard rationing according to the terminology used by Breyer. Under soft rationing, markets provide substitutive or supplementary services. Another question is whether rationing is implicit, meaning that physicians make the decisions case-by-case, or explicit, meaning that society defines and informs the rules that are followed in the provision of public services.

When governments aim to increasingly use primary rationing and prioritization in the future as an instrument for saving health and LTC costs, the issues described above must be openly discussed. Hard rationing aims at equal access, but it is still not easy to justify and difficult to carry out in practise. Soft rationing operates better when it is explicit. Also equity speaks for explicit instead of implicit rationing, but the rules are not easy to make and maintain.

3.4.6 Concluding comments

The Nordic countries are facing the prospect of an increasing ratio of public health and long-term expenditure to total output. This may become problematic if it leads to rising tax rates. Otherwise there seems to be no strong reason to reconsider the role of the welfare state in respect to these issues. Barr (2001) argues that the combination of public funding and public production of health services for which the Nordic countries have opted can both contain costs and promote access to the services. The weaknesses are in consumer choice and in waiting lists (Barr, p. 70). Freedom of choice has increased and access to care has improved recently, but there is still much to do especially in Finland. The new EU directive will give more visibility to these weaknesses.

The scale of public funding perhaps needs reconsideration. Barr (2010) argues that, because people have very different tastes, topping up public long-term care funding should be an option, from private saving or through supplementary private insurance, if that is available. This may also be defended as a political price for a mandatory system that covers everyone. One recommendation by Cremer *et al.* (2012) concerning long-term care is that the government should provide education and

information on the risks of dependence and the type of services that may be required. Many people seem to be unprepared for the risks of old-age dependence, in the same way people were unprepared for old-age income risks half a century ago.

Paying the increasing tax burden by working longer seems to be a viable option in the Nordic countries. It also appears to be fair in the sense that generations that live longer also pay more. Future cohorts are expected to live longer, so they should work longer and pay more taxes. One could actually ask what if any part of the cost increase in health and long-term care should current generations pay?

Pension policy is not the only instrument in increasing labour supply. Measures such as tighter rules in unemployment allowances and obligations to accept also low-paid jobs have proven to be very efficient in Germany. We have also shown that higher immigration could be part of the solution, on the condition that the employment rates of the immigrants are high enough.

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4. Labour migrant adjustments in the aftermath of the financial crisis

Bernt Bratsberg,⁵³ Oddbjørn Raaum,⁵⁴ and Knut Røed,⁵⁵ The Ragnar Frisch Centre for Economic Research⁵⁶

4.1 Introduction

The common Nordic labour market of 1954 has for 60 years facilitated unrestricted worker mobility within the Nordic countries. Over the decades, the integrated labour market has raised overall employment in the Nordic region by smoothing asymmetric labour demand shocks, serving as an important stabilizing force of macroeconomic fluctuations. Inter-Nordic migration flows are cyclical (Pedersen and Røed, 2008) and reduce pressures on wages and prices during booms in the receiving country (Lundborg, 2006), while providing employment opportunities in other countries for those affected by recessions at home.

The subsequent extensions of the common labour market – first with other countries in Western Europe in 1994 through the establishment of the European Economic Area (EEA), and then with countries in Eastern and Central Europe in 2004 and 2007 through the expansions of the European Union – have significantly enlarged the potential benefits associated with free movement of labour (for a recent analysis of the effects of open borders on productive efficiency, see Kennan 2013). This comes at a time when the Nordic countries are going through a period of

⁵³ Senior Research Fellow at Ragnar Frisch Centre for Economic Research.

⁵⁴ Director at Ragnar Frisch Centre for Economic Research.

⁵⁵ Senior Research Fellow at Ragnar Frisch Centre for Economic Research.

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rapid demographic transition with ageing of the population, high exit rates from the labour force, and consequently temporary labour shortages in many occupations and industries. In this light, labour immigration offers a potential remedy to fiscal imbalances created by demographic changes (Storesletten, 2003; Holmøy and Strøm, 2012; Dustmann and Frattini, 2013; Preston, 2013).

But the recent enlargements of the common labour market have also brought new challenges. Whereas the common Nordic labour market as well as the EEA prior to 2004 represented open borders between countries with fairly similar wage levels and welfare structures, the 2004 and 2007 EU expansions meant that the common market now includes countries that are widely different along these dimensions. The opening of borders and permitting unregulated labour migration between countries characterized by huge differences in economic conditions represents a rather unique experiment. Large wage and social insurance differentials between the Nordic countries and the home country – combined with regulation that ensures exportability of social insurance entitlements – means that effective replacement rates can become very high, particularly when benefits are collected in the Nordic countries while consumption expenditures are in Eastern European prices. From a theoretical perspective, under such conditions work incentives will be weakened and the economic gains from staying in the destination country beyond the expiration of the initial spell of employment can be considerable.

Historically, inter-Nordic labour migrants working in a neighbouring country have typically returned home when employment opportunities deteriorate, presumably because the gains from staying on are small when social insurance systems of the two countries are comparable. Empirical evidence on the medium-term labour market performance and return migration propensity of the new labour migrants from Eastern Europe is, however, scarce. Because of the lack of relevant historical parallels, it has been difficult to foresee the size and composition of resulting migration flows, as well as how migrant workers will react to cyclical fluctuations in the host country.

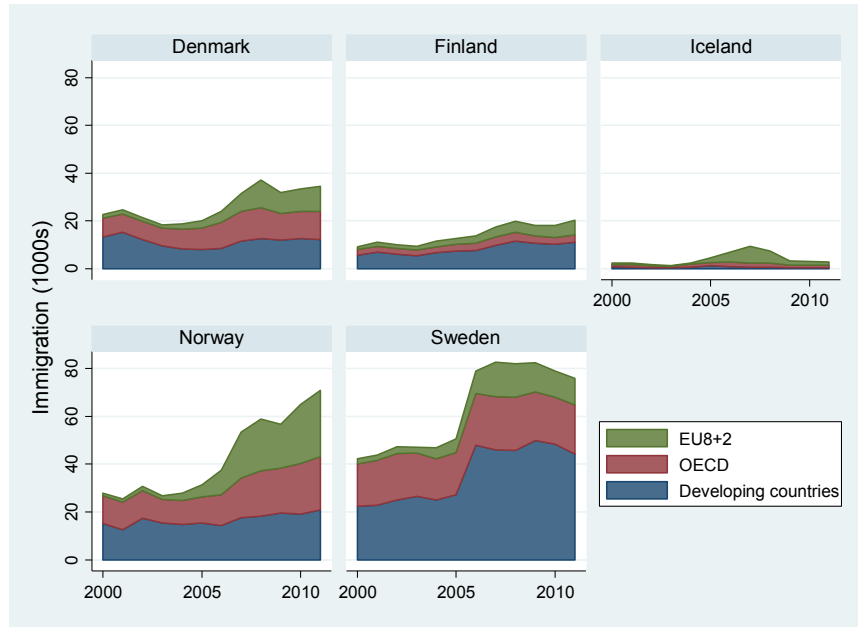
This chapter first provides a descriptive overview of the recent migration flows to the Nordic countries highlighting the significant changes that occurred in response to the EU expansion in 2004, addressing the possible incentives embedded in the large differences in earnings levels and social insurance institutions between the Nordic and Eastern European countries. We then focus more closely on labour immigrants to Norway, and document the labour market performance of post-EU accession Eastern European labour migrants during their first years in the

country by means of longitudinal administrative micro data. We examine in greater detail the migrants that came to Norway from Poland and the Baltic States between 2004 and 2007, following accession but prior to the onset of the financial crisis. As the financial crisis hit the Norwegian labour market in late 2008, we study how the negative labour demand shock affected subsequent employment and earnings patterns and the propensity to leave Norway. Did the financial crisis impinge on migrant inflows? How did labour migrants present in Norway at the time of the crisis adjust to the economic downturn; did migrant workers directly affected by the economic crisis stay and collect unemployment benefits, or did they return migrate to their home country? Did the crisis affect long-term economic outcomes such as employment, earnings, and welfare benefit uptake among the labour immigrants?

4.2 The 2004 EU expansion and immigration to the Nordic countries

The 2004 eastward enlargement of the European Union bolstered immigration from the accession countries to the Nordic region. This is highlighted in Figure 4.1, which shows that each of the five Nordic countries experienced significant increases in inflows from the new EU member states in the years following accession. In fact, between 2003 and 2008, overall immigration from the new member states to the Nordic region increased from 8,000 to 58,000 per year (Tronstad and Andersson Joona, 2013). As the figure shows, inflows are unevenly distributed across destination countries, with Norway and Sweden receiving the bulk of migrants from the new EU member states (and two thirds of the overall Nordic inflow in 2007). The figure also bears witness to the slowdown of this migrant flow in 2009, immediately following the crisis. The flow nevertheless quickly recovered and by 2011 was back to its pre-crisis level in all countries except Iceland.

Figure 4.1: Immigration to the Nordic countries by major region of origin, 2000–2011



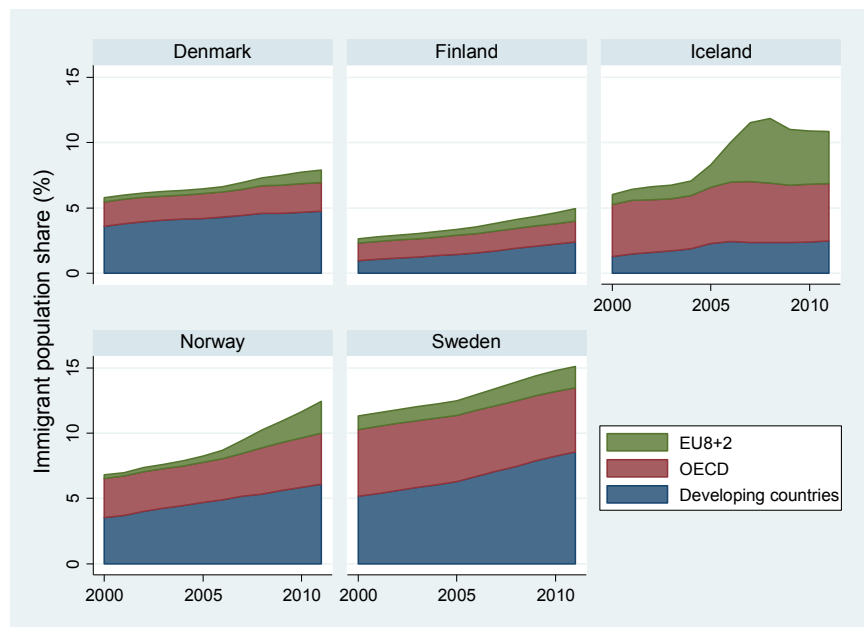
Source: OECD International Migration Statistics.

Note: “EU8+2” includes Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, and Slovenia.

The overall fraction of immigrants in the population is also rising considerably in the Nordic countries, particularly in Norway, Sweden, and Iceland (at least up until the financial crisis), where the immigrant population shares in 2011 were between 12 and 15%; see Figure 4.2. Finland is an important exception to this pattern, however, with an immigrant population share in 2011 slightly below 5%. Given the large inflows from Eastern Europe since 2004, the population share from accession countries is rising throughout the Nordic region. Nevertheless, with the exception of Iceland, those originating in developing countries made up the largest immigrant groups as of 2011, with population shares ranging from 2% in Finland to 6% in Norway. Differences in 2011 population shares will reflect both variations in the initial stock of migrants as well as the generally lower propensity to remigrate observed among immigrants from developing countries. (For analyses of labour market integration and welfare use among immigrants to the Nordic countries from developing and developed countries, see Edin *et al.*, 2000; Husted *et al.*, 2001; Hansen and Lofström, 2003; Bratsberg *et al.*, 2010; Sarvimäki, 2011; Barth *et al.*, 2012.) When we use the micro data that form the basis for the analyses of the next sections and examine immigrant em-

ployment in Norway (these data are not available to the authors for the remaining Nordic countries), we find that immigrant population shares in general are mirrored in their labour force shares. These data reveal, however, a somewhat larger weight for recent immigrants from accession countries who in 2011 made up 3.2% of the labour force versus 2.4% of the population. In comparison, immigrants from developing countries accounted for 5.8% of the labour force, slightly less than their 6% population share.

Figure 4.2: Immigrant population shares in the Nordic countries by major region of origin, 2000–2011



Source: OECD International Migration Statistics; Statistics Denmark.

Note: "EU8+2" includes Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, and Slovenia.

Economic theory since Sjaastad (1963) emphasizes that migrant flows respond to economic conditions in source and destination countries, and empirical studies confirm this prediction (see, e.g., Pedersen *et al.*, 2008; Mayda, 2010). Differences in employment opportunities and wage differentials are among the most important factors determining migration behaviour. In addition, differences in social insurance institutions may motivate migration, particularly for risk averse persons and for persons who consider it likely that they may become reliant on social insurance transfers (Nannestad, 2004; Barrett, 2012). Within the common European labour market, this may be of particular importance, as EU rules on

social security coordination ensure that entitlements in general are transferred to the country of (most recent) employment. This regulation implies that Eastern European labour immigrants to, say, the Nordic countries immediately gain access to the same welfare transfers (such as child allowances) and insurance programs (e.g., unemployment insurance) as natives (see the discussion in NOU, 2011, and European Commission, 2013).

Table 4.1 illustrates the potential importance of these incentives by reporting average monthly wage earnings and unemployment benefits in the Nordic countries as well as in the major migrant source countries in Eastern Europe (Poland and the Baltic states). Not surprisingly, a job in one of the Nordic countries pays many times more than a job in one of the four listed source countries. But, even the typical level of unemployment insurance benefits in the Nordic countries by far exceeds average wage earnings in Poland and the Baltics. For example, for a single wage earner without children, the average unemployment insurance benefit level in Norway is five times higher than average wage earnings in Lithuania and four times higher than average earnings in Poland. Although some of these differentials will be mitigated by the higher living costs in the Nordic countries, the large differences in pay and benefits across countries will affect incentives for return migration in case of loss of employment.

Table 4.1: Unemployment benefits and average earnings in the Baltic States, Poland, and the Nordic countries, 2010

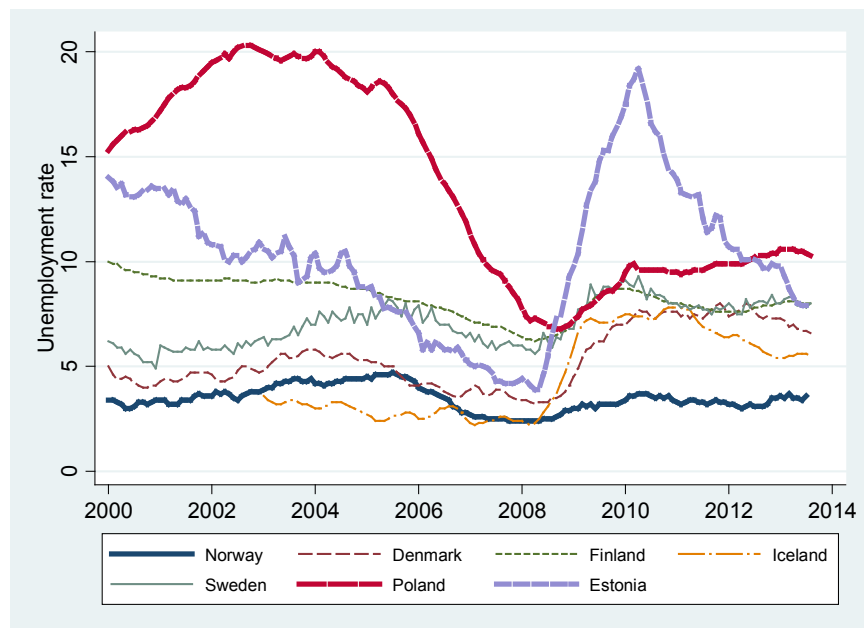
	(I)	(II)	(III)	(IV)
	Single wage earner, no children		Wage earner in married couple, two children	
	Monthly UI benefits	Monthly wage income if employed	Monthly UI benefits	Monthly family wage income if employed
Estonia	405	809	405	1,352
Latvia	411	684	411	1,143
Lithuania	188	561	188	937
Poland	223	754	223	1,258
Denmark	2,188	4,208	2,188	7,028
Finland	1,584	3,283	1,737	5,483
Iceland	1,547	2,793	1,547	4,664
Norway	2,948	4,916	3,040	8,210
Sweden	1,545	3,217	1,545	5,373

Note: Source OECD iLibrary, OECD Social and Welfare Statistics. Benefits and wages are converted to Euros using average exchange rate for 2010. Columns (III) and (IV) are computed as if spouse earns 67% of average wage.

To give an overview of the state of the labour markets during the relevant period, in Figure 4.3 we show recent developments of unemployment in each of the Nordic countries and in two of the major source

countries, Poland and Estonia. Between 2004 and the onset of the financial crisis in the fall of 2008, there was a general reduction and strong convergence in unemployment rates across the seven countries. In the period following the crisis, unemployment grew in all of the countries, but to higher levels in the new EU member states than in the Nordic region. As the figure also shows, compared to the rest of the Nordic region, the crisis had a relatively modest impact on the Norwegian economy. The higher unemployment rates in the new EU member states and the favourable employment conditions in Norway provide suggestive evidence that the financial crisis had a modest impact on migration flows; if anything, the crisis reinforced pre-existing relative differences in labour market conditions in sending and receiving countries.

Figure 4.3: Unemployment rates in the Nordic countries, Poland, and Estonia, Jan 2000–July 2013



Source: OECD harmonized series.

4.3 Labour migration to Norway

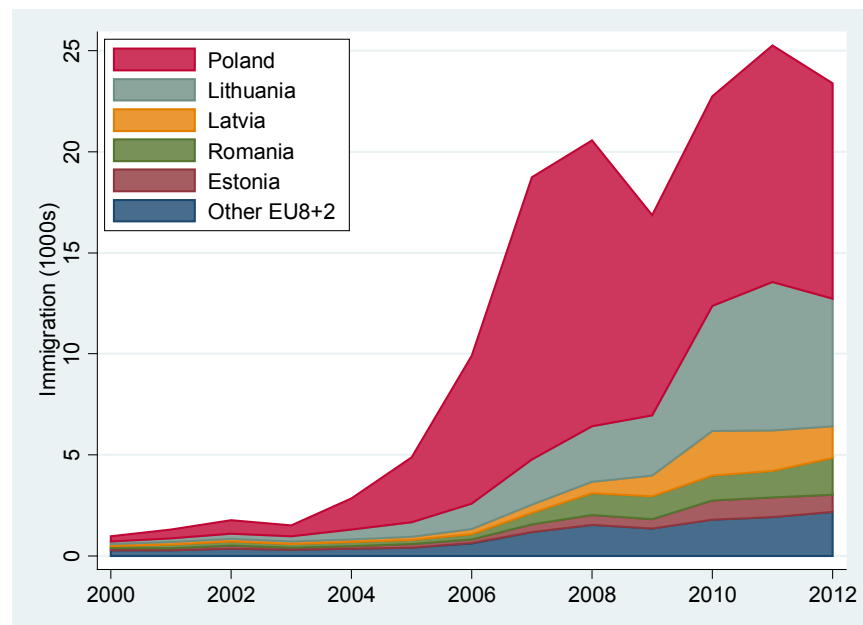
The eastward enlargements of the EU and, thereby, the EEA in 2004 and 2007 extended the integrated European labour market and workers of the new member states were no longer constrained to enter Norway as seasonal workers or specialists, the two major admission classes before accession. Several continental countries met the EU expansions by imposing restrictive transitional arrangements based on quotas and employment requirements. Such transitional arrangements caused substantial diversion effects, reinforcing inflows to the UK and Ireland in particular (Boeri and Brücker, 2005). The Norwegian transitional arrangements, like those in Denmark, were fairly liberal for individual migrants, allowing for up to six months of job search at their own expense. Permits to stay for work were granted to anyone who could document a fulltime job with pay and working conditions in accordance with collective agreements or “what normally applied” in the industry of employment (Dølvik and Eldring, 2005). Work permits lasted until the work contract expired and gave the right to a subsequent six months of job search, but EU8+2 citizens were not eligible for unemployment insurance until after 12 months of employment (see also the discussions in Hansen *et al.*, 2010, and Friberg and Eldring, 2013).

The transitional arrangements were set to expire after five years, and were repealed on May 1, 2009, for citizens from the EU8 (Poland, Lithuania, Latvia, Romania, Estonia, the Czech Republic, Slovakia, and Hungary), and in 2012 for Romanian and Bulgarian citizens. Following the transitional period, migrant and native workers face the same eligibility criteria for unemployment insurance (UI). Specifically, the UI program is available for active job seekers who have lost their job involuntarily. To become eligible, job seekers must have had labour earnings exceeding 1.5 times the social insurance base amount (presently NOK 123,183 or EUR 16,500) during the prior calendar year or earnings that add up to at least 3 times the base amount over the three calendar years prior to unemployment entry. Labour earnings from the origin country are adjusted upwards to account for the general wage difference between countries, implying that earnings from a job in, say, Poland, will be recalculated to the level that would have applied had the same job been held in Norway.

The strong economic upturn in Norway between 2005 and 2008, when unemployment dropped from 4.7% in October 2005 to 2.4% in May 2008, led to unprecedented inflows of labour migrants from the accession countries. Between 2003 and 2008, immigration from the new

EU member states grew from 1.5 to 21 thousand per year. In total, between 2005 and 2008, 57 thousand immigrants from the accession countries took up residence in Norway. The period saw similar growth in temporary labour migrant inflows (Bratsberg *et al.*, 2013). Figure 4.4 shows the developments in immigrant inflows from the five major source countries in Eastern Europe as well as the rest of the EU8+2 area. As is evident from the figure, Poland is by far the major source country of this migrant flow, with Lithuania growing in importance since 2009.

Figure 4.4: Immigration to Norway from new EU member states, 2000–2012



Source: Authors' calculations from population register data.

4.4 Data and analyses samples

The analysis in this chapter is based on longitudinal individual records drawn from several administrative registers of the full population. The data sources include the population register with information on age, gender, nationality, and date of immigration; tax registers with detailed accounts of annual labour earnings and transfers; employer-employee registers with information on on-the-job tenure and industry of employment; social insurance registers with information on registered unemployment spells and unemployment insurance claims; and, finally, the national education database with information on the highest com-

pleted educational attainment. The different data sources are linked together by means of an encrypted common identification number.

Table 4.2 describes the composition of the labour migrant cohorts from the four major source countries during the post-accession and pre-crisis period between 2004 and 2007 – Poland and the three Baltic States. Among the male migrants in the relevant age group (17–46), 23.1% had left Norway by January 1, 2010 (see column III, which reports the fraction that remained in Norway). Outmigration was even lower among women; 14.7% of the equivalent group had left Norway by 2010. In the next sections, we study the link between individual adverse earnings and employment shocks triggered by the financial crisis and outmigration behaviour. This analysis is based on labour migrants who had not left and remained in Norway at the beginning of 2010, and who were solidly established in the labour market before the financial crisis, earning at least the base amount of the public pension system during 2008 (see Table 4.2, cols IV and V). We also study long-term employment and earnings among those we remained in Norway over time; these analyses are based on the longitudinal panel of individuals who were present in Norway as of 1.1.2013 (see column VII).

Table 4.2: Immigrant inflows from Estonia, Latvia, Lithuania, and Poland, 2004–2007

	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)
Year of arrival	Cohort size	Per cent age 17–46 at arrival	Per cent in Norway 1.1.2010 if (II)	Per cent with wages above 1 G in 2008 if (III)	Obs in out-migration analysis	Per cent out-migrated by 1.1.2013 if (V)	Obs in unemployment and earnings analyses (in Norway 1.1.2013)
A. Men							
2004	1,390	82.1	76.8	81.3	712	6.7	664
2005	3,041	81.8	79.9	82.9	1,649	5.2	1,564
2006	6,781	81.0	76.7	84.3	3,553	5.9	3,342
2007	12,900	81.6	76.3	88.0	7,068	8.4	6,475
Total	24,112	81.5	76.9	85.9	12,982	7.2	12,045
B. Women							
2004	859	83.2	75.9	75.9	412	1.5	406
2005	1,168	79.1	80.4	70.4	523	1.5	515
2006	2,240	75.6	86.7	65.2	957	4.0	919
2007	4,036	75.3	88.3	59.0	1,585	3.7	1,527
Total	8,303	76.8	85.3	63.9	3,477	3.2	3,367

Note: Immigrant figures exclude 149 persons who died while in Norway. “1G” denotes the base amount of the public pension system. In 2013, the base amount was equal to NOK 85,245, roughly one sixth of the average fulltime full-year earnings level in Norway.

4.5 Individual earnings shocks during the financial crisis

The financial crisis hit the Norwegian labour market, and especially the construction sector, in late 2008. In this section, we investigate how the crisis affected employment and earnings among recently arrived labour immigrants. To place the migrant outcomes in perspective, we compare their outcomes with those of similar natives. For this purpose, we construct male and female native comparison groups that exactly match the age distribution of the immigrant samples. Because there may be large differences in educational attainment between immigrants and natives, and because it is unclear whether recently arrived immigrants earn similar returns on their educational investments as natives, we also construct native comparison groups consisting of persons with very low education; i.e., those who did not complete upper secondary education. Unfortunately, data on educational attainment is missing for a majority of the migrant samples. For those with education data, average attainment lies somewhere between the averages of the two native comparison groups.

Prior research shows that labour migrants are particularly vulnerable to economic downturns (Barth *et al.*, 2004; Dustmann *et al.*, 2010). Such differences in their sensitivity to the stage of the business cycle may arise because immigrants are more likely to hold temporary job contracts and, because of their generally shorter tenure with the employer, are more often adversely affected by last-in-first-out practices. Immigrants are also more likely than natives to hold jobs in industries, such as construction, that are vulnerable to business cycle fluctuations.

To study the role of adverse individual employment and earnings shocks, we focus on those with a solid foothold in the labour market prior to the financial crisis and who were employed in 2008 with pay exceeding the base amount of the public pension system. Among migrants and natives employed in 2008, we define a negative earnings shock as either being non-employed in 2009 or having experienced a drop in real labour earnings of more than 50% from 2008 to 2009. In our samples of male workers, 17.8% of the labour migrants experienced this negative income shock, while native males were considerably less affected (4.0%); see Table 4.3, column 1. This observed difference can in part be explained by the fact the immigrants in question on average tended to have shorter tenure (and, hence were disproportionately affected by last-in-first-out practices) and also worked in industries that were hit particularly hard by the financial crisis. When we regress an indicator variable of the individual negative employment shock during

the financial crisis on immigrant status, and control for tenure and industry (the latter by means of 504 indicator variables for detailed industry of employment before the crisis), the male immigrant-native differential falls from 13.9 to 9.0 percentage points (see Table 4.3, Panel A, column II). When we also condition on pre-crisis wages (to account for the fact that those with low wages may be more exposed to negative earnings shocks), the differential drops to 7.1% (see column III). Still, the estimates presented in Table 4.3 reveal that labour migrants are much more exposed to negative labour demand shocks, compared to natives with the same age, tenure, earnings, and industry affiliation. Educational attainment is not observed for these immigrant cohorts, but if we compare the migrants with low-educated natives (without completed upper secondary education), the differential remains significant at 4.2 percentage points; see panel B column (III).

Table 4.3: Accounting for immigrant-native difference in probability of negative earnings shock during the financial crisis

	(I)	(II)	(III)	(IV)	(V)	(VI)
	Men			Women		
Immigrants						
Share with negative earnings shock	0.178			0.077		
A. All natives						
Share with negative earnings shock	0.040			0.046		
Immigrant-native difference	0.139*** (0.003)	0.090*** (0.003)	0.071*** (0.003)	0.031*** (0.004)	0.013*** (0.005)	0.004 (0.005)
Tenure/10		-0.035*** (0.003)	0.000 (0.003)		-0.036*** (0.006)	0.011* (0.006)
ln(annual wages 2008)			-0.130*** (0.003)			-0.101*** (0.003)
B. Low educ natives						
Share with negative earnings shock	0.073			0.066		
Immigrant-native difference	0.105*** (0.004)	0.046*** (0.006)	0.042*** (0.005)	0.011** (0.006)	-0.003 (0.007)	-0.000 (0.007)
Tenure/10		-0.065*** (0.007)	-0.002 (0.007)		-0.039*** (0.015)	0.016 (0.015)
ln(annual wages 2008)			-0.207*** (0.005)			-0.124*** (0.007)
Additional control variables	None	Industry (504 cat's)	Industry (504 cat's)	None	Industry (462 cat's)	Industry (462 cat's)

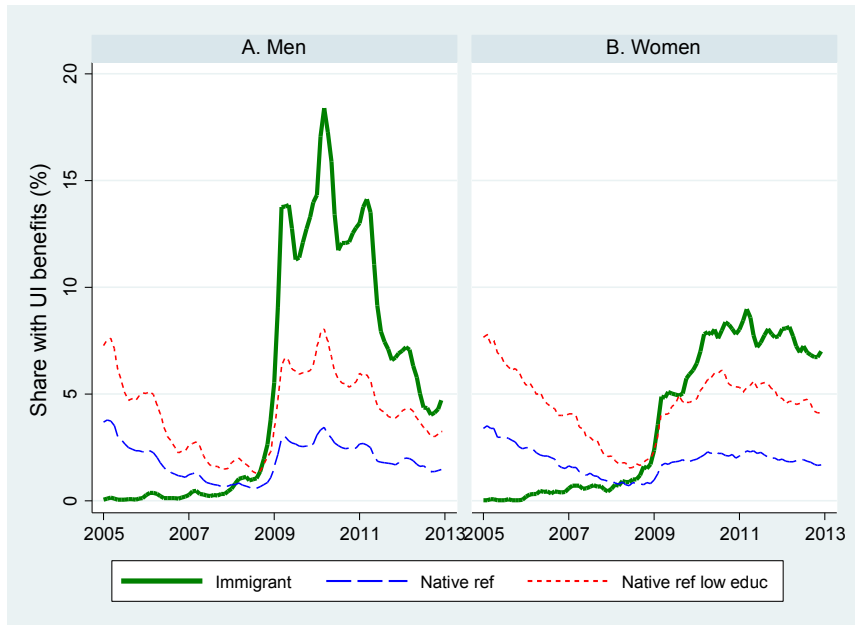
*/**/** Significant at the 10/5/1% level.

Note: Standard errors are reported in parentheses. Samples are restricted to those with wage earnings above 1G in 2008 and who were present in Norway 1.1.2010. The regressions have 49,549 (panel A, cols I–III), 25,493 (panel A, cols IV–VI), 24,060 (panel B, cols I–III), and 7,929 (panel B, cols IV–VI) observations.

Compared to males, females were less adversely affected by the financial crisis as only 7.7% of employed immigrant women experienced a negative income shock during the crisis. Among employed native women, 4.6% experienced the adverse earnings shock (see column IV). When we account for differences in tenure and industry affiliation, the female immigrant-native differential is reduced by more than a half; see Table 4.3 panel A, column (V). Further controlling for 2008 wages, there is no difference in income shock exposure between the samples of immigrant and native women, regardless of whether we compare immigrants with natives with average attainment (panel A) or low-educated native women (panel B).

The rise in unemployment following the financial crisis was particularly steep for the labour migrants. This is depicted in Figure 4.5, which shows that the share of the migrant group with unemployment benefits rose dramatically over a short time period – from below 2% in October 2008 to 14% in February 2009. Male unemployment peaked during the winter months of 2010, with unemployment rates of 18.4% among immigrants, 8.1% among low-educated natives, and 3.4% in the native sample with average educational attainment. Even if immigrant unemployment dropped significantly during the recovery period in 2011–2012, it never returned to its pre-crisis level and remained persistently above the corresponding rates for the two native comparison groups. As was also shown in Table 4.3, the crisis had less severe consequences for female immigrants. But, even if the rise in unemployment was less dramatic than for men, unemployment remained at a high level, and by 2013 the unemployment rate was actually significantly higher among female than among male immigrants. When we consider the incidence of unemployment over the entire 2009–2012 period, we find that 46% of the male labour migrants present in Norway at the end of 2009 received UI benefits at some point during the extended period, compared to 22% of low-educated native men and 12% of the comparison group of native men with average attainment. For women, the corresponding figures of cumulative unemployment incidence are 27% for immigrants, and 20% and 10% for the two comparison groups of low and average educated native women, respectively.

Figure 4.5: Unemployment rate at end of month, Jan 2005–Dec 2012



Note: Immigrant samples consist of 2004–2007 migrants from Poland, Lithuania, Latvia, and Estonia; age 17–46 at arrival; employed in 2008 with labour earnings exceeding NOK 69,108; and present in Norway 1.1.2013. Native samples are subject to the same employment and earnings restrictions, and are stratified to match the age distribution of the immigrant samples.

To summarize, while unemployment among male labour migrants was negligible during the initial period after arrival and prior to the financial crisis, five to eight years after arrival unemployment was considerably higher among immigrants than among natives for both women and men, even when we compare immigrants to natives with basically no qualifying education.

4.6 Adverse earnings shocks and outmigration

The long-term economic effects of labour migration depend on the extent to which immigrants stay or outmigrate in response to economic shocks that undermine the employment opportunities that motivated migration in the first place (for studies of outmigration among immigrants to Sweden and Norway, see Nekby, 2006, and Bratsberg *et al.*, 2007). From a public finance perspective, the interaction between labour market outcomes and duration of stay is particularly important. In this section we study outmigration patterns among the post-accession

labour migrants and examine how these patterns relate to individual adverse earnings shocks triggered by the financial crisis.

To study the role of adverse earnings shocks for outmigration decisions, we again focus on the samples of immigrants with a foothold in the Norwegian labour market prior to the financial crisis and who remained in Norway at least until January 1, 2010. The latter sample restriction likely makes us understate the relationship as we ignore outmigrations that took place immediately after the economic downturn. (The underlying micro data reveal that 5.1% of post-accession male labour migrants who were employed in 2008 outmigrated during 2009. The figure compares to an outmigration rate of 4.7% in 2007 and 2008 when we consider those employed during the prior year. These figures suggest that the number of labour migrants to outmigrate during the short term in response to the economic downturn was negligible.) But the restriction allows us to circumvent the problem of reverse causality, as we drop from the analysis those who left their job because they already had decided to outmigrate. As Table 4.2 showed, 7.2% of the male migrants who remained present in Norway as of January 1, 2010, outmigrated during the following 36 months. Among women, only 3.2% outmigrated.

In this section, we examine the extent to which outmigration decisions were affected by experiences of adverse earnings shocks, and in particular whether these effects were moderated by receipt of unemployment insurance benefits. Table 4.4 presents the estimation results from a linear probability model where the dependent variable is an indicator set to unity if the persons outmigrated between Jan 1, 2010, and Dec 31, 2012 (and zero otherwise). The results reveal that loss of employment with a substantial negative earnings shock in 2009 had a significant effect on subsequent outmigration for both men and women. The effect was much larger for those who did not claim UI benefits in 2009 than for those who did. For male labour migrants, the combined effect of earnings loss and UI benefits raised the outmigration rate by 6 percentage points, yielding an outmigration propensity that is more than twice that of the reference group. (Recall that the reference group consists of those with stable employment during the financial crisis; their outmigration rate was 4.4%, see constant, column I.) Female outmigration is also affected with a combined effect of earnings loss and UI benefits of 5 percentage points, compared to 2.3% for those without income loss (see column IV). Even if we control for tenure, wages and detailed industry affiliation prior to the crisis, outmigration is substantially higher for those who experienced a negative employment and earnings shock and who received UI benefits in 2009 (see columns II–III for men and V–VI for women) than for those with stable employment through the crisis.

Table 4.4: Determinants of outmigration 2010–2012, pre-financial crisis labour migrants from Estonia, Latvia, Lithuania, and Poland

	(I)	(II)	(III)	(IV)	(V)	(VI)
	Men			Women		
Earnings shock and UI benefits 2009	0.064*** (0.009)	0.063*** (0.009)	0.057*** (0.009)	0.052*** (0.019)	0.063*** (0.019)	0.063*** (0.019)
Earnings shock w/o UI benefits	0.305*** (0.008)	0.292*** (0.008)	0.268*** (0.009)	0.170*** (0.014)	0.166*** (0.015)	0.163*** (0.015)
UI benefits 2009, w/o earnings shock	-0.007 (0.006)	-0.007 (0.006)	-0.009 (0.006)	-0.007 (0.010)	-0.006 (0.011)	-0.007 (0.011)
Tenure 2008		-0.010*** (0.002)	-0.005** (0.002)		-0.005 (0.004)	-0.003 (0.004)
ln(annual wages 2008)			-0.057*** (0.006)			-0.009 (0.007)
Constant	0.044*** (0.003)	0.045*** (0.003)	0.048*** (0.003)	0.023*** (0.003)	0.023*** (0.003)	0.023*** (0.003)
Additional control variables	None	Industry (292 cat's)	Industry (292 cat's)	None	Industry (288 cat's)	Industry (288 cat's)

*/**/** Significant at the 10/5/1% level.

Note: Standard errors are reported in parentheses. Samples are restricted to those with wage earnings above 1G in 2008 and who were present in Norway 1.1.2010. The regressions have 12,982 (cols I–III) and 3,477 (cols IV–VI) observations. Where applicable, constant term is evaluated at sample mean of continuous variables and weighted average industry affiliation.

For those not claiming unemployment insurance, the adverse earnings shock raises the probability that the labour migrant outmigrates by as much as 27 percentage points for men and 16 percentage points for women (see Table 4.4, columns III and VI). These estimates are three to five times higher than for migrants who claimed UI benefits. Apparently, outmigration is strongly moderated by unemployment benefit eligibility. The unemployment benefit claim is, however, potentially endogenous. Even though we measure UI benefit receipt ahead of the period during which we study outmigration, some of those who claimed benefits during the financial crisis may have stayed for the long term even in the absence of unemployment insurance because they viewed employment prospects to be better in Norway than in the home country (refer back to the large cross-country differences in unemployment displayed in Figure 4.3). Moreover, the outcomes of non-claimants of benefits who also experienced a negative earnings shock during the crisis may not be a reasonable counterfactual for the alternative state without unemployment insurance. To study the isolated effect of unemployment insurance eligibility, we need a different identification strategy. Nevertheless, the data show that a small fraction of the labour migrants present in Norway during the crisis

had outmigrated by 2013 (recall that only 7.2% of men and 3.2% of women remigrated). In contrast, a large fraction had collected unemployment insurance (as discussed above, fully 46% of men and 27% of women present in Norway at the end of 2009 received UI benefits at some point between 2009 and 2012). Such empirical patterns point to strong incentive effects of unemployment insurance: An overwhelming majority of the labour migrants who suffered job loss did not return to their home country. Instead, they stayed in Norway and collected UI benefits.

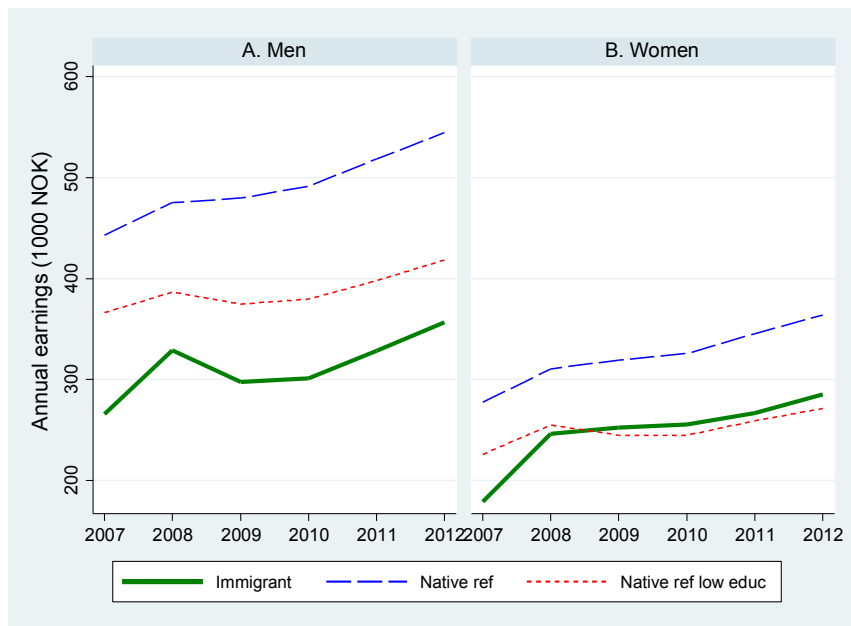
4.7 Long-term earnings responses to negative employment shocks among immigrants and natives

The prior section showed that the vast majority of the migrant cohorts under study chose to stay in Norway despite the downgrading of job opportunities. For the immigrants who chose to remain in Norway over time, it is of interest to investigate how the adverse shocks during the financial crisis affected their longer-term employment and earnings prospects (Åslund and Rooth, 2007, and Åslund *et al.*, 2014, study long-term effects of initial labour market conditions and employment outcomes on immigrants earnings; Huttunen *et al.*, 2011, investigate long-term effects of job loss in general). In Figure 4.6, we display average earnings profiles over time (excluding a few zeros) for the labour migrants employed in 2008 and still present in Norway at the end of 2012. Again, native samples match the age distribution of immigrants, and to ensure comparability the native samples are also restricted to those who were employed in 2008 and present in Norway on January 1, 2013.

Earnings growth reflects accumulation of experience as well as overall real wage growth. Earnings dips – or slowdown in growth – during the financial crisis in 2009 and 2010 are found for all groups considered. But, as Figure 4.6 shows, earnings dips are most pronounced for male immigrants. The average male migrant experienced a substantial decline in real labour earnings from 2008 to 2009. Earnings improved during the economic recovery of 2011 and 2012, with a slight convergence between the immigrants and low-educated natives. Compared to the average native male, however, the earnings gap remained at 34%.

The financial crisis had less detrimental effects on earnings of female immigrants. Actually, earnings of immigrant women were, on average, slightly higher than those of low-educated native women throughout most of the study period. But, again, the immigrant-native comparison crucially depends on the comparison group. The average native female had somewhat higher earnings growth than the other groups considered from 2009 onwards.

Figure 4.6: Average wage earnings, 2007–2012



Note: Immigrant samples consist of 2004–2007 migrants from Poland, Lithuania, Latvia, and Estonia; age 17–46 at arrival; employed in 2008 with labour earnings exceeding NOK 69,108; and present in Norway 1.1.2013. Native samples are subject to the same employment and earnings restrictions, and are stratified to match the age distribution of the immigrant samples. Averages exclude zero earnings. Earnings are inflated to 2011 values by the consumer price index.

To investigate the possible long-term consequences of the adverse earnings shocks in 2009, we next pool the samples of immigrant and native workers and regress the logarithm of 2012 earnings on an immigrant indicator variable and the 2009 individual shock measure, together with vectors of control variables. The coefficient attached to the immigrant indicator will then capture the immigrant-native earnings differential

controlled for these other factors. The results are displayed in Table 4.5. In the comparison with a representative sample of equally aged native workers, the observed earnings differentials are as high as 0.42 log points for men and 0.32 log points for women; see panel A. Accounting for differences in 2012 industry affiliation and tenure reduces the native-immigrant differentials to 0.17 and 0.14 for men and women, respectively (see panel A, columns I and IV). Now, adding controls for the experience of an adverse shock in 2009 (including an indicator for receipt of unemployment benefits), reduces both the male and the female differential to 0.13 log points (columns II and V). Hence, particularly for men, it is clear that there are some – though not very large – persistent negative impacts of the employment shocks of the financial crisis that raised the immigrant-native earnings differential on a lasting basis. Controlling for the initial earnings level in 2008 reduces the immigrant-native differential in 2012 even further, to 0.04 log point for men and 0.07 log points for women. Finally, it is clear from Table 4.5 that the 2009 adverse earnings shock had a lasting impact on individual earnings: controlling for the level of pre-crisis earnings, the 2012 earnings of native men are 0.26 log points and those of native women 0.30 log point lower than those who did not experience any individual employment shock during the financial crisis (see columns III and VI).

Table 4.5: Explaining immigrant-native difference in log 2012 wage earnings

	(I)	(II)	(III)	(IV)	(V)	(VI)
	Men			Women		
A. Vs. all natives						
Observed difference	-0.415			-0.323		
Immigrant-native difference	-0.168*** (0.010)	-0.128*** (0.010)	-0.040*** (0.009)	-0.137*** (0.017)	-0.126*** (0.017)	-0.070*** (0.016)
Earnings shock 2009		-0.416*** (0.016)	-0.256*** (0.015)		-0.489*** (0.025)	-0.297*** (0.025)
UI benefits 2009		-0.138*** (0.011)	-0.089*** (0.011)		-0.225*** (0.022)	-0.177*** (0.021)
Tenure	0.024*** (0.001)	0.021*** (0.001)	0.009*** (0.001)	0.044*** (0.002)	0.039*** (0.002)	0.023*** (0.002)
ln(annual wages 2008)			0.586*** (0.007)			0.453*** (0.011)
B. Vs. low educ						
Observed difference	-0.108			0.063		
Immigrant-native difference	0.039*** (0.014)	0.050*** (0.014)	0.089*** (0.013)	0.134*** (0.026)	0.130*** (0.026)	0.138*** (0.026)
Earnings shock 2009		-0.368*** (0.021)	-0.252*** (0.020)		-0.564*** (0.055)	-0.408*** (0.054)
UI benefits 2009		-0.061*** (0.015)	-0.028* (0.014)		-0.123*** (0.039)	-0.096** (0.038)
Tenure	0.035*** (0.002)	0.029*** (0.002)	0.017*** (0.002)	0.054*** (0.005)	0.047*** (0.005)	0.030*** (0.005)
ln(annual wages 2008)			0.598*** (0.014)			0.524*** (0.027)
Additional control variables	Industry (689 cat's)	Industry (689 cat's)	Industry (689 cat's)	Industry (612 cat's)	Industry (612 cat's)	Industry (612 cat's)

*/**/** Significant at the 10/5/1% level.

Note: Standard errors are reported in parentheses. Samples are restricted to those with labour earnings above 1G in 2008 and who were present in Norway 1.1.2013. The regressions have 45,886 (panel A, cols I–III), 24,307 (panel A, cols IV–VI), 20,942 (panel B, cols I–III), and 7,129 (panel B, cols IV–VI) observations.

Moving further to the results based on the comparisons with low-education natives (see panel B), we find a similar pattern with respect to the impacts of the 2009 employment shock. Controlling for exposure to such shocks raises the earnings differential in favour of male immigrants. Indeed, accounting for differences in tenure and industry affiliation, it is evident that the immigrants on average have higher earnings than unskilled natives (see panel B, columns III and VI).

4.8 Conclusions

The opening up of the common labour market in Europe represents new opportunities for efficient allocation of labour, for reducing bottlenecks in production processes, for mitigating the fiscal consequences of demographic transition, and for cushioning national and regional cyclical fluctuations. However, at least in the short and intermediate terms, the integrated market also presents some political and economic challenges. A particular concern is that the large cross-country differences in wages and social insurance standards may put pressure on existing welfare state institutions. The fact that the social insurance benefit level in some countries by far exceeds typical wages in other countries may distort migration flows and weaken labour migrants' incentives to remain in productive employment over the long term. This makes the new European labour market qualitatively different from the common Nordic labour market that for 60 years has facilitated unrestricted labour mobility between countries, thereby raising aggregate output in the Nordic region.

In this chapter, we have examined the first major wave of post-EU accession labour migrants from Eastern Europe to Norway, with a focus on employment performance during the initial eight-year period after accession. We have shown that the labour immigrants were much more adversely affected by the financial crisis than comparable natives, and that during the winter months of 2008/09, immigrant unemployment rose spectacularly. Those who were directly affected by the crisis had a higher probability of remigration. Their outmigration propensity was moderate, however. For those who experienced job loss during the financial crisis, unemployment benefits were high compared to wages in their home country and many may have had rational expectations of returning to work in Norway. As predicted by theory, the return mobility of workers from the new EU member states seems less sensitive to negative employment shocks than what is previously found for inter-Nordic migrants (Pedersen and Røed, 2008).

Among those who stayed in Norway, the majority of unemployed immigrants returned to employment relatively quickly after the crisis, although the unemployment rate remained at a significantly higher level than for comparable natives even three years after the crisis. The adverse long-term earnings impacts of experiencing a negative labour demand shock during the financial crisis prevailed in 2012 and account for a significant portion of observed earnings differences between native and immigrant workers. Our findings reconfirm prior evidence in the empirical literature that recently arrived labour migrants are considera-

bly more vulnerable to cyclical downturns than natives, and that they have a higher risk of persistent non-employment in the aftermath of negative labour demand shocks. For a majority of the immigrants studied, however, the unemployment experience turned out to be short-lived. Even if the lasting adverse effects of the financial crisis were moderate, the accumulated effects of business cycles on long-term employment profiles can be large when immigrants are consistently exposed to job loss during recessions.

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5. Young disability beneficiaries – A pertinent policy issue of today

*Karsten Albæk (SFI),⁵⁷ Rita Asplund (ETLA),⁵⁸ Kristine von Simson (ISF),⁵⁹
Pekka Vanhala (ETLA)^{60, 61}*

5.1 Rapidly increasing disability beneficiary caseloads

The fast increase in the disability beneficiary caseload over the past few decades in combination with rapid growth in the spending on disability benefits is a major concern in a majority of developed countries. Already before the onset of the recent economic crisis, in 2008, disability was more prevalent than unemployment, and spending on disability benefits was much higher than spending on unemployment benefits (OECD, 2010). The current jobs crisis is expected to have further weakened the employment prospects of people with health problems or disability.⁶²

As remarked in several contexts, this trend in disability rolls is counterintuitive in view of the strong decline in physically demanding work and the continuous improvement in the health status of the working-age population. Simultaneously, however, it is widely recognized that a key driver behind the rapidly growing numbers of disability beneficiaries

⁵⁷ Programme Leader at the Danish National Centre for Social Research (SFI).

⁵⁸ Research Director at the Research Institute of the Finnish Economy (ETLA).

⁵⁹ Researcher at the Institute for Social Research (ISF).

⁶⁰ Research Secretary at the Research Institute of the Finnish Economy (ETLA).

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⁶² Apart from OECD (2010) the European debate is well illustrated also in e.g. Greve (2009) and Eichhorst *et al.* (2010). Autor and Duggan (2006), Autor (2011) and Moore (2014), among others, are illustrative examples of the corresponding US debate.

are chronic problems which are typically difficult to assess objectively, such as psychiatric diagnoses. Indeed, mental ill-health is today the biggest single cause for a disability benefit claim (e.g. OECD, 2010). In for instance Denmark and Sweden, mental health problems account for almost half of all new claims. This also contributes to explaining the concern expressed by, *inter alia*, Dansk Arbejdsgiverforening (2013).

An extraordinarily challenging aspect related to mental ill-health is that mental health problems often seem to start at a relatively young age. According to OECD (2010) figures for 2008, the share of new disability benefit recipients with mental health problems is highest among young people: about 70% of all claims due to mental ill-health are among those aged 20–34. One reason for this skewed age-related distribution might be the fact that conditions with a mental health dimension often seem to emerge before the age of 25 (e.g. Eurofound, 2010).

The situation seems most worrying in Denmark where mental health problems cover close to 80% of the inflow into disability benefit schemes in the 20–34 age-groups with other problems thus accounting for only around one-fifth of all new claims within this young age-group. The situation is described to be only slightly better in Finland and Sweden with the corresponding share being about 70%. In Norway it is lower at some 55%, implying that here other problems explain almost half of all new disability benefit claims of this particular age-group. Moreover, the increase in mental health problems has, at least in certain countries, proved to be especially marked among young women. Among the Nordic countries, this holds true for Finland in particular. Similar trends have, in effect, also been reported for the USA (Ben-Shalom & Stapleton, 2013).

Moreover, employment rates of people with a disability are in general substantially lower compared to people without a disability, and particularly low for those suffering from mental ill-health. Additionally, disability benefits are still often treated as lifelong pension schemes. According to the OECD (2010), this implies that once a permanent disability benefit is awarded, the probability that the beneficiary will return to work is in most cases close to nil. Hence, when a person acquires a disability benefit at a young age, he/she can be expected to stay on it for a substantial number of years. This, in turn, represents a substantial cost to society in terms of lost productivity as well as increased burden on social protection systems.

Breaking this benefit dependence of young people would demand strong integration measures not only due to their weaker disability-

induced working capacity, but also because they usually have a low education and mostly lack work experience.⁶³ Indeed, replacing the disability pension for young people by a more active regime is in several countries, including the Nordic ones, considered as a topic of utmost importance. However, for such activation measures to be efficient they need to draw on comprehensive information on the various barriers to labour market inclusion that young people with health problems face, as well as profound evaluation outcomes on which measures work and which do not.

This knowledge base is still very scant, though. As a matter of fact, also our knowledge on the labour market performance of disabled compared to non-disabled young people is mostly non-existing.⁶⁴ This, in turn, may be a direct consequence of the extent of health problems and disabilities impacting on young people's work capacity being in general poorly documented, as illustratively shown in, for instance, Eurofound (2010). A major reason for this unsatisfactory situation is often stated to be the strong focus in national as well as pan-European policies on youths, on the one hand, and people with disabilities, on the other. This dichotomy is argued to have contributed to concealing the growing problem of disabilities and incapacity benefit claimants among young people and, hence, also to a weak understanding of the causes fuelling these trends.

All in all, young disability beneficiaries are for several major reasons a particularly pertinent policy issue of today. This seems to hold true especially when it comes to the Nordic countries. Indeed, the worrying patterns and trends characterizing the Nordic countries have recently been comprehensively illustrated in a report by the Swedish Social Insurance Inspectorate (2013). The present chapter aims to move behind these general outcomes for selected Nordic countries⁶⁵ (Denmark, Finland and Norway) by analysing and comparing the situation of a cohort of youths turning 16 in 1998. These young people are tracked on an annual basis during a 10-year period, up to age 26 (in 2008). The data allows us to identify changes in the young persons' labour market status, including being a disability beneficiary. Additionally it provides rich information on, *inter alia*, their individual characteristics and family background.

⁶³ In Finland, for instance, young people typically become disability benefit recipients straight after completing compulsory education and mostly also stay there on a more or less permanent basis. See e.g. Asplund & Vanhala (2014).

⁶⁴ While a growing number of national as well as international studies provide information on the labour market situation of people with disabilities, this information is seldom reported by age groups.

⁶⁵ An extended version of this chapter will be produced when corresponding results for Sweden exist.

The chapter continues with a brief presentation of the disability benefit system in place in respective countries under study (in Section 5.2). Here, the emphasis will logically be on the disability schemes directed towards young people and the extent to which these arrangements have eventually been reformed since 1998, that is, the year when the youngsters belonging to our cohort under study turned 16. Section 5.3 outlines the national datasets used in the subsequent analysis. The presentation of results starts, in Section 5.4, with a general description and cross-country comparison of how the disability beneficiary status evolves up to age 26 among the young people belonging to the cohort under scrutiny. Thereafter, the focus turns to disentangling the role of the young persons' background for having the status of a disability beneficiary as a young adult (at age 26). While being aware of the underlying causes forming complex and multi-dimensional patterns, this chapter will exclusively address three issues, all of which can be considered to be of crucial policy relevance: first, the role of intergenerational transmission of benefit dependence (Section 5.5); second, the influence of different post-compulsory-school transitions and especially of risky trajectories (Section 5.6); and third, the role of financial incentives for awarding a disability pension as illustrated by the Danish system with municipalities having a key role in deciding on disability benefits and the state covering the main part of the costs (Section 5.7). Section 5.8 discusses the main results and policy implications.

5.2 Growing numbers of young disability beneficiaries despite substantial reforms

The conspicuous increase in the number of young people taking up disability benefits is remarkable in view of the reforms undertaken in order to slow down the inflow to disability benefit schemes. In this section, we provide a brief description of the disability benefit arrangements in place in each country when our cohort under study turned 16 (in 1998), as well as of major reforms undertaken since the late 1990s with respect to adolescents and young adults.

5.2.1 *Denmark*

To be eligible for disability pension, the person has to have a physical or psychical illness that reduces his/her work ability permanently. A disability pension can be granted from age 18 and stops at retirement age. The right

to receive disability pension is, as a general rule, dependent on Danish citizenship and residence in Denmark. Eligibility for a full pension requires that the pensioner has been a Danish resident at least 4/5 of the years after the pensioner turned 15 to the time when the pension is granted.

There is only one disability pension scheme in Denmark, which is financed out of general public revenue. No requirement of previous work experience has to be fulfilled in order to obtain disability pension and neither is the level of the pension related to previous work income which is, in effect, also the case for public old-age pensions. This is in contrast to many other countries, where some amount of work experience is a prerequisite for receiving disability pension and where the level of the pension is related to previous earnings. Disability pensions are granted by the municipalities, which also differs from practices in most other countries. Most cases start with an application from persons who want to obtain disability pension, but municipalities can also initiate cases for persons who reside in the municipality. The decision of the municipality can be appealed to an appeal agency (ankestyrelsen). A substantial revision of the disability pension system was enacted in 2013. A main provision is that persons below the age of 40, as the point of departure, cannot obtain disability pensions. In line with the 2003 reform of the Swedish disability system for young people, the Danish reform aims at improving the rehabilitation of young people with disabilities and at providing them, in the first place, with a so-called resource plan (ressourceforløb) for a limited time period (up to five years).

Prior to 2003, disability pensioners were classified in categories according to their residual work ability and the level of the pension was dependent on categorization (highest, middle, enhanced ordinary and ordinary disability pension). Starting in 2003 the categorization was abandoned for new entrants to the disability pension system and only one type of disability pension is granted. Persons on the old scheme can apply to enter the new scheme.

A special trait of the Danish system is the so-called flexible-job scheme, which is also targeted to persons with permanently reduced work capacity. The scheme consists of a wage subsidy that amounts to either 1/2 or 2/3 of the salary. The wage subsidy is paid to employers for whom the persons participating in the flexible-job scheme work. Persons in this scheme are not included as pensioners in our analysis.

5.2.2 Finland

The young people recorded to be disability beneficiaries in the Finnish dataset used in the subsequent analyses receive a pension benefit according to the registers compiled jointly by the Finnish Centre for Pensions (ETK) and the Social Insurance Institution of Finland (Kela). A disability pension may be granted either in the national pension scheme or in the statutory earnings-related pension scheme.⁶⁶ The latter covers all employees, self-employed persons and farmers whose employment exceeds the minimum requirements laid down by law. The liability to take out insurance under the earnings-related pension legislation starts at the beginning of the month following the person's 18th birthday. The national pension scheme, in turn, covers all persons aged 16 to 64 who have permanently resided in Finland for at least three years after turning 16. However, exceptions from this required period of residence are awarded to: (1) those having become incapable of working before the age of 19 while resident in Finland and (2) those receiving a disability allowance for persons under the age of 16 when turning 16.⁶⁷ In contrast to the earnings-related pension, the national pension is funded by the state and paid at a flat rate with income testing.

Irrespective of the scheme under which the disability pension is awarded, the following applies. The person needs to have an illness which significantly reduces his/her work ability. The pension is awarded either until further notice or for a specific period of time, in which case it is (since 1996) called a cash rehabilitation benefit. This time-limited benefit is granted if it can be expected that treatment or rehabilitation can, at least in part, improve the person's working capacity. Accordingly a cash rehabilitation benefit is always to be accompanied by a treatment or rehabilitation plan. A major difference between the two pension schemes, however, is that while the disability pension can be granted only as a full pension under the national pension scheme, it may be awarded either as a full or a partial pension under the statutory earnings-related pension scheme. Awarding of partial (full) disability pension requires that the person's working capacity has been reduced during at least one year by two-fifths (three-fifths) or more due to illness, disability or injury. The

⁶⁶ The presentation of the Finnish system is based on ETK and Kela (2012) and Swedish Social Insurance Inspectorate (2013).

⁶⁷ Further exceptions to the rules governing residence-based pension provision are entailed in EC, Nordic and bilateral arrangements.

decision process also takes into account circumstances such as the claimant's earnings capacity, educational level and age.

The overall structure of the Finnish pension system has remained basically intact during the time period analysed, that is, since the late 1990s. Yet, the two parallel systems have been subject to a number of reforms over the past decades. One major change to the pension legislation was made in 2005, resulting in further differentiation of the earnings-related and national pensions. When it comes to young persons, one reform is worth mentioning in this context as it clearly affected the medical requirements for disability pension eligibility under the national pension scheme. In particular, from August 1, 1999 onwards, a national disability pension was no longer granted to a person under the age of 18 until his/her prospects for vocational rehabilitation had been clarified. By April 1, 2002, this age limit was increased to 20 years thus covering all persons aged 16–19. Among the exceptions to this rule are: (1) if a young person is unable to participate in vocational rehabilitation and is also unlikely to benefit from such activities due to ill health; (2) if a young person has received sickness benefit for the maximum payment period; (3) if a young person has been rendered incapable of working already before the age of 15. Permanently blind persons as well as persons permanently without mobile ability are always considered incapable of work, though. In the earnings-related pension scheme, on the other hand, it is required that the incapacity for work can be estimated to last for at least one year.

In view of the fact that the cohort under study turns 16 when the follow-up period starts (in 1998), it is obvious that the national pension option is the only arrangement available to them for a number of years, either in the form of a permanent disability pension or (since August 1999) a time-limited cash rehabilitation benefit. Only after they have turned 18 can they apply for a disability pension under the statutory earnings-related pension scheme provided that their employment fulfils the minimum requirements laid down by law. It is noteworthy, though, that the minimum requirement for previous earnings was markedly reduced in 2005, which resulted in a notable increase in the earnings-related pension beneficiary caseload.

5.2.3 Norway

The Norwegian disability insurance scheme is divided into a temporary and a permanent program. Eligibility for either program requires that the person must have reduced work capacity of at least 50% due to physical or mental health problems, certified by an authorized physician. In addition, the applicant must have been a member of the national in-

surance program for at least 3 years (everybody who is a resident in Norway is a member), and must be between 16 and 67 years of age. The health problem must be the main cause for the reduced work capacity (excludes primary social causes), and the work capacity must be reduced by at least 50% on a long-term basis.

The general rule is that after 12 months on sick leave, one can apply for either temporary or permanent disability benefits. Claimants normally receive a benefit amounting to approximately 66% of their past earnings (with both minimum and maximum benefit thresholds). Persons with no previous work experience may receive a minimum amount according to the guidelines established for the old-age pension. Youth under the age of 26 who are granted a permanent disability pension are entitled to a special pension which is higher than the minimum amount. The Norwegian disability insurance scheme also provides for a partial disability pension, where the pension is reduced in proportion to the loss of work capacity. The partial disability pension may be combined with work or other types of benefits.

In the period under consideration, the temporary disability insurance (TDI) program consisted of three different benefits of limited duration: medical and vocational rehabilitation benefits, and time-limited disability pension (from 2004).⁶⁸ The purpose of the rehabilitation benefits, generally granted for a period of 52 consecutive weeks, is to provide income maintenance for persons who are undergoing active treatment with prospects of improving their vocational potential. If the health problems persist beyond this additional year, the person may apply for a disability pension. While vocational rehabilitation is supposed to have been tried before being granted disability pension, the majority of disability pension entrants have never participated in any vocational rehabilitation.

In addition to the rehabilitation benefits, there are two types of disability pensions which are relevant for the youth cohort under study: a time-limited disability pension and a permanent disability pension. The time-limited disability benefit is granted if there is any possibility for improved work capacity in the future, and may be received for a period of one to four years. If there is no scope for improvement, the permanent disability pension will be granted. Normally, a permanent disability pension lasts until it is replaced by an old-age pension at the age

⁶⁸ In 2010, the three benefits (medical and vocational rehabilitation, and time-limited disability pension) were combined into one: The Work Assessment Allowance.

of 67, and there is no re-testing of the individual's work capacity. This particular feature is of decisive importance when trying to understand the differences in disability observed across the Nordic countries.

5.3 Brief presentation of national datasets used

As indicated earlier, the results reported in this chapter are derived from analysing the full cohort of young people that turned 16 in 1998. The outcome of these young persons with respect to disability beneficiary status (in the following, simply referred to as "pensioner") is described, examined and compared across the three Nordic countries under study – Denmark, Finland and Norway. The information used is entirely gathered from various register databases administered by the Statistical Bureau in the respective country.

These 16-year-old youngsters are traced up to the age of 26, implying that our period of investigation covers the years 1998 to 2008. In our data we can identify their labour market status on an annual basis and, hence, also track changes in this status especially with respect to becoming and staying a pensioner. However, the information on labour market status readily available in the national data used in the subsequent analyses has been adjusted in one crucial respect: the main activity of a young person as provided in the national data is re-coded to being a full-time student if, according to supplementary register information, s/he has been enrolled in an educational institution for most of the year. By means of this re-coding we obtain a more accurate picture of a young person's true activity (status) in each year and, hence, also of eventual changes in this status over the 10-year period investigated. While the effect of this re-coding varies across our three Nordic countries depending on the way in which the main activity is defined and constructed in each national data, the impact is by no means negligible. On the contrary, due to the strong prevalence of part-time work while studying in the Nordic countries the re-coding concerns a substantial number of full-time students who happened to be (temporarily) employed or unemployed at the particular point in time for which the register information on the main activity was compiled. Unsurprisingly, the young person's pensioner status is seldom, if at all, affected by this re-coding.

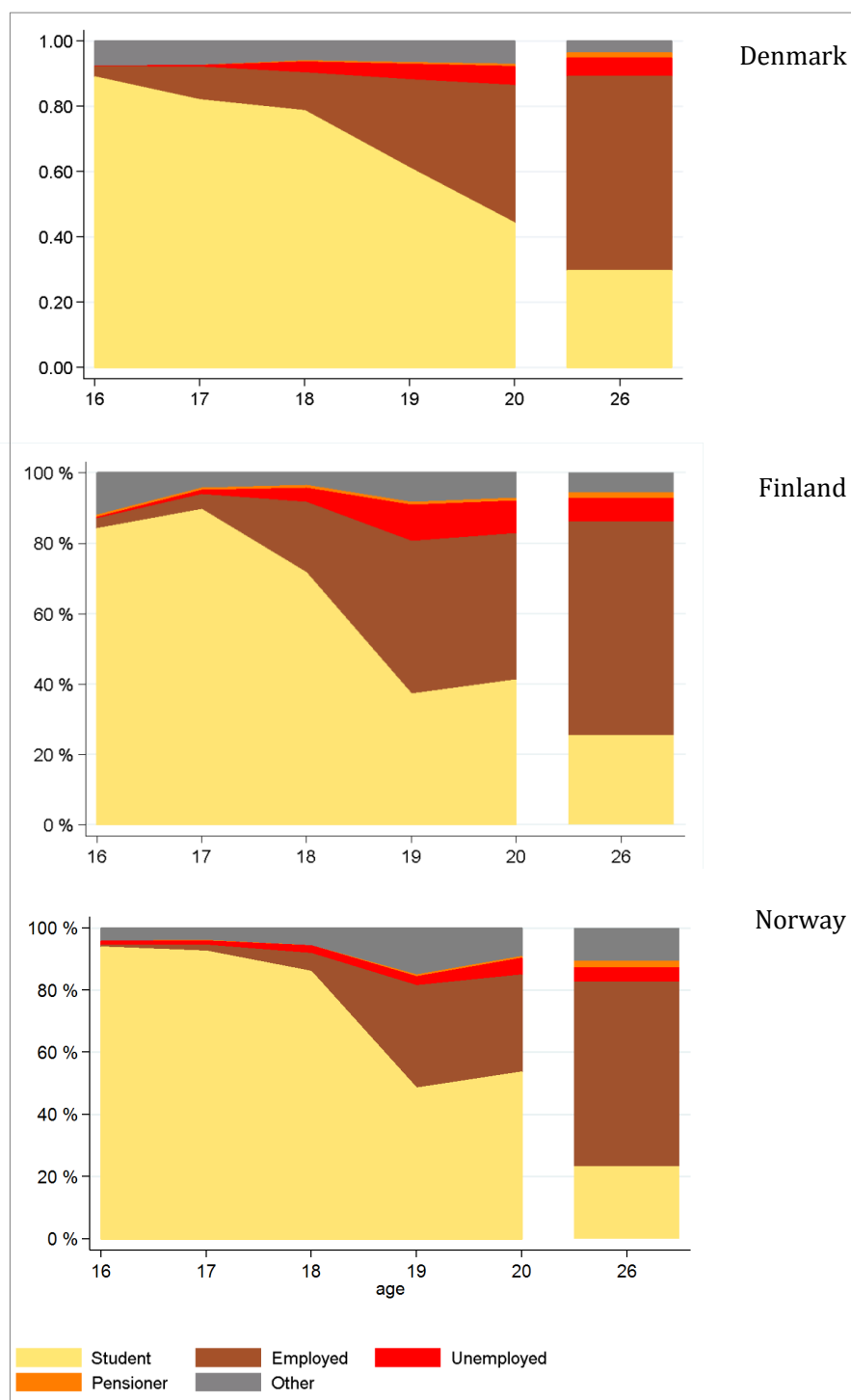
In addition to the main activity, our national datasets contain rich information about the young persons but also on their family background. Details on the individual and family background information utilised in the subsequent analyses are provided in the context it is used.

5.4 Pensioner status evolution up to age 26

As noted above, the information on each young person's main annual activity (labour market status) is readily available in the national data on which our analyses are based. However, for the purposes of these analyses we have, as described in the previous section, re-coded the registered annual status for those young persons who, as it turns out, are actually full-time students. The conditions for being recorded in the national data as a pensioner were, in turn, described in Section 5.2. In this section we will look into the frequency of having a pensioner status in the cohort under study, that is, those young people who turned 16 in 1998.

The first country-specific graphs, presented in Figure 5.1, provide a general picture of the development of our cohort's main activities from age 16 up to age 26. More precisely, the three graphs show the relative shares of different major statuses for each year between 1998 and 2008. The overall pattern is highly similar for the three Nordic countries under study: the relative share of full-time students (yellow area) declines with age whereas the share of those with an employment contract (brown area) increases. At the age of 26 a large majority of the cohort's young people was employed: 61.2% in Denmark, 60.8% in Finland and 59.5% in Norway. In Denmark 28.3% were still studying on a full-time basis. The corresponding share for Finland and Norway is only slightly smaller – 25.4 and 23.3%, respectively.

Figure 5.1: Shares of main activities from age 16 up to age 26



The main activities of those young persons who are neither studying nor working are divided into three broad categories: unemployed, pensioner and inactive (residual group labelled “other”). At the age of 26 these categories, taken together, cover 10.5% of the Danish cohort, 13.9% of the Finnish cohort and as much as 17.2% of the Norwegian cohort. A conspicuous feature, common to all three Nordic countries, is that this share is remarkably similar to the corresponding share when the cohort turned 20. This implies that non-studying and non-working activities tend to cement already after the age of 20.

Compared to the relative shares of the other four main statuses – full-time student, employed, unemployed and inactive (other) – the cohort share with pensioner status remains quite small in the 10-year period investigated. If looking at the situation at three different ages – 16, 20 and 26 – the pensioner share evolves as follows: 0.0 (disability pension is not awarded before age 18), 1.1 and 1.6% for Denmark; 0.7, 0.8 and 1.6% for Finland; and 0.0, 0.6 and 2.1% for Norway. Hence, both the largest share at age 26 and the strongest growth since age 16 is obtained for Norway. While these relative shares stand out as rather minor, the absolute numbers of young people concerned raises some concern: at the age of 26 almost 790 young persons were recorded to have pensioner status in the Danish cohort, 1,060 in the Finnish cohort and 1,043 in the Norwegian cohort. If these numbers are treated as typical cohort averages, already ten consecutive cohorts would produce a substantial caseload of young disability beneficiaries. Moreover, a majority of these young pensioners have a low education level. Still five years after completed basic education, about 71% out of these 1,060 young Finns had no post-compulsory degree. The corresponding share is, however, even higher (81%) for Norway and as high as 85% for Denmark.

5.5 Intergenerational transmission of young persons' pension dependence

This section presents some basic results concerning family background and pensioner status at age 26. Family background reflects the situation prevailing when the young person turned 16 (in 1998).⁶⁹ As a first step, we will measure family background by use of a small set of traditional family background measures (such as the parents' education level) common to all three Nordic countries under study. In the next step, we explore the possible presence of a so-called pensioner-status transmission process, that is, an evident relation between the young person's pensioner status at age 26 and a pensioner status of his/her parents. As a final step we combine these two sets of family background information in order to assess their relative importance when it comes to the relation between family situation and the child's labour market status at age 26.

5.5.1 *Parents' income and education matter*

Intergenerational transmission from parents to children has for long been an important academic as well as political issue. Special attention has thereby been paid to the parents' educational and income levels.⁷⁰ We therefore start by exploring the role of these traditional measures for family background. In other words, we ask whether there is a clear-cut relation between the family situation as measured by education and income and the child's probability of being a pensioner at age 26. The parents' education and income refer to the year when the child turned 16.⁷¹

The parents' formal educational level is measured by means of three categories: basic, secondary and higher education. Also the (gross) income level of parents is split into three categories: low, middle and high wage-income. While the information on educational level is given separately for the mother and the father, the wage-income refers to the household-level income, i.e. the sum of the parents' wage-income. Table 5.1 shows country-specific shares of each category separately for 26-year-old pensioners and non-pensioners.

⁶⁹ The information on parents is linked to the young persons of our cohort and is included in our analyses as such with no account made for the 'relation' of the parents, that is, whether they live together or not.

⁷⁰ See e.g. Björklund *et al.* (2010), and Black and Devereux (2011) for a comprehensive review of results within this area.

⁷¹ The Finnish data contains parental education information for the year 2010 only (when the child turns 28).

Table 5.1: Distribution of parental background for 26-year-old pensioners and non-pensioners

Educational level	Denmark		Finland		Norway	
	Status at age 26		Status at age 26		Status at age 26	
	Pens.	Non-pens.	Pens.	Non-pens.	Pens.	Non-pens.
Of the mother						
Basic	51.1	35.5	28.6	21.3	43.5	31.8
Secondary	29.3	36.2	47.0	44.3	39.5	43.0
Higher	19.6	28.3	24.4	34.4	17.0	25.2
Of the father						
Basic	42.6	27.0	37.2	30.0	37.6	24.0
Secondary	41.6	48.7	39.5	39.9	45.6	50.0
Higher	15.8	24.3	23.3	30.1	16.8	26.0
Household wage income						
Lower	54.6	33.0	46.8	33.0	53.2	32.9
Middle	26.5	33.4	29.9	33.5	27.8	33.5
Upper	18.9	33.5	23.3	33.5	20.0	33.6

Notes: The three educational-level categories correspond to ISCED 1–2, 3–4 and 5–6, respectively. The three wage-income categories refer, respectively, to the lowest, middle and highest one-third of the wage-income scale.

As is evident from Table 5.1, young pensioners' family background differs typically quite remarkably from the family background of young non-pensioners. The largest differences between the pensioner and the non-pensioner group are observed for Denmark and the smallest for Finland. Conspicuous features of the 26-year-old pensioner group are, *inter alia*, the dominance of low-educated mothers (Denmark and Norway) and lower-income households (all three Nordic countries).

The results obtained from running a statistical model on this parental information lend further support to the contention that family background is linked to the child's pensioner status at age 26 in an important way.⁷² More precisely, a low educational level of the parents tends to increase the child's pensioner status probability at age 26 in both Denmark and Norway. In both countries, however, the father's education seems to have a slightly stronger impact than the mother's education. The effects of parents' education are negligible for Finland. Compared to parental education, the link to the child's pensioner status at age 26 is clearly stronger when it comes to the

⁷² Full estimation results in relation to parental education and income are presented in the Appendix of this chapter (Table A1). It may be noted that our results differ to some extent from those reported in previous studies (e.g. Bratberg *et al.*, 2013; Dahl *et al.*, 2013) mainly because of differences in the set-up of the data and the model framework.

household wage-income level. Moreover, this correlation shows up for all three countries. With respect to the magnitude of this relation, the correlation is weakest for Finland and strongest for Norway while Denmark falls in-between.

5.5.2 *Clear relation between child's and parents' pensioner status*

Next we turn to the parents' pensioner status and pose the question whether or not this status is likely to be heritable in the Nordic countries. In contrast to education and income, however, intergenerational transmission from parents to children of a pensioner status does not necessarily measure transmission of welfare dependence *per se*, as unobserved family traits might be correlated across generations. A leading example is genetic components of health giving rise to diseases which make individuals qualified for disability pensions. The correlations between child and parental pension statuses reported below can therefore be seen as providing an upper bound of welfare dependence across generations.⁷³ Potential mechanisms for transmitting welfare dependence from one generation to the next include a reduction of the stigma affiliated with receiving a pension, parental provision of information relevant for obtaining a pension, and different parental investment in children between pensioner and non-pensioner households (Moffitt, 1992).

The magnitude of this particular intergenerational correlation is assessed for two of our Nordic countries under study, that is, Denmark and Finland (the parents' pensioner status is unidentifiable in the Norwegian dataset). While the child's pensioner status refers to disability benefit, the parents' pensioner status covers any kind of pension. However, since the parents' pensioner status is measured when the child turned 16, most parental pensions are likely to be related to health problems or disability.

In Section 5.4 above, the cohort's pensioner share at age 26 was reported to be 1.6% both in the Danish and the Finnish cohort. Of these 787 young Danes, 12.1% had a mother who was a pensioner when they turned 16. For the cohort's 26-year-old non-pensioners the corresponding share was 4.2%. The share with a father receiving a pension was

⁷³ In order to assess the causal effect of parental pension dependence on the pension dependence of children, it would be necessary to disentangle the effect of unobserved family background from the effect of pension dependence. While an attempt to disentangle these effects is made in Dahl *et al.* (2013), such an analysis is outside the scope of this study.

8.7% for young pensioners and 3.1% for young non-pensioners. Of the 1,060 young Finns on pension benefits at age 26, 7.8% had a mother and 9.3% a father on pension when they turned 16. Among the 26-year-old non-pensioners the corresponding shares were 3.9 and 7.2%, respectively. Hence, in both countries the parents of young pensioners are clearly more likely to have a pensioner status than the parents of young non-pensioners, although the differences in shares are notably higher for Denmark than for Finland. Another outstanding difference between the two countries is that Denmark reveals a higher probability of the mother but Finland a higher probability of the father being a pensioner irrespective of the child's labour market status at age 26. Finally, only a minor share of the cohort's young people had both parents on pension benefits when they turned 16: 2.4% of the Danish young pensioners (0.5% among the young non-pensioners) and 2.9% of the Finnish young pensioners (0.9% among the young non-pensioners). However, this is also the expected outcome provided that the pension statuses of parents are unrelated, as they most likely are in a majority of cases.

In our statistical analyses we include information on parents' pensioner status stepwise.⁷⁴ This procedure provides information not only on the independent role of the mother's and the father's pensioner status but also on the potential presence of a non-negligible interdependence between the parents' pensioner status. First we include in our statistical model information on the mother's pensioner status when the child turned 16. For both Denmark and Finland, this family situation indicates a significantly higher probability of the child being a pensioner at age 26 (compared to the mother not being on pension). A separate analysis involving only the father's pensioner status also points to an important link to the child's pensioner status probability at age 26. For Denmark the role of the mother's and the father's pensioner status is approximately of the same size. For Finland, on the other hand, the effect of the parents' pensioner status is not only much weaker compared to Denmark but additionally the Finnish results point to a much stronger relation with the mother's than the father's pensioner status.

Including in the statistical model both the mother's and the father's pensioner status affects these outcomes only marginally, which is only to

⁷⁴ Full estimation results in relation to parents' pensioner status are presented in the Appendix of this chapter (Table A2).

be expected in view of the relatively few young persons in our cohort having both parents on pension benefits when turning 16 (see above). Yet, we do see a minor decline in probabilities for both countries which might be interpreted in support of a moderate positive correlation between the pension statuses of parents.

5.5.3 The single most critical factor is the mother's pensioner status

Finally we include in the same statistical setting information on parental educational and income levels as well as pensioner status. As information on parents' pensioner status is not readily available in the Norwegian dataset, this analysis can be undertaken for Denmark and Finland only.

In brief, the results indicate the following. While the relation between the child's family situation at age 16 and his/her pensioner status at age 26 weakens according to the results obtained for Denmark, nonetheless, all critical parental dimensions remain highly significant. This holds true for the mother's and father's pensioner status, a low educational level of the mother and the father, and a low household wage-income level. Moreover, the parents' pensioner status continues to have the strongest effect while their educational level has the weakest influence.

In the case of Finland, the combined assessment of the role of parental pensioner status and educational and income levels changes our previously reported findings only marginally. The link between the mother's pensioner status and the child's pensioner status at age 26 weakens but stays strongly significant, while the role of a lower household wage-income level remains significant and unchanged. The other family background describing factors have a negligible impact. As for Denmark, the single most important factor seems to be the mother's pensioner status.

5.6 Post-compulsory-school trajectories and young persons' pension dependence

In this section we focus on the relation between the young persons' pensioner status at age 26 and their post-compulsory-school trajectories, that is, their school-to-work transition experiences after completion of primary education. Indeed, the transition from compulsory education can be seen as one of the most demanding transitions in the career path of young people. A majority of youngsters progressing from primary school will face complex and multi-dimensional challenges. For young persons with

health problems or disabilities, additional barriers may turn up in the form of, for instance, societal attitudes and direct and indirect discrimination. In such cases, appropriate and coordinated systems and services to support the young person's access to the labour market are of crucial importance, as the multitude of measures targeted at this particular group of young people to promote their labour market participation has shown (e.g. Eurofound, 2010). However, as became evident in the previous section, also family factors have a strong bearing in this context.

We start with a brief presentation of our cohort's post-compulsory-school transition pathways from age 16 up to age 20. Next we investigate whether there is a clear-cut relation between their pensioner status at age 26 and this critical 5-year period in their lives. Finally we assess whether their pensioner status at age 26 is solely the outcome of previously experienced school-to-work transitions or whether family background continues to play a decisive role.

5.6.1 *Large variation in individual post-compulsory-school trajectories*

Figure 5.1 above displayed the overall distribution of our cohort's young people across five main activities – full-time student, employed, unemployed, pensioner, other (inactive) – for each year between 1998 (cohort turns 16) and 2008 (cohort turns 26). However, these relative shares cannot tell us anything about the situation experienced in these years by each young person. Instead we need to look more closely into their main activity in each year and, based on this information, construct for each of them an individual post-compulsory-school trajectory. This individual trajectory then reveals in which activity the young person has mainly been engaged in each year investigated. We thereby obtain a sequence of main activities for each young person in our cohort. For our present purposes, we restrict these individual trajectories to cover the 5-year period following immediately upon completion of basic education, that is, from age 16 up to age 20.

This idea on which our subsequent analysis is based can be illustrated by means of a simple example. Presume that three of our youth cohort members experience, from age 16 up to age 20, the following sequences of main activities (statuses):

- ❑ Sequence one: 1 1 1 2 1
- ❑ Sequence two: 1 1 2 1 1
- ❑ Sequence three: 1 2 5 4 4

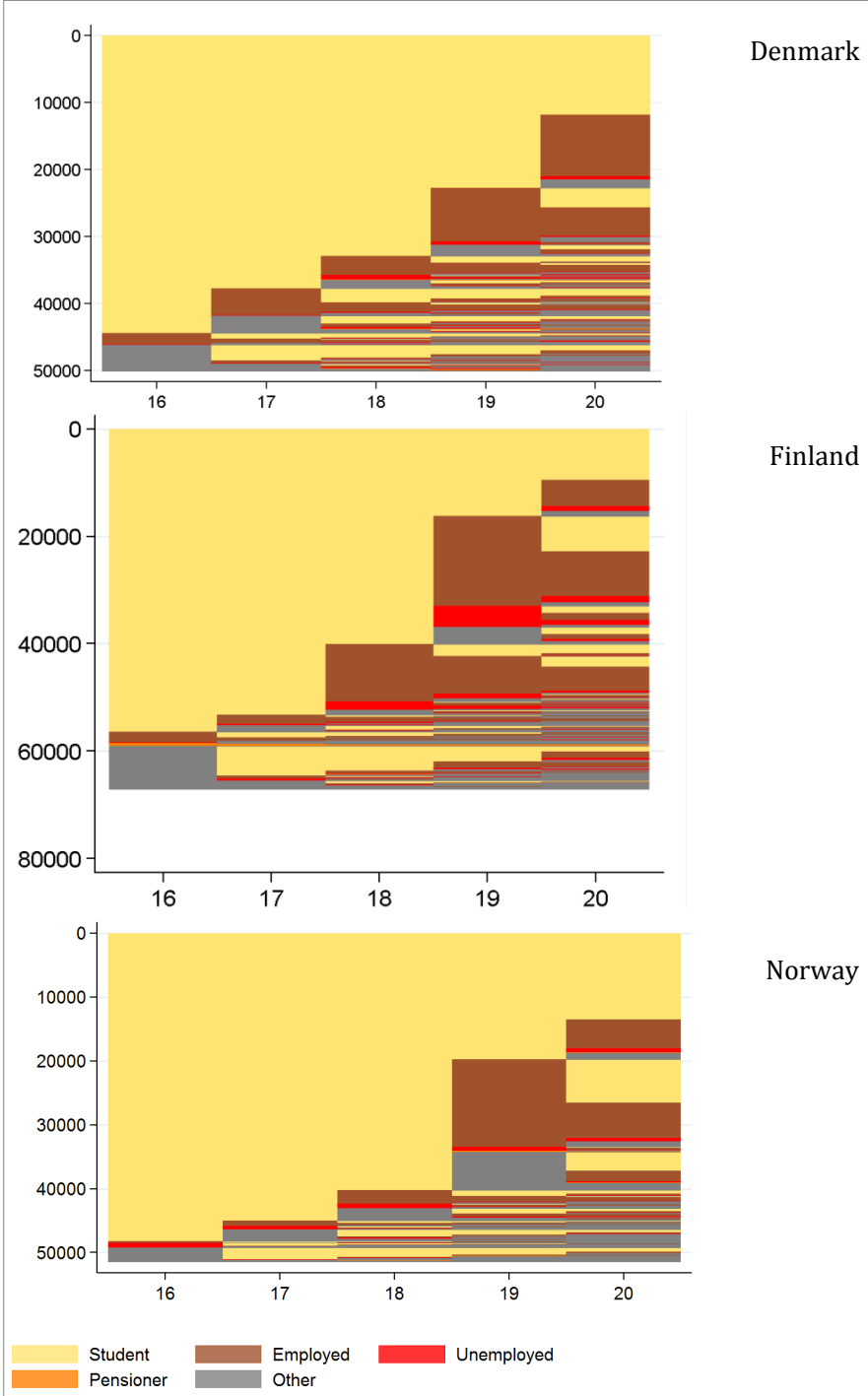
The young person in sequence one is a full-time student at ages 16, 17 and 18, employed at age 19, and again a full-time student at age 20. The person in sequence two is a full-time student at all ages except for age 18 when s/he is employed. The person in sequence three, finally, is a full-time student at age 16, employed at age 17, in the residual inactivity category “other” at age 18 and shows up as a pensioner at age 19 and also at age 20.

In reality, the potential combinations of statuses and, hence, the possible number of individual sequences are evidently enormous and accordingly difficult to handle without the help of some specific technique for categorizing them into a reasonable number of groups (clusters).⁷⁵ While the individual sequences assigned to each cluster should be as similar as possible, the clusters themselves should logically differ as much as possible from each other. From our illustrative example above, it is clear that sequences one and two are very similar while sequence three is highly different. This means that individuals one and two should be categorized into the same cluster while individual three should go into a different cluster.

Figure 5.2 presents the individual post-compulsory-school trajectories of each young person in our cohort, starting from their main activity at age 16 and ending with their main activity in the year they turned 20. As can be seen from the three graphs contained in the figure, there is considerable variation in individual trajectories in all three Nordic countries under study. Simultaneously the graphs illustrate well the impact of the countries’ differently organized secondary-level education. In particular, in Denmark, where the apprenticeship system has a long tradition, the transition from school to work seems to be much smoother than in Finland and Norway, where secondary education is organized in a more “school-based” manner.

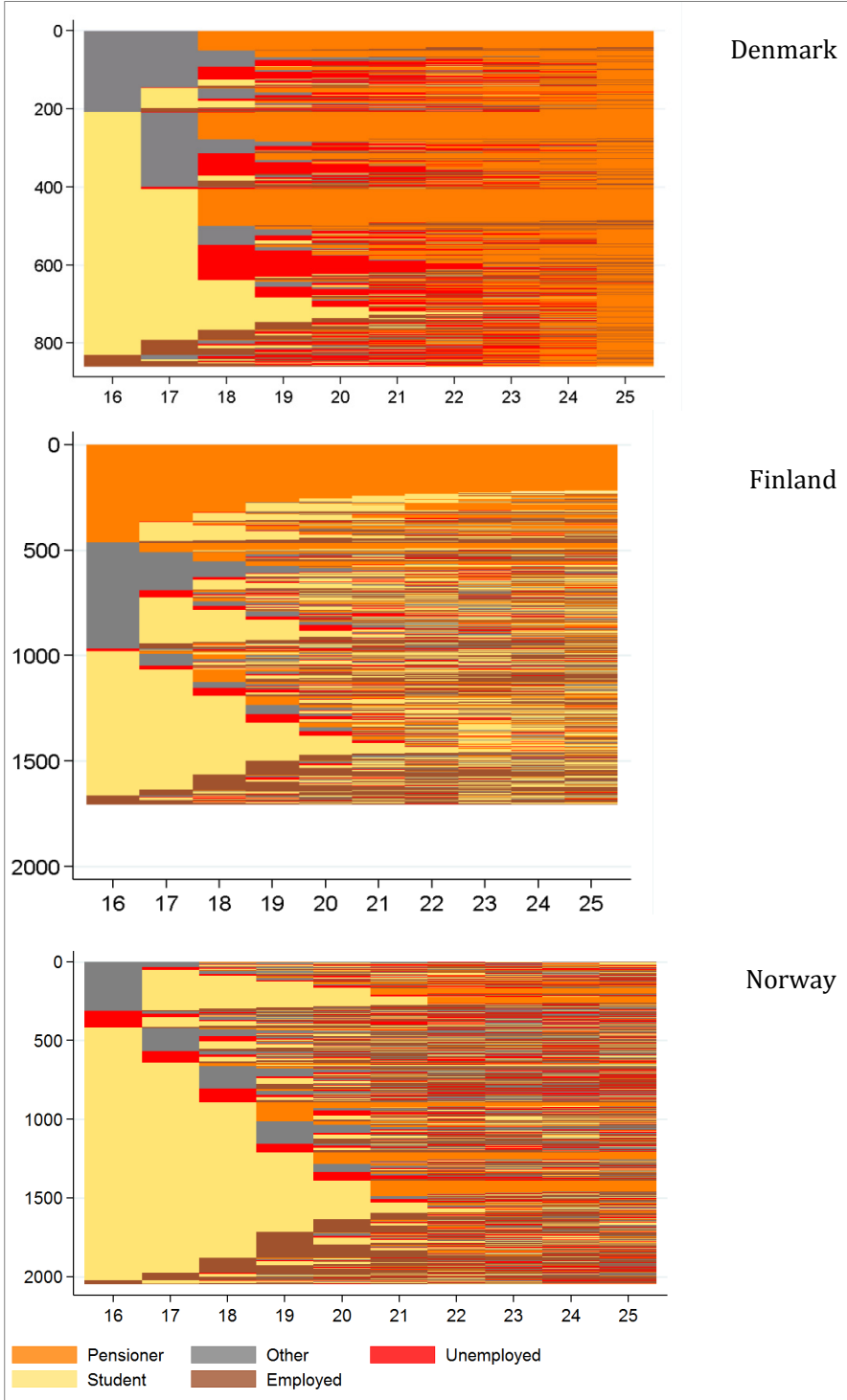
⁷⁵ The technique we use for describing clusters of typical post-compulsory-school trajectories is called sequence and cluster analyses (see e.g. Martin and Wiggins, 2011).

Figure 5.2: Individual post-compulsory school trajectories



The strong dominance in Figure 5.2 of spells (sequences) mainly spent either in full-time education or in employment, however, conceals effectively most of the spells spent by our youth cohort members on disability benefits. In Figure 5.3, we have therefore retained only those young persons who have experienced at least one year on disability benefits (pensioner status) when aged 16 to 25. The reason for now extending the individual trajectories up to age 25 instead of using age 20 as a cut-off, as in Figure 5.2, is the dynamics in young people's disability benefit status that this extension reveals. Moreover, by covering the whole 10-year period we are able to better illustrate how strikingly similar the overall pattern of individual trajectories is across the three countries for those young people having experienced at least one year with pensioner status when turning 25.

Figure 5.3: Individual post-compulsory-school trajectories of those who have been on disability benefit at least once between ages 16–25



As shown in Figure 5.3, most of them spend several years in post-compulsory education before facing serious ill-health or disability resulting in a shift to pension benefits. A substantial number also start working before the onset of this kind of problems. A majority, however, seems to encounter serious health problems already before turning 19 or 20. This seems to hold true especially for Denmark and Finland.

A particularly outstanding feature in the Finnish cohort is the relatively large number of young people moving to pension benefits straight after completing primary education and, moreover, on a rather permanent basis. Of all young people having spent at least one year on disability benefits while aged 16 to 20, more than one in four had spent the whole 5-year period as a disability beneficiary. For neither Denmark nor Norway we find no such cases in our cohort as no young persons below the age of 18 are awarded pension benefits.

5.6.2 *Strong link to individual post-compulsory-school trajectories*

Before reporting our main results concerning the relation between the young persons' early post-compulsory-school trajectories and their labour market status at age 26, we will present some descriptive information on the clusters into which our cohort's individual trajectories have been grouped before being included in our statistical model. A major challenge in this context is to construct a reasonable number of clusters which are not only common but also highly relevant for all three countries under study.

Based on country-specific clustering of the large set of individual post-compulsory-school trajectories displayed in the three country graphs included in Figure 5.2 above, we have identified a total of ten common clusters fulfilling well the crucial conditions of high relevance and frequency in all three Nordic countries. In other words, all individual trajectories starting at age 16 and ending at age 20, as shown in Figure 5.2, are grouped into ten representative clusters. These ten clusters are briefly presented in Table 5.2 along with key descriptive information for each country.⁷⁶

⁷⁶ A graphing of the ten clusters, separately for each country, can be found in the Appendix of this chapter (Figure A1).

Table 5.2: Major groupings of individual post-compulsory-school trajectories and the distribution of the cohort's young people across these clusters

Group	Patterns		Share		
			DK	FI	NO
1	1 1 1 1 1	Student track	61.4%	46.8%	63.9%
2	1 1 1 2 2	Student-employment track	17.9%	31.6%	22.6%
3	1 5 5 1 1	Student-inactivity-student track	5.5%	2.4%	3.9%
4	5 1 1 2 2	Delayed-student-employment track	5.2%	6.2%	1.9%
5	2 2 2 2 2	Employment track	3.9%	2.8%	0.8%
6	1 1 1 4 3	Student-disability-unemployment track	1.4%	3.2%	3.6%
7	1 1 2 3 4	Student-employment-disability track	1.5%	3.6%	1.4%
8	2 2 3 4 3	Employment-unemployment-track	0.6%	0.4%	0.2%
9	4 4 4 4 4	Pensioner track	0.2%	0.6%	0.0%
10	5 5 5 5 5	Inactivity track	2.4%	2.4%	1.6%

Note: The young persons' main activities are labelled as follows:

1 = full-time student; 2 = employed; 3 = unemployed; 4 = pensioner status; 5 = other (inactive).

The post-compulsory-school trajectory cluster most strongly related to our cohort's young people having pensioner status at age 26 is cluster 9 in Table 5.2, that is, the cluster compiling heavily pensioner-status dominated trajectories following straight upon completion of basic education.⁷⁷ It is, therefore, hardly surprising that, in all three countries, this particular cluster comes out with the overwhelmingly strongest link to pensioner status also at age 26. The second strongest relation concerns cluster 8, the employment-unemployment-track, which is dominated by unemployment spells coupled with time spent on disability benefits. Thereafter follows cluster 10, the inactivity track, which mainly comprises spells outside both education and working life. The weakest link to a pensioner status at age 26 is, in turn, displayed by solid school and employment trajectories, viz. clusters 1, 2 and 5.

However, as shown in Table 5.3, these general patterns characterize Finland and Norway but not necessarily Denmark. While there are distinct commonalities across the three Nordic countries also in this respect (notably in relation to those two clusters having, respectively, the strongest and the weakest link to pensioner status at age 26), Denmark comes out with a clearly different pattern especially in relation to certain clusters. For example, the employment-unemployment track (cluster 8), which is found to be quite strongly related to a higher probability of pensioner status at age 26 in both Finland and Norway, is in Denmark

⁷⁷ Full estimation results in relation to individual post-compulsory-school trajectories are presented in the Appendix of this chapter (Table A3).

outstripped by the student–unemployment–disability track (cluster 7). Likewise, while a solid employment track (cluster 5) is in Finland and Norway highly unlikely to end up in pensioner status at age 26, it seems to represent a more risky trajectory for Danish youngsters. In Denmark, a delayed–student–employment track (cluster 4) stands out as a much better choice for avoiding the risk of becoming a young pensioner.

Table 5.3: Ranking of the strength of the relation of the ten post-compulsory-school trajectory clusters to the probability of the young person having pensioner status at age 26

Track	Denmark	Finland	Norway
9. Pensioner track	1	1	1
8. Employment-unemployment-track	3	2	2
10. Inactivity track	4	3	3
6. Student-disability-unemployment track	5	5	4
7. Student-employment-disability track	2	6	5
4. Delayed-student-employment track	8	7	6
3. Student-inactivity-student track	7	4	7
5. Employment track	6	8	8
2. Student-employment track	9	9	9
1. Student track		reference group	

Note: 1 = strongest relation; 9 = weakest relation; ranking according to results for Norway.

Most likely the institutional systems in place and the reforms undertaken since the late 1990s (see Section 5.2) can explain at least part of these rather conspicuous differences in outcomes between Denmark, on the one hand, and Finland and Norway, on the other. Untangling the underlying reasons is, however, not possible within the framework of this study.

5.6.3 Both post-compulsory-school experiences and family background play a role

Finally we extend our statistical model including the ten post-compulsory-school trajectory clusters with information on family background, with the view of exploring whether the young persons' post-compulsory-school trajectories simply reflect crucial variations in their family situation at age 16 or whether these trajectories continue to play a role also after controlling for key differences in family background. We start by adding information on parents' educational and income levels using the same measures as in Section 5.5.

The overall impression from this exercise is that not much happens to our results. The link between a young person's pensioner status at age 26 and his/her post-compulsory-school track before turning 21 remains unchanged. Accordingly, also the ranking of clusters when it comes to their relative importance in this respect, as presented in Table 5.3 above,

stays the same. The previously outlined relation between family background, measured by parental educational and income levels, and the child's pensioner status at age 26 weakens after the inclusion of the ten clusters but remains in many cases significant in magnitude. This holds true especially for Norway while the link to the family situation weakens even further for Finland. The most outstanding change in results occurs for Denmark, where the influence of parental education and income becomes almost as weak as for Finland after the inclusion of the ten trajectory clusters. This weakening in the role of family background indicates that there is a non-negligible relation between family background and the child's post-compulsory-school trajectory especially in Denmark. In Norway, both factors continue to be strongly and independently linked to the child's labour market status at age 26. In Finland, finally, post-compulsory-school trajectories stand out as far more important than family background as measured by parents' education and income.

The outcome is more or less the same when adding further information on the parents' pensioner status (for Denmark and Finland). The link between the parents' pensioner status and the child's pensioner status at age 26 weakens but does not disappear. More precisely, while the link to the father's pensioner status turns close to negligible, the mother's pensioner status remains a family background factor of notable importance. All in all, these findings thus imply that the family-situation-related patterns outlined in Section 5.5 do become weaker when adding information on the child's post-compulsory-school trajectory up to age 20, but are in certain respects still of considerable relevance when trying to understand the mechanisms underlying the child's pensioner status at age 26.

As a final exercise, we delete from our analysis all cohort members who were – temporarily or permanently – on disability benefits when aged 16 to 20. This means that we merely retain those 26-year-old pensioners who encountered problems of ill-health or disability only after turning 21. Naturally, one consequence of this re-definition of our target group is that the early pensioner-dominated track (cluster 9) disappears for all three countries. Simultaneously the number of 26-year-old pensioners in our cohort drops from 787 to 501 for Denmark, from 1,060 to 143 for Finland and from 1,043 to 831 for Norway. Put differently, of those young people having pensioner status at age 26 a considerable number started experiencing serious ill-health or disability already before turning 21. This holds true especially for Finland with only 13.5% of the cohort's 26-year-old pensioners left after this deletion. For Denmark, on the other hand, almost 64% are retained and for Norway as much as close to 80%.

These percentages show that notably in Denmark and Norway, a substantial share of those young people ending up as pensioners at age 26 experience serious health problems only after age 20. The question then is whether or not differences in early post-compulsory-school trajectories (not involving disability benefit experiences) and family background play a role also in their case. Our results imply that they do. For Norway, the change in results from excluding young people having been on disability benefit already before turning 21 is minor: the strength of family background remains virtually intact while the role of the different trajectory clusters weakens only slightly with no re-ordering of clusters compared to the situation outlined in Table 5.3. This is only to be expected in view of the slight reduction in the target group after deletion of those having encountered health problems or disability already before age 21.

The outcome is similar for Denmark with respect to trajectory clusters: a slightly weakened impact but no change in relative importance across clusters. The role of family background remains weak except for the mother being on pension benefits. The same findings with respect to the family situation are obtained for Finland. However, in contrast to Denmark and Norway, the role of post-compulsory-school trajectories changes quite remarkably when focusing on those 26-year-old Finnish pensioners who started experiencing health problems only after age 20. In particular, the link to pensioner status at age 26 turns weak for a majority of the trajectory clusters. The only outstanding exceptions are the inactivity (cluster 10) and student–inactivity–student (cluster 3) tracks. However, these findings should be contrasted against the fact that excluding all young people with serious health problems before turning 21 leaves us with a very small number of young people with, as it seems, very specific kinds of problems.

5.7 Financial incentives and the pension awarding process

A crucial element in the debate about disability pensions is the behaviour of agencies and the process associated with awarding these pensions. Hence, one way to halt the increasing disability beneficiary caseload would be to try to influence the agencies and institutions awarding the pensions.

In contrast to the other Nordic countries, Danish municipalities can influence the awarding of disability pensions. While the municipalities pay a share of social assistance expenditures, the state finances most of

the expenditure related to disability pensions. Indeed, empirical investigations for Denmark reveal differences in the propensity of municipalities to award disability pensions (e.g. Kolodziejczyk *et al.*, 2010). Municipalities with a high propensity have, as a consequence, been reproached for not doing enough to prevent people from transiting to disability pensions.

We try to shed further light on this topic by adding to our statistical model information on municipality affiliation for our 26-year-old pensioners in the Danish cohort. Our results point to significant cross-municipality differences in the numbers of these 26-year-old pensioners.⁷⁸ The outcome is thus in line with previous findings for Denmark. However, this procedure raises questions of a measurement error problem with respect to municipality affiliation. For the outcome to be reliable there needs to be a close connection between transition to pensions and population at risk. It is not evident that municipality affiliation measured at age 26 provides a sufficiently close link between these two occurrences. As an alternative we measure pensioner status at age 26 and municipality affiliation at age 16. Now there is no longer a significant difference in the numbers of 26-year-old pensioners between municipalities, implying that there is no difference across municipalities in their propensity to award disability pensions.

The municipality of Copenhagen provides an illustrative example. In 2003, the pensioner ratio at age 26 was 0.31, which was substantially below the average ratio (1.1%) of the country. Hence, Copenhagen comes out as a municipality with a low propensity to award disability pensions (cf. e.g. Nielsen, 2013; Kolodziejczyk *et al.*, 2010; Dansk Arbejdsgiverforening, 2013). When municipality affiliation is measured at age 16, the share of 26-year-old pensioners increases to 1.16, which is slightly above the country average. The main reason for this dramatic change is a substantial increase in the denominator of the ratio when using age 26 instead of age 16 as the point of reference: the size of the youth cohort residing in Copenhagen increases from 2,070 at age 16 to 9,656 at age 26. This is mainly due to a strong inflow of students to Copenhagen coupled with the fact that students are expected to have a relatively low probability to transit to disability pensions.

⁷⁸ Full estimation results concerning cross-municipality differences are presented in the Appendix of this chapter (Table A4). Note that these results refer to an earlier cohort, turning 16 in 2003. Similar calculations for the cohort turning 16 in 1998 provides similar but weaker support for the conclusions made in this section.

5.8 Concluding remarks and discussion

This chapter has tried to shed new light on young pensioners in the Nordic countries and also on mechanisms that are likely to strongly influence the probability of youngsters ending up as disability pensioners already when young adults. More precisely, we have analysed and compared the situation in three Nordic countries and examined the role of two major sets of potentially influencing factors. The first set relates to the family situation when the child turns 16. The second set covers the young persons' experiences after completing basic education up to age 20. These experiences are approximated by means of post-compulsory-school trajectories showing the main activity of the young person at each age covered (16 to 20). By this split of underlying mechanisms we presume that actions of 16-year-olds do not affect to any significant extent their family situation, whereas their choices and preferences concerning early post-compulsory-school activities may have important consequences for their labour market, including pensioner, status in the short and longer term.

Our analyses concern one specific cohort of young people. They turned 16 in 1998 and we follow them up to the year they turned 26 (in 2008). This means that their labour market careers started in a period of strong economic growth, which should have improved their employment prospects. Since we are interested in young pensioners, we focus in our analyses on those young people in our cohort who had pensioner status when turning 26. These young people represent 1.6% of the Danish and Finnish cohorts and 2.1% of the Norwegian cohort. The distribution of these young pensioners across genders is close to even, as is also the gender distribution for all the other pensioner-related dimensions examined in the chapter. The gender aspect is therefore not given specific attention in our analyses.

According to our results, both family background and early post-compulsory-school activities are linked to the child's probability of having pensioner status at age 26. While these two mechanisms are to some extent closely related, both continue to have an impact on the child's labour market outcome at age 26 also when accounted for simultaneously. Moreover, this overall pattern is not changed when splitting our group of 26-year-old pensioners into those having experienced ill-health or disability already before turning 21 and those having encountered serious health problems only after age 20. A significant role is still retained for both intergenerational transmission of pension dependence and school-to-work transitions entailing risky elements.

These results are interesting also from a policy point-of-view. Policy interventions can be made both to improve the family situation and to secure a successful transition from school to work. Our findings imply that much is still to be done in these respects when it comes to young people with ill-health or disabilities. In particular, medical and vocational rehabilitation has a long and renowned tradition in the Nordic countries. But more recently notably vocational rehabilitation activities have also been criticized for not improving the employability and employment of the treated (e.g. Blomgren & Hytti, 2013; Härkäpää *et al.*, 2013; Lindh, 2013). Our results can be interpreted as lending further support to this contention. Moreover, major organisational changes in the way disability pensions are awarded, including the use of financial incentives, do not seem to have a major impact on the disability beneficiary case-load, as shown by our analysis of the Danish system.

However, our results also raise new questions of critical importance. Most notably, while we have concentrated on investigating the situation of those young people ending up as pensioners at age 26, there are obviously also young people not becoming young pensioners despite having a similar family background and similar post-compulsory-school experiences, including serious ill-health or disability. There are certainly several reasons for looking more closely also into this group of young people. However, of particular interest in this context are the mechanisms underlying their highly different labour market outcomes as compared to the young people that we have focused on in this chapter. Is there, for instance, a clear difference in the extent (what, how and when) to which these young people have participated in employability promoting activities?

5.9 References

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5.10 Appendix

Table A1: Estimation results in relation to parental education and income

	Denmark	Finland	Norway
Female	-0,002 (0.001)	-0.004*** (0.001)	0,002 (0,002)
Mother's education			
ISCED 1-2	0.006*** (0.001)	0.003* (0.001)	0.011*** (0,002)
ISCED 5-6	0,001 (0.001)	-0.003** (0.001)	-0,002 (0,002)
Father's education			
ISCED 1-2	0.007*** (0.002)	0,002 (0.001)	0.014*** (0,002)
ISCED 5-6	0,001 (0.001)	0,001 (0.001)	-0,002 (0,002)
Household income			
Low	0.010*** (0.001)	0.007*** (0.001)	0.020*** (0,002)
High	-0,002 (0.001)	-0,002 (0.001)	-0.003* (0,002)
Constant	0.008*** (0.001)	0.016*** (0.001)	0.020*** 0,002
<i>r</i> ²	0.004	0.002	0.008
<i>bic</i>	-64,241	-86,181	-32,289.63
N	44,749	65,866	50,791

Table A2: Estimation results in relation to parents' pensioner status

	Denmark 1	Denmark 2	Denmark 3	Denmark 4	Finland 1	Finland 2	Finland 3	Finland 4
Mother pensioner	0.027*** (0.005)		0.025*** (0.005)	0.019*** (0.005)	0.017*** (0.004)		0.016*** (0.003)	0.013*** (0.003)
Father pensioner		0.026*** (0.005)	0.022*** (0.005)	0.015** (0.005)		0.005* (0.002)	0.003 (0.002)	0.001 (0.002)
Female				-0.002 (0.001)				-0.004*** (0.001)
Mother's education								
ISCED 1-2				0.005*** (0.001)				0.003 (0.001)
ISCED 5-6				0.001 (0.001)				-0.003** (0.001)
Father's education								
ISCED 1-2				0.006*** (0.002)				0.002 (0.001)
ISCED 5-6				0.001 (0.001)				0 (0.001)
Household income								
Low				0.008*** (0.001)				0.007*** (0.001)
High				-0.002 (0.001)				-0.002 (0.001)
Constant	0.013*** (0.001)	0.013*** (0.001)	0.012*** (0.001)	0.008*** (0.001)	0.015*** (0.000)	0.016*** (0.001)	0.015*** (0.001)	0.015*** (0.001)
<i>r</i> ²	0.002	0.001	0.003	0.006	0.001	0	0.001	0.002
<i>bic</i>	-64,209	-64,175	-64,245	-64,291	-86,081	-86,044	-86,073	-86,111
<i>N</i>	44,749	44,749	44,749	44,749	65,834	65,834	65,834	65,834

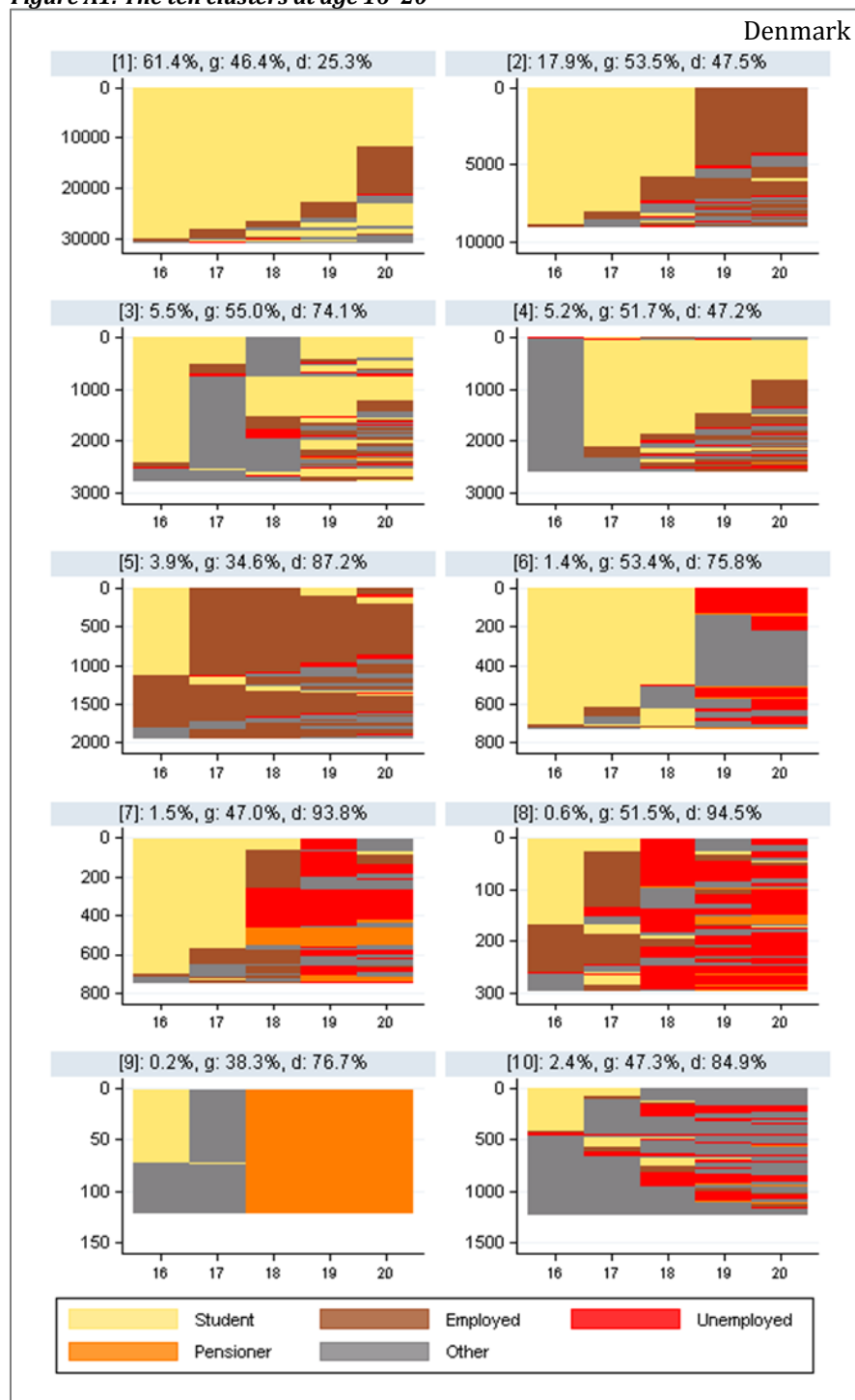
Table A3: Estimation results in relation to individual post-compulsory-school trajectories

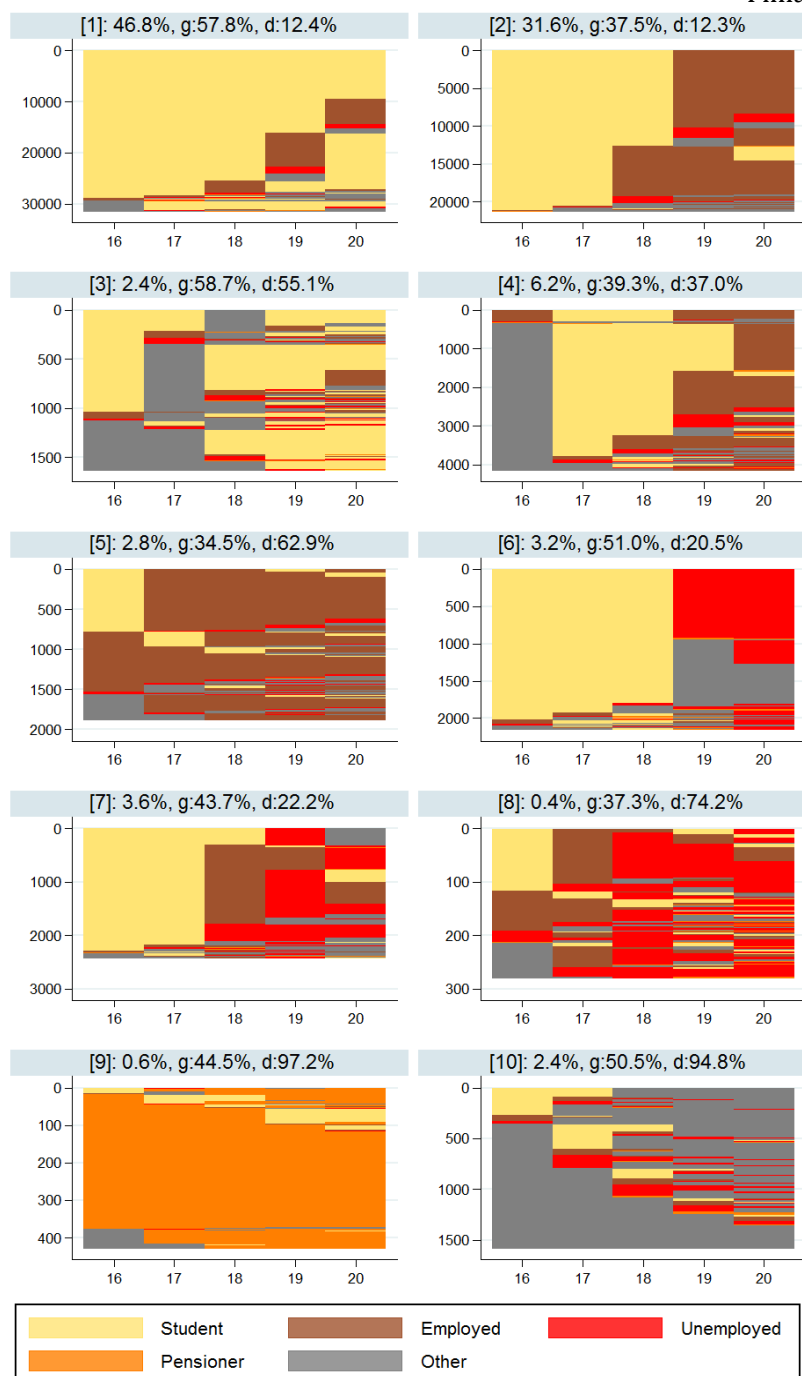
	Denmark 1	Denmark 2	Finland 1	Finland 2	Norway 1	Norway 2
Female	-0,002 (0,001)	-0,002 (0,001)	-0.004*** (0,001)	-0.004*** (0,001)	0,002 (0,002)	0,002 (0,002)
Mother's education						
ISCED 1-2		0,001 (0,001)		0 (0,001)		0.008*** (0,002)
ISCED 5-6		0 (0,001)		-0.002* (0,001)		-0,002 (0,002)
Father's education						
ISCED 1-2		0.003* (0,001)		0,001 (0,001)		0.010*** (0,002)
ISCED 5-6		0 (0,001)		0,002 (0,001)		-0,002 (0,002)
Household income						
Low		0.003* (0,001)		0.003** (0,001)		0.016*** (0,002)
High		0 (0,001)		-0,001 (0,001)		-0,002 (0,002)
Pathways						
2. Student-employment	0.004*** (0,001)	0.004*** (0,001)	-0.005*** (0,001)	-0.006*** (0,001)	-0.000 (0,002)	-0,002 (0,002)
3. Student-inactivity-student	0.009*** (0,002)	0.008*** (0,002)	0.024*** (0,004)	0.023*** (0,004)	0.019*** (0,005)	0.017*** (0,005)
4. Delayed-student-employment	0.006** (0,002)	0.006** (0,002)	0.010*** (0,002)	0.010*** (0,002)	0.057*** (0,009)	0.050*** (0,009)
5. Employment	0.010*** (0,003)	0.009** (0,003)	-0,002 (0,002)	-0,003 (0,002)	0.017* (0,010)	0,008 (0,010)
6. Student-disability-unemployment	0.081*** (0,011)	0.080*** (0,011)	0.015*** (0,003)	0.015*** (0,003)	0.067*** (0,007)	0.062*** (0,007)
7. Student-employment-disability	0.226*** (0,017)	0.225*** (0,017)	0.011*** (0,003)	0.010*** (0,003)	0.092*** (0,012)	0.083*** (0,012)
8. Employment-unemployment	0.156*** (0,024)	0.154*** (0,024)	0.064*** (0,016)	0.062*** (0,016)	0.198*** (0,049)	0.185*** (0,049)
9. Pensioner	0.877*** (0,031)	0.876*** (0,031)	0.896*** (0,014)	0.896*** (0,014)	0.459*** (0,093)	0.448*** (0,092)
10. Inactivity	0.132*** (0,012)	0.130*** (0,012)	0.062*** (0,007)	0.060*** (0,007)	0.105*** (0,012)	0.094*** (0,012)
Constant	0.004*** (0,001)	0,002 (0,001)	0.010*** (0,001)	0.010*** (0,001)	0.023*** (0,001)	0.016*** (0,002)
<i>r</i> ²	0.212	0.212	0.322	0.323	0.021	0.026
<i>bic</i>	-74,676	-74,631	-111,646	-111,607	-32,917.56	-33,102.77
<i>N</i>	44,749	44,749	65,866	65,866	50,791	50,791

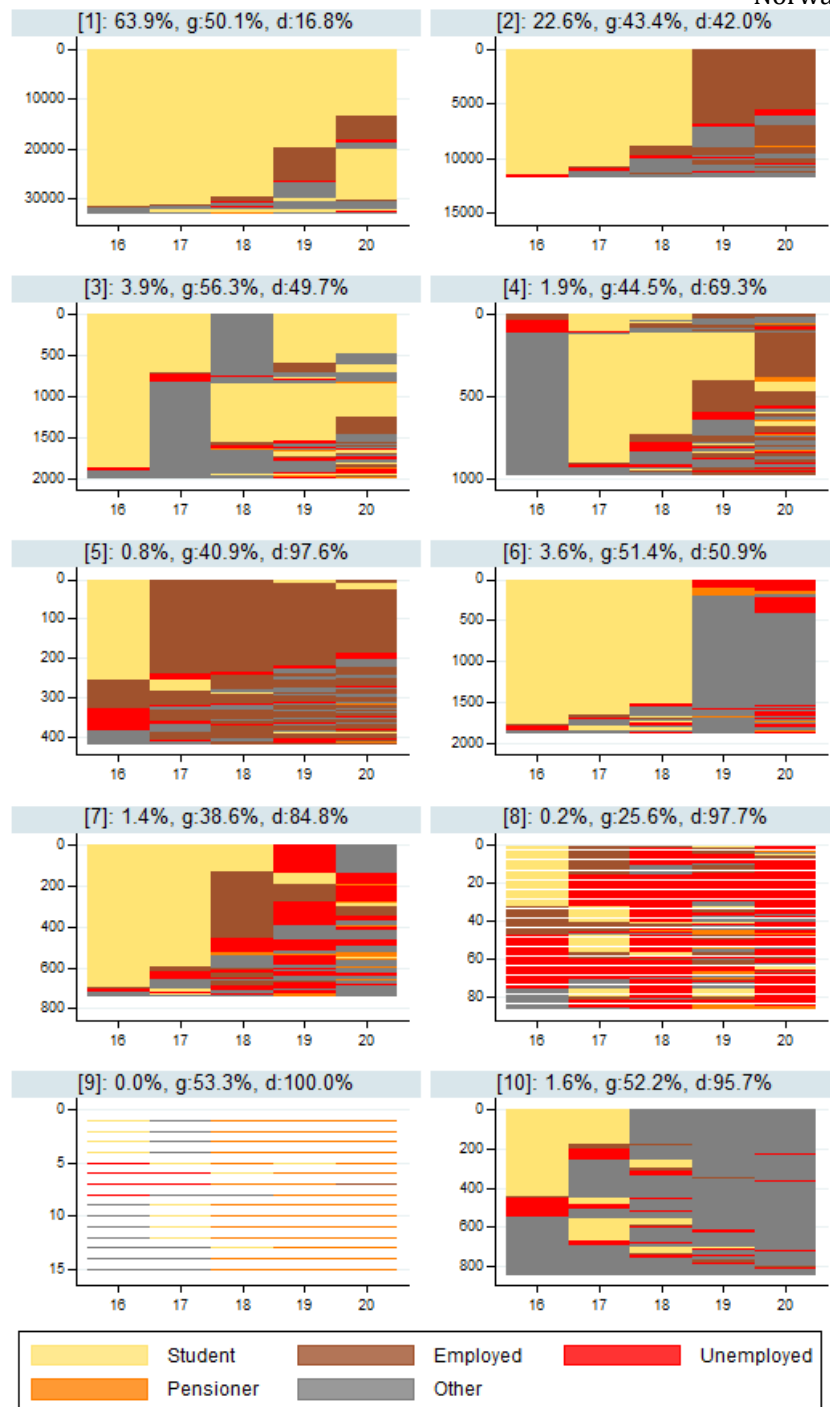
Table A4: Estimation results concerning cross-municipality differences

Municipality attachment at	Denmark	
	Age 26	Age 16
Constant	-0.004* (0.002)	0.002 (0.003)
Mother pensioner	0.014*** (0.002)	0.014*** (0.002)
Father pensioner	0.009** (0.003)	0.009*** (0.003)
Broken Family	0.009*** (0.001)	0.009*** (0.001)
Mother teenager	-0.001 (0.002)	-0.001 (0.002)
Female	-0.001 (0.001)	-0.001 (0.001)
Mother's education		
ISCED 1-2	0.002 (0.001)	0.002* (0.001)
ISCED 5-6	0.002 (0.001)	0.001 (0.001)
Father's education		
ISCED 1-2	0.003* (0.001)	0.003** (0.001)
ISCED 5-6	0.002 (0.001)	0.000 (0.001)
Mother's income		
High	0.005*** (0.001)	0.006*** (0.001)
Low	-0.001 (0.001)	-0.002* (0.001)
Father's income		
High	0.003** (0.001)	0.003** (0.001)
Low	0.000 (0.001)	-0.001 (0.001)
<i>Municipality dummies</i>	<i>Yes</i>	<i>Yes</i>
<i>r²</i>	<i>0.017</i>	<i>0.011</i>
<i>bic</i>	<i>-86,852</i>	<i>-86,508</i>
<i>N</i>	<i>51,547</i>	<i>51,547</i>
<i>Equality of municipality dummies, p-value</i>	<i>0.000</i>	<i>0.332</i>

Figure A1: The ten clusters at age 16–20







6. Early school leaving and labour market prospects

Karsten Albæk,⁷⁹ Rita Asplund,⁸⁰ Erling Barth⁸¹, and Kristine von Simson^{82,83}

6.1 Setting the stage

Young people spend time both in education and in the labour market. Especially in the Nordic countries, many young persons are engaged in both activities at the same time, that is, they are working while studying. However, they tend to follow quite divergent trajectories through school, and a remarkably large share has not completed secondary education by the time they get into their twenties. In this chapter, we look more carefully into the transition of young people from school towards the labour market and the statuses they go through during this transition process. In particular, we are concerned with the large variation in school-to-work pathways of young people leaving primary education (at age 16) up to age 20, and the potential link between these pathways and the young persons' subsequent activities at three points in time: at age 21, 26 and 31.

School completion, youth employment and youth unemployment are topics high on the policy agenda in most countries, as well as at the international level (see e.g. European Commission, 2012; OECD, 2010). Particular attention has for quite some time been paid to early school leavers and school drop-outs especially in view of growing skills demand

⁷⁹ Programme Leader at the Danish National Centre for Social Research (SFI).

⁸⁰ Research Director at the Research Institute of the Finnish Economy (ETLA).

⁸¹ Senior Researcher at the Institute for Social Research (ISF).

⁸² Researcher at the Institute for Social Research (ISF).

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in the labour market and early school-leaving being increasingly seen as a signal of future weak labour market attachment as well as social problems. Additionally, youth unemployment has in recent years been placed high up on the policy agenda by the fact that young people have been hardest hit by the financial and economic crisis (e.g. Scarpetta *et al.*, 2010; ILO, 2011 and 2013).

The Nordic countries are characterized by high educational attainment levels and also by high employment levels among young people. At the same time, however, we see high non-completion rates from secondary education, and most Nordic countries, notably Finland and Sweden, rank high in the distribution of youth unemployment rates in Europe. How can we reconcile these stylized facts, and what is the relationship between dropping out of school and subsequent employment and unemployment outcomes?

First we need to get the facts right, though. In order to sort out the relationship between education, employment, unemployment and inactivity (outside education and the labour market) we use figures calculated from the Labour Force Surveys, mostly as provided by the OECD. Next we compare early-leaving, drop-out and non-completion rates across the Nordic countries. Finally we link post-compulsory-school trajectories of young drop-outs when aged 16–20 to their outcomes at ages 21, 26 and 31 in terms of education, employment, unemployment and inactivity, using unique national register data on three youth cohorts from Denmark, Finland and Norway. A discussion of the main findings and their policy implications concludes the chapter.

6.2 Education, employment and NEETs

Table 6.1 gives key statistics on the activities of the youth population as reported by the OECD for the Nordic countries. These statistics are further compared to a small number of other countries.

Table 6.1: Education and employment among young people aged 15–24, per cent of total youth population, the Nordic countries and selected non-Nordic countries, 2007–2012

		Attended school	Employment ratio	Empl. ratio students	Empl ratio non-students	NEET rates
Denmark	2007	75.8	66.2	46.3	19.9	4.4
	2012	82.0	53.8	42.4	11.4	6.7
Finland	2007	75.1	36.9	19.8	17.1	7.8
	2012	73.5	35.7	18.1	17.6	8.9
Iceland	2007	71.5	70.0	14.9	55.1	4.8
	2012	77.1	57.1	9.0	48.1	6.2
Norway	2007	68.2	57.2	33.2	24.0	7.8
	2012	73.0	51.3	31.5	19.8	7.2
Sweden	2007	72.4	38.0	17.4	20.6	6.9
	2012	74.4	36.2	18.0	18.2	7.4
Germany	2007	70.9	45.4	25.5	19.9	9.2
	2012	70.7	46.3	25.1	21.2	8.1
Spain	2007	60.1	38.2	10.0	28.2	11.7
	2012	69.3	18.4	5.8	12.6	18.1
UK	2007	60.7	52.3	24.7	27.6	11.7
	2011	58.0	46.6	19.5	27.1	14.9
US	2007	57.3	52.2	21.4	30.8	12.0
	2012	60.5	44.2	18.6	25.6	13.9
EU	2007	66.5	36.3	14.3	22.0	11.5
	2012	67.5	32.3	13.3	19.0	13.6
OECD	2007	57.5	43.2	15.9	27.3	15.2
	2012	60.0	38.9	14.8	24.1	15.9

Notes: The reported ratios are percentages of the total youth population of the total youth population. The numbers are for the 1st quarter (UK 2011: 4th quarter) of the year. NEET = young people Not in Employment, Education or Training.

Source: OECD.

The first column of Table 6.1 shows the per cent of young people aged 15–24 who attended school in the first quarter of 2007 and 2012. School attendance in the Nordic countries is well above EU and OECD averages. Only in Finland, among the Nordic countries, did school attendance not increase from 2007 to 2012.

When looking at employment ratios for young people in the Nordic countries, we find particularly high employment rates in Denmark, Iceland and Norway, with Iceland reaching a youth employment ratio of 70% in 2007. Considerably lower employment ratios are observed for Finland and Sweden.

The next two columns report youth employment ratios separately for students who are in employment and employed non-students. Among the Nordic countries, Denmark and Norway stand out with a high share of students who are also working. Iceland, in turn, has a relatively high employment ratio among the non-students. The comparatively low employment ratios for young people in Finland and Sweden are for the most part a result of low employment ratios among students relative to

the situation in notably Denmark and Norway, but not in relation to the employment ratios of the two countries' non-students.

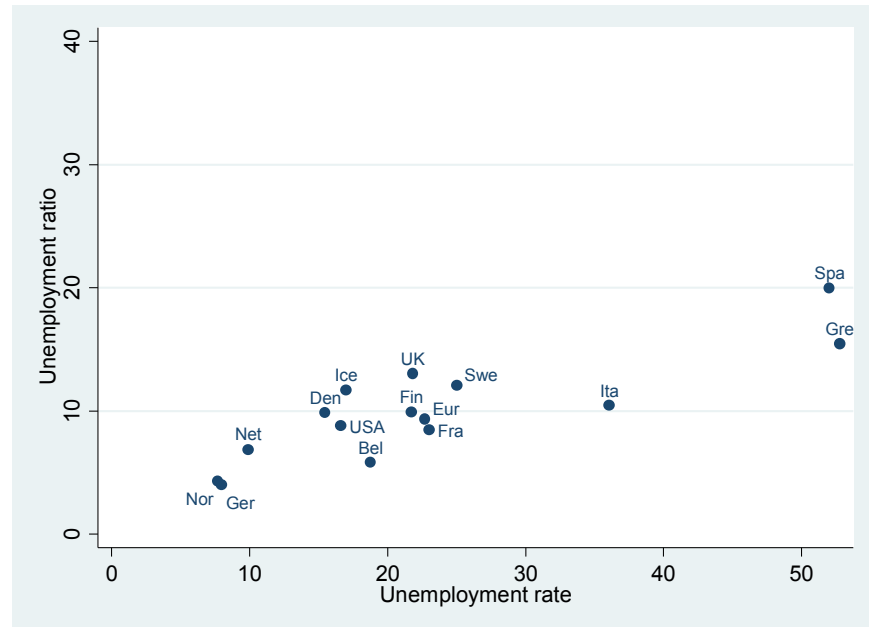
In 2007, the NEET rates ranged from 4.4% in Denmark to 7.8% in Finland and Norway. With the exception of Norway, all Nordic countries have seen an increase in the NEET rate between 2007 and 2012, now ranging from 6.7% in Denmark to 8.9% in Finland. However, together with Germany, all five Nordic countries have a NEET rate which is well below EU and OECD averages.

6.3 Youth unemployment

Young people are the first to be hit by increasing unemployment. They are new labour market entrants or typically employed on a temporary basis in business-cycle-sensitive jobs and, hence, among the first to suffer from cut-downs in the workforce or reductions in hiring rates. Figure 6.1 shows figures from the first quarter of 2012 for the Nordic countries as well as for a few non-Nordic countries. The horizontal axis gives the unemployment rate as a percentage of the labour force. We note that Sweden has a higher youth unemployment rate than the average for Euro countries (EUR), and that both Finland and Sweden have higher rates than the UK and the US.

The vertical axis, in turn, measures youth unemployment in relation to the whole youth population, that is, by means of the unemployment ratio. While 23% of the European youth labour force is unemployed, the unemployed young people constitute only 9.6% of the youth population. In terms of the unemployment ratio, however, all Nordic countries except Norway score higher than the average for Euro countries. In both Iceland and Sweden, youth unemployment is, in fact, higher than in Italy when measured by means of the unemployment ratio.

Figure 6.1: Youth unemployment rates and unemployment ratios, the Nordic countries and selected non-Nordic countries, 2012 (1st quarter)

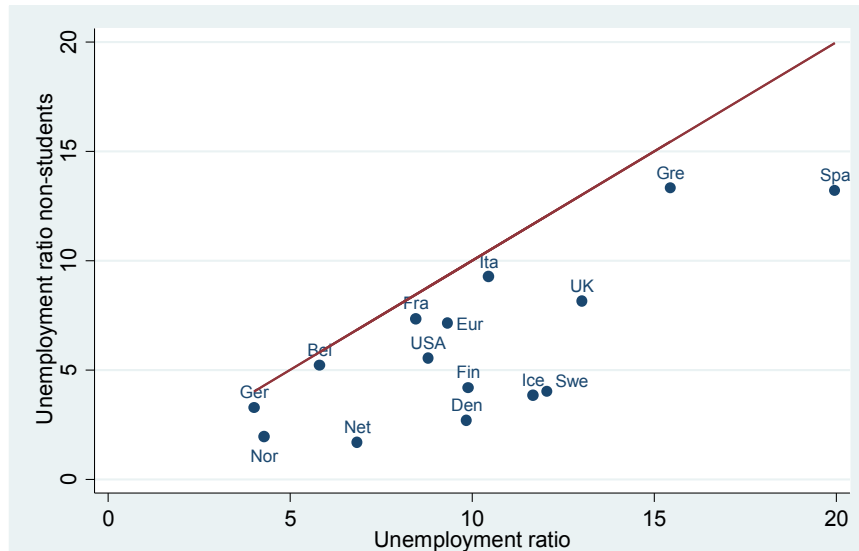


Notes: Unemployment rate = unemployed 15–24 year-olds in relation to the labour force of the age group. Unemployment ratio = unemployed 15–24 year-olds in relation to the whole population of the age group.

Source: OECD.

However, many of the young people recorded in the Labour Force Surveys to be unemployed are actually attending school and, moreover, typically on a full-time basis. Figure 6.2 shows what happens when we remove from the pool of young unemployed those young people who report studying as their main activity. What we are left with on the vertical axis of Figure 6.2 are unemployed young persons who are not attending school. For the Euro area as a whole, the youth unemployment ratio drops from 9.3% to 7.2% of the youth population. For the Nordic countries, the change is even larger. After this correction, all Nordic countries rank among those with the lowest level of youth unemployment (among the non-students).

Figure 6.2: Youth unemployment ratios with and without students, the Nordic countries and selected non-Nordic countries, 2012 (1st quarter)



Notes: Unemployment ratio = unemployed 15–24 year-olds in relation to the whole population of the age group. Unemployment ratio, non-students = unemployed 15–24 year-olds with studying not being their main activity in relation to the whole population of the age group. The red line shows the 45 degree angle.

Source: OECD.

The countries which fall the most below the 45-degree line added to Figure 6.2 are the ones with the largest proportion of unemployed youth who are also students. The pattern displayed in the figure thus arises from the fact that the unemployed young persons who are *not* at the same time attending school make up a smaller proportion in the Nordic countries compared to the other countries in the figure. In all Nordic countries, the proportion of unemployed young people who are not also in school is less than one-half, and as small as one-third in Sweden.

6.4 Drop-out and completion rates for secondary education

Completion and non-completion (drop-out) from secondary education can be measured in a multitude of ways. Markussen (2010), for instance, reviews studies measuring drop-out rates for the Nordic countries. He thereby emphasizes the lack of comparable information across countries, which is due both to different conceptual issues and differences

across countries in the organization of secondary education. Table 6.2 presents selected numbers gathered from international sources.

Table 6.2: Completion, early leaving and drop-out rates for the Nordic countries

		Denmark	Finland	Iceland	Norway	Sweden
Upper secondary graduation rates						
< 25 year-olds	2011	79.4	85.0	70.4	77.7	75.4
≥ 25 year-olds	2011	10.2	11.0	17.4	11.8	0
Total		89.6	96.0	87.8	89.5	75.4
Early school leavers	2007	12.9	9.1	23.2	18.4	8.0
(Eurostat)	2012	9.1	8.9	20.1	14.8	7.5
School drop-outs	2009	14.2	9.7	55.2	20.3	7.4
(OECD scoreboard for youth)						

Notes: The first lines show expected graduation rates before and after the age of 25 as reported by the OECD *Education at a Glance*. “Early school leavers” (Eurostat) refer to persons aged 18–24 fulfilling the following two conditions: first, the highest level of education or training attained is ISCED 0, 1, 2 or 3c short; second, respondents declared not having received any education or training in the four weeks preceding the survey (numerator). The denominator consists of the total population of the same age group, excluding no answers to the questions “highest level of education or training attained” and “participation in education and training.” Both the numerators and the denominators come from the EU Labour Force Survey (Eurostat). The OECD Scoreboard for youth: share of youth not in education and without an ISCED 3 degree.

Graduation rates from upper secondary school before age 25 are highest in Finland. When adding graduation rates completed at age 25 or later, the expected lifetime graduation rate from upper secondary school is close to 90% for all Nordic countries, except Sweden. In terms of early school leavers, Denmark, Finland and Sweden stand out with small rates. Using the drop-out rates of the OECD, Sweden has the lowest drop-out rate, closely followed by Finland. Irrespective of the measure used, non-completion is relatively high in Norway and especially in Iceland.

6.5 Moving from a static to a dynamic approach

A major shortcoming of the indicators reported above is that they illustrate the youth situation at a given point in time. Put differently, they conceal the dynamics behind these numbers, that is, the fact that young people are highly mobile between main activities especially in the years after completing compulsory education. Accordingly it is of utmost importance to try to capture these dynamics in the lives of young people. In the following we try to illustrate these dynamics and their implications for non-completion of secondary education and subsequent labour market outcomes. This exercise is undertaken for three Nordic countries: Denmark, Finland and Norway.

Our analysis focuses on three full cohorts of young people who turned 16 in 1993, 1998 and 2003, respectively. These young people are followed over the years on an annual basis up to age 21 (all cohorts), age 26 (the two oldest cohorts) and age 31 (the oldest cohort). The national datasets on which our analysis is based are compiled from register data administered by the Statistical Bureau in the respective country. The datasets contain yearly recordings of the young persons' labour market status, as well as detailed individual and parental background information. Taken together, this allows us to uncover patterns and differences in post-compulsory-school trajectories and subsequent labour market outcomes across both cohorts and countries.

The following main activities are defined in our data: studying, employed, unemployed, disability beneficiary and a residual activity called "other," which mainly consists of young people not found in any of the broad administrative registers from which our national datasets are compiled. If a young person appears in several registers at the same time, the following priority is given: activities in the labour force (employed/unemployed) override activities outside the labour force (disability beneficiary and "other"). There is one important exception to this rule, however: those young people registered as full-time students are always treated in our datasets as students, even when they are in the employment or the unemployment register while studying.

6.5.1 Non-completion of secondary education

In our analysis, we define non-completion as not having completed secondary education by the year one turns 21 years-of-age. Instead of using the term "drop-out" or "early school leaver", which in this case would be somewhat misleading, we prefer to use in the following the term "non-completer" for those who still five years after completed compulsory education have no secondary-level degree. In other words, their only formal education by age 21 is primary education.

Table 6.3 reports non-completion rates for our three cohorts. Non-completion is highest in Denmark, with 38% of the 2003 cohort's young people not having completed secondary education by the age of 21. Finland has by far the lowest non-completion rate: in the 2003 cohort only about 18% had not completed secondary education by the age of 21. Norway falls in between but is much closer to Denmark than to Finland. The Norwegian rates are comparable to those reported by Falch and Nyhus (2011) and Bratsberg *et al.* (2010) while the Danish rates are comparable to those reported by Jakobsen and Liversage (2010). Our

findings are also comparable to those of Bäckman *et al.* (2011), who compare drop-out rates across the Nordic countries, measured seven years after the school start. They find drop-out from vocational tracks to be highest in Norway and the lowest in Finland.

Table 6.3: Non-completion rates for three youth cohorts

	Denmark	Finland	Norway
Cohort 1	34.7	16.0	28.0
Cohort 2	39.0	19.7	28.7
Cohort 3	38.3	18.4	32.2

Notes: Non-completion is defined as having reached 21 years-of-age without completing secondary education. Cohort 1 turns 16 during 1993, cohort 2 during 1998 and cohort 3 during 2003.

Source: Authors' own calculations.

How should we square these numbers with the high expected upper secondary completion rates reported by the OECD (Table 6.2 above)? The answer is that a sizeable fraction of young non-completers continues in school on a full-time basis, and eventually completes secondary education only later on, that is, after age 21. Table 6.4 therefore shows percentages of non-completers having completed their secondary education by the time they are 26 or 31 years-of-age.

Table 6.4: Completion of secondary education by age 26 and 31 among non-completers

Age	Denmark		Finland		Norway	
	26	31	26	31	26	31
Cohort 1	41.6	51.8	25.4	34.7	41.9	50.1
Cohort 2	42.9		29.7		29.1	

Notes: See Table 6.3 above.

Source: Authors' own calculations.

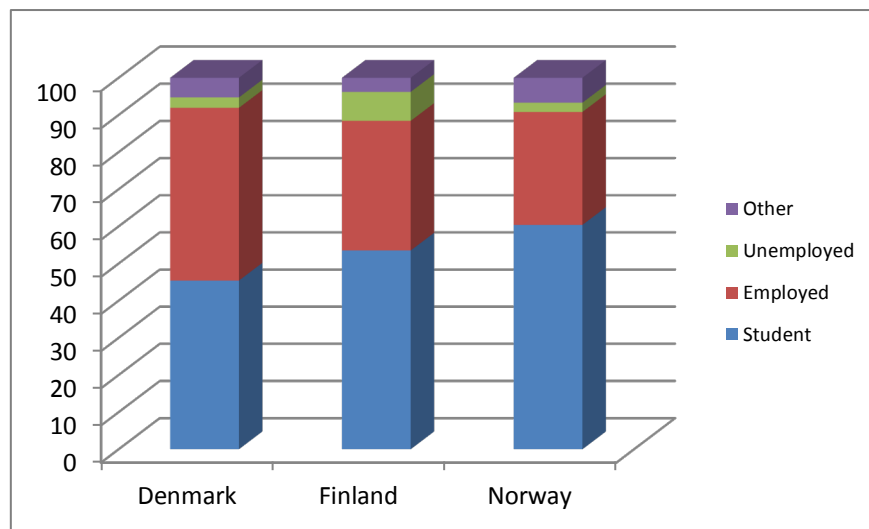
In Denmark and Norway, more than one-half of the non-completers from the 1993 cohort had eventually completed secondary school by the time they turned 31. More than 40% of them had actually come around to complete secondary school before they turned 26. While this share is repeated for the Danish 1998 cohort, it is remarkably lower for the Norwegian 1998 cohort and actually down at the same low level as for the Finnish 1998 cohort. On the whole, the completion rates for non-completers in Finland remain comparatively low with only about one-third of the 1993 cohort non-completers having completed a secondary-level degree by the time they turned 31. The fact that the overall non-completion rates are markedly lower in Fin-

land than in Denmark and Norway (Table 6.3 above) can only explain part of this difference.

6.5.2 The next 10 years

The next two figures illustrate the distribution of main activities at age 21 for two separate groups: completers of secondary education (Figure 6.3a) and non-completers of secondary education (Figure 6.3b) five years after leaving compulsory education (at age 16). We note that the distribution of main activities is highly different for non-completers and completers in all three countries. More than 85% of all 21-year-old completers are either still studying or working. The share of full-time students is by far highest in Norway while the share of employed is highest in Denmark. The share of completers not in education or employment (so-called NEETs) is small in all three countries.

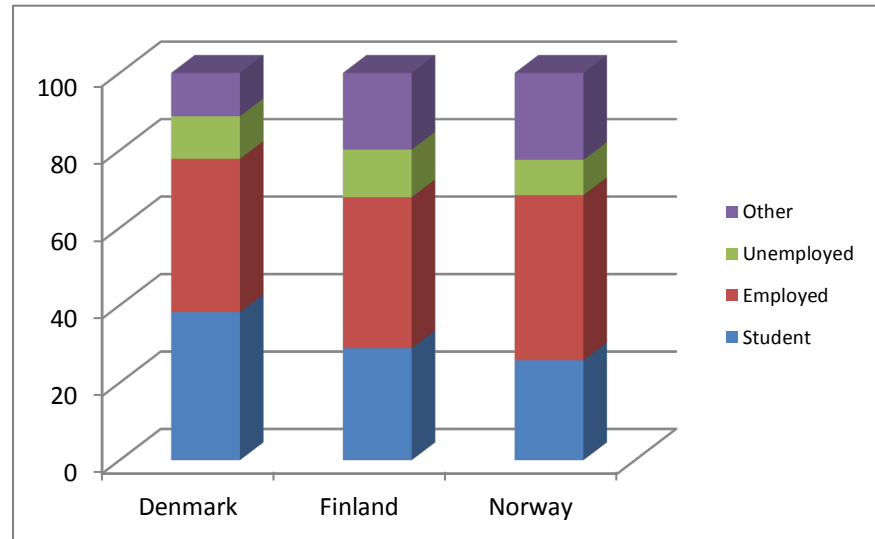
Figure 6.3a: Main activities at age 21 for completers of secondary education



Notes: Completion is defined as having completed secondary education by age 21. For definitions of the four main activity groups, see the text.

Source: Authors' own calculations based on pooled information on the three youth cohorts under study.

Figure 6.3b: Main activities at age 21 for non-completers of secondary education



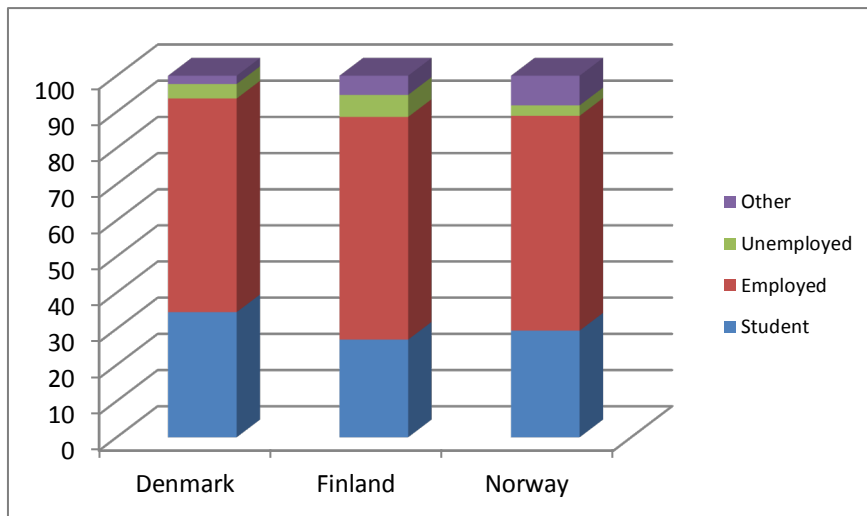
Notes: Non-completion is defined as having reached 21 years-of-age without completing secondary education. For definitions of the four main activity groups, see the text.

Source: Authors' own calculations based on pooled information on the three youth cohorts under study.

The most striking feature of Figure 6.3b is that the share of non-completers not in school or employment is significantly higher than for the category of completers. Nevertheless, we see that over 70% of the Danish non-completers and more than 60% of the Finnish and Norwegian non-completers are either full-time students or employed at age 21.

Next we pick up these completers and non-completers at age 26. This results in the distributions of main activities shown for completers in Figure 6.4a and non-completers in Figure 6.4b. Among the completers, employment has now clearly taken over as the dominant activity. Almost 95% of the Danish completers are either in school or at work at this age. The corresponding share among both Finnish and Norwegian completers is almost 90%.

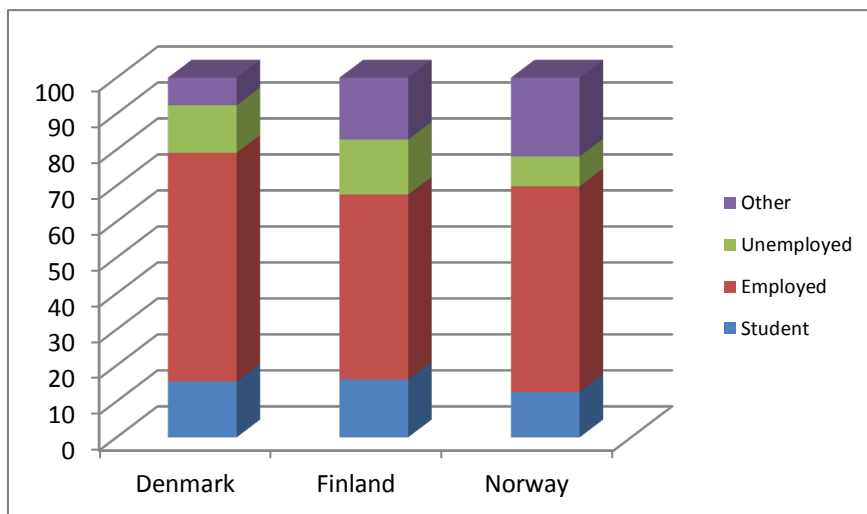
Figure 6.4a: Main activities at age 26 for completers of secondary education



Notes: See Figure 6.3a above.

Source: Authors' own calculations based on pooled information on the three youth cohorts under study.

Figure 6.4b: Main activities at age 26 for non-completers of secondary education



Notes: See Figure 6.3b above.

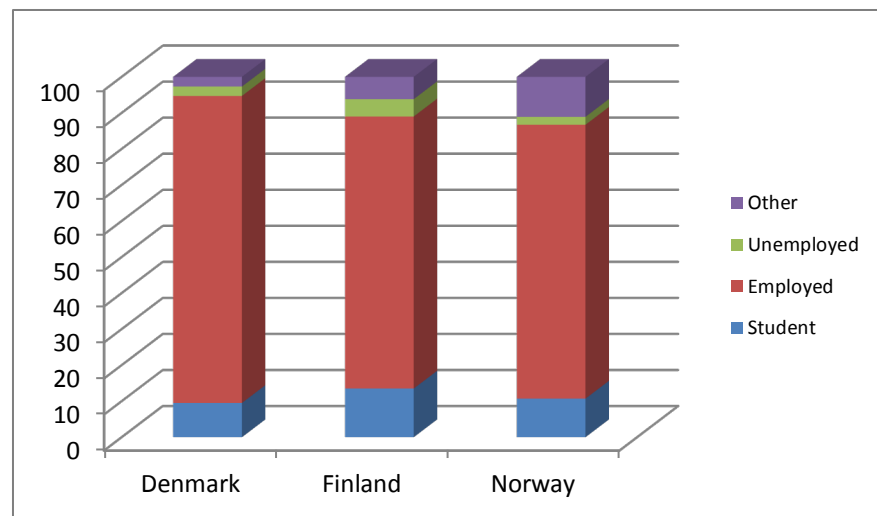
Source: Authors' own calculations based on pooled information on the three youth cohorts under study.

Among the non-completers of age 26, the total share in either education or employment is close to 80% for Denmark and almost 70% for Finland and Norway. Put differently, in Finland and Norway just over 30% of the non-completers are either unemployed or in activities outside education

and working life. The fraction of inactive 26-year-old non-completers is clearly highest in Norway.

Finally, at age 31 about 95% of the Danish completers are either employed or still in education (Figure 6.5a). In Finland, this share is close to 90% and in Norway about 87%. At the age of 31, employment is the overwhelmingly most typical main activity among completers.

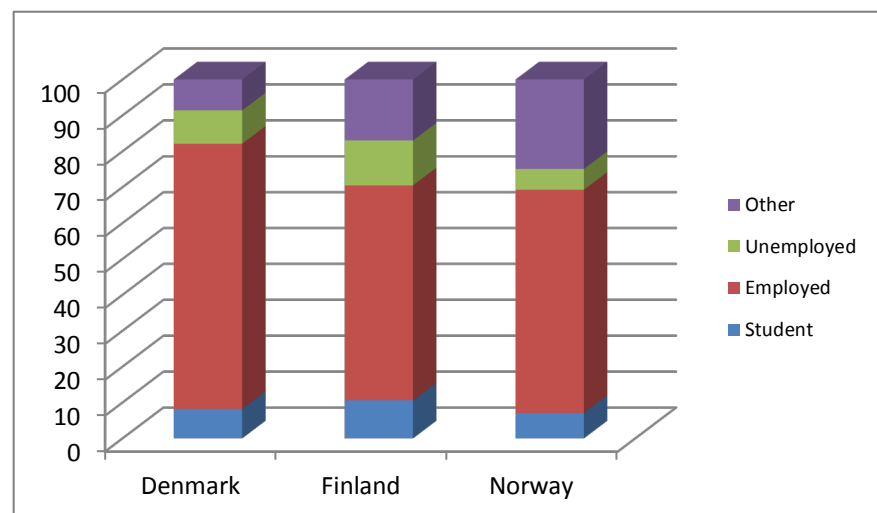
Figure 6.5a: Main activities at age 31 for completers of secondary education



Notes: See Figure 6.3a above.

Source: Authors' own calculations based on pooled information on the three youth cohorts under study.

Figure 6.5b: Main activities at age 31 for non-completers of secondary education



Notes: See Figure 6.3b above.

Source: Authors' own calculations based on pooled information on the three youth cohorts under study.

Even among the 31-year-old non-completers, some 82% are employed or studying in Denmark with the corresponding share being almost 70% in the other two countries. However, the Norwegian share of inactive non-completers remains the highest, which is consistent with the results reported by Bäckman *et al.* (2011). On the whole, not much seems to have changed in these shares compared with the situation at age 26.

The conspicuous “success rates” in terms of education or employment observed also for non-completers could be taken to indicate that, in the last resort, many of them fare reasonably well in the labour market as young adults. The highest success rates are obtained for Denmark. The difference in non-completer outcomes between Denmark and Finland could then be interpreted as a result of notable cross-country differences in the composition of the group of non-completers. The “hard core” of non-completers, that is, young people with proportionally weak labour market prospects, tend to drop out from education at an early age in principally any country. If the number of non-completers increases, this most likely implies that also young people with less serious problems and, hence, with an obviously closer labour market attachment, are for some reason shifting into the group of non-completers. If this is the case, then the overall size of the group of non-completers could also tell us something about the composition of non-completers, for which reason we would expect Danish non-completers to do better on average. However, this interpretation does not get support when comparing Finland to Norway: a similar difference in non-completion rates does not result in different success rates of Finnish and Norwegian non-completers. Moreover, even in the case of relatively high employment rates also among non-completers, previous research has shown that there is a large and significantly negative wage differential between employed non-completers and employed completers (see Bratsberg *et al.*, 2010).

6.6 Typical pathways through secondary education

Finally we take a closer look into the pathways through secondary education for each of our three countries under study. For these purposes, we classify the pathways through school – from age 16 to 20 – into a total of 16 categories based on two criteria: how long they stay in school and their main activity after completion. Table 6.5 shows these typical trajectories.

The numbers in the column labelled “Typical paths” indicate the sequence of main activities over these five years, starting at age 16 and ending at age 20. Each number signifies a main activity: 1 stands for full-time student, 2 for being employed, 3 for being registered as unemployed, 4 for being on disability or related benefits and 5 for being in other activities (basically not in any administrative register). If registered for several main activities, the internal ordering of the numbers shows the priority given to each of them; if the young person is a full-time student but registered in our data as unemployed, s/he is (re-)coded with a 1; if s/he is registered as unemployed but also receives an ill-health-related benefit, the coding is according to unemployment (3), and so on. The sequence of the numbers, in turn, represents the year in which the activity took place. For instance, the first two paths under the heading “Work” (11122 and 11222) include young people who continue in school during the first three or two years after completed compulsory education, and work in the next two or three years. There are, in reality, more than 3,000 possible combinations of pathways for young people during these first five post-compulsory-school years. Finally, in constructing the 16 trajectories displayed in Table 6.5, we have focused on pathways that represent typical trajectories for secondary-level non-completers. Those cohort youngsters who do not fit straight into one of these 16 pathways are allocated to the pathway that looks most similar to the one they have actually followed after completed compulsory education.

Table 6.5: Typical pathways for secondary-level non-completers, per cent of non-completers who follow these or highly similar trajectories from age 16 up to age 20

Main activity after leaving education	Drop-out after	Typical pathway	Denmark	Finland	Norway
Continue in education	5 years	[11111]	34.6	21.6	30.3
	5 years, late starter	[51111]	4.0	13.5	6.2
Employment	3 years	[11122]	10.6	11.1	14.6
	2 years	[11222]	12.3	8.8	9.4
	1 year	[12222]	9.9	4.4	2.7
	Non-starter	[52222]	4.2	6.2	0.9
Unemployment	3 years	[11133]	3.0	3.5	4.5
	2 years	[11333]	2.8	3.7	3.0
	1 year	[13333]	1.3	5.1	1.9
Disability beneficiary	3 years	[11144]	0.3	0.5	1.5
	2 years	[11444]	0.6	0.2	0.3
	1 year	[14444]	0.9	2.3	0.1
Other (inactive)	3 years	[11155]	5.1	7.4	13.3
	2 years	[11555]	3.7	2.2	6.0
	1 year	[15555]	3.9	1.7	3.5
	Non-starter	[55555]	2.7	7.9	1.7

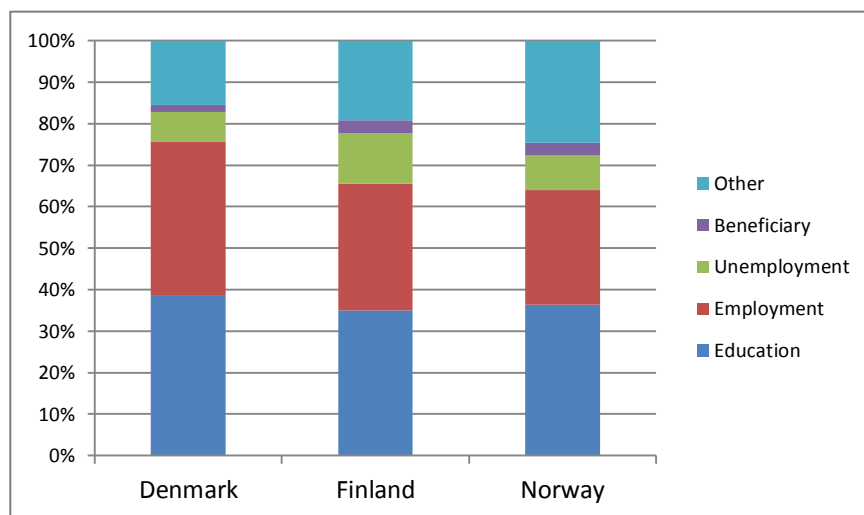
Notes: Late starter refers to year spent in inactivity between primary and secondary education.

Non-starter indicates that the young person never continued in secondary education.

Source: Authors’ own calculations based on pooled information on the three youth cohorts under study.

In a final step, we allocate these 16 non-completer pathways into four broad groups illustrating the young person's main activity after leaving education: remains a full-time student (Continue in education), starts working (Employment), becomes unemployed (Unemployment), is awarded disability or similar benefits (Disability beneficiary), or moves into some other form of inactivity (Other). In Table 6.5, the different pathways within each group differ from each other basically with respect to how long the young person stays in secondary education before s/he starts doing something else. Figure 6.6 illustrates the distribution of these broad groups by country.

Figure 6.6: Distribution of typical pathway groups for 16-to-20-year-old non-completers, by country



Notes: The shares are aggregates calculated based on the information provided in Table 6.5.
Source: Table 6.5.

Between 35 (Finland) and 40 (Denmark) per cent of the non-completers spend virtually all of the years from age 16 up to age 20 as full-time students. In other words, they typically go to school but nonetheless do not succeed in completing a secondary-level degree. In Denmark, about 35% of the non-completers spend most of the remaining years (out of the five years up to age 20) in employment. In Finland and Norway, this share is somewhat lower with between 25 and 30% of the non-completers following typical work-related paths. Note, though, that we here overlook the “quality” of these employment spells. For Finland, for instance, employment also captures time spent in active labour market programs provided that they involve an employment contract.

The largest group of non-completers registered as unemployed is observed for Finland. Along with Norway, Finland also has more young people on disability benefit trajectories than Denmark (see further Chapter 5 of this report). The largest cross-country difference, however, occurs with respect to the group of non-completers' post-compulsory-school trajectories dominated by "other" activities, that is, time spent outside education and the labour market. In Norway, approximately one in four non-completer follows these types of rather risky trajectories. In Finland, the corresponding share is about 19% and in Denmark around 15%.

6.6.1 *Pathways through education and labour market outcomes at age 26*

Table 6.6a reports the difference in the probability for non-completers, as compared to completers, of being in education at age 26 depending on the post-compulsory-school trajectory followed by the non-completer when aged 16 to 20. In calculating these probabilities, we have accounted for differences in gender and cohort (whether the young person belongs to the 1993, 1998 or 2003 cohort, as the three cohorts are pooled in our analysis), as well as in parental background measured by parental education and wage-income.

Table 6.6a: Non-completers' probability of studying at age 26, by main activity after leaving school; difference in probability when compared to completers

Main activity after leaving school	Drop out after	Typical pathway	Denmark	Finland	Norway
Continue in education	5 years	[11111]	-0.13	-0.03	-0.10
	5 years, late starter	[51111]	-0.09	-0.05	-0.14
Employment	3 years	[11122]	-0.12	-0.08	-0.11
	2 years	[11222]	-0.14	-0.11	-0.20
	1 year	[12222]	-0.16	-0.11	-0.22
	Non-starter	[52222]	-0.20	-0.13	-0.18
Unemployment	3 years	[11133]	-0.13	-0.07	-0.16
	2 years	[11333]	-0.15	-0.07	-0.22
	1 year	[13333]	-0.11	-0.11	-0.17
Disability beneficiary	3 years	[11144]	-0.01	-0.15	-0.08
	2 years	[11444]	-0.10	-0.19	-0.13
	1 year	[14444]	-0.14	-0.23	-0.06
Other (inactive)	3 years	[11155]	-0.05	-0.05	-0.08
	2 years	[11555]	-0.10	-0.07	-0.11
	1 year	[15555]	-0.10	-0.04	-0.16
	Non-starter	[55555]	-0.15	-0.09	-0.12

Notes: For explanations, see Table 6.5 and the text. A negative sign implies a weaker probability compared to completers. Low (high) absolute numbers indicate a small (large) difference to completers.

Source: Authors' own calculations based on pooled information on the three youth cohorts under study.

The results imply that all groups of non-completers have a lower probability of being a student at age 26 as compared to completers (all numbers have a negative sign). Not surprisingly, the non-completer groups with the highest probability of being a student at age 26 are those young people who stayed longest in education (their probability compared with completers is negative but closest to zero). A delayed start in secondary education slightly weakens this probability for Finnish and Norwegian non-completers but not for Danish ones. The non-completers with the lowest probability of being a student at age 26 followed work-dominated trajectories already before turning 21. Indeed, the earlier the non-completer started working after completed compulsory education, the less likely s/he is in education at age 26, although this pattern is not equally evident for Norway as for Denmark and Finland. While there is no such clear-cut pattern for non-completers moving at some stage into registered unemployment, this outcome is most likely due to a relatively small number of young people following these tracks. Accordingly the results with respect to unemployment should be interpreted with some caution.

Young people experiencing serious health problems are typically not only non-completers but also belong to those who have a low probability of returning to education. Again we refer to our results presented in Chapter 5 of this report. The last rows in Table 6.6a, finally, reflect considerable heterogeneity among those young non-completers who follow post-compulsory-school trajectories dominated by time spent in inactivity. While many of these young people show a high probability of having returned to education by the time they turn 26, this probability declines rapidly with the years spent in secondary education before dropping out.

Table 6.6b presents corresponding information on differences between non-completers and completers but now in terms of employment probabilities at age 26. Non-completers having followed work-dominated post-compulsory-school trajectories before turning 21 are typically much more likely than completers to be employed also when turning 26. This holds true especially for Finland. For those having followed educational tracks, there is virtually no difference in employment probabilities at age 26 between completers and non-completers. By and large, this holds true also for those having experienced unemployment spells already before turning 21. Not surprisingly, non-completers having spent time on disability benefits or in inactivity already at a young age are much less likely to be employed at age 26 as compared to completers. While the gap in employment probability increases in both Finland and Norway with the early years spent on disability benefits or in inactivity, this is not necessarily so for Danish non-completers.

Table 6.6b: Non-completers' probability of being in employment at age 26, by main activity after leaving school; difference in probability when compared to completers

Main activity after leaving school	Drop out after	Typical pathway	Denmark	Finland	Norway
Continue in education	5 years	[11111]	0.07	0.08	0.00
	5 years, late starter	[51111]	-0.01	0.00	-0.02
Employment	3 years	[11122]	0.04	0.21	0.02
	2 years	[11222]	0.04	0.21	0.08
	1 year	[12222]	0.07	0.20	0.07
	Non-starter	[52222]	0.09	0.21	0.02
Unemployment	3 years	[11133]	-0.04	0.03	-0.02
	2 years	[11333]	-0.04	-0.02	0.02
	1 year	[13333]	-0.09	-0.03	-0.06
Disability beneficiary	3 years	[11144]	-0.12	-0.36	-0.17
	2 years	[11444]	-	-0.39	-0.46
	1 year	[14444]	0.05	-0.43	-0.16
Other (inactive)	3 years	[11155]	-0.08	-0.01	-0.07
	2 years	[11555]	-0.06	-0.11	-0.10
	1 year	[15555]	-0.08	-0.08	-0.07
	Non-starter	[55555]	-0.06	-0.17	-0.13

Notes: See Table 6.6a.

Source: Authors' own calculations based on pooled information on the three youth cohorts under study.

As shown in Table 6.6c, all groups of non-completers have a higher probability of being unemployed at age 26 as compared to completers. Not surprisingly, this holds true especially for those non-completers having experienced unemployment spells already before turning 21. While these probabilities seem large when compared with average youth unemployment ratios, it has to be kept in mind that young people with an unemployment history are more likely to be unemployed also later in life. Moreover, the probability of experiencing unemployment also as a young adult tends to increase with the number of early years spent in unemployment. This pattern is not as pronounced for Norway as it is for Denmark and Finland, though. Also for the other groups of main activities we see a clear increase in unemployment probabilities with the duration of the “disadvantageous” activity that the young person is engaged in.

Table 6.6c: Non-completers' probability of being registered as unemployed at age 26, by main activity after leaving school; difference in probability when compared to completers

Main activity after leaving school	Drop out after	Typical pathway	Denmark	Finland	Norway
Continue in education	5 years	[11111]	0.05	0.06	0.04
	5 years, late starter	[51111]	0.07	0.10	0.06
Employment	3 years	[11122]	0.06	0.02	0.04
	2 years	[11222]	0.07	0.02	0.05
	1 year	[12222]	0.06	0.03	0.06
	Non-starter	[52222]	0.07	0.03	0.06
Unemployment	3 years	[11133]	0.11	0.11	0.08
	2 years	[11333]	0.13	0.14	0.08
	1 year	[13333]	0.13	0.17	0.09
Disability beneficiary	3 years	[11144]	0.06	0.05	0.10
	2 years	[11444]	0.06	0.00	0.07
	1 year	[14444]	0.02	-0.05	0.11
Other (inactive)	3 years	[11155]	0.08	0.10	0.06
	2 years	[11555]	0.10	0.11	0.07
	1 year	[15555]	0.11	0.13	0.07
	Non-starter	[55555]	0.13	0.14	0.08

Notes: See Table 6.6a.

Source: Authors' own calculations based on pooled information on the three youth cohorts under study.

Finally, we look at non-completers' probability of being outside both education, working life and unemployment at the age of 26 depending on their 16-to-20-year-old post-compulsory-school trajectory (Table 6.6d). In other words, the probabilities reported in Table 6.6d reflect the probability of a non-completer of being either disabled or otherwise inactive when turning 26.

Table 6.6d: Non-completers' probability of disability or other inactivity at age 26, by main activity after leaving school; difference in probability when compared to completers

Main activity after leaving school	Drop out after	Typical pathway	Denmark	Finland	Norway
Continue in education	5 years	[11111]	0.02	-0.11	0.06
	5 years, late starter	[51111]	0.03	-0.05	0.10
Employment	3 years	[11122]	0.03	-0.15	0.05
	2 years	[11222]	0.03	-0.13	0.07
	1 year	[12222]	0.03	-0.12	0.07
	Non-starter	[52222]	0.04	-0.11	0.08
Unemployment	3 years	[11133]	0.06	-0.07	0.11
	2 years	[11333]	0.06	-0.05	0.12
	1 year	[13333]	0.07	-0.04	0.15
Disability beneficiary	3 years	[11144]	0.08	0.46	0.15
	2 years	[11444]	-	0.57	0.26
	1 year	[14444]	0.08	0.72	0.11
Other (inactive)	3 years	[11155]	0.05	-0.04	0.10
	2 years	[11555]	0.06	0.07	0.14
	1 year	[15555]	0.07	-0.01	0.17
	Non-starter	[55555]	0.08	0.13	0.17

Notes: See Table 6.6a.

Source: Authors' own calculations based on pooled information on the three youth cohorts under study.

For Denmark and Norway, the probability for non-completers of being on disability benefits or otherwise inactive at age 26 is throughout clearly higher than for completers. Put differently, irrespective of the non-completer's post-compulsory-school experiences before turning 21, his/her probability of being on disability benefits or inactive at age 26 is notably higher than for those young people taking a secondary-level degree at an early age. However, while in Norway this probability declines slightly with the years spent in education before dropping out, no such pattern is observable for Denmark. Moreover, the disadvantage compared to completers is persistently clearly lower in Denmark compared to the situation observed for Norway.

The outcome is conspicuously different for non-completers in Finland. In particular, non-completers with long records in education or in the labour market have a notably lower probability than completers of being on disability benefits or inactive at age 26. Indeed, the longer this record is, the lower the probability of non-completers' having moved into inactivity at age 26. At the other extreme we have non-completers who were on disability benefits already before turning 21 for whom this state seems to be almost absorbing (cf. Chapter 5 of this report). The outcome is less clear-cut for those having followed early post-compulsory-school trajectories dominated by time spent in inactivity. Again this finding highlights the large heterogeneity that seems to characterize young people following such tracks, not least in Finland.

6.7 Concluding remarks and discussion

Education has traditionally been a high priority issue at the policy agenda in all Nordic countries. At the same time, the Nordic countries are characterized by strong labour market attachment of young people. In terms of official youth unemployment rates, on the other hand, the performance of the Nordic countries is only average, with Norway as a positive outlier with low youth unemployment rates and Sweden as an outlier with high youth unemployment rates. However, if measuring youth unemployment by means of the youth unemployment ratio (unemployed as a percentage of the youth population) for non-students, the Nordic countries rank among the best performing within the European and OECD areas. This observation is consistent with comparatively low rates of Nordic youth not in employment, education or training (NEETs).

The major reasons for the rather dramatic drop in Nordic youth unemployment when shifting from official unemployment rates to unemployment ratios calculated for unemployed and, finally, for unemployed non-students only are as follows. First, because of high school attendance, employment among young people is relatively low. This means that the total labour force (sum of employed and unemployed) going into the denominator of the unemployment rate is typically quite small. Accordingly, also smaller numbers of unemployed youth may result in quite high youth unemployment rates. Second, working or looking for part-time work while studying is frequent among Nordic students. As a consequence, a full-time student may easily fulfil the conditions for being recorded in the Labour Force Survey (the source for official unemployment rates) as employed or unemployed, even though his/her main activity is full-time studying. In view of this, a first policy-relevant conclusion would be that even if the unemployment rate is a relevant measure for assessing conditions in the labour market, the unemployment ratio of non-students is likely to be a more relevant measure for assessing youth policies in relation to investments in human capital, long-term labour market prospects and welfare.

The results reported in this chapter are based on longitudinal information on three full cohorts of young people for three Nordic countries: Denmark, Finland and Norway. More specifically, we have tracked young people who turned 16 either in 1993, 1998 or 2003 up to the year 2008. This means that we have been able to follow all three cohorts for a minimum of five years (up to age 21), two cohorts for 10 years (up to age 26) and one cohort for 15 years (up to age 31). We have thereby paid particular attention to these young persons' early experiences after

completion of compulsory education, that is, their way through secondary education up to age 20. A split is further made between those having completed a secondary-level degree by the time they turn 21 (completers) and those not having succeeded in achieving such a degree by this age (non-completers).

Our measure of completers and non-completers results in Denmark having a comparatively high share of non-completers and Finland by far the lowest share of non-completers, with Norway being much closer to Denmark than to Finland. This outcome seems to stand in sharp contrast to the high expected upper-secondary completion rates reported by the OECD and the early-school-leaving and drop-out rates reported by, respectively, Eurostat and the OECD especially when it comes to Denmark: both sources rank Denmark among the countries with the lowest early drop-out rates. The answer is uncomplicated, though: a sizeable fraction of Nordic young non-completers continue in school on a full-time basis and achieve their secondary-level degree only later on, after age 21.

A crucial question addressed in our chapter then is: Can we observe a clear-cut difference in subsequent labour market outcomes between those who completed a secondary-level education by age 21 and those who did not so (but possibly at a later age)? The answer seems to be that the difference in outcomes is surprisingly small for a majority of the young people under study. Moreover, the pattern is highly similar in the three Nordic countries investigated. In particular, by the time our young people reached the age of 26, a large majority of both the completers and the non-completers was either in employment or still in school. The shares of young people engaged in these two activities had improved further by the time they turned 31. About 95% of the Danish and close to 90% of the Finnish and Norwegian young people who had completed their secondary education by the time they turned 21 (completers) were either employed or still studying on a full-time basis. The corresponding shares for the non-completers were 82% for Denmark and close to 70% for Finland and Norway.

The high “success rates” of also non-completers suggest that they cover a highly diverse group of young people. Indeed, as shown by our calculations, a remarkable number of the non-completers continue in school or re-enter education to complete a secondary-level degree at a later age. Put differently, had we measured our completers and non-completers at a later age, say, at age 26, then the share of non-completers would have been substantially lower, especially for Denmark and Norway, and the observed cross-country differences in non-completion rates accordingly much smaller. Indeed, Finnish youngsters

seem on average to use less years for achieving their secondary-level degree (much higher share of completers by age 21) than Norwegian and especially Danish youngsters (much lower share of completers by age 21). Indeed, many young Danes seem to have a prolonged secondary education career. This finding of notable differences between our three countries with respect to the time that young people typically devote to completing their secondary education indicates that our non-completion rate, measured at age 21, is as much a measure of speed as a measure of drop-out rates. In view of this, a second policy-relevant conclusion from our analysis is the importance of approaching the early-school-leaving problem not only from a rather static point-of-view as in the Eurostat and OECD statistics but also from a more dynamic perspective.

However, all young people labelled non-completers at age 21 do not fare equally well as those following strong education or employment trajectories despite late or no completion of a secondary education. Compared to completers, non-completers tend to face a much higher risk of becoming unemployed, of moving onto disability benefits (cf. Chapter 5 of this report) or of being for other reasons outside both education and working life. This risk seems to be extraordinarily high for Norwegian non-completers but is by no means negligible for Danish or Finnish non-completers, either. Moreover, this risk of a non-negligible share of the non-completers moving, on a more or less permanent basis, outside both education and working life is, in effect, well reflected in their early post-compulsory-school trajectories up to age 20. Hence, a third policy-relevant conclusion from our analysis is the importance of improved systems for following-up young people on a regular basis also after completion of compulsory education, with the view of making the most in terms of targeting and early interventions of the information and signals of later problems that such tracking would produce.

6.8 References

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7. Taxation – Financing the welfare state in a more globalized world

Torben M. Andersen⁸⁴ and Allan Sørensen^{85,86}

7.1 Introduction

A pertinent question in policy debates is whether globalization curtails the scope for maintaining an extended tax-financed welfare state of the Nordic type. The primary concern is the nexus between taxes and competitiveness. Globalization makes it easier and less costly to relocate production across nations, which in turn loosens the link between production and consumption. Will high tax countries lose “competitiveness” in this process, implying that production and employment relocate, which in turn erodes tax bases and thus the financial viability of the welfare model? In short, if globalization makes tax financing more distortionary, retrenchment of the public sector must follow (for given political preferences). This may even lead to a race to the bottom where countries in an effort to gain competitiveness undercut each other in terms of taxes to obtain a competitive advantage.

There is indeed a large body of literature building on an extensive tradition in trade and open macroeconomics supporting the notion that higher taxes or a higher level of public sector activities may harm competitiveness. Empirical analyses also support the hypothesis that taxes harm competitiveness via the cost channel. But does this immediately support the retrenchment view? The abovementioned mechanism is

⁸⁴ Professor at the Department of Economics and Business, School of Business and Social Sciences, Aarhus University.

⁸⁵ Associate Professor at the Department of Economics and Business, School of Business and Social Sciences, Aarhus University.

⁸⁶ Comments at a seminar at ETLA in November 2013 and by Tarmo Valkonen are gratefully acknowledged.

only one of several links through which globalization affects the economy. In particular, globalization is associated with gains from trade, which under standard assumptions lead to higher income and private consumption, which increase tax bases and also affect the marginal social costs and benefits of public sector activities. The benefit side of globalization has to be considered on par with the cost side to assess the implications for tax-financed welfare arrangements. Related is the point that the role of taxes cannot be seen independently of what they are financing, and “active” spending on e.g. education may be more important in a more globalized world.

The key purpose of this paper is to discuss how globalization affects the scope to tax finance an extended welfare state. Since the predominant part of tax revenue accrues from the direct and indirect taxation of earned incomes (about 90% in the case of the Nordic countries), it is natural to focus on the effects of labour income taxation. If labour income taxation becomes more costly due to globalization, the potential implications are large for high tax countries. Our framework for discussing these issues is based on modern theories of trade explicitly allowing an analysis of further integration between countries and the implications for production levels and structures. The focus is on product market integration and thus the trend increase in trade and specialization. In this setting we consider the implications of tax-financed public activities and how they interact with further product market integration.

Within the space of this paper there are some important tax and globalization issues which cannot be addressed. Race-to-the-bottom problems in taxation of capital and corporate income arise from non-coordinated policies,⁸⁷ and it is an important policy issue whether policy coordination or cooperation can be established to reduce some of these problems.⁸⁸ We do not discuss the scope for further coordination of corporate taxation. Important aspects in relation to globalization are innovation and structural changes where taxes may play an important role. This applies not least to the taxation of small and medium-sized firms. This raises an issue of the need for special tax treatment of (new) SMEs, which we do not discuss. Globalization may be associated both with

⁸⁷ See e.g. Lassen and Sørensen (2003).

⁸⁸ One example is the EU Savings Directive applying to the taxation of capital income which stipulates information exchange between EU member countries (and a number of other countries having joined the agreement) or the imposition of a withholding tax where the revenue is distributed to the country of origin of the capital owner. The possibilities for coordination on corporate taxes have been discussed for a long time without any significant progress in the area.

more risk and new forms of risk which in turn may affect the demand for social insurance (see e.g. Rodrik (1998)), which is not discussed. Finally, labour migration may have different effects than job mobility, especially for high tax countries with generous social arrangements.⁸⁹ This is a topical issue which, however, falls outside the scope of this paper.

The plan of the paper is as follows. In Section 7.2 we provide a brief overview of taxation in the Nordic countries. In Section 7.3 we present the basic theoretical arguments on the relation between taxation and competitiveness when product markets become more tightly integrated. This section also considers possible race-to-the-bottom mechanisms. Empirical evidence on the importance of taxes in open economies is discussed in Section 7.4. In Section 7.5 we discuss the scope for financing welfare state activities in less distortionary ways than by general income taxation. Finally, Section 7.6 provides a discussion of some policy implications and open questions.

7.2 Tax structures in the Nordic countries

The Nordic countries have been front-runners in applying the dual income tax system; that is, a system with a separation between labour income and capital income taxation, where the former is progressively taxed and the latter is proportionally taxed (with a tax rate at the level of the lowest labour income tax rate). One key argument in support of this tax system is that it reconciles low capital income tax rates to avoid capital mobility with the possibility of maintaining higher and more progressive labour income tax rates, cf. Sørensen (2010). The dual income tax system is not applied purely in Denmark since positive net-capital income above a threshold level is taxed on par with labour income (Finland has also recently introduced a moderate progressive element in capital income taxation).

As is well known, gross tax rates are high in the Nordic countries by international comparison, cf. Figure 7.1a. The tax level has remained fairly constant in Denmark and Norway⁹⁰ since the late 1990s, while a

⁸⁹ This may affect the scope to maintain the universal principle in the design of the welfare state due to the selection mechanisms migration may create. This applies if emigration tends to be concentrated among highly educated and immigration among less skilled, which in turn will erode tax bases and increase social expenditures.

⁹⁰ Note that for Norway the return on the Pension Fund is an additional source of public funding. The allocation rule for the Fund stipulates that an amount corresponding to an average return of 4% can be used

weakly declining trend can be observed for Finland and Sweden. Care should, however, be taken in such cross-country comparisons for several reasons including different tax treatment of social transfers. In some countries social transfers are taxable income, in others they are not (or partly), and this makes comparisons based on gross rates problematic. This is particularly so since the Nordic countries tend to apply the gross principle, implying that the gross tax burdens are inflated in international comparisons.⁹¹

Interestingly there are significant variations in tax structures across the Nordic countries, cf. Figure 7.1b. Denmark and Iceland are outliers with only a small part of tax revenue accruing from social contributions⁹² and with a much larger part coming from direct income taxation. Finland and Sweden are more like the OECD average, while Norway holds an intermediate position.

annually. The flip-side of this is a structural budget deficit (before this transfer) which currently amounts to 5% of (mainland) GDP.

⁹¹ Adema and Ladaique (2009) find for 2005 that the taxes on social transfers constitute about 4% of GDP in the case of Denmark and Sweden, 2.5% in the case of Finland and 1.5% in the case of Norway.

⁹² We discuss mandatory pension contributions in Subchapter 7.4.3.

Figure 7.1: Gross tax burden and tax structure

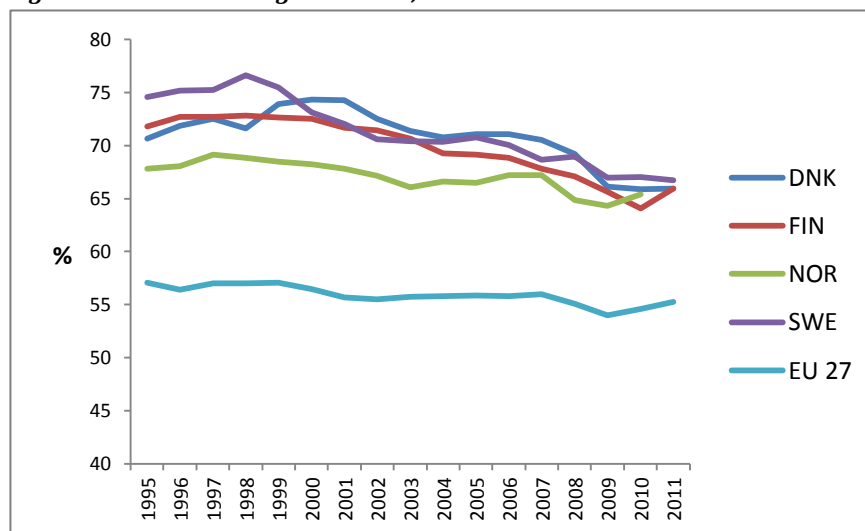


Note: Data for tax structure applies to 2010.

Source: www.oecd-ilibrary.org

This brings up an important point in relation to the implications of taxation for labour markets. Basic insights from economic theory teach us that taxation may be distortionary due to the wedge created between the compensation for work received by workers and the costs of workers to employers. The cost of labour to firms is the wage including social contributions, while for the worker the wage net of direct taxes, social contribution and indirect taxes is the relevant measure of the compensation for work. The total tax wedge is thus the sum of social contributions paid by employers and employees, direct taxes and indirect taxes. The composition of single parts does not matter, the sum does. Figure 7.2 shows that the total tax wedge on labour is high for the Nordic countries compared to the EU27, but also that it has a clear declining trend and the gap to other EU countries has been declining.

Figure 7.2: Total tax wedge on labour, 1995–2011



Note: Total tax wedge given as the sum of the implicit tax on labour income and the implicit consumption tax. Data not available for Iceland.

Source: Computed based on Eurostat (2012).

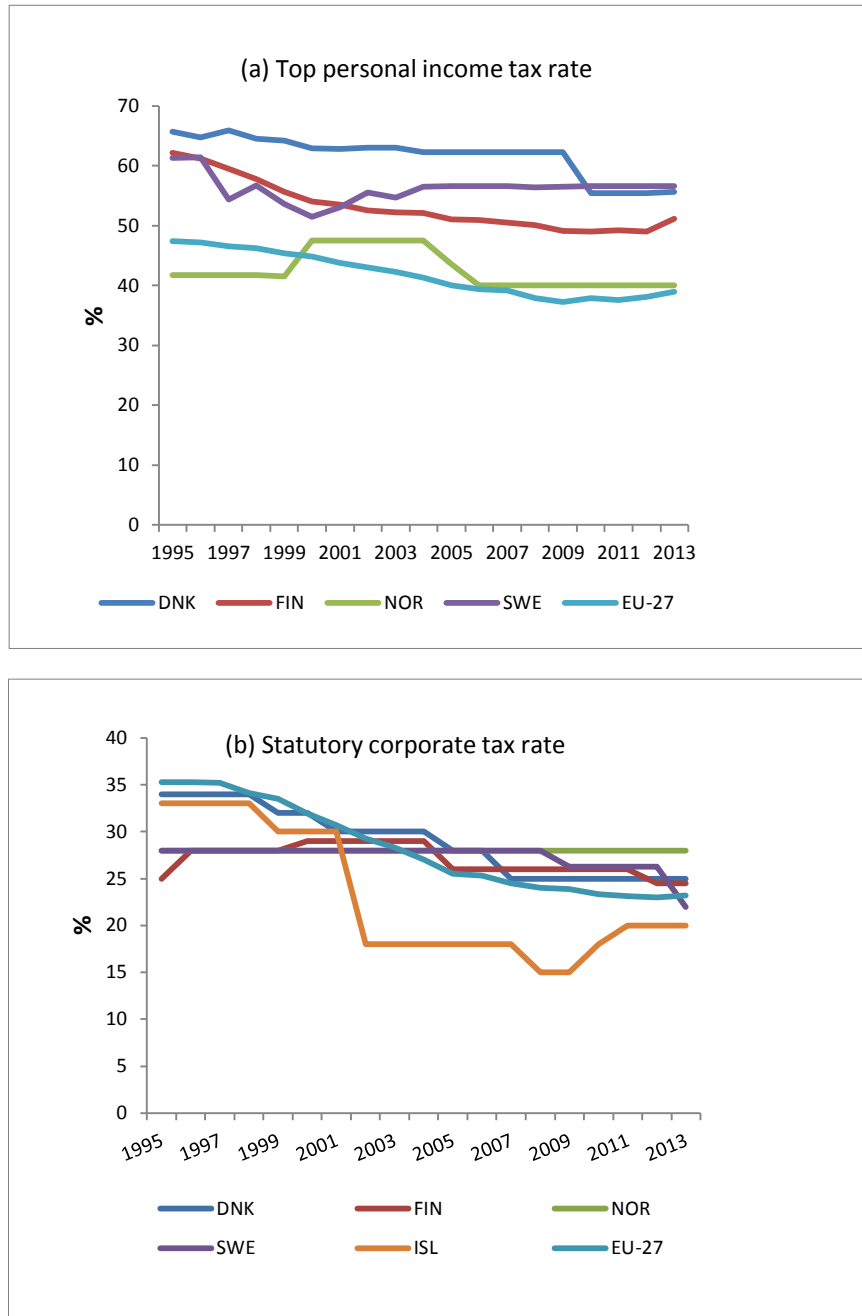
The declining trend in the tax wedge reflects tax reforms with the aim to strengthen the incentives to work and thus increase labour supply both along the intensive (lower marginal tax rates) and extensive margin

(making work pay).⁹³ For the latter earned income tax credits have been introduced (except in Norway), and particularly Sweden has used this instrument actively in recent years.

It is also a general trend to reduce marginal tax rates and broaden tax bases to reduce tax distortions and to ensure efficiency in taxation as well as to simplify the tax system (although this has turned out to be difficult). Top personal income tax rates have thus been declining, cf. Figure 7.3a. Statutory corporate tax rates also display a declining trend (in particular in Denmark and Finland) reflecting a concern for mobility of corporations, cf. figure 7.3b. The declining trend is continuing since Sweden has lowered the corporate tax rate from 26.3% to 22% in 2013, Finland from 24,5% to 20% in 2014 and Denmark is decreasing the rate from 25% in 2013 to 22% in 2016. Note that despite declining tax rates, tax revenue has not been declining to the same extent due to effects of tax base broadening.

⁹³ This is also reinforced by labour market reforms and reforms of the pension system to delay retirement. On the later see Chapter 2 in this volume on pension reforms.

Figure 7.3: Top personal income tax rate and statutory corporate tax rate

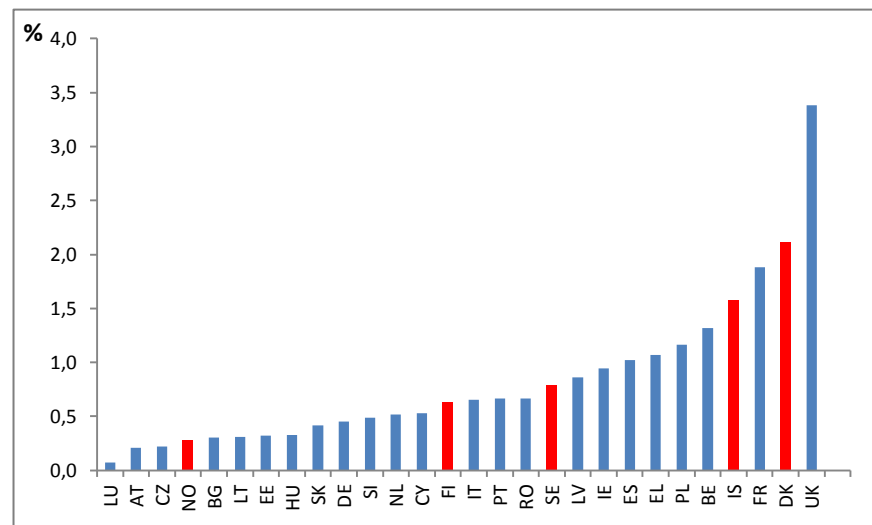


Note: The corporate tax rate includes the non-targeted top rate. Some countries apply special rates to specific types of companies or activities. Data on the top personal income tax rate is not available for Iceland.

Source: Eurostat (2012).

The logic of globalization is to shift taxes from mobile to less mobile tax bases. Financial capital and corporations are usually deemed to be very mobile, while natural resources and real estate are among the least mobile. In perspective of this and the general high level of taxation, it is worthwhile to note that recurrent taxes on immovable property⁹⁴ contribute relatively low tax revenue in the Nordic countries, especially in Norway, Finland and Sweden, cf. discussion below

Figure 7.4: Recurrent taxes on immovable property, % of GDP



Source: Eurostat (2012).

7.3 Costs of financing the welfare state through taxation of labour

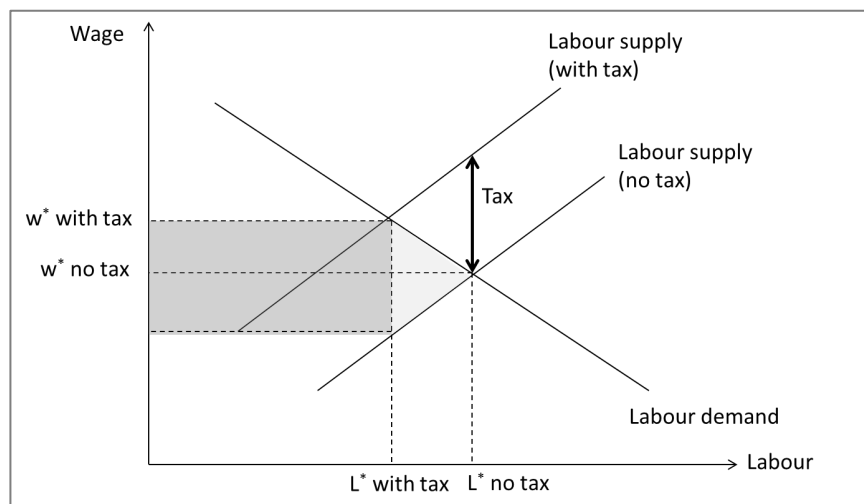
Financing the welfare state through direct and indirect taxation of labour income is costly due to the distortionary effects of taxation. Taxation of income and consumption creates a wedge between the costs of labour to firms and the remuneration of workers in terms of consumption possibilities. This tax wedge distorts incentives and thus behaviour,

⁹⁴ It is often argued that such taxation is ideal in a globalized economy since it is an immobile tax base. While there are arguments in favour of higher taxation of property (see Subchapter 7.4.2), it should be noted that taxes on immovable property are still relevant for the tax wedge affecting the labour market since the costs of housing matter for the real consumption value of wages.

which implies efficiency losses. Through a simple example we illustrate these efficiency costs and explain how they may interact with globalization. In order to keep the analysis simple and transparent we focus on a single tax instrument, namely a tax on labour income paid by the workers. See Box 1 for a more general description of the tax wedge.

The basic understanding of the efficiency costs from labour income taxation is presumably obtained most easily by considering the effects of a tax in a standard supply and demand diagram for the labour market. In the diagram below we have displayed the empirical relevant case with an upward-sloping labour supply curve; i.e. the case where the substitution effect dominates the income effect, which also implies that the tax (or a higher tax) reduces labour supply.

Figure 7.5: Effects of labour taxation⁹⁵



The tax shifts up the labour supply curve as workers (and/or unions) require a higher gross wage in order to earn the same net wage as without the tax for a given supply of labour. The direct implications are that the gross wage, i.e. the labour costs for the firms, increases whereas both

⁹⁵ The graphical analysis is simplified for illustrative purposes. We treat the tax as a tax per hour worked and not as a tax rate on wage income; i.e. the wage received by the worker is the gross wage (w) minus the tax per hour and not the gross wage minus an income tax payment which varies with the wage level as would have been the case under a proportional income tax. This assumption implies that the labour supply curve with the tax is parallel to the curve without the tax, whereas the formulation with a constant tax rate on income implies that the labour supply curve with the tax is steeper than that without it and therefore the distance between them depends on the wage.

the net wage and employment fall. The reduction in the employment level causes an efficiency loss as the marginal benefit to society of an extra work hour (measured by the labour demand curve) exceeds the marginal costs to society of supplying the extra hour (measured by the labour supply curve without the tax) at the level of employment prevailing in equilibrium. The efficiency loss is given by the light-shaded area (triangle) in the diagram and this is the distortionary cost of taxation. The dark-shaded area (rectangle) is the tax revenue.

Box 1: The tax wedge

The tax wedge (TW) measures the difference in labour cost to the firms and the purchasing value of the wage to the worker when taking taxes into account. Let w denote the wage rate, let $t > 0$ denote the tax rate paid by workers (this also includes VAT, other consumption taxes, and social security contributions paid by the workers), and let $s > 0$ denote the employer's social security contribution. The tax wedge can then be expressed as

$$TW = \frac{w(1+s) - w(1-t)}{w} = t + s$$

In the graphical analysis we set $s=0$, and the tax wedge is thus given by the direct and indirect taxation of workers ($t > 0$).

7.3.1 Globalization and the costs of taxation

Next we turn to how globalization affects tax distortions and thus the costs of financing the welfare state through taxation of labour income. It turns out that several forces are released; some tend to increase and some tend to decrease the distortionary costs of taxation.

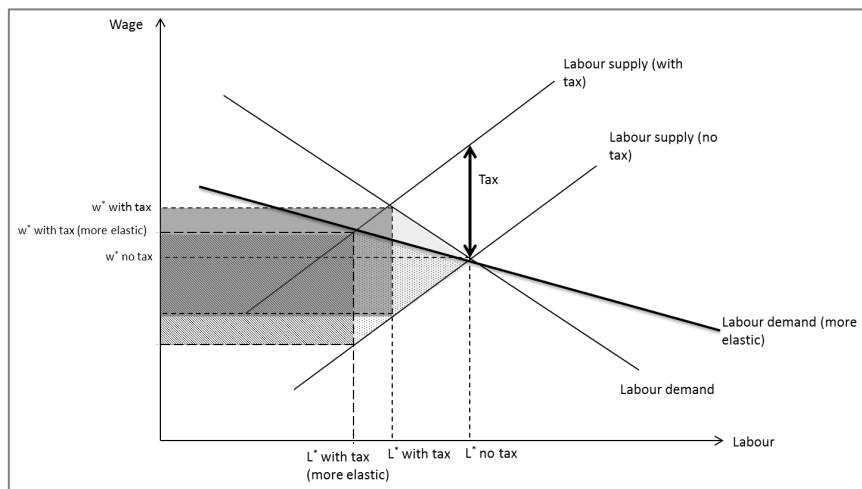
Globalization reduces the costs of moving goods, jobs and workers. This can be interpreted in terms of the sensitivity (elasticity) of labour demand to wage and tax rates; i.e. how strongly labour demand responds to changes in economic conditions. However, globalization may also change the level of labour demand. In the following we examine separately how globalization through these channels impacts efficiency costs of income taxation and thereby the costs of financing the welfare

state. We continue with graphical analyses to strengthen the understanding of basic and central mechanisms.⁹⁶

Elasticity effect

Globalization increases the mobility of goods and jobs. Both political factors, such as reductions in or removals of tariffs, non-tariff trade barriers, regulations, etc., and technological factors, such as reduced transport costs and improved information technology, have significantly reduced the costs of moving goods across borders. Increased mobility of goods implies tougher competition on the global markets and that production of both final and intermediate goods becomes more footloose⁹⁷ in the sense that production can more easily move to destinations with lower production costs. Consequently, production and therefore labour demand and jobs become more sensitive to local costs including local gross wages; i.e. the labour demand curve is getting flatter. We illustrate this in Figure 7.6 below.

Figure 7.6: Effects of taxation with a more elastic labour demand



⁹⁶ An appendix containing a more formal/mathematical analysis is available from the authors upon request.

⁹⁷ Improved information/communication technology has also made it easier to manage global value chains. This has spurred a wave of off-shoring of particular labour intensive tasks in high wage countries such as the Nordic countries.

It is evident from Figure 7.6 that a more elastic labour demand, and thus a flatter labour demand curve, magnifies the distortionary effect of taxation on employment. The efficiency loss increases from the triangle shaded in light grey to the dotted triangle. Another implication which can be seen from Figure 7.6 is that the tax revenue obtained is reduced (from the dark grey-shaded rectangle to the hatched rectangle) for a given tax rate. Hence, a more elastic labour demand *ceteris paribus* increases the costs of financing the welfare state through labour taxation as the distortionary employment effect increases at the same time as the revenue obtained from the tax is reduced.

In the presence of several tax bases the arguments is not as straight forward. The more elastic labour demand implies that a tax rate increase has a larger (negative) effect on employment and a smaller (positive) effect on wages and thus a larger (negative) effect on total wage income. However, the lower wage increase implies less negative effects on the return to other factors (e.g. capital) and thus on other tax bases which have counteracting effects (see Andersen and Sørensen (2011)). Taking mobility of goods and jobs as well as competition in the global markets to the limit, we have a small open economy operating in a perfectly competitive environment with given world market prices. This is often how globalization is portrayed in public debates. In this case the labour demand curve becomes entirely flat, i.e. horizontal. See Figure 7.7 below for an illustration.

Figure 7.7: Effects of taxation in a small open economy in perfect competition

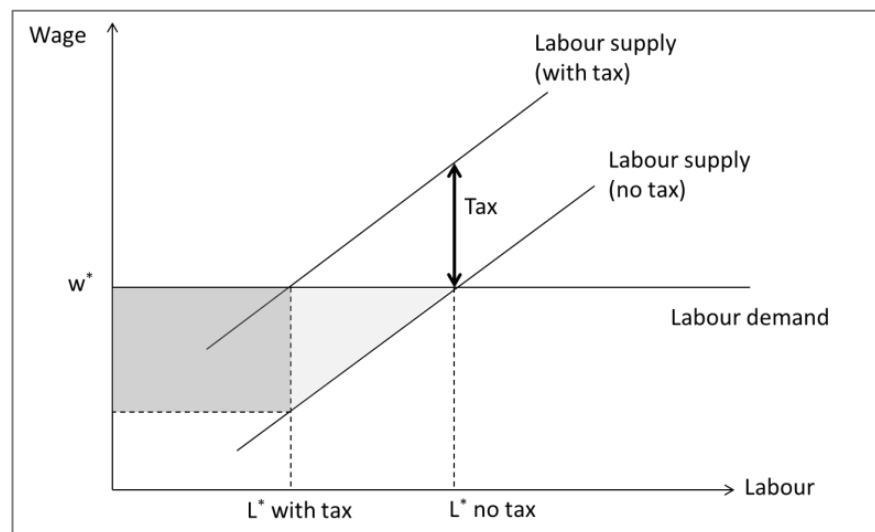


Figure 7.7 delivers a clear and important message. Although the tax does not affect labour costs to the firms and thus competitiveness (in equilibrium), there are still costs from financing the welfare state through taxation of labour. In fact costs (the light-shaded triangle) are at their maximum in this case as there is no wage increase to counteract the distortionary effect of the tax on the labour supply. Moreover, there are no gains from improved terms-of-trade (see below). Note that in this case the employment level depends entirely on labour supply, and thus policies reducing labour supply translate directly into lower employment.

At first it seems obvious that globalization increases the sensitivity of labour demand to the gross wage due to jobs being more footloose, but there is more to the story. In fact firms' employment of domestic labour may become less sensitive to domestic wages at higher levels of globalization, since firms at higher levels of integration may out-source larger parts of their production to foreign (low wage/low cost) countries. This, in turn, implies that firms' costs and thus production and thereby domestic employment become less sensitive to local wages as the cost share of local labour has been reduced (see e.g. Skaksen and Sørensen (2001)).

The preceding arguments are partial in the sense of considering only the direct effects on the labour market disregarding effects arising at the economy-wide level. An example of such a counteracting effect comes through imported goods in the consumption basket. At higher levels of globalization foreign goods have a larger weight in the consumption basket and accordingly the consumer price index responds less to the local wage rate. An increase in the nominal wage thus has a larger impact on the real wage and therefore labour supply responds more to the local wage. A higher tax rate which increases the nominal wage will also increase the consumer price index, which tends to have a negative impact on labour supply. However, this second round negative impact on labour supply is muted by globalization due to the larger weight to foreign goods in the consumption basket.⁹⁸

Level effect

Globalization will not only affect the sensitivity of labour demand to the wage but also its position or the level.

Although often ignored in the public debates on globalization and tax-financed welfare states it is well-documented in the economics liter-

⁹⁸ This mechanism is not included in the graphical analysis.

ature that globalization brings substantial gains. These gains partly manifest themselves through a lower price index (driven by more varieties and/or lower prices due to tougher competition) and thus a higher real wage for a given nominal wage. Moreover, globalization, e.g. in the form of lower trade frictions, brings gains from increased specialization, see e.g. Figure 7.8 below, which in turn increases real wages. Higher real wages increase the real tax base both directly (through the higher real wage) and indirectly through an increase in the labour supply and thus employment. The direct effect is neutralized (only partly if part of public consumption is goods from the private sector) by higher public expenditures due to higher real wages to public employed workers. However, the indirect effect via the higher labour supply ensures that public consumption can be financed with a lower tax rate. The lower tax rate in turn reduces the efficiency costs of financing the welfare state as the distortionary effects from taxation increase with the tax rate (see Andersen and Sørensen (2012) for a complete analysis of this argument).⁹⁹

7.3.2 Taxation, competitiveness, and international specialization

The concern in relation to globalization is that the tax (or for that matter a tax increase) increases the gross wage and thus the labour costs of the firms; i.e. the competitiveness of the domestic firms deteriorates relative to foreign competitors. To explore this issue further we consider a framework capable of capturing an essential element of globalization, namely, a tighter integration of product markets. Such integration implies that domestic firms can more easily penetrate into foreign markets, and foreign firms into the domestic market. We capture this in a setting relating product market integration to the production structure and trade flows.

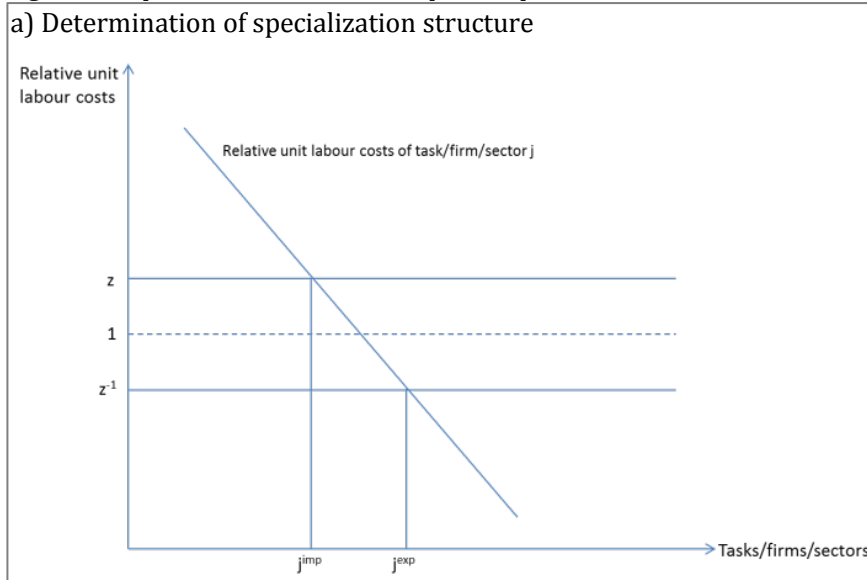
Consider Figure 7.8 (below) in which sectors/goods/tasks are ranked according to their comparative advantage¹⁰⁰ (in increasing order) on the first axis and relative costs – determined by relative gross wages and relative productivities at the task level – are displayed on the second axis. The downward sloping locus represents the relative unit labour

⁹⁹ It is a well known result that the distortionary effects of a marginal increase in the tax rate increase with the level of the tax rate.

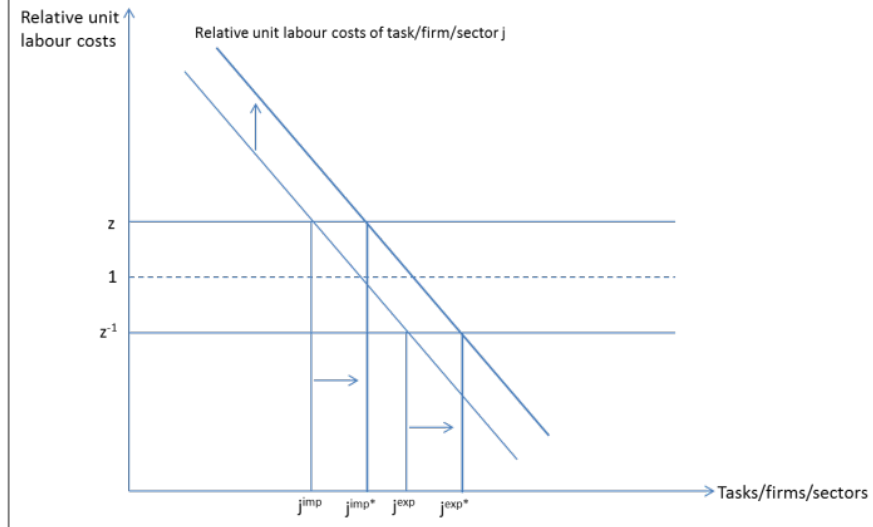
¹⁰⁰ One may think of this as the ratio of the productivity level in domestic firms to the productivity level in foreign firms.

costs which decreases as we move rightwards as the comparative advantage increases in that direction. Production takes place where it is cheapest after correcting for trade frictions (z), so that trade frictions shield countries from international competition and generate a set of non-tradeables. Trade frictions are modelled as iceberg trade costs, implying that $z > 1$ units must be shipped in order for one unit to arrive on the foreign shore. Tighter product market integration corresponds to a lower value of the friction driven by technological changes and political decisions to integrate markets. The country specializes according to comparative advantage and thus exports tasks for which its comparative advantage is sufficiently large (to the right of j^{exp} in Figure 7.8a), import tasks for which its comparative advantage is sufficiently low (to the left of j^{imp} in the Figure 7.8a), and tasks with intermediate levels of comparative advantage (between j^{imp} and j^{exp} in Figure 7.8a) are non-traded due to trade frictions. A lower trade friction will lead to more trade and specialization. The home country will export more goods and also import more goods, and the non-tradeable sector will shrink.

Figure 7.8: Specialization structure: Imports, exports and non-tradeables



b) Effects of a tax increase



We are now able to analyse the implications of a tax increase. Graphically the higher gross wage rate due to the tax increase shifts up the relative-unit-labour-costs locus and thus changes the specialization structure. This can be seen in the right panel of Figure 7.8b. After the tax increase the country only exports tasks to the right of $j^{\text{exp}*} > j^{\text{exp}}$, imports tasks to the left of $j^{\text{imp}*} > j^{\text{imp}}$, and tasks in-between are non-traded. The tax induced wage increase has thus changed the specialization structure such that the country to a larger extent specializes in production in tasks in which it has comparative advantages (the tasks where the country is still competitive despite the higher gross wage). This highlights that a loss of competitiveness not only implies job-losses due to declining market shares but also that domestic production of some tasks/goods ceases.

However, the deterioration in competitiveness brings some positive effects which are often ignored in the public debate. It tends to increase the real wage through the following two channels. The economy specializes in tasks where it has larger comparative advantages. Hence, a higher tax rate implies a specialization gain that manifests itself through a higher average productivity as labour reallocates to more productive activities.¹⁰¹ Moreover, the increase in the relative wage implies that one unit

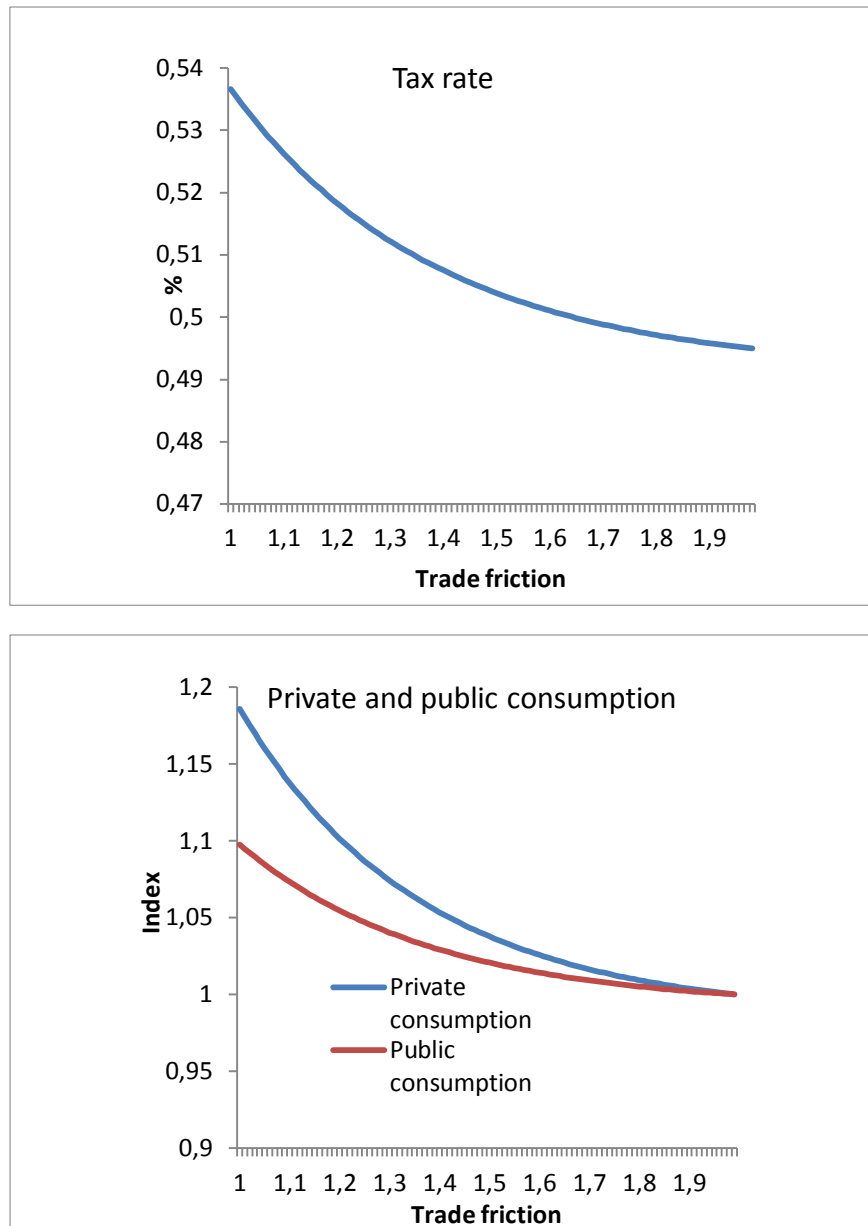
¹⁰¹ Reallocation of labour is both costly and time consuming. The present analysis focuses on structural, i.e. long-run, implications of taxation and globalization (product market integration).

of domestic labour indirectly buys more units of foreign labour through trade in goods and services. This is known as a terms-of-trade improvement. The terms-of-trade effect has a zero-sum game property since the terms-of-trade improvement is matched by a terms-of-trade loss for the trading partners. Hence, this suggests that there are gains from international coordination of labour taxation. We elaborate on this below.

In Figure 7.9 below we present numerical solutions to a model¹⁰² (see Andersen and Sørensen (2013)) which captures many of the above-mentioned effects, including the effect of taxes on wages and thus competitiveness, gains from specialization/trade in terms of both more private consumption and a broader tax base, effects on specialization of both globalization and taxes, and the effects of taxes on the terms-of-trade. Figure 7.9 shows in the upper panel the unilateral optimal tax rate on labour under the assumption of a utilitarian social welfare function. With lower trade frictions (more integrated product markets) the optimal tax rate increases, although in the particular illustration shown here the increase is small. The reason for the increase is that there are gains from trade, and therefore private consumption increases which lowers the marginal utility of private consumption and thus an element in the opportunity costs of public consumption. Moreover underlying the increase in private consumption is an income increase which also increases the tax base and thus tax revenue. The net result of this is that public consumption also increases with more tightly integrated product markets. In an absolute sense there is no retrenchment of the public sector, both the tax rate and public consumption increase. In fact due to the increasing tax rate public expenditures increase relative to private expenditures. However, productivity improvements due to increased specialization only apply to the private sector and therefore private consumption increases by more than public consumption (= public employment), and in this sense there is a relative decline in public consumption.

¹⁰² The results arise from a model economy consisting of two countries which are symmetric at the aggregate level and only differ with respect to the tasks/goods/sectors in which they have a comparative advantage. In Figure 7.11 below a case of asymmetric countries is considered.

Figure 7.9: Integrating product markets – tax rate, private and public consumption



Note: The tax finances public consumption. Figure based on Andersen and Sørensen (2013).

What is the tax revenue used for?

In order to assess the costs of tax-financed public revenue it is crucial to know what the revenue is spent on. It matters whether the revenue is spent on public consumption or transfers. This is important because public consumption requires labour and therefore also has a labour demand effect. An increase in public consumption may thus directly crowd

out private employment, an effect which does not arise if taxes finance transfers. Adding to this it should be noted that some expenditure items like child- and old-age care, but also education and health expenditure more generally, may strengthen labour supply both in the qualitative and quantitative dimension. These welfare arrangements may in particular be important for a high female labour force participation rate.

The abovementioned effects also interact with globalization. Consider e.g. the choice between spending revenue on transfers and spending revenue on public employment and thus public services. Spending on public employment increases demand for domestic labour directly, whereas transfers do so only indirectly through private consumption. When the economy trades with other countries the spending on public employment distorts the consumption pattern towards goods/services produced by domestic labour as public employment is more intensive in domestic labour than private consumption. Hence, the relative wage of domestic labour increases with public employment, which induces a terms-of-trade improvement (see e.g. Epifani and Gancia (2009) and Andersen and Sørensen (2012)). The more integrated the economy is in the world economy, the larger effect it has on the terms-of-trade whether revenue is spent on transfers or public employment. This stems from the fact that the implied domestic labour demand from private consumption and thus transfers is falling in the import share (integration of product markets). Although important, a further analysis is beyond the scope of the present work.

Finally it should be noted that the above is touching on the issue of difference in productivity growth between the private and public sector. The analysis above has productivity changes in the private sector due to specialization induced by product market integration, but unchanged productivity in the public sector. If there is a systematic higher rate of productivity growth in the private sector, the issue of Baumol's cost disease arises making services with low productivity growth relatively more expensive over time (for a discussion see SNS (2014)). The pressure this creates on public financing depends on the scope for increasing productivity in public service production e.g. via outsourcing.

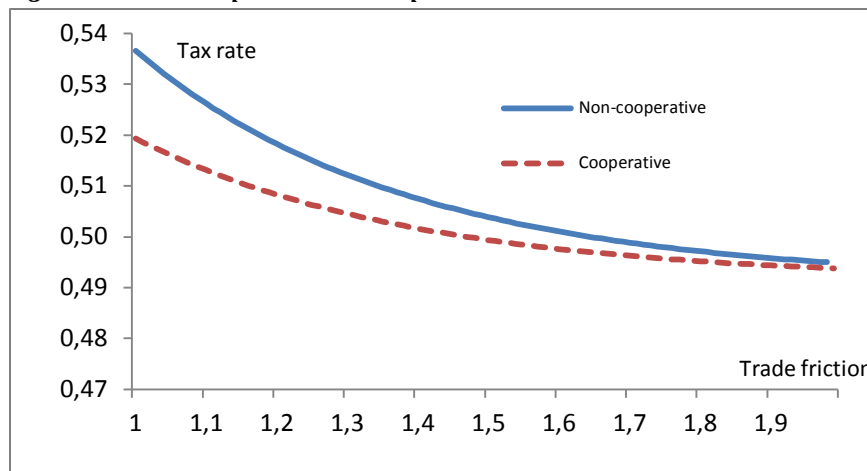
7.3.3 Coordination of tax policies

In policy debates it is a widespread belief that if taxes harm competitiveness, it is to be expected that countries acting non-cooperatively choose too low taxes (a race to the bottom) and thus the level of public sector activities is too low. However, a very robust result from explicit

general equilibrium models is that countries acting non-cooperatively tend to choose too high levels of public activities and thus taxes. The reason is that countries perceive that they can affect the terms-of-trade to their advantage by tilting demand towards domestic labour. This effect is not present in the case of coordinated policies, and therefore there is an upward bias in taxes determined non-cooperatively (see e.g. Chari and Kehoe (1990), Devereux (1991), Turnovsky (1988), van der Ploeg (1987, 1988), and Andersen *et al.* (1996)). Epifani and Gancia (2009) build on this literature and show in a model with specific functional forms, exogenous labour supply and exogenous production/specialization structures how globalization may increase public sector activity, and they present empirical evidence in support of this finding. In Andersen and Sørensen (2012) we showed in a rather general setting with endogenous labour supply and production/specialization structure that this non-cooperative bias not only applies to public consumption but also to transfers. Moreover we showed that countries have incentives to increase relative wages through both increasing demand for domestic labour (public consumption/employment) and by reducing supply of domestic labour (distortionary taxation).

Figure 7.10 illustrates this by means of the same model underlying the simulations in Figure 7.9. The case is one with two symmetric countries, and it is seen that both the non-cooperative and the cooperative tax rates are increasing with more product market integration (lower trade friction). It is also seen that the difference between the two is monotonously increasing the further product markets are integrated. Hence, there is no race-to-the-bottom and no downward bias in fiscal policy. In fact there is an upward bias which increases with further product market integration.

Figure 7.10: Non-cooperative and cooperative tax rates



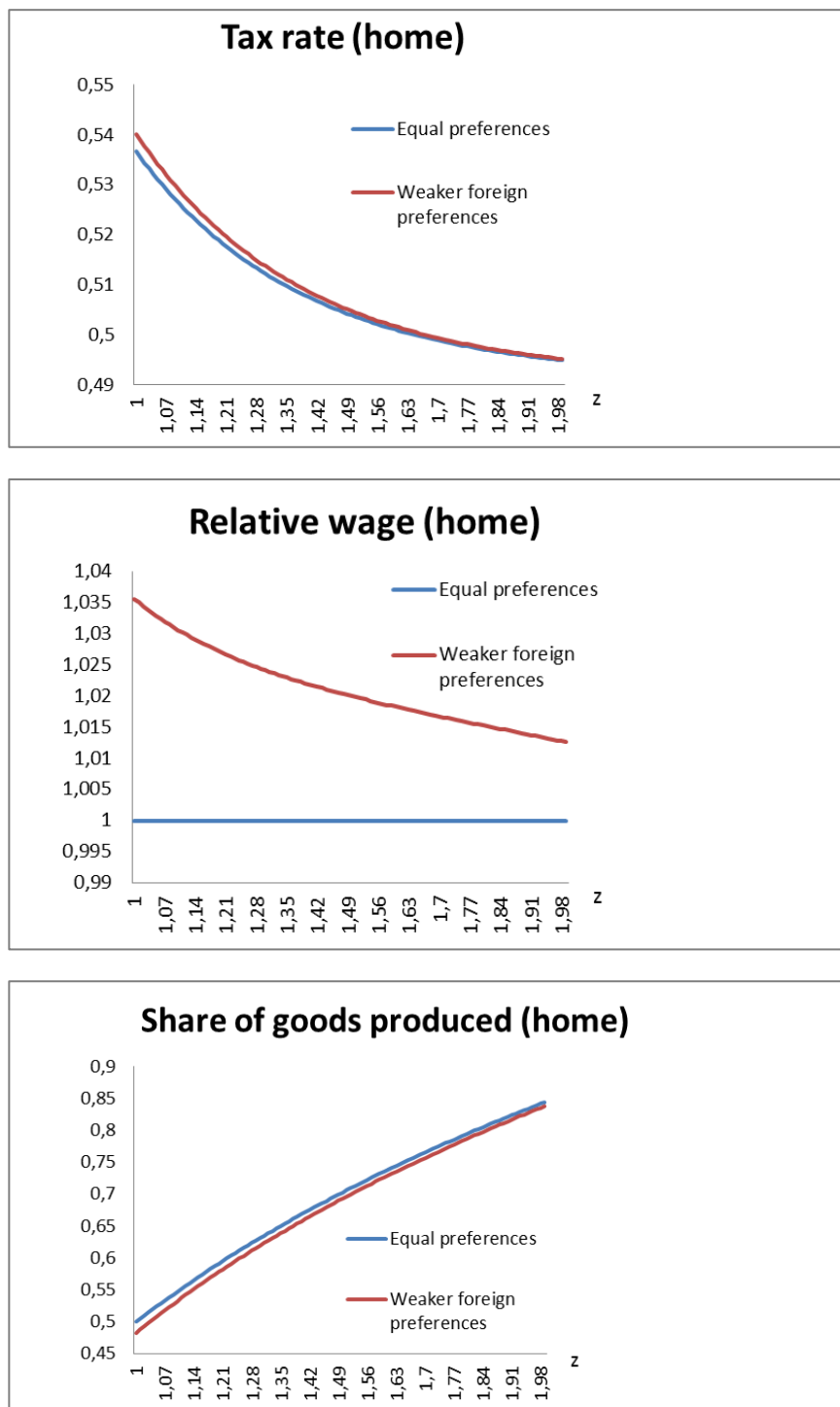
The difference between the coordinated tax rate and the uncoordinated tax rate appears because countries have incentives to increase both tax rates and public employment in order to achieve a terms-of-trade improvement. However, the terms-of-trade improvement obtained in the home country by the home fiscal policy is counteracted by the corresponding foreign fiscal policy, and in a symmetric equilibrium no terms-of-trade improvement is achieved. Accordingly, countries suffer from tax rates and levels of public employment/consumption being too high. Hence, there are gains from policy coordination, and these gains increase with the degree of market integration as the gap between the cooperative and the non-cooperative tax rates increases with market integration. However, it should be noted that for the particular simulation shown the difference between the non-cooperative and the cooperative tax is not large.

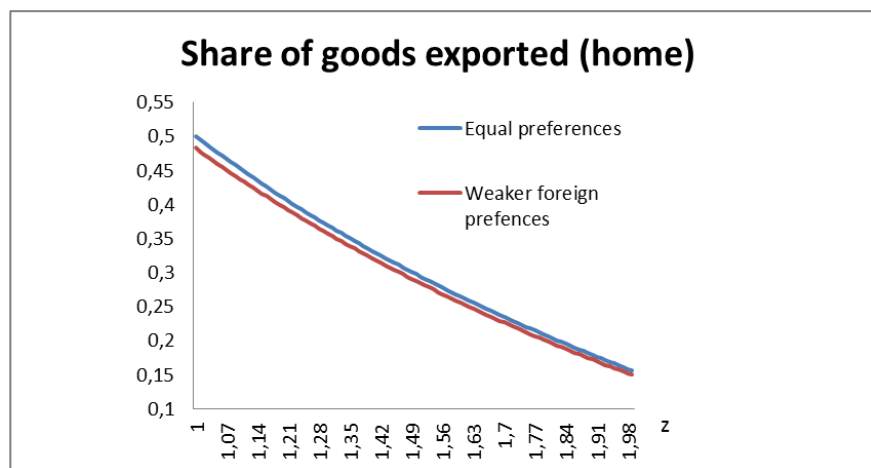
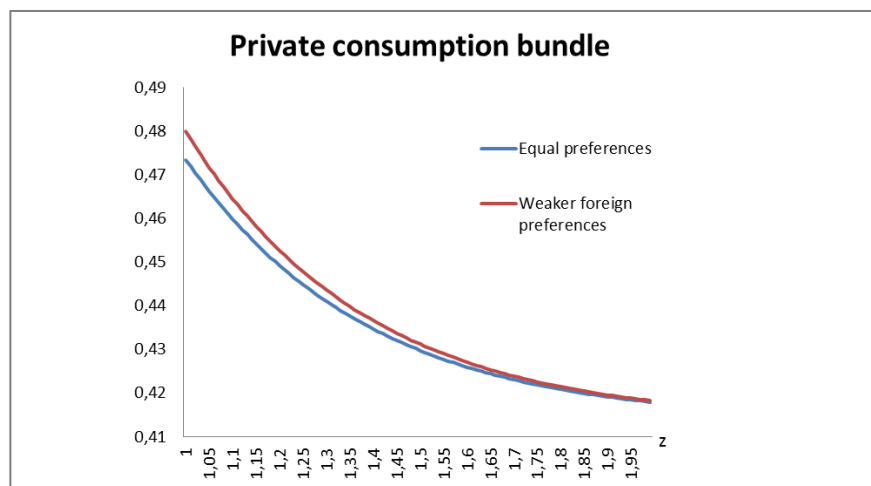
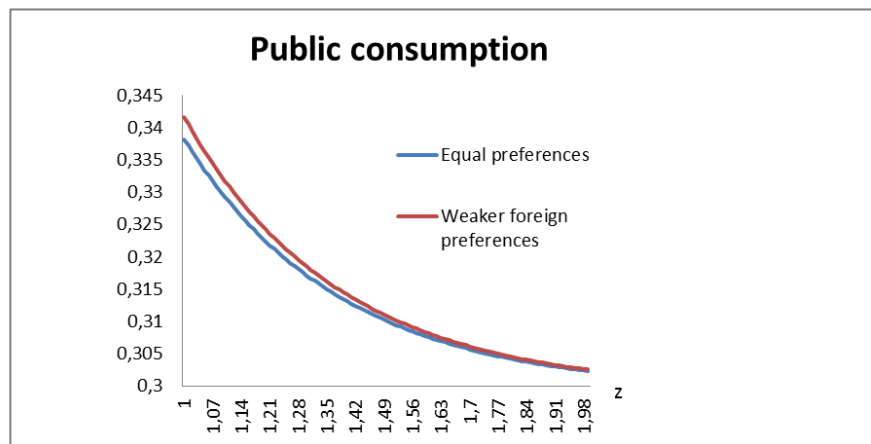
7.3.4 Nordic countries: Small open economies with large public sectors

It is a wide-spread view that product market integration is more problematic for countries with large public sectors. The view is that countries with a leaner public sector have a competitive advantage, which in turn puts more pressure on countries with a larger public sector when their markets integrate. If true, this may constitute a substantial challenge for the Nordic countries, all of which have large public sectors in an international context, and which as small open economies are deeply integrated into the world economy and highly dependent on external linkages.

This conjecture is not supported by the analysis in Andersen and Sørensen (2013). In fact the reverse holds in a model with an endogenous specialization structure similar to the one illustrated in Figure 7.8 and where competitiveness depends negatively on the tax rate/size of public sector. Figure 7.11 below is based on the same model as Figures 7.9 and 7.10 and illustrates what happens when a country with strong preferences for public consumption integrates with a country with a weaker preference for public consumption. One may interpret this as what happens to the Nordic countries when they integrate into the world economy (or EU for that matter). Lower trade frictions, z , are the driver behind market integration; i.e. we move left-wards in the sub-figures as the economies become more closely integrated.

Figure 7.11: Economy with strong preferences for public consumption integrating with the world economy





Weaker foreign preferences for government consumption turn out to imply a larger tax rate and a higher level of public consumption in the home country. Why is that the case? A weaker preference for public consumption in the foreign country leads to a lower foreign wage due to a lower tax rate (supply-side effect) and due to a lower public labour demand (demand-side effect). The lower foreign wage improves the competitiveness of the foreign firms and therefore reduces the competitiveness of the home firms. However, the lower foreign wage benefits the home economy through two channels. First a direct terms-of-trade effect where the lower foreign wage reduces the prices that home consumers pay for foreign goods. Second a specialization effect. The specialization effect appears as the lower foreign wage improves the competitiveness of the foreign economy, and the foreign economy accordingly takes over production of some tasks/goods that were otherwise produced in the home country. In Figure 7.11 the effect of weaker foreign preferences for public consumption is thus similar to that of a higher tax rate in the home country; see Figure 7.8b. Hence, the home country specializes in goods/tasks where it has larger comparative advantages and this specialization increases average productivity. Both channels have positive effects on the real wage and thus private consumption in the home economy. The higher private consumption lowers the opportunity costs of public consumption in the home country, which therefore may increase. The more integrated the economies are, the larger are the gains running through these two channels. In fact the gains from market integration are larger for the home country when the preferences for public consumption in the foreign country are weaker.

Similar results arise when a small country integrates with a large country. Hence, there is not unequivocal theoretical support for the view that small economies with large public sectors are necessarily exposed to race-to-the-bottom effects when product markets are integrated.

In this section we have focused on the structural (long-run) effects of taxation and ignored transition and adjustment issues. Both globalization and tax changes imply changes in the production/specialization structures of the economy, cf. Figure 7.8. The presumption has so far been that fired workers in contracting or closing firms/sectors immediately find new jobs in expanding firms/sectors. However, this reallocation process may be both long lasting and costly, and displaced workers may suffer during the adjustment period. Reallocations take time due to search frictions in the labour market and due to potential mismatches between the skill set of the fired workers and the skill set required by the expanding firms. The length and costs of adjustment processes thus

depend on the flexibility of the labour market and on the policies surrounding the labour market including educational policies. Although adjustment costs are non-trivial we have chosen to focus solely on the structural (long-run) implications of taxation.

7.4 Empirical evidence

Various types of empirical evidence are of relevance to the discussion above. It is natural to start with the labour supply elasticity, which in general is crucial and, in the case of a small open economy, is pivotal. There is a vast empirical literature assessing elasticities of labour supply (recently surveyed by e.g. Evers *et al.* (2005), Meghir and Phillips (2008) and Bargain and Peichl (2013)). As is well known, estimated labour supply elasticities are not large and mostly significantly below one. A common finding is that labour supply is more responsive along the extensive (participation) than along the intensive (hours) margin. Labour supply elasticities are also usually found to be larger for women than men, especially for single mothers. An interesting finding (see Evers *et al.* (2005) and Bargain and Peichl (2013)) is that labour supply elasticities tend to be falling in the overall employment rate. This is suggesting that the role of economic incentives matters less in increasing labour supply along the extensive margin, the larger the employment rate. Since the Nordic countries have relatively high employment rates, this is an important finding. In the same vein there seems to be a declining time trend in labour supply responses which may be attributed to a change in work preferences, including a stronger attachment of women to the labour market (which in turn may also be related to social preferences and gender issues, also reflected in child care institutions). These general findings do not preclude potential large responses for specific groups, e.g. due to high implicit tax rates or a clustering of individuals around thresholds in the tax system. Tax reforms addressing such problems are thus important to reduce distortions of labour supply decisions.

In an open economy context it is of crucial importance whether the small open economy assumptions are met. Very few empirical studies address this question directly. The empirical important implication of this assumption is that the incidence of tax changes is falling entirely on wage earners (since the wage cost employers can pay is determined exogenously from international markets), cf. Figure 7.7. Studies of the wage incidence of tax changes thus provide some indication on this assumption. Bennmarker, Calmfors and Seim (2012) present a study based

on Swedish micro data of the effects of the earned income tax credit recently introduced and expanded in Sweden (see Section 7.2). They find that the elasticity of the wage with respect to the net replacement rate or the retention rate (one minus the tax rate) is about 0.1–0.2; i.e. a change in the tax rate does have a (small) effect on the wage, suggesting that the small open economy assumption is not fully met. Note that the estimated elasticity provides a short-run effect, and it does not take into account any possible economy-wide repercussions (general equilibrium effects).

There are surprisingly few empirical studies exploring the link between taxation and wage competitiveness. Alesina and Rodrik (1997) consider how relative unit labour costs depend on labour taxation focusing on the role of wage setting institutions. They find that taxes increase relative unit labour costs, in particular in countries with intermediary levels of centralization, whereas there is only a small effect with more centralized bargaining. Daveri and Tabellini (2000) find that taxes increase wages in continental European countries, but do not find significant effects for the Anglo-Saxon and Nordic countries. Lane and Perotti (2003) focus on how the transmission from taxes to wages depends on the exchange rate regime. In flexible exchange rate regimes they do not find any effect, while there is a small wage-driving effect in countries with a fixed exchange rate. In conclusion there is thus evidence that taxes may affect wage competitiveness, but the effects are small. More research is needed on these issues. The abovementioned studies can be criticized on various grounds,¹⁰³ and they are all somewhat dated. In particular, there is a need for studies explicitly taking into account the globalization process.

7.5 Scope for making financing less distortionary

The discussion above took a very general perspective on both the labour market and the taxation system. In the following we consider specific issues related to both, and ask whether there is some scope to make the financing of the welfare state less distortionary and thus less costly.

¹⁰³ The study by Alesina and Perotti (1997) estimates an equation for the relative unit labour costs of a given country depending on the level of taxes in the same country. However, relative costs would in general depend not only on the country-specific tax, but also the tax rate in the competing countries, cf. e.g. the relative wage equation in Andersen and Sørensen (2012).

7.5.1 *Making work pay*

It is a well-known fact that the Nordic countries are characterized by both high tax burdens on labour and high employment rates, cf. Figure 7.12. This is suggesting that the distortionary effects of labour income taxation have been countered. One crucial factor is the design of the social safety net. On the one hand, the social safety net is relatively generous in international comparison, but, on the other hand, it is very employment focused. By the latter we mean that there are various employment conditionalities associated with eligibility to ensure that recipients of social benefits have a strong incentive for active job search. These conditions include requirements for active job search and various compulsory activation measures (active labour market policy); see e.g. Andersen (2013). This may also be phrased in the way that relatively generous transfers are combined with non-pecuniary incentives to be actively searching for jobs, and the social safety net is thus not an unconditional alternative to work. This procedure may have the advantage that incentives for employment can be reconciled with relatively generous transfers to those who are involuntarily without work. To this could be added that there are tax-financed activities – most notably care – which may serve to strengthen labour supply, in particular for women (see e.g. Jaumotte (2004)).

The effects of activation are most relevant to individuals with low wage options in the labour market. Incentives for these groups to be active in the labour market may thus be strengthened via both the activation requirements and making work pay either by adjustments of benefits¹⁰⁴ or by tax rebates like the earned-income-tax-credits. As noted above the latter has recently been introduced in the Nordic countries (except Norway).

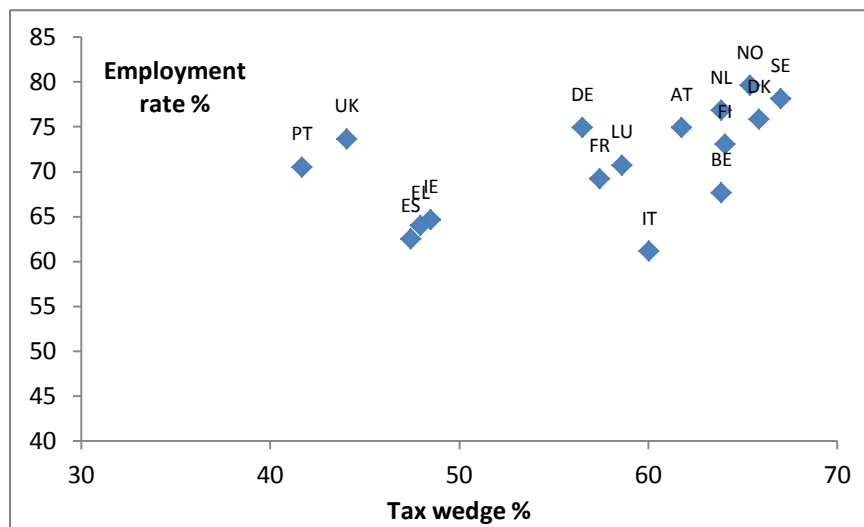
It should also be noted that the activation approach is more effective in the extensive dimension than the intensive dimension of labour supply. It is noteworthy that the Nordic countries have relatively low average working hours per worker. This has motivated tax reforms focusing on top marginal tax rates.

Even though tax distortions to some extent have been countered via the design of the social safety net, the question is whether this has

¹⁰⁴ There are some attempts in Finland to allow the low productivity employees to participate in labour markets and earn a restricted amount, which does not imply loss of unemployment benefits or disability pensions.

reached a limit. If so, a further tax increase will be more distortionary (marginal consequences much larger than the average consequences at present levels of taxation) because the scope for counteracting distortions has been reached. It follows that tax financing of the welfare state may have reached a limit.

Figure 7.12: Labour income taxation and employment rate, EU countries, 2010



Note: Tax wedge as in Figure 7.2. Employment rate for age group 20–64. Data applies to 2010.
Source: Tax wedge as Figure 7.2, www.oecd-ilibrary.org

7.5.2 Property taxation

As noted in Section 7.2 property taxation constitutes a relatively low share of tax revenue in general and in particular in the Nordic countries. This is surprising since there are several arguments in favour of a higher tax burden on property in all three classical dimensions: efficiency, distribution, and stabilization. Moreover, since property is a so-called immobile tax base, the basic globalization logic implies that it should carry a larger tax burden when economies integrate.

For all the Nordic countries analyses (see e.g. Danish Economic Council (2011), Swedish Fiscal Policy Council (2008), OECD (2012 a,b) on Finland and Norway) document that current taxation systems distort property markets by taxing the return to owner occupied housing (including imputed rents) at a lower rate than other forms of capital income. It is hard to see general arguments for subsidies going to housing since social concerns can be addressed by other means. Moreover subsidies to housing tend to benefit high income groups more than low in-

come groups both because the incidence of private ownership is strongly correlated with income, and because subsidies may be larger for very expensive houses. Finally, having property taxation respond to price developments in the housing market works to strengthen automatic stabilizers both with respect to public finances and reducing volatility in housing prices (see e.g. Dam *et al.* (2011)).

7.5.3 Alternative modes of financing

It is a general principle of the Nordic welfare model that welfare services and the social safety net are financed by general taxation. That is, access should be free and equal for all depending on need rather than ability to pay. This has attractive properties in terms of equal opportunities, distribution, etc. However, it also introduces common pool or incentive problems since there is no relation between contributions and entitlements. As a consequence the private return to work becomes less than the social return, which in turn distorts the economy leading to lower employment and production, etc. In a forward perspective this raises particular issues. The need and demand for welfare services are likely to increase due to general improvements in material well-being, new options (not least within health) and demographic changes, see SNS (2014). If these trends are driven by preferences and demand by citizens, there must also be a willingness to pay, and it may seem straightforward to let taxes increase to ensure the financing capacity. This argument is deceptive since it does not take into account that demands are not linked to payments via taxation, and hence tax distortions remain.

This raises the question whether other and less distortive means of taxation are available. One example of this is mandatory insurance and pension arrangements.¹⁰⁵ By making these mandatory the welfare state objective of ensuring that all relevant citizens are included and covered is maintained,¹⁰⁶ but the mode of financing is changed. If these schemes have an individualized element as is the case with labour market pensions,¹⁰⁷ then this form of financing will be less distortionary than general taxation for the basic reason that higher contributions benefit the

¹⁰⁵ A more radical solution is the establishment of so-called welfare accounts. See e.g. Bovenberg *et al.* (2012).

¹⁰⁶ Mandatory arrangements have the advantage that possible adverse selection problems are eliminated by ensuring that all participate. However, moral hazard effects of insurance remain.

¹⁰⁷ It is interesting to note that pension reforms in Denmark and Sweden have taken somewhat different routes, but in both cases there is now a strong link for the individual between contributions and entitlements.

individual directly. This can also be rephrased by saying that contributions are based on the benefit principle (see e.g. Summers (1989) and Kaplow (2004)). If the relation between entitlements and contributions is actuarially fair and agents do not suffer from myopia, there will be no distortion.¹⁰⁸ If these ideal conditions are not met, there may be distortions, but to a lesser extent than with general taxation. While this approach may relieve the public sector of substantial financial burdens it is not without problems. Such schemes will target those in employment, and hence there is an issue of unequal coverage and there are also distributional implications of such a change. One solution applied for pensions is to have a basic tax-financed public pension defining the minimum living standard that the welfare state finds acceptable for old citizens. However, this introduces new distortions due to the transition between the two systems. Hence, this does not escape the trade-off between efficiency and equity, but it may achieve a different and more preferable balance.

User payments are often mentioned as a possible way to counteract the expenditure drift within the welfare state. User payments are used by the Nordic countries (see e.g. Hansen and Houlberg (2012)), but not to a large extent. Moreover there are no clear principles for their application, which seems more to depend on historical circumstances. User payments have three immediate effects. First, it may reduce use or demand for the particular service, which, in turn, leads to a cost saving. Second, it provides some revenue. Finally, financing via user payments does not release the same distortions as general taxation since the payment, in case of user payment, is related to the demand and use, while with general taxation it depends on income and thus distorts incentives.

The more the user payment reduces demand, the larger the cost saving and the smaller the revenue accruing from the payment. How sensitive the use is to the user payment is thus of crucial importance. There is an international empirical literature on the effects of user payments within health and long-term care, see Kiil and Houlberg (2012). For health services (like medicine, consultation with a general practitioner, ambulant treatments, etc.) these studies do in general find that user payments reduce demand. The order of magnitude is such that a one percent increase in the user payment reduces demand between 0 and 0.4% depending on the specific service and country. There are fewer

¹⁰⁸ Under these conditions it is difficult to justify a mandatory pension scheme.

studies of the effects of user payment in old-age care, but there is also evidence that demand is reduced by user payments on such services. There is thus evidence that user payments can be used to affect the level of demand for services which, in turn, has implications for both costs and revenue.

An important issue in relation to user payment is the distributional consequences. User payments are relatively more important for low income families, and especially low income families with a strong need for particular health services. The studies considered in the survey by Kiil and Houlberg (2012) thus find that user payments tend to have a problematic distributional profile. This problem can be addressed in different ways. One is to limit the sum of user payment to be paid over some period (as known for e.g. medicine). This ensures that individuals with a strong need for a particular type of medicine are not disproportionately affected. Another approach is to make user payments depend on income. This has, however, the disadvantage that it may increase effective marginal tax rates, in particular for low income groups.

User payments are not the solution to the problem of financing welfare services, but it can contribute to reduce some of the problems. Without jeopardizing the general principles of the welfare state, user payments cannot be a main source of financing. They may, however, serve the purpose of reducing demand, lowering costs, and providing some revenue. For distributional reasons the level of user payments is bounded, but they are used today and there is a need for more general principles for the use of user payments and for aligning them more consistently across various welfare services. Even though user payments have some drawbacks, they should be seen against the alternative. There is a financial challenge to be solved, and the alternative may be that some services will not be included at all in the public package.

7.6 Concluding remarks

It is a widespread concern that globalization makes it more difficult to maintain generous tax-financed welfare arrangements. In this paper we have focused on the role of product market integration and thus the easier scope to relocate production and thus jobs across economies. We have based our approach explicitly on modern theories of trade capturing essential elements of the globalization process. These models also predict that countries with higher taxes tend to have relatively higher wages. However, one cannot conclude from this that further integration

increases the social costs of tax financing. Integration is associated with gains from trade, the political motivation for such integration, which increases production and consumption and thus tax bases and in this way eases tax financing of the welfare state. Simultaneously it changes the marginal costs and benefits of publicly provided activities. An important conclusion from these analyses is that further product market integration is not a particular threat to small countries with a strong preference for public sector activities.

This does not imply that the design of the tax system is immaterial. On the contrary, labour supply incentives along both the intensive (hours worked) and extensive (labour force participation) margin are of crucial importance. The Nordic countries have in recent years undertaken a number of reforms to lower marginal tax rates and to make work pay.

Along the same line it is important to consider alternative modes of financing which are less distortionary. This includes mandatory social insurance arrangements and user payments.

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Part III

1. The Nordic model – challenges and reform needs

*Vesa Vihriälä*¹⁰⁹

1.1 Introduction

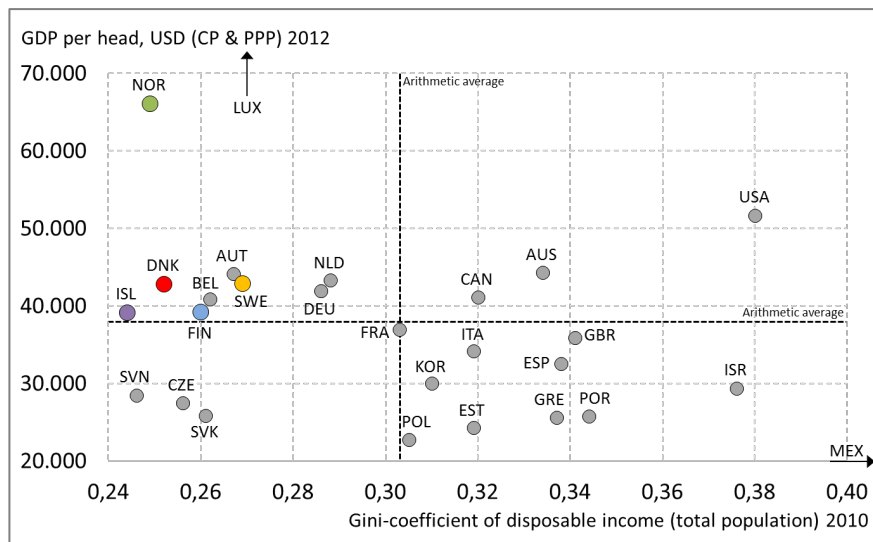
The Nordic countries have fared well in comparison with other advanced economies in recent decades. All of them have been able to combine efficiency and equity well: a high average standard of living with small income differences and a low level of poverty. The key elements of the Nordic model have typically been identified to include trust in markets in the allocation of resources in the private sector, opening up for free trade, comprehensive public safety nets to allow risk taking and to reduce poverty, free and mostly high quality education, efficiently produced and high-grade tax-financed health and social services, substantial public spending on R&D activities and efficient tax systems to collect the high tax revenues needed to finance the large public sectors, and strong trust in institutions including in the political system.

Calmfors' analysis in Part I of the book shows that while it is still justified to talk about a Nordic model, it may not be as special and internally uniform as the expression suggests. Several other countries have expenditure and tax levels of the same magnitude and have also reached rather similar combinations of average welfare and equality. Nor has the performance of the Nordics been uniformly as stellar in the past few years as say from the mid-1990s until the onset of the global crisis in 2008. The Nordics have clearly been vulnerable to external shocks and unstable internal developments, in different ways in different countries.

¹⁰⁹ Managing Director at the Research Institute of the Finnish Economy (ETLA). This is a self-standing discussion of policy challenges and possible responses while drawing heavily on the findings in Part I and Part II. I am grateful for the comments on an earlier version by Lars Calmfors, Torben Andersen, Sixten Korkman, Tarmo Valkonen, Rita Asplund, Terttu Luukkonen, Niku Määttänen, Jukka Lassila and Petri Rouvinen, and for research assistance by Sinikka Littu and Johanna Soininen.

The Nordics face many important challenges going forward. Many of them are common to all developed economies while some are more specific to small open economies with a high level of taxation and a comprehensive welfare system. On the other hand, some of the emerging trends may also provide good opportunities for the Nordic societies. Responding to the challenges as well as full utilization of the opportunities calls for forward-looking evidence-based policy reforms. In this concluding part of the book I will first discuss these challenges and opportunities and then look at potential policy responses.

Figure 1: Combinations of average living standard and equality



Source: OECD.

1.2 Key challenges and opportunities

1.2.1 *Macroeconomic instability*

The global financial crisis and the Euro crisis have shown that deep recessions are not just part of economic history. The “Great moderation”, extending from the mid-1980s to 2007 turned out to be a phase of building up large macroeconomic imbalances within and across countries and excessive risk taking in the financial sectors. The reversal of unsustainable positions has resulted in the weakest growth performance in the advanced economies since the 1930s.

The Nordic economies are open, both in terms of gross trade and the degree to which they participate in global value chains. Therefore they obviously are vulnerable to global and European shocks. However, the extent to which the Nordics have been affected has depended very much on the economic structures and domestic policies.¹¹⁰

Norway has been least affected thanks to its steady incomes from natural resources, solid public finances and a stable financial system. At the other end of the spectrum is Iceland, which had developed a major credit-financed bubble prior to the global crisis, just as Sweden and Finland had done in the late 1980s. The Icelandic experience is similar to that of Spain and Ireland at the same time, but the bubble was on a much bigger scale in relative terms. According to some accounts, the Icelandic boom-bust episode resembles more the Mediterranean and emerging economies crises than the earlier Nordic crises (Gylfason 2014). In any case, the crash was exceptional and very painful. Nevertheless, thanks to drastic policy measures involving for example major depreciation of the currency and the introduction of foreign exchange controls the economy has recovered at a relatively fast pace.

Denmark and Sweden were rather equally affected by the global shock in 2009, GDP declining by some 5%. Sweden has recovered from the slump quite well, thanks mainly to solid public finances, strong competitiveness and a robust financial system (despite significant exposures of some banks to the plummeting Baltic economies). The Danish economy has recovered much more slowly, owing to a massive credit-financed domestic property boom and loss of cost competitiveness over an extended period of time before the onset of the global crisis. Perhaps re-

¹¹⁰ For an early analysis of the impact of the global crisis on the Nordics see Gylfason *et al.* (2010).

flecting lack of earlier serious crisis experience, the banking system has also been more strongly affected in Denmark than in the other Nordics leading to the closing of a number of small banks.¹¹¹ Denmark and Iceland were spared from the systemic banking crises Norway, Sweden and Finland experienced in the early 1990s and which very likely has impacted on subsequent bank and supervisory behaviour.

Finland was hit hardest among the Nordics by the global crisis and lost 8.5% of GDP in 2009. This was mainly due to the strong specialisation on investment goods in manufacturing, as the global investment boom of 2007–2008 turned into a collapse of investment activity. However, also the recovery has been very weak reflecting primarily the decline of ICT production (Nokia!) and long-term weakness of paper demand. Apart from a symmetric global shock Finland has also been hit by an asymmetric shock. At the same time, weakened cost competitiveness particularly since 2008 has led to a loss of market shares in other sectors as well. The combined effect has been a stagnation of the Finnish industrial output and GDP at well below the pre-crisis level.

The different patterns of the Nordic economies in the recent years suggest what is likely to be important for macroeconomic stability going forward. First, a credit-fuelled property and asset price boom makes an economy vulnerable to shocks and also slows down the recovery due to a debt overhang problem. Second, a strong reliance on one or two export sectors contributes to vulnerability even if such specialisation is good for long-term growth. Third, while gradually weakening cost competitiveness may not be a big issue in good times, this can have a major impact in bad external conditions.

Strong public finances are of course very important to allow for temporary fiscal stimulus and to avoid destabilising expectations about sovereign credit quality. In the most recent recession all the Nordics have in fact made extensive use of the fiscal space for stabilising fiscal policy while avoiding any speculations about government debt quality, with the notable exception of Iceland. Apart from Iceland, the government gross debt levels are still moderate in the Nordic countries. Equally important, in Norway and to a lesser degree in Finland and Sweden the public sectors have more financial assets than liabilities. This is a good starting point. The Nordic sovereigns (Iceland being an exception) have in fact

¹¹¹ That several banks have been closed and there has been some market turbulence associated with the events may at least in part be due to the aggressive bail-in policy.

maintained AAA credit ratings throughout the recent crisis. This has helped them to keep interest rates low. But given the sustainability gap and the gradual increase in the gross debt level, not only Iceland but also Finland could see its fiscal policy severely constrained by increasing public debt in the years ahead, and some risks exist also in Denmark.

Finally, it is of some importance that the choice of the monetary policy and exchange rate regimes does not seem to be all that important for macroeconomic stability under normal conditions. Undoubtedly, the fast recover of the Icelandic economy is partly due to the significant depreciation of the currency just as the Swedish and Finnish recoveries benefitted from depreciation in their respective crises in the early 1990s. However, under more normal circumstances the exchange rate and the possibility to fine tune short-term interest rates does not seem to matter that much. The Swedish and Finnish economies, which have many structural similarities, performed almost like twins in the first decade of the EMU until the global crisis despite very different monetary arrangements. It is likely that the depreciation of the Krona helped the Swedish economy somewhat in 2009 and 2010 relative to Finland, but the effect was not large and did not last long. The fact that Finland lags considerably behind Sweden in terms of cumulative output growth since the trough of the crisis is due the asymmetric problems referred to earlier rather than the monetary regime (Suni and Vihriälä 2013). This does not imply that adjusting to a major structural shock could not be helped by exchange rate flexibility.

1.2.2 Global competition and technological change

Increasing global competition and technological change have been the two key drivers of the global economy over the past two decades. True, the “Great Recession” dented growth of world trade and output. Also the pace of technological change as measured by the rate of total factor productivity growth has slowed down since 2008. Nevertheless, growth of the emerging economies recovered fast and their share in the global economy has steadily increased. Global competition is increasingly felt in the developed economies including in many services sectors which were earlier quite sheltered from foreign competition. At the same time, new technologies are being continuously introduced to the market by start-ups and other companies challenging the competitive advantages of incumbent firms.

Breaking-up of the value chains

An important element of the change that has taken place in the global economy is the breaking up and reorganisation of value chains. Until the 1980s industrial production was concentrated in clusters where all key

phases of production of a final good took place in the same location, often although not always based on domestic raw materials. In that context globalisation meant more extensive foreign trade in final goods and raw materials. This was also the way the Nordic economies opened up. Forest clusters, in particular in Finland and Sweden but also in Norway, exported paper and other wood-based products. Similarly, plentiful renewable energy sources made Norway and Iceland important producers of energy-intensive goods such as fertilizers and aluminium for export. Domestic iron ore was in turn a central factor contributing to the development of the Swedish metal and machinery industry. Danish specialisation in farm products for exports is another example.

The ICT revolution in particular but also a continued decline of freight costs and lower tariffs since the 1980s have changed this pattern and led to a new phase of globalisation. The “second unbundling” (Baldwin 2006) of industrial production has radically changed the way production processes are structured. The production of a final good or service can be split into many stages which can take place very far away from one another. While in many cases several of the stages occur within the same global corporation, often important parts (intermediate goods or services) are outsourced to other companies which again may be located very far from where the final product is produced.¹¹² One has started to talk about global value chains (GVC). A key issue is how the value added of the whole production chain is distributed between companies and the locations of their activities.

The technological change that has facilitated the second unbundling has at the same time been skill-biased or rather “non-routine-biased” in the sense that the new technologies have often been complementary to highly skilled labour engaged in non-routine tasks while they have been substituted for many non-skilled and also routine jobs with higher skill requirements. The combination of replacing routine work by computers and offshoring such work to low-cost emerging economies has been a central transformation of the global economy over the past two decades. It has also had a profound impact on the Nordic economies. Many Nordic companies have benefitted from these developments, which have allowed them to increase productivity and lower costs. Some of them have become truly global companies as a result, with the bulk of their em-

¹¹² While the share of intermediate goods in world trade declined until the early 1990s, their share has slightly increased since and in particular the share of foreign intermediates in all intermediate products has increased robustly (Yane 2013).

ployment being located outside their home country. Nokia and Kone of Finland and Ericsson and Ikea of Sweden are prime examples of this.

The loss of manufacturing jobs in the Nordic countries has been fairly similar to that in other advanced economies. This has created substantial adjustment challenges and also impacted on the distribution of market incomes, as the job losses have been concentrated in low to medium-paid manufacturing occupations and new job opportunities have emerged in high-paid professions as well as in some low-paid service occupations. There has been a tendency towards polarisation in the labour market (Eurofound 2013, Asplund *et al.* 2011). While unemployment has increased markedly in some locations, the increase in overall unemployment has been moderate. New jobs have been created both in private and public services.

Over the past few years new features of technological change and global competition have become visible and have also started to impact on the Nordic economies. The digital revolution has advanced creating superior or completely new digital services and new business models. Geographical distances are irrelevant in the production of such services and their production can be scaled up at no or minimal costs. These trends greatly help companies in conquering markets on the basis of superior technology or business ideas and make incumbent companies vulnerable to new competition.

A prime example of the impact of such new competition is the evolution of Nokia. The company was the global market leader in mobile phones by a wide margin in 2007. However, the introduction of touch screen technology by Apple on the iOS operating system and the emergence of the Android operating system by Google as well as the exploding number of applications that became available for these operating systems quickly toppled Nokia from its position; Nokia's market share plummeted. As a result, the company was forced to sell its mobile phone business to Microsoft, shed more than half of its employment in Finland and refocus its operations in a fundamental way.

Forecasting technological developments is hazardous. In fact rather diverse views exist about future productivity trends. Some interpret the observed recent global slowdown of the growth of total factor productivity as a beginning of a new era (Gordon 2013). Others emphasize the potential of digital technology and predict a recovery of productivity growth even if not perhaps to the level seen in the more than ten-year period prior to the global crisis (Byrne, Oliner and Sichel 2013). In any case, it seems unlikely that the transformative power of digital technology is fully exhausted. Similarly, it is unlikely that the trend towards an

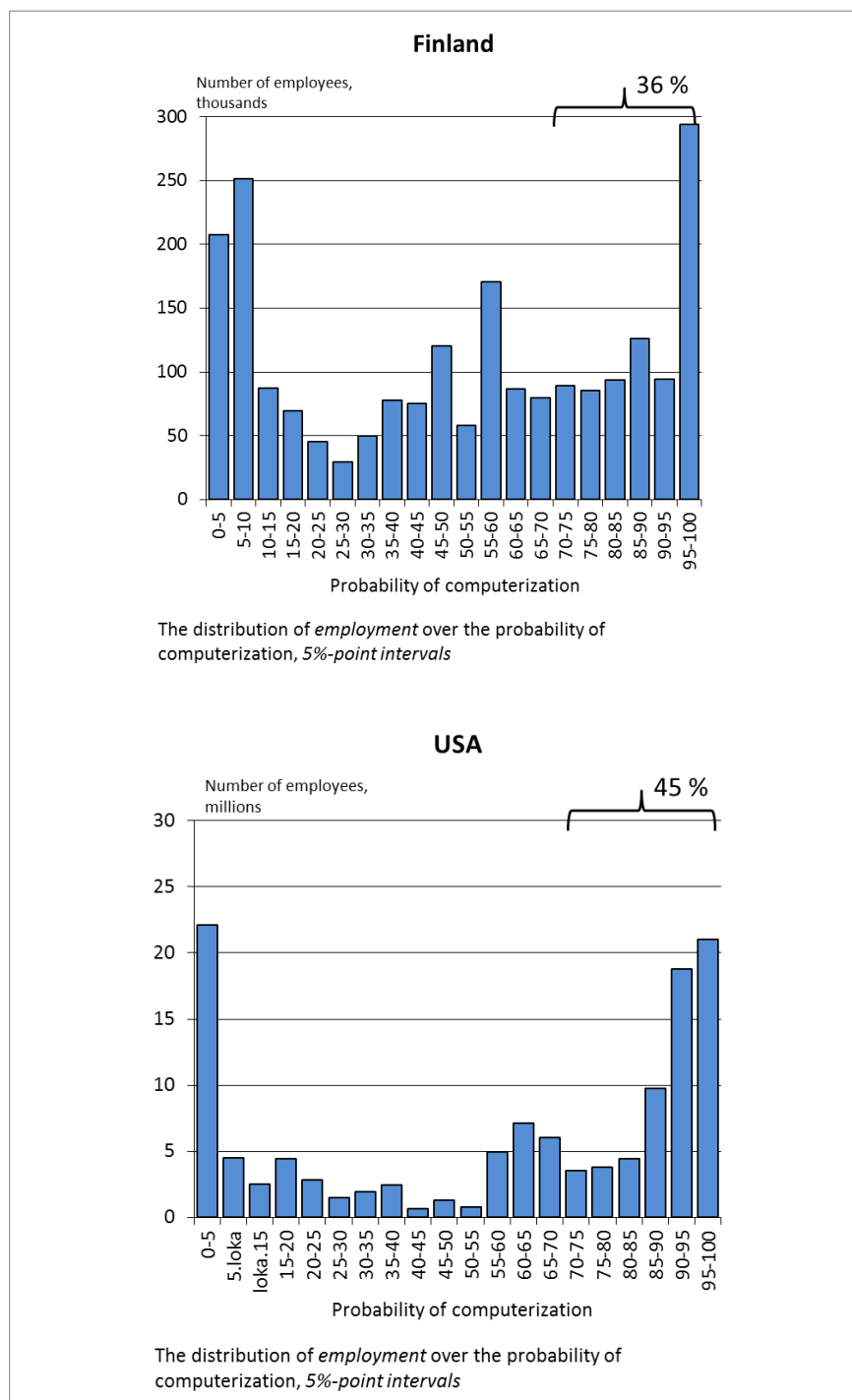
even more closely integrated global economy would be reversed in the foreseeable future. The on-going negotiations about new regional free trade agreements suggest that the political will to advance free trade and integration is still there.

These trends provide both challenges and opportunities for the Nordics. As other developed economies, the Nordics continue to face significant adjustment pressures. Lines of production can quickly turn unprofitable, companies face extinction if not capable of changing, and jobs continue to be destroyed.

Automation threat to jobs

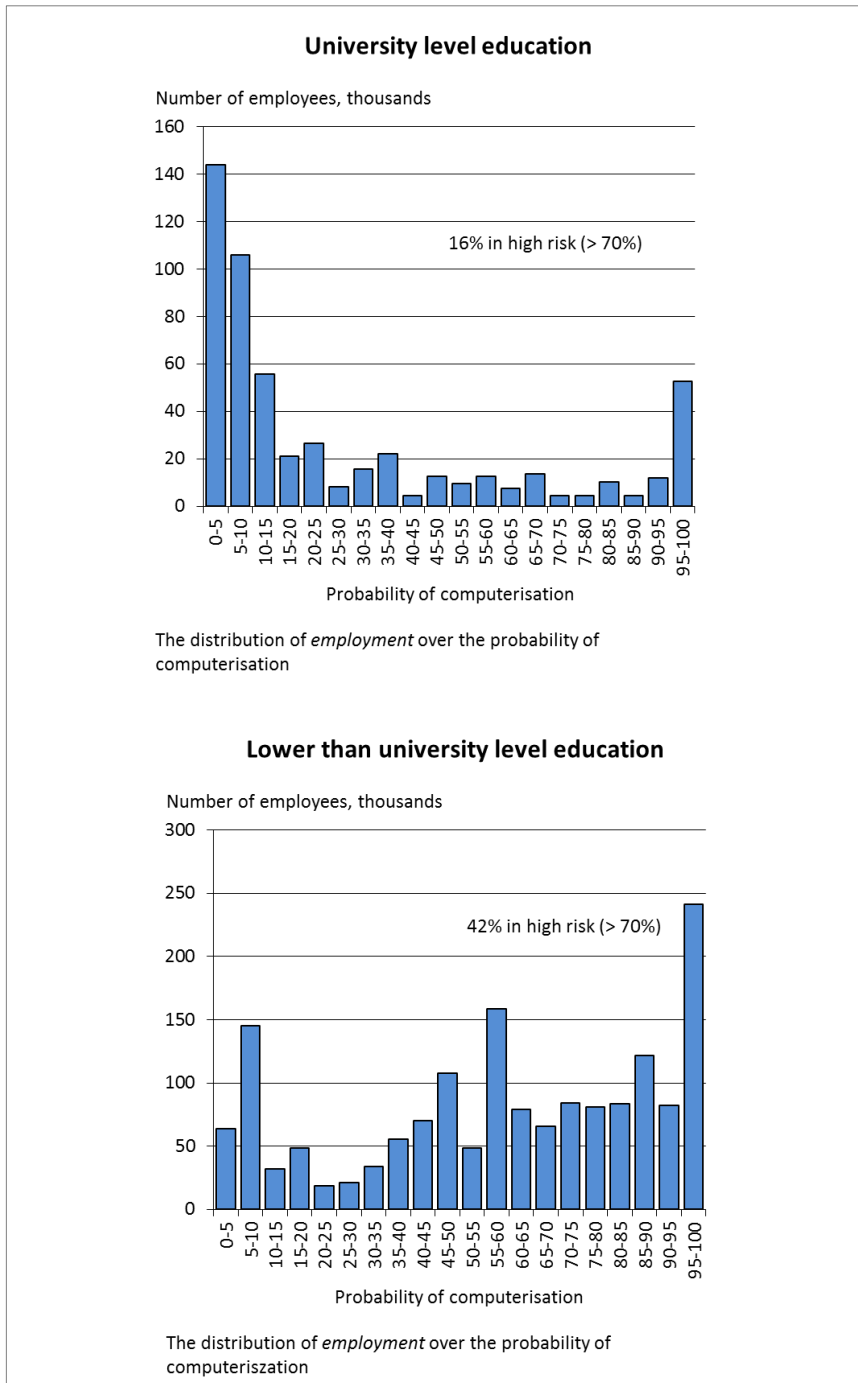
That technological advances destroy jobs is no news. Nevertheless, the perspective that the ever more powerful digital technology could wipe out a large fraction of the current jobs, some of which require considerable skills, in a relatively short period of time has received much more attention recently. The analyses by Frey and Osborne (2013) and Pajarinen and Rouvinen (2014) suggest that one-in-three to one-in-two jobs have a very significant risk of being replaced by automation in the coming 10–20 years. The analyses indicate that the pressures on jobs to disappear due to technological change continue to be the greater the lower the wages and the lower the skill requirements are. With the existing occupation structures jobs in the private sector are more vulnerable than jobs in the public sector. In the light of Pajarinen's and Rouvinen's comparative analysis the Nordics may be slightly less vulnerable to this development than the US, assuming that the job structures in the other Nordics resemble more those of Finland than those of the US.

Figure 2: Jobs threatened by computerisation in Finland and the US



Source: Pajarinen & Rouvinen (13.1.2014). ETLA Briefs, 22. <http://pub.etla.fi/ETLA-Muistio-Brief-22.pdf>

Figure 3: Jobs threatened by computerization in Finland by level of education



Data source: Statistics Finland, ETLA calculations.

The automation potential has important distributional implications. The evidence of the impact of technological change on jobs so far suggests that while overall employment may not have changed too much, the new jobs replacing the old ones tend to be concentrated at the low end and the high end of the pay scale (Autor, Dorn and Hanson 2013). Also going forward, existing low-to-medium wage jobs are more likely to be destroyed, while the immediate benefits are likely to accrue to the owners of the machines and the highly skilled who operate the machines and manage the machine-dominated production processes. Although new “non-routine” jobs are created at the low-skill end too, they tend to be in personal services and the like where productivity and as a consequence pay remains low. Taken together, it is likely that the tendency towards polarisation of the labour markets observed in many countries continues (Manning 2014, Boehm 2013). This suggests that there is continued pressure for income disparities to increase.

The rather generous unemployment benefits and other safety nets soften the immediate impact of automation on income disparities in the Nordics. On the other hand, the unemployment consequences could be more serious if the same factors make the “reservation wages,” i.e. the wages below which people are not willing to accept job offers, relatively high unless the incentives structures are modified and/or paths to re-employment improved in other ways.

The new technologies will foster competition and could destroy jobs in uncompetitive firms more easily than before. For the “creative destruction” to function properly, there must be sufficient incentives for creating new businesses and labour needs to be mobile across companies, occupations and locations. This in turn requires not only appropriate competences but also sufficient economic incentives to move.

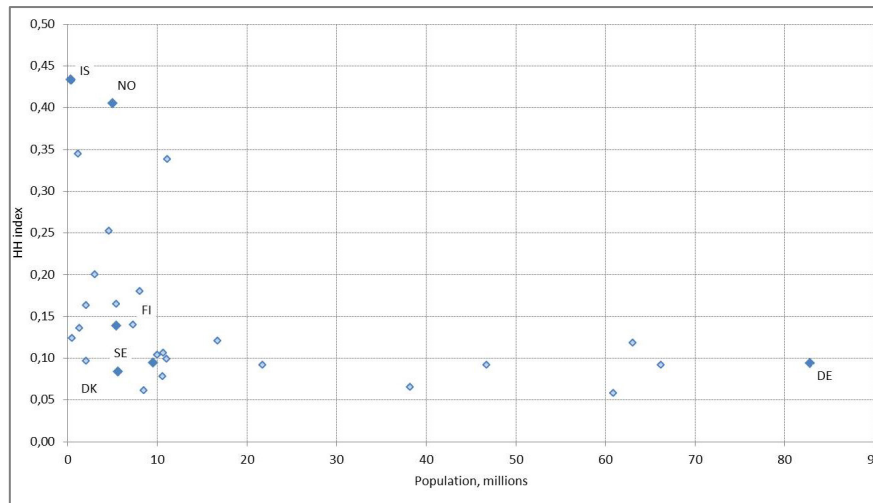
Specialisation a must but risky

A particular issue stems from the small size of the Nordic economies. The economies cannot spread activities around in many fields of production but need to specialise if they are to be efficient. Iceland and Norway are highly specialised due to their natural resources. The exports are concentrated to an exceptional degree in aluminium and fish (products) in the case of Iceland and in oil and gas (products) in the case of Norway.

Sweden, Denmark and Finland are more typical small countries in terms of specialisation, irrespective of the precise measure used. Of

these countries Denmark displays “revealed comparative advantage” (RCA) in more industries than Sweden or even Germany, while Finland has the fewest such industries.¹¹³ However, there appears to be little difference in the quantitative importance of the RCA industries between Sweden, Denmark and Finland currently, as the size of the Finnish ICT sector declined substantially from the exceptional level reached before the current crisis (Kaitila and Virkola 2014).

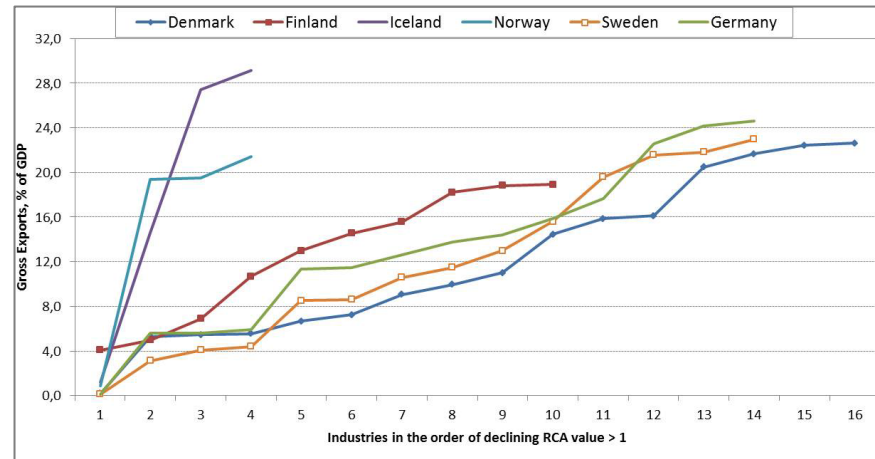
Figure 4: Concentration of exports and country size*



*Concentration is measured by Herfindahl-Hirschman index, the data are from 2012. Source: Unctad. Source: Kaitila and Virkola (2014).

¹¹³ Revealed comparative advantage of industry i of country j is the ratio of the share of that industry's export in all exports from j divided by the share of industry i export's share in global exports.

Figure 5: The importance of industries in which countries specialise*



* Cumulative gross exports by industries of revealed comparative advantage (RCA) in 2007–2009, % of GDP. The Industry rankings are specific to each country.

Specialisation according to comparative advantage is obviously what we would expect and applaud when countries seek to gain from international trade. But it has the downside of making the country vulnerable to shocks to that particular industry or line of production. The dramatic decline of Finnish manufacturing exports due to the Nokia shock and the coinciding secular decline in paper demand is an example of the materialisation of such a risk.

The fact that the Nordics have reached the global technology frontier in many areas is likely to accentuate this vulnerability. This implies that more than in the past, the Nordics have to rely on innovation rather than imitation, even if most of the new technologies to be applied in any country still originate abroad. The small size of the Nordic economies implies that they cannot invest heavily in absolute terms in innovation, be it money or human resources, in many fields at the same time. The dilemma of all policy makers about how to promote innovation with strong enough policy measures while not trying to pick winners is therefore likely to be starker in the Nordics than in bigger economies.

A logical policy response to higher volatility in the economy is to reinforce the insurance elements that protect against idiosyncratic risks. This can happen on different levels. An extensive social safety net obviously helps individuals to adjust smoothly by allowing them time to seek new jobs in which they can make good use of their skills and thus be productive. Diversified equity ownership across the Nordics and more widely can shield capital incomes from shocks specific to one country. Similarly, an integrated Nordic and European banking market helps

credit flows to smooth country-specific shocks. An obvious further step would be cross-country fiscal stabilisers, which are being discussed in the Euro area context. The political hurdles for such new mechanisms are however very high, and unless properly addressed, moral hazard problems could be serious.

Unfortunately, the shocks hitting the economies are not just manifestations of symmetric cyclical variation in demand. More often than not they are permanent in the sense that a whole line of production disappears as tastes change or superior technology used by competitors make existing production obsolete. Therefore and because all of the above insurance options are incomplete, the capacity to adjust, call it *agility* or *resilience*, must be the primary means to keep the economies stable and able to benefit from the gains of trade.

Nordic strengths

The new competitive landscape is not just a challenge. There are at least a couple of factors which might favour the Nordics relative to some other developed economies. One is the aforementioned fact that many of the rapidly growing digital services are easy to scale up and distribute around the globe with close to zero marginal costs. This reduces the disadvantages that small producers from relatively peripheral locations without large home markets have previously faced in introducing new products globally. The game industry is an extreme example of this. These technological developments as well as the opening up of the North East Passage to Asia further down the road are likely to make the Nordic region a more attractive location for economic activity from the point of view of economic geography.

Second, the Nordics, particularly Sweden and Finland, have invested heavily in digital technology, in education, research and development and in infrastructure. As this general purpose technology has a wide variety of applications, the competences developed are likely to be useful in many different undertakings. In addition, many Nordic companies have been active in developing new products and processes to address environmental challenges, which are becoming increasingly important. Demand for cleantech solutions is bound to increase.

Third, the Nordics have relatively well-functioning labour markets and the skill level of the adult population is generally speaking good. What may be even more important is that the Nordics have a tradition of extensive participation in adult education. All these factors should help the labour force to respond to changes in the relative demand for different skills thus aiding adjustment to any structural change in the economy.

1.2.3 *Demographics and the sustainability of public finances*

The Nordic countries are no exception with regard to the main trends in demographic developments. Life expectancy continues to increase while fertility is much lower than it used to be and below the level needed for a stable population. As a result, the share of those in the working age in the total population is declining, or, put differently, the dependency ratio is increasing. This creates increasing pressure on public finances when the public sector has important responsibility for the welfare of the non-active population. In the Nordic welfare states such a responsibility is obviously extensive, making the ageing of the population potentially a very significant challenge.

Fortunately, there are factors mitigating these tendencies substantially although in very different degrees among the Nordics. First, even though below the reproduction rate, the fertility rates in all Nordics have remained high in comparison to most other advanced economies. Child-friendly family policies have been instrumental in this. Second, the Nordics have also started to attract more work-related immigration. Sweden has traditionally been a destination of a lot of migration, work-related and otherwise, and immigrants account for some 15% of the population. Also in Norway the immigrant population has increased rapidly over the past decade to some 12% of the total population. In Denmark immigration has increased rather steadily but the level reached is lower than in Sweden or Norway. Similar trends can be observed in Finland, although the share of the foreign-born population in Finland still is among the lowest in the advanced economies. In Iceland immigration increased substantially prior to the economic crisis and the immigrant population reached some 12% of the population but has diminished somewhat since.

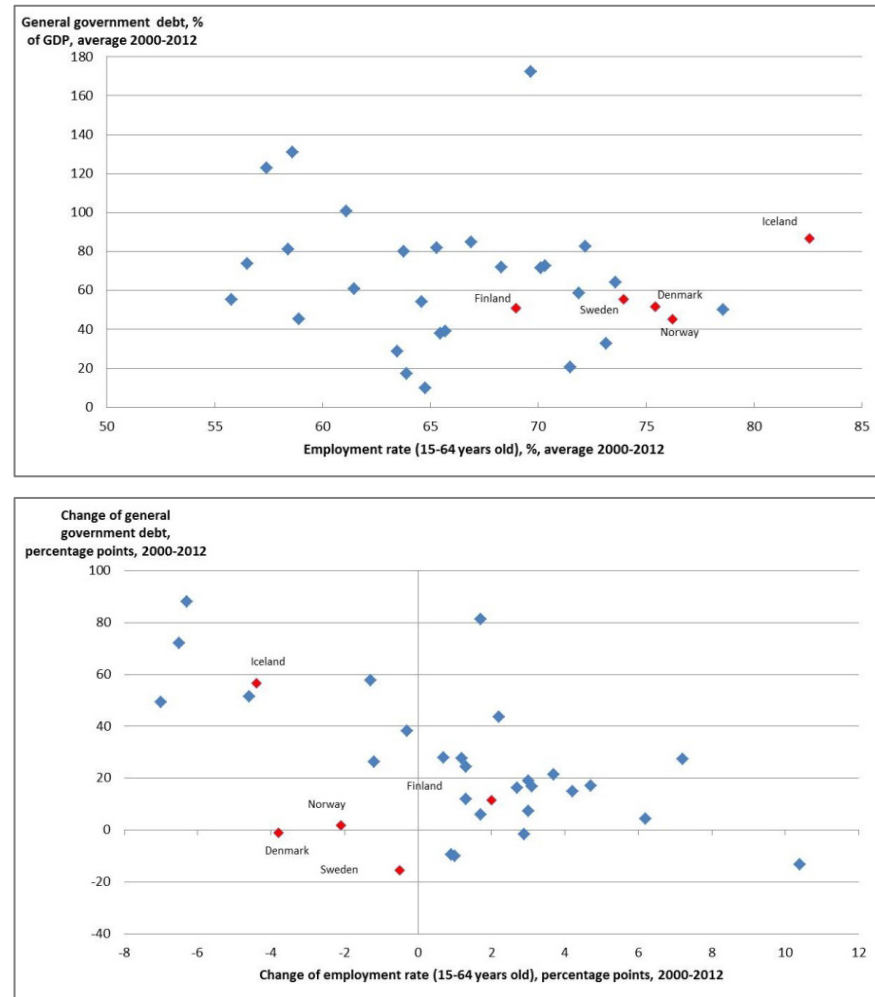
Going forward, quality-of-life aspects might become a Nordic asset in the competition for skilled labour in the long term. The Nordics come out well in almost all international quality-of-life comparisons, including the OECD's Better Life Index. In the short term, the difficulties of many Southern and Eastern European countries combined with more restrictive attitudes towards work-related immigration of some key immigration destinations such as the US and the UK could boost the Nordics' relative position in this regard.

All in all, while old-age dependency ratios will increase significantly in all Nordics in the next 25 years, the ratios are expected to stabilise in Iceland and Denmark and increase only a little in Sweden, Finland and Norway beyond the late 2030s. By 2040 the ratio is forecast to be below the EU average in all the Nordic countries. Among the Nordics, Finland is

projected to have the highest old-age dependency ratio until 2050 and particularly so until 2030.

Apart from better than average demographics, the Nordics have succeeded in reaching and maintaining high participation and employment rates by international standards. This is primarily due to the high female labour market participation reflecting again policies encouraging and facilitating such participation, for example, through individual taxation, widely available day-care and old-age care services. Iceland is at the global top in this regard, while Finland is a little bit of an outlier with an overall employment rate below 70%. This is mainly due to the low employment rate of people above 55 years of age, particularly men. But also females in the reproductive age participate in the labour market a little less than in the other Nordics most likely because of relatively generous subsidies to mothers staying home with children under three years of age. The high employment rates are positive for public finances both through wider tax bases and through smaller demand for social transfers (for more detailed analysis, see Part I).

Figure 6: Employment rate and public debt



Source: OECD.

Furthermore, pension policies have been adapted to the changing demographic outlook rather proactively. With the exception of Iceland, either the level of pensions or the retirement age has been linked to life expectancy. This implies that the impact of increasing longevity on pension expenditures is largely eliminated. The Swedish system also protects the contribution rate against the effects of variations in the contribution base and the yield of the pension funds. Obviously, this at the same time makes the level of pensions vulnerable to such shocks. In Denmark the retirement age has been increased as a discretionary decision and linked to life expectancy although with a lengthy transition period. The link to life expectancy decided upon is very strong, as every additional year of life expectancy will in-

crease the pension age by a year. In all countries early pathways from employment to retirement have been restricted or made less attractive. Further reforms are being contemplated in Sweden and Finland.

Public sectors are moreover considered relatively efficient in the Nordics even if reliable comparisons are difficult to make. Thanks to these factors and a tradition of fiscal prudence in general, the public finances of the Nordic countries are among the best in Europe; Iceland is an exception since the crisis. Particularly Norway and Sweden have strong public finances. Nevertheless, as discussed in Part I, there is reason to be worried about the long-term pressures on public finances in the Nordics, too. While national and OECD estimates are somewhat more positive (particularly for Sweden and Denmark), all Nordic EU countries have a sustainability gap according to the European Commission (European Commission 2013). The situation is worst by a large margin in Finland. The latest Commission estimate of the sustainability gap is a whopping 6.2% of GDP. While this is likely to exaggerate the true gap, Finland's relative long-run fiscal outlook is clearly the worst among the Nordics. Also Iceland has a serious sustainability challenge in the medium term; according to the OECD (2013), the consolidation requirement to reach the 60% public debt ratio by 2030 is around 5% of GDP, higher than in the case of Finland.

All the positive factors notwithstanding, there is a structural risk in the Nordic public finances. As the "public welfare promise" is extensive in the Nordics, the so-called Wagner's law and Baumol's disease pose bigger challenges for them than for most other developed economies. According to the former hypothesis, demand for public services tends to increase as a share of GDP as the economy develops and GDP per capita increases. Baumol's disease in turn suggests rising relative prices of the services whose productivity growth is weaker than in the economy on average. As many services of this type are taken care of by the public sector in the Nordics, public finances come under continued cost pressure.

More specifically, any shocks that increase the demand for or cost of providing care for the vulnerable in the society are likely to put great pressure to increase public spending in the Nordics with the strong egalitarian political preferences. In particular, the wider the concept of treatable medical conditions becomes, and the more expensive technically possible medical interventions become, the stronger will be the calls that the state should finance such new services in order to ensure equal access to services. In countries where families traditionally have had more responsibility for providing care for the old and sick, such developments are likely to impact less on public expenditures.

1.2.4 Factor mobility and taxation

Maintaining a level of taxation which is sufficient to finance an extensive welfare state is obviously a challenge for the high-tax Nordics if tax bases are mobile across national borders. Indeed, the tax literature underlines the high mobility of corporate incomes through location decisions and transfer pricing, as well as the mobility of capital incomes, as important constraints to the tax policies of individual countries (Devereux and Sorensen 2006).

As a matter of fact, uncoordinated efforts to keep the corporate tax rates competitive have led to a general decline in corporate tax rates in developed countries. The Nordics have followed this general trend with some hesitation. In the past decade or so, the Nordic rates have remained relatively flat (with the exception of Iceland), while in the EU the rates have typically continued to fall taking the average EU rate below those of the Nordics, except for Iceland. However, as of 2014 Finland reduced its corporate tax rate by over 4 percentage points to 20%, marginally below the current EU27 average.

Apart from trying to avoid major competitive disadvantages with regard to the corporate tax rates, a key Nordic response to the tax competition associated with mobile capital has been dual income taxation, i.e. capital incomes are taxed at a relatively low and (almost) flat rate, while earned income as a rule is taxed according to a progressive scale and at a higher average rate. Given that capital incomes are very unevenly distributed this choice has obviously been subject to substantial political debate in the egalitarian Nordic societies. A particular point of contention is the treatment of entrepreneurial income from closely held companies, where the owners can to some extent choose in what form to take their income.

This approach is based on the assumption that tax revenues on labour incomes are not sensitive to tighter economic integration. To the extent this assumption holds, taxing labour incomes can be determined purely on the grounds of designing appropriate incentives to work and put in effort as well as of domestic redistribution objectives. It seems that this premise has in fact held relatively well so far despite the continued globalisation trend. True, tax rates on earned income have been reduced over the past 15 years in all the Nordic countries, but this has been motivated primarily by aspirations to increase incentives for higher employment, effort, and perhaps also private investments in education, not as a response to lower taxes elsewhere.

Andersen's and Sorensen's analysis in Part II of the book explains why product market integration need not result in a significant decline

of revenues from labour taxation, even when such integration increases the sensitivity of labour demand to labour costs. One factor is that product market integration improves the division of labour across countries and increases thereby productivity and the tax base. A “sufficient” level of tax revenues can be collected even if the tax rates decline somewhat. An obvious prerequisite for this protection of the tax base to function is that the economies adjust quickly and seize the opportunities provided by globalisation.

Another factor is that, to the extent that foreign products are not perfect substitutes for domestic products in the world market, higher domestic costs lead to improvement of the terms of trade. In other words, part of domestic labour taxes are effectively shifted onto foreign consumers via higher export prices. This effect is stronger in more open economies, where exports account for a bigger part of the total demand than in closed economies.

Nevertheless, deeper economic integration poses a challenge to high taxation. One aspect is that an ever increasing share of production takes place in global value chains controlled by multinational corporations. This increases the scope to minimise the overall tax burden through judicious application of transfer pricing and by locating key parts of the value chain in locations with lenient tax rules. An important element in this is intellectual property rights (IPR), which are very easy to assign to almost any destination. Many countries have in fact created preferential rules in IPR taxation (“Innovation boxes” etc.), inducing the Nordics to consider such special treatment as well.

Another aspect is that highly skilled labour is becoming more and more mobile. Improved language skills, convergence of educational standards and life styles, and the very existence of global companies and networks of closely cooperating companies make people less bound to a given country. At the same time skilled labour is becoming ever more important for the production process, and its remuneration gets boosted accordingly. In extreme cases, “superstars” account for a major part of the costs of producing certain services. This combination of increasing mobility and increasing importance in the production process is likely to put downward pressure on taxes on such individuals. Many countries, including all the Nordics, have in fact introduced special tax brackets for foreign experts to attract them to work for a few years in the host country. However, the tax pressures concern a much broader segment of the labour force than a few foreign experts.

The empirical evidence of the determinants of labour migration and in particular on the role of taxation is not very extensive. There is never-

theless some evidence that taxation indeed can impact on the location choices of highly skilled individuals (Kleven *et al.* 2013). Interestingly, some evidence has emerged that also the location of corporate headquarters is affected by labour taxation (Egger *et al.* 2013). This can be rationalised precisely by the aforementioned importance of key personnel for the production process.

1.3 Policy priorities

1.3.1 *The policy conundrum*

The Nordic Model has relied very much on a virtuous circle between high employment rates and extensive public services and safety nets. Public services and safety nets have facilitated high labour supply through publicly provided education, well-functioning health care and day care services for children. Equal opportunity education and extensive public expenditure on R&D have supported high productivity. Productivity has also been supported by the specialisation opportunities and competition facilitated by a positive attitude toward free trade. Free education, high employment rates and extensive social safety nets have contributed to low income disparities and trust or social capital which have probably reduced transactions costs and supported acceptance of the high taxes needed to finance large public expenditure. Active labour market policies have sought to combat the detrimental incentives that high taxes and generous safety nets create for labour supply and its allocation. Fiscal prudence has helped to create room for countercyclical fiscal policy to support stable and high employment. Finally, high employment, mostly in good jobs, has produced a large and stable tax base for collecting the tax revenues needed for the welfare state.

The trends discussed above put pressure on many elements of the Nordic model. Technical change threatens jobs in a way which is likely to increase income disparities. The increasing competences of the developing countries create new competition in high-value-added production. The unbundling of production processes bring international competition to the level of phases of production and tasks reducing possibilities to maintain solidarity wages. Toughening competition in the product market increases pressure to specialise further, which increases the Nordics' vulnerability to shocks. Population ageing increases age-related public expenditures and reduces labour supply. In the egalitarian societies there is strong pressure to provide all citizens new expensive medical

services at taxpayers' expense. The scope to impose high taxes is reduced by increasing mobility of skilled labour and competition for the most valuable parts of the value chains.

To put it concisely, demand for public spending is increasing due to ageing, endowing the domestic labour force with competitive skills, providing an attractive environment for footloose innovation activity and providing adequate safety nets. Simultaneously, the scope to collect taxes is reduced by increasing mobility of important tax bases. Moreover increasing income disparities threaten to weaken the social cohesion that has underpinned a smooth functioning of the political systems to cater to the long-term needs of the society.

The question is whether the Nordic model is capable of meeting these challenges, perhaps with some modifications, or whether a more fundamental revision of the model is necessary. In what follows, we will discuss how policies could and should evolve in selected policy fields to respond to the pressures outlined.

1.3.2 Even more emphasis on ensuring adequate skills

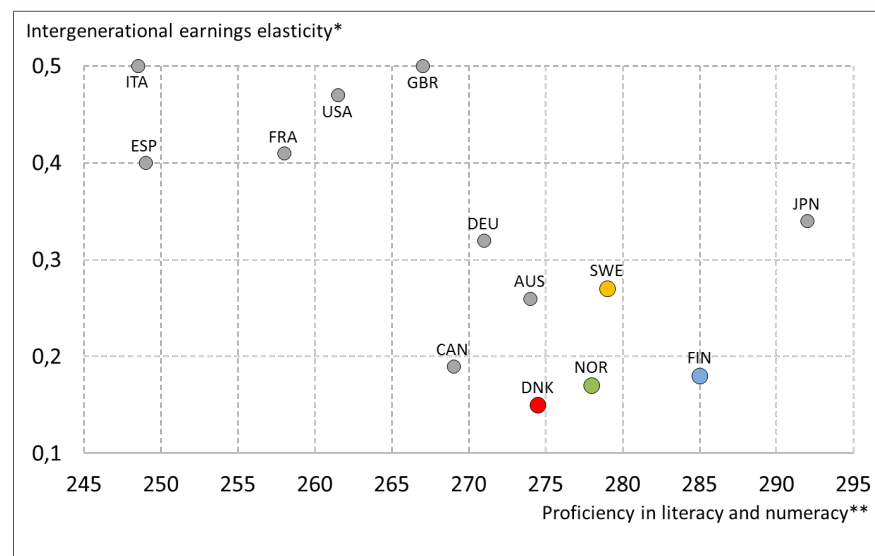
It is obvious that a well-educated labour force continues to be a foundation for a successful combination of economic efficiency and equality. A strong educational background supports labour market participation, capacity to adjust when skill requirements change and productivity.

The fact that many current low-to-medium skilled jobs are threatened by technological change underlines the need to equip people with the skills for which there is demand, and more importantly, ensure people's capacity to acquire new skills as required. Simultaneously, the constraints on redistribution through taxes and transfers underline the need to limit the widening of market income disparities if one wants to keep the disparities of disposable income and poverty in check. For that to happen, maximising the share of the population that can earn a decent living through labour market participation without needing support from the public purse is essential. A well-functioning comprehensive education system is a necessary condition for this.

There is also an important dynamic aspect to education. An education system that endows the population widely with strong skills is good for long-term equality as well as for productivity. When people can advance to well-paid jobs on the basis of their competence and effort rather than the economic and social position of their parents or their place of birth, society's human resource are likely to be used more efficiently. The Nordics have succeeded very well in achieving high intergenerational mobil-

ity, i.e. the parents' incomes have not had a strong impact on children's incomes (Björklund and Jäntti 2009, Corak 2013). It is no coincidence that the Nordics do well in both income mobility and high average level of adult skills. A fresh study on intergenerational mobility among the different states of the US suggests that intergenerational mobility is clearly associated with factors which are important elements of the Nordic model: income equality, little residential segregation, good primary school education and strong social capital¹¹⁴ (Chetty *et al.* 2014).

Figure 7: Adult skills and intergenerational mobility



* Corak (2013). Inequality from generation to generation: The United States in comparison.

** The average of literacy and numeracy scores in the OECD survey of adult skills (PIAAC) 2012.

The results of the recent comprehensive comparative analysis on adult skills, PIAAC, suggest indeed that the Nordics are in a good position (OECD 2013a). They perform clearly better than the OECD countries on average. Finland comes out as global number two and three in the literacy and numeracy tests, respectively, and does quite well in the capacity to solve problems in a technology-rich environment. By one metric used in the study, Sweden tops the test on the capacity to solve problems.

¹¹⁴ Social capital is measured in the study by an index that comprises i.a. voter turnout rates and participation in community organisations.

However, at closer look the picture is not without problems. Even in Finland old age groups perform only at the OECD average. Denmark scores well below the OECD average in literary skills. Also in Norway young adults score below average in literacy. In Sweden, a weak point is foreign-language immigrants, who score very poorly in literacy.

Interestingly, returns to PIAAC skills are low in the Nordics compared to all other countries examined: higher individual skill scores are not associated with much higher individual wages (Hanushek *et al.* 2013). This may at least in part be because the Nordics employ a lot of highly educated people in the public sector, where wages and wage differences between educational groups are small compared to the private sector. But even if this is true, the observation raises the question whether the skills are used optimally in the economy, i.e. whether individuals have sufficient incentives to seek jobs that correspond to their competences.

With the exception of Finland, the relative PIAAC results are much better than the PISA results on the skills of the 15-year-olds have been over the past decade (OECD 2013b). In the PISA studies, with the exception of Finland, the Nordics have performed below OECD averages.

The difference between the PIAAC and PISA results suggests that somehow the Nordic societies have been able to equip their labour forces with competitive skills on average even if basic education may not always have performed very well. Well-functioning and widely available secondary education, including for those who do not continue at the tertiary level, could be one explanation. But most likely also a strong emphasis on adult education has played a role; Nordic populations participate substantially more in adult education than in most developed countries. Linked to this is probably a general positive attitude to adopting new techniques and processes in the work place and the associated learning in the work place (Part I discusses this in more detail).

On the other hand, the average PISA results have deteriorated from 2003 to 2012 in all the Nordics. This is also true for Finland, even though it remains very close to the global top. Furthermore, in Finland, Sweden and Iceland there has been an increase in the share of those who have not reached beyond the lowest performance level. Similarly, in Finland and Sweden the dependency of performance of family background has increased, even if it still remains small. If these trends continue, it would be difficult for the Nordics to maintain their relative position regarding the competence of the labour force and also the equalising role of education diminishes. There are limits on how much adult education can compensate for the lacking basic cognitive and non-cognitive skills, which are

developed during the childhood and adolescence. This is an important point also with regard to maintaining equal distribution of income.

At the other end of the spectrum, not many Nordic universities are very good in international comparisons of the quality of research in universities. Only few Nordic universities enter lists of best universities in the world. For example, according to Shanghai Jiao Tong University (2013) rankings, only one university in Denmark (University of Copenhagen, 42nd) and one in Sweden (Karolinska institute, 44th) make it to the top 50 universities. Among the 200 best there are a further 8 universities (4 from Sweden, 2 from Denmark and 1 from Finland and Norway each). Qualitatively the same result is obtained by Times Higher Education Ranking (2013), which includes indicators seeking to capture also the quality of teaching in addition to the quality of research.

While all Nordics do quite well in terms of the number of scientific publications relative to the size of the population, only Denmark seems to do very well in terms of relative citations in general and specifically in the most highly-cited group (top 10%),¹¹⁵ both of which are likely to tell more about the quality of research than citations per population alone (Academy of Finland, 2012).

On the other hand, an undisputed Nordic achievement is the high share of women with tertiary education, which is beneficial for equity but also from an efficiency point of view: existing talents are recruited to professions requiring high educational attainment levels to a higher degree than if women's educational levels were lower.

As a whole, while the Nordics have done fine in providing the vast majority of the population with the skills required in the working life, there is clearly room for improvement. First, there are groups of people which lack the skills necessary for a successful integration into the labour market. These groups, where immigrants are overrepresented, face a serious risk of unemployment, exclusion from the labour market, weak health, and long-term if not permanent dependency on social benefits.

There is strong evidence that skill deficiencies in adulthood are often a result of neglect in early childhood, and that early interventions to improve skills are much more cost-effective than later corrective measures. This applies to both cognitive and non-cognitive skills such as

¹¹⁵ The Top 10 index is constructed by comparing each country's most cited publications as a proportion of the country's total publication number to the world's most cited publications as a proportion of total world publications, whereby the world average is one.

perseverance, self-control, trust, self-esteem and resilience to adversity (Heckman and Kautz 2013).

The Nordics have a good starting point in that families with small children receive many kinds of support and publicly financed early education is widely available. There are nevertheless indications that there are pockets also in the Nordic societies where the prerequisites for developing the basic skills are weak, including in families with serious drug abuse, long-term unemployment and an immigrant background. And as noted above, there are some worrying signs that the performance students has started to depend more on their family background than before. Addressing these issues is essential for providing the population with skills needed in the future work place and to reduce exclusion.

The analyses on early school leavers and young pensioners reported in Part II only underline the importance of early intervention. The young people who do not complete secondary education and in particular those who end up as pensioners at a very early age typically have experienced many kinds of problems early on in their lives. To reduce the incidence of early disability pensions, strong and persistent interventions are required once the compulsory schooling age is over, and even then such efforts may not be that successful.

There are probably better chances to reduce the dropout rates and marginalisation of those who have difficulties in completing the regular secondary education. Apprenticeships have proved rather efficient in providing the sort of training that interests youngsters who do not like formal education. The Nordics could learn from the German speaking part of Europe in this regard, even if precisely the same model may not be transferable. Given the rapidly changing skill requirements, special attention should nevertheless be given to avoiding locking in people in too narrow fields of competence.

Second, the declining PISA results call for more attention to quality in the primary school systems. The OECD (2013b) points to at least two important factors, very much in line with the Finnish experience. One is highly motivated and well educated teachers. All qualified primary school teachers are required to complete a university degree in Finland. This requirement should be easy to copy where that is not yet the case. More difficult may be to attract high quality applicants into the profession, which may depend on deeply rooted valuations of different professions. Raising teacher salaries could help and might be necessary in some cases, but high salaries are not very attractive from the public finance point of view and clearly have not been the trick in Finland. A second issue is the autonomy of the schools to determine how the learn-

ing objectives should be achieved, i.e. what material to use, etc. This again should be a transferable feature. Finally, sufficient calm and discipline in the class room appears necessary for good learning results, particularly for those with weaker than average backgrounds.

An issue which has received some attention particularly in Sweden is the role of competition between the schools. As in other services, competition could in principle improve performance in schooling, and some evidence to that effect has been presented on Sweden recently (Böhlmark and Lindahl 2012). However, there are also drawbacks. Potentially the most important one is increasing segregation according to pupil background. Those with parents who are interested in the quality of education and probably have taken good care of providing a safe and supportive childhood including early education, would most likely cluster in the better schools while the pupils with weaker backgrounds would end up in worse schools. In any case, the Finnish experience does not lend strong support to competition as a key factor to improve learning results.

Third, the quality of the tertiary education definitely needs further attention. Given that increasing public funding is difficult, the focus should be on increasing efficiency and exploring other sources of financing. A question can be asked whether all of the universities are big enough or specialised enough to create a sufficient critical mass of talented people.

At least in Norway and Finland the resources appear to be distributed too thinly. In Norway there are 8 larger universities and 9 specialised universities, 20 state university colleges and two national colleges of art. Finland hosts 10 larger universities and 4 specialised universities as well as 16 polytechnics or universities of applied sciences, even after some important mergers recently. Sweden manages with 14 universities and 11 university colleges even if Sweden's population is 75–85% bigger than that Finland or Norway. Denmark has the most consolidated university system of the four countries with only 5 larger universities and two technical universities, even if there are many art schools, business schools and university colleges in addition.

A large number of universities with wide coverage of fields implies that many departments exist in the same or much overlapping fields in different universities. This is likely to pose a risk to the average quality of research and education. The fact that according to the citation indexes, the Danish research is on average on the highest level may have something to do with the capacity to create critical mass in universities. Consolidation and specialisation could help at least in Finland and Norway, even if the size is unlikely to be the only important factor, and geography makes the

trade-off between good availability of higher education and the quality more difficult in Norway and Finland than say in Denmark.

Another way to improve efficiency is to give universities more autonomy and subject them more clearly to competition. Competition between universities is not likely to be associated with similar unintended consequences as that between primary schools might be. Therefore there is a stronger case to encourage it. Nevertheless, the outcomes depend on the specific type of governance and management systems adopted and the way in which performance-based measures are used in resource allocation (Butler, 2012). Performance-based funding has been a trend in the Nordics.

There have in fact been changes in university governance. Especially in Denmark the universities have been given a lot more autonomy. Recently also in Finland universities have been given a legal status that is independent of the state implying i.a. that the personnel has ceased to be civil servants. The appointment processes have been simplified and salary structures have become more flexible. Also language requirements have been loosened. As a result, Finnish universities have started to recruit more foreign professors, which is a highly desirable outcome, considering that the Finnish university system has had relatively little international mobility. Similar reforms have taken place in other Nordics as well.

Additional financing can be obtained from private sources. Donations have increased as such a source and could be further encouraged. Tuition fees are in principle a natural way to finance universities and at the same time provide incentives for the students to complete their studies in reasonable time. However, introducing tuition fees has met with strong resistance as it goes against the established Nordic tradition of free education for all. There is no denying that high tuitions could discourage students from financially weaker backgrounds entering tertiary education. Therefore, should such fees be introduced, they would have to be accompanied by sufficient grants for those who could not afford the fees. On the other hand, charging fees on students from outside the EEA would seem less problematic assuming that demand for such fee-based education exists. The experience of Sweden with such fees does not, however, seem very encouraging, as the number of applications has fallen significantly.

1.3.3 Tax policies in support of labour supply and efficiency

Several factors create pressures to increase taxation. Expenditures related to ageing are increasing, skills could be better improved by more expenditure, and reducing the impact of widening disparities of market incomes on inequality would be helped by more redistribution. However, increasing, at least essentially, the overall tax burden is hardly a realistic option.

On the contrary, as discussed, there is pressure to reduce some taxes. Tax competition linked to increasing mobility of the relevant tax bases creates pressure to reduce taxes on corporate profits, capital incomes as well as on the earned incomes of the most mobile workers, who usually are at the high end of the pay scale.

These observations suggest that tax structures should be developed to be more employment and growth friendly and less vulnerable to tax base erosion. In this regard, some broad principles are rather obvious on the basis of the tax literature (Mirlees *et al.* 2011). One should focus as much as possible on immobile tax bases. Broad tax bases, allowing lower rates for a given tax revenue, would be preferable. Taxation of labour should be reduced if possible, focusing in particular on brackets where the marginal rates are high taking social transfers into account. Also, taxes hampering risk taking and reallocation of capital and labour should be avoided.

As discussed earlier, the Nordic tax policies have aimed at these objectives, and many reforms have been taken to that effect over the past 25 years. However, some reforms have also gone in the opposite direction, including introduction of additional “holes” in the tax base. Thus, improvement would seem possible, in various ways and degrees in various countries.

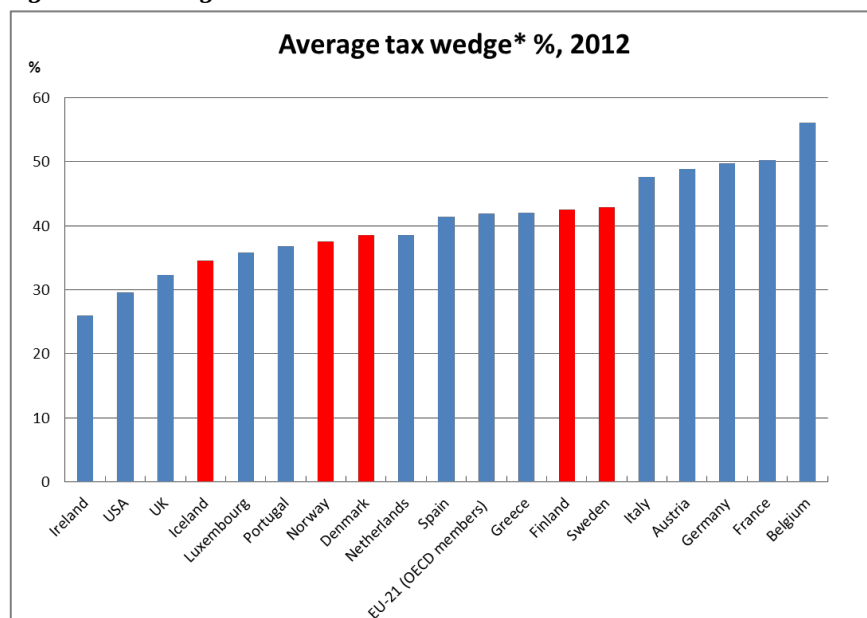
First, taxes on real estate are low in Norway, Finland and Sweden compared to other OECD countries, while they are relatively high in Denmark and Iceland. There is thus space to rely more on such taxes to reduce pressure on other more vulnerable and distorting taxes in these three countries. In some cases real estate taxes could even help to correct weaknesses in the way the real estate market functions, i.e. when the supply of land for construction or financing of infrastructure is constrained by lack of public funding. Real estate taxation also reduces wealth inequality. Another rather neutral tax limiting wealth differences is taxation of inheritances.

Second, reduced VAT rates could be raised in all Nordics except Denmark to or at least closer to the general tax rate to allow lowering

other taxes. Similarly attention should be given to other tax expenditures, for which there is no rationale supported by empirical evidence. Favourable tax treatment of owner occupancy in housing is one such thing. Taxing imputed housing income would seem optimal, but if that is not feasible, one should eliminate any remaining tax deductions of interest expenses.

Third, as high employment rates are a key prerequisite for the sustainability of the Nordic model, lowering labour taxation should be used to the extent possible. This would be welcome not only to support labour supply across the board but also to improve the attractiveness of the Nordics as locations for headquarter functions. There would seem to be need and scope for such reforms in all Nordics, though in different ways and degrees in different countries. The tax wedge created by income taxes and social security contributions is on average highest in Sweden and Finland, while top marginal taxes are high also in Denmark. In the case of low-incomes, the combined effect of taxes and transfers is often more important for incentives than tax rates alone. Increasing net earnings at low incomes would be more important for increasing labour market participation while lower marginal tax rates at higher incomes would impact more on hours and effort.

Figure 8: Tax wedge



The sum of personal income tax, employee plus employer social security contributions together with payroll tax, minus benefits, % of labour costs. Source: OECD.

Fourth, taxes on transactions which burden relocation of employees are harmful for efficient reallocation of labour and should be reduced or even eliminated completely. Given that more than half of all dwellings are owner-occupied in all Nordics and the share is around 60% in Norway and Finland, reducing stamp duties on dwelling transactions could be helpful. Similarly, the Nordic EU countries' reluctance to introduce financial transaction taxes is well-founded from the point of view of facilitating efficient allocation of capital.

Corporate tax rates appear to be reasonably competitive in the Nordics currently. It would be in the Nordic interest to limit tax competition in this field, and retain an as wide a tax base as possible. The EU initiative on Common Consolidated Corporate Tax Base deserves Nordic support. Similarly strict policies against tax fraud and evasion in all countries would benefit the Nordics, where tax authorities have a tradition of applying all rules stringently. However, if the downward trend in corporate tax rates continues, the Nordics have little alternative but to follow suit.

Finally, according to the influential Mirlees Review, corporate and capital income taxation should aim at neutrality on several margins unless a strong case can be made for a deviation. The tax rates should be chosen so that taxation of different sources of finance and different forms of corporate income are equal. Similarly, the marginal tax rates of earned incomes and the combined taxation of corporate profits and shareholder taxation should be equalised. Still another element in neutral taxation is that the risk-free rate of return on capital is exempted. A prime example of a tax system that largely fulfils these criteria is the one applied currently in Norway.

1.3.4 Pension policies and other policies to increase labour supply

The primary objective of pension systems is to provide sufficient incomes for retired people. When the share of pensioners in the total population is increasing due to the ageing of the population, providing adequate pensions obviously requires more pension contributions. At the same time labour supply relative to population is declining, putting pressure on tax revenues. If the overall tax burden cannot be raised, increasing pension contributions constrains the use of public funds for other purposes, such as education and health care.

To meet this challenge policy action is needed on several fronts. A natural response to the increase in longevity is to lengthen working careers. For the majority of the population this is a viable alternative given

the constantly improving health in advanced age. As a consequence, longer working careers have been a central policy objective in the Nordics over the past decade, supplementing increases in pension contributions, which have also been carried out in several countries.

However, further reforms are needed, to different degrees in different countries. In all countries it is important to focus on the occupational health issues of those who are likely to drop out of the labour force due to various physical and mental health conditions. Men with a weak educational background typically in blue-collar occupations are a key target group in this regard. The health disparities according to the educational background seem to be highest in Finland among the OECD countries (Devaux and de Looper 2012). As the occupational health system seems to work quite well in Finland, policy reform should probably focus on ensuring that those with weaker attachment to regular work receive adequate services and are incentivised to look after their health.

Similarly, in all countries attention needs to be paid to ensuring sufficient skill-upgrading and re-training of ageing workers. Without such efforts there is a great risk that elderly workers are pushed out of the labour force when skill requirements change, even if physical or mental conditions would not prevent a continuation of their working career. As discussed earlier, in this regard the Nordics are well placed in international comparison. Life-long learning is a recognised concept and participation in adult education, be it formal or informal, is high in the Nordics by international standards.

But there is strong evidence that the age limits and economic incentives of the pension systems are central determinants of when people leave the labour force. In recognition of this, recent reforms in many European countries have increased the statutory retirement age, reduced the scope for using various early pathways from the labour force to retirement, and also made it economically less attractive to retire early.

In all Nordic countries there is a basic old-age pension for which the eligibility age is typically 65 years (in Iceland 67). The earnings-related pensions have flexible retirement ages which vary between countries. The economic incentives to continue to work after the lower boundary vary across the countries. In Sweden and Norway monthly pensions are adjusted to the age in which the individual retires. In Iceland similar adjustment is applied to the mandatory occupational pensions. In Finland the accrual rate of the pension is higher after the earliest eligibility age. In Denmark early retirement is possible using the voluntary contribution based on the so-called "*efterløn* system".

It would seem essential that the incentives to remain in the labour market are strong in the systems where the worker has a choice about the precise timing of retirement. This implies that any subsidies to early retirement should be eliminated. Apart from making the statutory pension schemes actuarially fair, also the tax-subsidised occupational pensions and individual voluntary pensions should be reformed to disincentivise early retirement.

Nevertheless, also the age limits of the compulsory pension systems require further attention. There is quite a bit of evidence that retirement tends to be concentrated at the time when people reach the lowest statutory pension age. This suggests that raising the age limits of the (flexible) retirement age would be efficient in lifting the effective retirement age provided the early retirement schemes do not constitute an easy alternative route away from the labour market.

A simulation analysis of various options to reform the Finnish pension system confirms this conjecture (Määttänen 2014). The effects of raising the age limits on labour supply are clearly stronger than those of a reduction of pension benefits with roughly the same impact on public finances. The study furthermore suggests that raising simultaneously the age limits for old-age pension and the early retirement schemes would also be better from a distributional point of view than cutting the pension level. There are several reasons for this outcome. One of them is that a higher statutory retirement age does not usually affect individuals with very low life time earnings such as those who have retired on a disability pension at a young age. While the precise numerical predictions of the analysis are specific to the Finnish system, the qualitative conclusion is rather general.

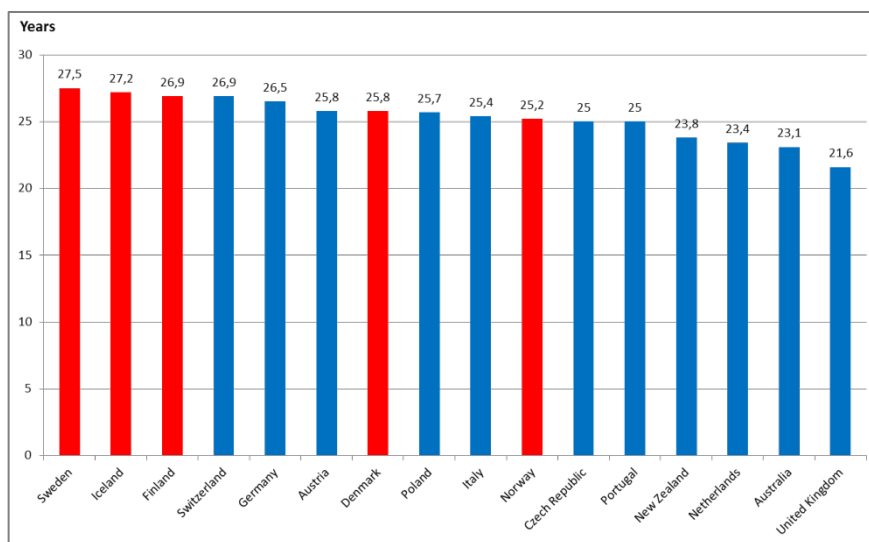
On these grounds, at least in Finland, but probably also in Sweden and Norway, lifting the pension age limits should be seriously considered. Moreover, a link to life expectancy would seem a very natural way to go. Denmark has already decided about a radical reform in this regard and also reduced the attractiveness of the early retirement scheme. In Iceland the statutory pension age is already very high as is labour supply as a whole.

Apart from postponing retirement labour supply can obviously be increased at earlier stages of life. Two groups of people deserve special attention in this regard. While high participation of women in the labour market is a hallmark of the Nordic model, there is still room to improve their attachment to the labour market. Adequate day care services are important in this regard and moderation of subsidies to parents (typically women) who stay home with their children very long might be useful

in some countries as well. The fact that the female labour supply seems to be much more elastic with regard to take-home pay than men's labour supply should make the use of financial incentives attractive.

A second group where labour market participation could be increased relatively easily are students, particularly in the tertiary education. Students complete their studies late. This stems from both a late starting age (particularly Iceland, Sweden and Denmark) and long study times (particularly Finland and Sweden). Making the selection processes more efficient would be one way to improve the situation. For example, one could make better use of the results of the matriculation exams in selection. Given that students receive rather generous financial support in all Nordics and there are no tuition fees, financing constraints can hardly be a major reason for long study times. In fact the soft budget constraint may be one of the causes for staying so long in the university. Redesigning the incentives of student support would probably be helpful.

Figure 9: Median age of completing tertiary education



Source: OECD, Education at a glance 2010.

As described earlier, immigration has become a very significant source of labour supply in all of the Nordic countries except Finland and even in Finland net immigration has increased steadily over the past decade. Apart from Finland, the Nordics clearly attract migrants, and the key policy challenge is integration of the newcomers into the labour market and the society at large rather than creating additional incentives for immigration. There are large differences in the speed of integration and

economic net benefits to the destination country depending on the characteristics of the immigrant i.a. with regard to the level of education and cultural closeness. Quite understandably immigrants who are attracted to the county by job opportunities in fields where there is shortage of labour tend to integrate faster than say asylum seekers. Thus, targeting the immigrants with the best integration probabilities would obviously be economically attractive.

As elsewhere, immigrants are more likely than the natives to remain unemployed and face a much higher risk of exclusion. The empirical evidence on Norway presented in Part II shows that while the immigrants from the new EU member states since 2005 originally found jobs very well, their unemployment rates have been substantially higher than those of the natives since the start of the financial crisis. This confirms the results of earlier studies that recently arrived migrants are more vulnerable to demand shocks than the natives.

While Finland faces the same integration challenges as the rest, it also has the greatest need to increase immigration and integrate immigrants efficiently, as the projected labour force evolution is particularly weak. With its relatively new position as a destination of work-related migration, Finland can benefit a great deal from the experiences of the other Nordics in terms of both good and bad practices.

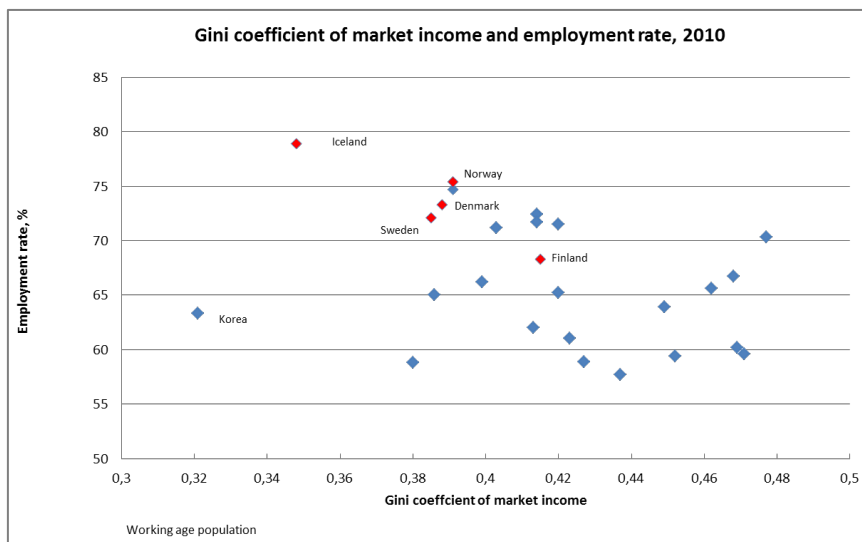
1.3.5 Improving the functioning of the labour market

The labour markets in all developed economies are under a multitude of pressures stemming from technological development, globalisation and macroeconomic shocks. While the Nordic labour markets have performed quite well in many ways in international comparison, also the demands are high. The extensive public welfare promises can only be financed and the egalitarian distributional objectives achieved if employment rates are very high.

A high employment rate based on extensive participation in the labour market and low unemployment is important for low income disparities in two different ways. First, as noted, it is essential for the sustainable financing of the large welfare state, which redistributes incomes through both the tax and transfer system and through free or below-market-price public services. But equally important, a high employment rate contributes directly to low disparities of market disposable incomes. Even low wages and salaries or entrepreneurial incomes typically exceed the transfer incomes one can get in the long term.

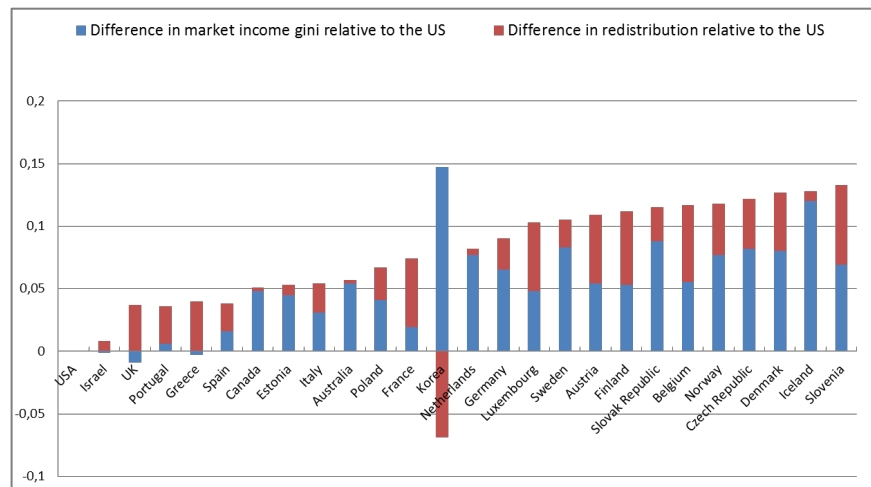
While many factors impact on the distribution of market incomes, there is a clear correlation: countries with high employment rates tend to have low disparities of market incomes. This shows up in the way the Nordics and some other countries arrive at lower income disparities than the US. The much more equal distribution of disposable incomes in Iceland than in the US is almost solely because the market incomes are more equally distributed. This in turn very likely is due to the extremely high employment rate in Iceland. In Sweden, Denmark and Norway as well, more equal market incomes account for a larger fraction of income equalisation than redistribution. Only in Finland, which has the lowest employment rate among the Nordics, is redistribution a more important income equaliser.

Figure 10: Employment rate and disparity of market incomes



Source: OECD.

Figure 11: Sources of income equalisation relative to the US



Source: OECD.

While in the long run supply factors determine the employment rate, also demand factors are important. In an open economy, cost competitiveness is essential for full employment. This calls for flexibility of the wage level when the economy is hit by shocks. Wage flexibility is particularly important in countries which cannot use the exchange rate as an adjustment mechanism. Among the Nordics Finland and also Denmark belong to this group. Wage flexibility has increased over time and may not be as limited as some earlier studies have suggested (Kauhanen and Maliranta 2012)). Nevertheless, significant variation in competitiveness (see Maliranta *et al.* in Part II), market shares and also employment and unemployment in the last few years suggest that more responsive wage formation processes would be welcome, at least in Finland and perhaps also in Denmark.

Apart from macro level flexibility, also flexibility of wage structures is important when the economy is hit by various shocks, be they short-term variations in demand for certain types of goods and services or more permanent changes. The splitting of the value chains exposes individual phases of production, and even individual tasks to global competition. As a result, there is increasing pressure towards equalisation of productivity-adjusted wages at the level of different occupations and skill levels rather than at the level of the national economy, branch or even company. Under these circumstances trying to reduce wage dispersion leads more easily than before to unemployment for those whose productivity-adjusted labour costs are not competitive. Sufficient flexibility of relative wages would smooth the quantitative adjustment.

With the ageing labour force flexibility of wages is particularly important for sustaining demand for elderly workers. The measures to spur labour supply of older age groups are of no use if demand for labour does not respond correspondingly. Sufficient wage flexibility is necessary though not sufficient for demand to keep up. A particular aspect is that the wages of elderly workers should adjust when the productivity declines with age. The fact that layoffs are often concentrated on elderly workers is an indication of a market failure in this regard, although pure age discrimination may play a role as well.

Flexibility of relative wages requires that occupation and firm-specific conditions influence wages. This can only happen if a significant part of any changes in wages is agreed upon at the firm or plant level. Decentralisation of wage formation from the central and union level to firm and plant would thus seem warranted from a microeconomic perspective. This is in fact the direction in which wage formation has evolved particularly in Sweden and Denmark, though less so in Finland and Norway. In Iceland wage formation is already one of the most flexible in the OECD area (OECD 2011).¹¹⁶

Still, given the high degree of unionisation and the tradition of co-ordination in wage negotiations in the Nordics, it is not likely that the Nordics will shift to a much more decentralised Anglo-Saxon system of wage formation. The challenge is thus to find a good compromise between co-ordination that ensures wage developments consistent with full employment and a sustainable external balance at the macro level and sufficient flexibility at the level of individuals and firms. It seems that Sweden has recently succeeded best in this regard, and the other countries could learn from it.

An important aspect of well-functioning labour markets is that the unemployed – or already people under a threat of unemployment – quickly transit to new jobs. This is in part an issue of appropriate training, rehabilitation and placement services for the unemployed. The Nordic countries have been frontrunners in active labour market policies (ALMP). The originally Danish “flexicurity” model combining strong activation measures with equally strong incentives to accept any jobs of-

¹¹⁶ Perhaps the most dramatic decentralisation of wage bargaining in Europe has taken place in Germany. It has recently been argued that this change has been a key element in Germany’s economic resurgence in the last 15 years (Dustman *et al.* 2014). The success of the decentralisation process has probably been linked to specific institutional features such as works councils. Thus, adopting the German approach in the Nordic countries may not be straightforward.

ferred has become famous as an effective policy approach. Among the Nordics Finland has used relatively fewer resources on ALMP and resembles in this regard many continental EU countries.

The recent increase in unemployment in all Nordics, except in Norway, and in particular the increase of long-term unemployment suggests nevertheless that the Nordic policies haven't perhaps been as stellar as often claimed. Empirical research has raised doubts about the efficiency of many activation measures (Kluve 2010, Card *et al.* 2010). It seems that the positive effects are often limited to the activation period, and do not permanently improve the participants' employment chances. The activation measures deserve careful empirical analysis to allow focusing on the most effective ones.

A potential shortcoming is that the unemployed do not have sufficient incentives to move to a new job, perhaps paying substantially below the previous wage. A large body of empirical research (Lalive *et al.* 2006, Layard *et al.* 2005) supports the conclusion that a generous unemployment compensation for a long period of time tends to reduce the likelihood of regaining employment. Cutting the benefits more quickly towards the level provided by social assistance would probably be helpful. The German experience following the so-called Hartz reforms a decade ago lends at least some support to this conjecture, although the issue remains controversial.¹¹⁷

An obvious problem is that all people do not find jobs even with strong incentives. Reducing the unemployment compensation only lowers the living standards of such people and may hasten their exclusion from the labour market. Therefore, strengthening incentives should be accompanied by appropriate activation measures. There is thus no obvious substitute to the flexicurity paradigm. Perhaps the best one can do is to experiment with different combinations of activation measures and financial incentives, in particular with regard to the length of unemployment benefits at high replacement rates.

Our open economic system is characterized by constant changes in preferences, technology, and the strategies of foreign competitors. Supporting people rather than jobs seems the only sensible strategy in this context. Only constant improvement of productivity in line with the global technical change can guarantee high employment without a de-

¹¹⁷ Krebs and Scheffer (2013) produce evidence in support of strong effects of the Hartz reforms on unemployment, while Dustman *et al.* (2014) argue that a very significant decentralisation of wage bargaining has been the key factor behind reduced unemployment.

clining relative standard of living. For this to happen, the process of creative destruction should not be obstructed. The Nordics have followed this approach to a large extent. As demonstrated in Part I, employment protection is not particularly strong in the Nordics, with the potential exception of temporary employment in Norway. Also government interventions to rescue jobs through targeted subsidies to companies under distress have become more and more infrequent, partly probably in response to the tougher EU state aid rules.

1.3.6 Innovation policy – industrial policy

There is a wide consensus on the key factors promoting growth: macro-economic stability, adequate physical infrastructure, investments in education, research and development activities, competition, product market regulation aiming at a level playing field and avoiding excessive regulatory burden, relatively neutral tax systems aiming at minimising distortions, flexible labour markets, efficient capital markets and an efficient and non-corrupt public administration. In the case of developed economies which are at or close to the technological frontier in many sectors of the economy, the importance of policies that support innovation is underlined.

The Nordics fare well in international comparisons of the growth promoting characteristics listed above. In particular, they can be characterised as knowledge-based economies. As discussed earlier, skill levels are generally high. With the exception of Norway, R&D expenditures are high relative to GDP. The same goes for the share of researchers in total employment. In terms of easily measurable innovation outputs, the Nordics fare quite well, too. Patents per million of inhabitants are high.¹¹⁸

Thus, at least at first glance, it is difficult to argue for a need to fundamentally revise the Nordic policy approach. The Nordics are doing what according to the widely accepted view is good for growth, including promoting innovation. Some questions can nevertheless be posed. How can the Nordics avoid excessive vulnerability to sector and technology-specific shocks when they seek to be at the global technological frontier, which requires specialisation? Does the rising importance of

¹¹⁸ Triadic patents per capita, i.e. patents filed in the US, Japan and Europe, are in fact higher in Sweden, Denmark and Finland than in the US.

the global value chains impact on what is appropriate innovation policy in an individual small open economy?

It is obvious that small countries such as the Nordics cannot excel in a large number of fields in research and in product or process development. A large American research university alone has roughly the same amount of resources for research as the whole university system of, say, Denmark, Norway or Finland.¹¹⁹ Nordic start-up activity can hardly compete in absolute terms with that of Silicon Valley, even combined. Large countries obviously host many more large multinational companies than the Nordics.

The Nordics have to specialise in research and innovation activity. A natural way to do that is to continue to invest in fields where one has done well and presumably has a comparative advantage. The success of Danish and Swedish pharmaceutical companies based on long-term investments in research in the field is an example. Similarly, the investments in developing communication technology by the governments as well as by the companies themselves served Ericsson, and until recently also Nokia, well. But betting on the same horse can lead one astray, too. Nokia's recent fall is one example.

For policy makers the issue is about how to allocate the limited resources to support innovation. Given the bad track record of industrial policy in the sense of the authorities picking sectors and even companies to be promoted, the recommended policy approach with regard to innovation policy is to be as horizontal as possible and to leave the selection of ideas to the innovators and the markets. The strength of this argument is hard to deny, even if some growth economists have qualified the conclusion somewhat recently.¹²⁰ It is hard to see a sensible alternative to a policy which leaves the ultimate choice of the precise technologies and business ideas to be pursued to the market to the extent possible. The best role of the public sector in this choice process probably is to participate in risk sharing, for example, by providing risk financing in the early stages of the process. Still choices cannot be avoided.

¹¹⁹ MIT's budget for 2013 was 2.9 bn. USD or about 2.1 bn. EUR. Of this, three quarters goes into research and instruction. According to the OECD statistics, the entire higher education systems spent on research 1.4 bn. EUR in Finland, 1.8 bn. EUR in Norway and 2.2 bn. EUR in Denmark in 2011, the last year of comparable data.

¹²⁰ Aghion *et al.* (2011), for example, argue that tradable sector investments have been neglected due to an excessively laissez-faire approach and also emphasize the need to invest in clean technologies. But they, too, underline that no policy should favour any individual incumbent company and the support mechanisms should be designed to encourage competition.

One possibility is to make a compromise by spreading some of public innovation support solely on the basis of demand and target the rest to the technologies with the best chances of success as assessed by some expert body. Most countries follow this approach by providing innovation subsidies through the tax system to all R&D activities fulfilling some general requirements, and then having programmes for advancing research and development of specific technologies. The Nordics have followed different approaches in this regard. Denmark and Norway have used tax subsidies quite extensively, while in Finland and Sweden such subsidies have been introduced only recently on a relatively small scale. In Finland they will in fact be phased out soon. In Sweden and Finland the dominant forms of innovation support are grants and loans from special agencies (Vinnova and Tekes, respectively).

An additional complication is that it is difficult to ascertain the benefits of R&D subsidies even *ex post*. For example, studies on the impact of R&D subsidies on firm-level productivity in Finland have come up with different results depending on the precise subsidies examined and the analytical approach (Koski and Pajarinen 2012, Einiö 2013). Moreover, the main benefits of such subsidies may be the external effects which are even more difficult to analyse than the effects on the firms subject to the intervention. This uncertainty does not imply that R&D subsidies should not be used but rather that great care needs to be exercised when designing such schemes and that high-quality evaluation should accompany any subsidy scheme.

The rise of the global value chains exacerbates the challenges of national innovation policies. The problem is that the interests of the multinational companies do not necessarily overlap with those of any host country. An R&D subsidy to a multinational company in a given country may lead to innovation, the benefits of which in terms of value added materialize in other countries and tax jurisdictions. The same thing can happen if a domestic company is acquired by a foreign buyer before the innovation leads to significant domestic value creation and the high-value-added parts of the production process are transferred abroad.

To the extent this sort of mobility of value added threatens to cause an overall reduction of public spending on innovation support, international co-operation, for example, within the EU would be a natural response. However, it would not solve the problem of how to promote innovation in a given country.

These observations suggest that measures to support innovation should target and create resources, which are likely to remain attached to the country (Baldwin and Evenett 2012). One option is simply to con-

centrate on educating high-quality researchers and other personnel in large quantities on the assumption that a significant fraction of them would stay in the country paying for the education. The availability of immobile experts would then attract innovation activity and the related production. As discussed earlier, an obvious challenge is that such experts are becoming increasingly mobile.

A step further would be to assign the subsidy directly to the personnel working in the country or to set requirements that any subsidy is conditional on locating a given fraction of the R&D activities in the host country. A handicap in this approach is that it might weaken the possibilities for international co-operation, which in many fields is essential for truly important innovations.

Providing a good physical and social environment for innovation activities is also an obvious choice, which many countries have deliberately pursued. Science parks, incubators, etc. with attractive physical infrastructure and various auxiliary services have in fact figured highly in many countries' and regions' innovation strategies. While the Nordics may have few natural advantages and certainly not overwhelming financial resources to attract innovators, there are governance and social aspects which may make the Nordic environments attractive places for them. Predictable, relatively simple administrative procedures, secure, clean surroundings, well-functioning public services including day care for children as well as tolerant social attitudes can become increasingly important for the sort of people who have the most to contribute to innovation. The success of "Slush", an annual start-up event in Helsinki attracting several thousands of innovators and financiers from all over the world, suggests that relatively small investments can spur start-up activity. The emergence of innovative entrepreneurial ecosystems and their growth does not necessarily require massive subsidies. Sometimes a little nudging may suffice.

1.4 Improving the efficiency of the public sector

In principle, the most attractive way to lessen pressures on public finances is to improve the efficiency of the public sector. This is particularly so in the case of the Nordics, where the share of public provision of services in GDP (or more reliably the share of public sector employment in total employment) is exceptionally high; in fact the Nordics are more distinctive in this regard than in the ratio of overall public expenditure to GDP, as described in Part I.

In practice this avenue is far from easy. The problems start with the difficulties in measuring efficiency in the public sector. The standard measurement approach is not available for most of public sector production as the output is not sold in the market, which would determine the value of the services. Recording quantities of output, which usually is feasible, is often useless as the key issue is the impact of the output on the ultimate objective, the quality of the service provided. Increasing the number of hours of teaching or surgical operations is not very interesting if the higher numbers are associated with lower quality and one cannot measure the quality reliably.

When one cannot measure properly, it is difficult to assess the potential for improvement or verify progress over time. In spite of these difficulties some broad observations and comparative studies suggest that the Nordic countries have relatively efficient public sectors in an international comparison. For example, in one often cited comparative study (CPB 2004), Sweden, Denmark and Finland are among the best performing countries in different dimensions and often at the very top among the 22 developed countries included in the analysis. Similarly, according to the World Bank's indicator for government effectiveness, all the Nordics come out either at the absolute top or very close (OECD 2013c).

This conclusion is not uniform, though, and room for improvement exists. For example, comparing public expenditure on education and adults' average skills (PIAAC), Finland and Sweden appear very efficient while Denmark and Norway spend much more resources but with no better results. On the other hand, if one compares public expenditure on education and the PISA results, all the Nordics with the exception of Finland look rather mediocre if not worse. Similar comparisons of public expenditure on health and an indicator of health outcome (healthy life years) suggest that Iceland, Norway and Sweden are efficient while Denmark and Finland are relatively inefficient. Of course, simple scatter plots should not be given too much emphasis. Still they may have some indicative value in suggesting where the performance may be under-shooting. Interestingly the weak health performance of Denmark and Finland is corroborated by a more in-depth comparative assessment of the health sector efficiency by the OECD (Journard *et al.* 2010).

Figure 12: Public expenditure and education outcomes

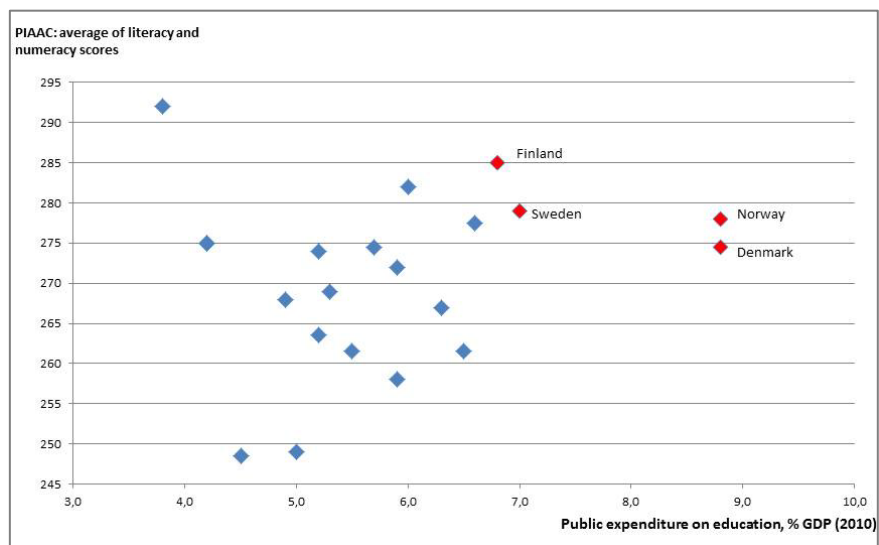
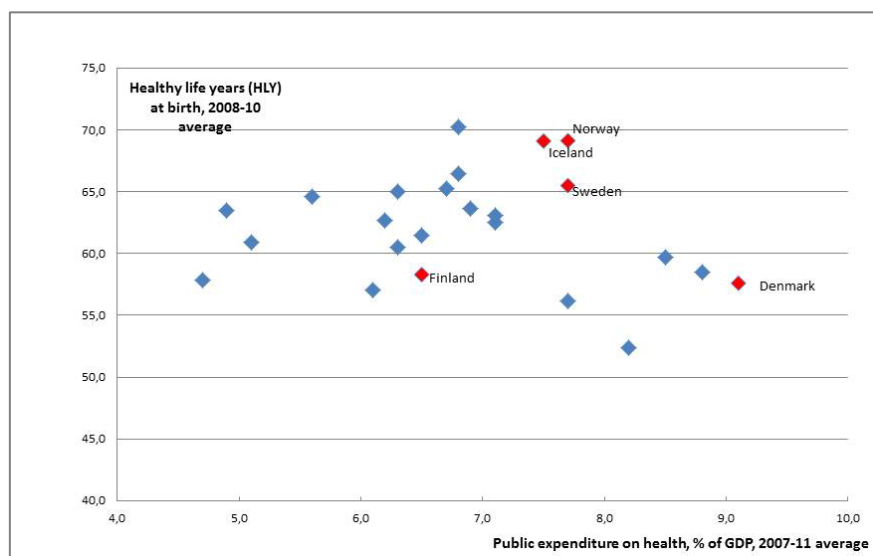


Figure 13: Public expenditure and health outcomes



Source: OECD

In the private sector well-functioning competition can be assumed to eliminate gross inefficiencies in production, and promoting competition is one of the key policies recommended, for example, by the OECD to improve productivity. Unfortunately, competition cannot usually be relied on in the same way in solving problems of inefficiency in the public sector. The reason is simple: many activities carried out by the public sector take place in that sector precisely because one cannot trust that private provision of services spurred by competition would be a good way of taking care of such services owing to information problems, externalities or distributional implications (Andersen et al. 2007).

Still, public provision does not necessarily require public production, many ideologically charged claims notwithstanding. For example, in countries where service provision is based on social insurance it is common that services are privately produced. Nordic countries are well-known for the large share of public production, but there is large variation also among them in how, e.g., health care and long-term care is organized. Extreme cases are Denmark, where primary and outpatient specialised health care is mainly produced by self-employed professionals and Finland where the role of the private sector is still marginal, even though it is increasing. In all the Nordics, long-term care is increasingly produced by the private sector.

There are in fact several ways through which market principles can potentially help increase efficiency in the public sector short of complete privatisation of services: (1) private ownership and contracting out (tendering, outsourcing, public-private partnerships), (2) user choice and competition and (3) price signals in funding (Blöchliger 2008).

These different avenues have been experimented with in different ways in different countries, including the Nordics. Unfortunately no clear-cut general conclusions appear warranted about which approaches work and which do not. Much seems to depend on the specific circumstances and applications. For example, efficient outsourcing requires enough competition and skilled purchasing to get the incentives and conditions right. These requirements have not always been met.

In any case, a key issue for a well-functioning system, be it one relying on “command and control” within a traditionally organised public sector or one using market mechanisms, is adequate information about the quality of the services as well as the use of different types of resources in the production process. Such information is essential to allow challenging the existing production methods and incumbent producers (Sunden *et al.* 2014). Even when one does not want to resort to private production of publicly provided (financed and organised) services, such

information is key in promoting efficiency. It allows identifying best practices and benchmarking any other production against them. Similarly only when patients have knowledge about the quality of the service producer can they make an informed choice when given a chance of choosing.

As a whole, there would seem to be room for applying market principles in the provision of public services more widely than has happened so far in the Nordic countries. However, given the many informational and distributional challenges, this should take place on a carefully planned experimental basis. An evaluation process should always accompany a new way of production to allow an early modification, extension or termination of the experiment.

While private provision of public services may still remain an ideologically charged issue, making full use of the opportunities created by digital technology should be a rather obvious way to go irrespective of political considerations. There are many examples of great savings achieved which suggest that the further saving potential is huge.

Still, progress is slow in many fields, even if most of the Nordics are well advanced in international comparison (Digile *et al.* 2014). One obstacle is the existing mutually incompatible technologies used by various units. This is a particular problem when the service production has been decentralised to a large number of autonomous producers as in health care in Finland. Another problem is ossified organisational structures with an outdated and stiff division of labour between different professions. Also the fear of job losses can hamper the adoption of new technology. It seems that strong leadership combined with extensive training is necessary to overcome these difficulties.

Finally, in some instances economies of scale are not used efficiently, even given the level of the use of digital technology. For example, highly specialised medical services are produced in an unnecessarily large number of hospitals even if strong evidence exists that such services could be provided at lower cost and better quality by a smaller number of producers. Unfortunately, discontinuing a service in a given location often confronts strong local political resistance, even if the availability of the service would not significantly weaken.¹²¹

¹²¹ An interesting example of the political difficulties involved is the reform of the Finnish health and social services. The government tried for almost three years to produce a complicated reform plan that would suit different political and regional constituencies. Only when the proposals hit overwhelming legal and political hurdles, a clear and simple structure to facilitate major economies of scale emerged in March 2014.

1.5 The Nordic model – still alive but in need of refocusing and recalibration

There is no doubt that the Nordic model is seriously challenged by three megatrends: digital revolution, globalisation and ageing. In a nutshell, demand for safety nets and publically financed services increases while there is less scope to tax.

While technological development, globalisation and ageing affect all developed countries, two factors make the Nordics particularly vulnerable. The first one is the extensive public welfare promise deeply ingrained in Nordic societies and manifested in the large share of publicly produced welfare services. Because of this, pressures for additional public expenditure are strong; the so-called Wagner's law and Baumol's disease are likely to affect the Nordics more than most other developed economies. Second, as small and open economies at or close to the technology frontier the Nordics are vulnerable to shocks that affect the fortunes of the highly specialised export industries. A negative shock in any of them creates a larger relative adjustment need than in more diversified economies.

At the same time, the Nordics are in some important respects better placed than many other societies to meet the challenges. The Nordics have a strong track record in adjusting to pressures of structural change. They have succeeded in mobilising a large fraction of the population in gainful economic activity with close-to-world top productivity in an open competitive environment. This is essential for generating large revenues for the public sector with a sustainable tax burden.

High employment rates are a result of a combination of several factors, the most important being (1) high or reasonably high quality education for everyone, endowing the population with the necessary skills, (2) a culture of gender equality, adequate incentives for women to participate in the labour market implemented e.g. through individual taxation and support mechanisms, and (3) labour market institutions that have been able to keep unemployment rates reasonably low on average.

High skill levels, substantial public investments in innovation, openness to trade and acceptance of creative destruction have contributed to high productivity, which has supported high overall living standards. High employment, mainly in good jobs, and generous safety nets have kept income disparities low and allowed individuals to take risks, while equal opportunity education has underpinned high intergenerational income mobility. This has fostered trust and social cohesion in a way which has contributed to the acceptance of creative destruction and to

political stability. Political stability has helped focusing on long-term objectives and managing public finances in a way which has created room for fiscal stabilisation.

The question is whether these mechanisms underpinning the Nordic model are strong enough to sustain the new assaults by the aforementioned three drivers, which simultaneously destroy jobs, increase inequality, raise public expenditure, reduce tax intake and make the economies more volatile.

Answering this question with any great confidence is hardly possible. Nevertheless, we would be inclined to give a qualified yes as an answer. Evaluation of the six policy areas above – education, taxation, pension policy and other policies in support of labour supply, policies to enhance labour market flexibility, innovation policy and reforming the public sector – suggests that while the relative position of the Nordics remains good, there is also further room for improvement in all areas, in different ways and degrees in different Nordic countries. Adjustments in a realistic scale could quite well be enough and, if well implemented, would not alter radically the way the Nordic societies function.

While there are many precise policy combinations that could do the trick and political preferences may lead to different choices in the different Nordic countries, it would seem hard to avoid the following general policy conclusions:

- More emphasis in the use of public resources should be put on skill formation. These efforts should cover all phases of life from the very early childhood to retraining of elderly workers. Life-long learning and equal opportunity education should be the catch words even more than has been the case so far. In the early years of life such educational efforts link strongly with social and health policies and the social returns of well-designed government interventions are much higher than those applied in later stages of life. While the role of the government financing in skill formation can and (to keep the expenditures in check) should decline progressively with age, the governments should make sure that high-level education is available to everyone. At the universities, academic excellence should be given a clear priority to other objectives. The emphasis on skill formation is good not only to increase the employability of the population in changing technological and competitive circumstances and productivity growth, but also important for equality, social cohesion and trust.

- High participation in labour markets requires determined measures to compensate for the negative impact of ageing on labour supply. Pension policies are of pivotal importance in this regard, and all Nordics should aim to bring about an increase in the effective retirement age in line with the increasing life expectancy. While the precise reforms may differ, elevating the statutory retirement ages is a necessary element of effective reforms, accompanied by reducing the attractiveness of the early exit routes from the labour market. Well-designed reforms can result in longer working careers, better pensions, better public finances simultaneously and decrease rather than increase old-age poverty. In addition, participation by females in their prime working years can still be increased by financial incentives and modifications in family policies. There is also significant room to bring forward the age at which people enter the labour market from tertiary education. Making better use of immigrant labour resources is important in all Nordics, and attracting more work-related immigration in particular for Finland.
- Minimising unemployment and ensuring an efficient allocation of labour resources to the most productive jobs are the ultimate objectives of well-functioning labour markets. Under conditions of rapid technical change, global competition at the task level, and high macroeconomic volatility, wage flexibility is essential for keeping unemployment low. At the same time, employment protection or unemployment benefits should not hamper re-employment and reallocation. While the Nordic labour markets function mostly quite well, there is room for reforms towards further flexibility. Such reforms are likely to increase workers' income variability over time and income disparities, but some additional income uncertainty and wage inequality probably cannot be avoided if one aims at high employment and low unemployment in the new environment.
- Fostering innovation and structural change (creative destruction) to support productivity growth in line with the global technical change continue to be of key importance for high living standards. Given the high level of public spending on research and development the opportunity costs of increasing such spending further would probably exceed the benefits. One should rather aim at using the money more efficiently. A particular challenge is how one could allocate the public funds so as to maximise the spill-overs into the domestic economy. There are no easy answers to these questions. Putting more emphasis on start-up financing and supporting the creation and development of entrepreneurial ecosystems might be

one way to go. Strong specialisation is undoubtedly a risk but is also necessary in the small Nordic economies. An efficient way to limit such risks might be promoting applications of general purpose technologies rather than by trying to deliberately spread innovation support widely to different branches. In any case promoting competition continues to be important.

- While the level of the overall tax burden is ultimately a political choice, taxes as a share of GDP can hardly go significantly up. The question rather is how much the overall tax ratios may have to decline under the pressure of increasing mobility of important tax bases. While tax structures can be considered relatively efficient in the Nordics, there is still room for improvement. That should be used to stimulate labour supply, labour mobility, risk taking and capturing value in the global value chains. Reducing labour taxation and increasing real estate and consumption taxes would be advisable, as would ending the favourable tax treatment of owner-occupancy. Corporate tax rates should be kept competitive but a race to the bottom hardly is in the Nordics' interest.
- Finally there is no way around continued efforts to improve the efficiency of the public sector. While the Nordics compare rather well in this regard internationally, to the extent such comparison can be trusted, there is clearly room for improvement in every country. There is no single superior way to organise public services. Nevertheless, improvements would most likely be achieved by making better use of market mechanisms. Also an open-minded application of digital technology in public administration and services could result in substantial savings. A prerequisite for any successful reform, be it within a "command and control" type of organisation of public services or in one relying more on market mechanisms, is adequate information about the quality of services. Much more effort should be put into producing such information as well as into the evaluation of the reforms.

Sound macroeconomic policies are an important basis for the aforementioned structural policy responses. The experience of Finland and Sweden in the early 1990s and Iceland and to some extent Denmark in the Great Recession show that mismanaged macro policies can derail the economy badly and result in a long legacy of high unemployment and high public debt. Macro-prudential policies to keep credit expansion in check and the banking sector on a sound footing are a very important part of a prudent preventive policy approach. Similarly, when shocks hit,

stabilising macro policy is important. In this regard, Sweden, Norway and Iceland have a more versatile tool box as they can use also monetary policy for stabilisation. However, at least so far the experience does not suggest that adequate stabilisation could not be done through fiscal policy, though the requirements for prudent fiscal stabilisation are tough.

A necessary precondition for effective fiscal stabilisation is that there is enough budgetary space for cyclical stabilisation – be it through automatic stabilisers or through discretionary policies. The Nordics have a rather good track record in this regard. However, it is far from easy to build sufficient fiscal buffers even in the best of the times, and certainly so when there are secular pressures on age-related spending, on the one hand, and on mobile tax bases, on the other hand. It is also very difficult to determine when a negative shock to demand should be considered transitory to which “bridge building” is an appropriate response and when the shock is permanent, which requires adjustment. There is an obvious danger of stretching stabilisation too far and sliding into a process of burgeoning debt. Independent expert bodies assessing fiscal and economic policies may limit such a risk. The experience of Denmark and Sweden on fiscal councils is encouraging, and a similar body is currently being established in Finland.¹²² Also the new stronger fiscal rules in the EU may help the three EU member states to keep on a prudent path. Nevertheless, ultimately it all depends on national political culture and leadership.

Among the Nordics, *Finland* faces the most severe adjustment challenges. They relate to the – by the Nordic standards – low employment rate in conjunction with the fastest ageing process and the exceptional structural shocks the economy has been hit by recently. Strong measures to increase labour supply including an ambitious pension reform and measures to attract work-related immigration as well as labour market reforms to increase wage flexibility and labour mobility are called for. Similarly, action to improve public sector efficiency is important, in particular with regard to the health care system. Finland still has a good primary education system even if the quality has deteriorated recently. Also the innovation system can be considered among the best, and there is a strong knowledge base in digital technology and some encouraging

¹²² In fact two separate bodies will soon exist in Finland for the assessment of economic policies. The National Audit Office functioning under the Parliament has been tasked with monitoring the implementation of EU's Stability and Growth Pact and Fiscal Compact, while a new, more academically oriented body is being set up to assess more broadly the appropriateness of fiscal and economic policies.

start-up activity. These strengths bode well for the capacity of the Finnish economy to respond to technological change.

In *Iceland* the most urgent task remains solidifying the return to growth after the unprecedented boom-bust episode and addressing the legacy issues. While the economy has grown modestly and unemployment has declined recently, the public debt remains very high and there is still need for substantial consolidation to ensure sustainability. There appears to be room for improving public sector efficiency, given that, for example, public spending on education is high relative to the results achieved. A longer-term issue is the weak productivity growth because of which Iceland's relative GDP per capita position has been declining for almost two decades. In addition to looking into the education system, reducing barriers to competition in the product markets would be helpful. Also ensuring the soundness of the banking system requires considerable attention. The high participation rate and low income disparities despite relatively modest redistribution through taxes and transfers are a good starting point for stronger growth while keeping it inclusive.

Denmark is only slowly recovering from the crisis, but the usual macro-indicators do not point to severe imbalances in a medium-term perspective. The overall strategy in addressing the problem of fiscal sustainability has been to strengthen labour supply and employment via an overhaul of all elements of the social safety net. The reform intensity has thus been high in recent years, but a number of implementation elements remain to ensure that these reforms deliver the projected results. Productivity growth has for some years been on a downward trend and lower than for most other countries and it is a major challenge to boost productivity growth. This applies equally for the private and the public sector. For the private sector it is crucial if Denmark is going to maintain its position as a high income country, and for the public sector it is essential if pressure for improvements in e.g. health and education should be accommodated without jeopardizing public finances.

Sweden has been among the best performing European economies recently. While the crisis hit Sweden too, it has recovered well. Current account posts a healthy surplus and public finances are in a good shape both in the short- and long-term perspective. Increased unemployment, particularly among the young and unskilled is a challenge, but could in part be traced back to the rapid increase of labour supply pursued by various reforms. While the population is endowed with good skills on average, there are some worrisome trends. The quality of primary education is not very good by international standards. A particular concern is that the educational outcomes have weakened and started to depend

more on the family background than before. A more versatile economy than that of the smaller Nordic countries is a Swedish strength. So is the proven ability to continuously reform economic institutions in response to new perceived challenges. Many countries could learn from the Swedish approach in this regard.

Norway is one of the richest countries in the world thanks to its vast hydrocarbon reserves. While it has used the revenues prudently, it has also been able to provide very high and equal welfare to its citizens. Tight demand conditions have kept unemployment low and attracted immigrants to the Norwegian labour market. While natural resources continue to remain an important source of revenues to the economy and the public sector in the coming decades, more attention should be paid to productivity growth in the mainland economy. The education system does not deliver results in line with the vast expenditures. Teacher quality and the fragmentation of higher education could be areas of useful reforms. New firms are created at a low rate and there are few rapidly growing start-ups. Nevertheless, finding effective remedies may not be easy as long as the hydrocarbon sector continues to play such a predominant role in the economy. As a whole, Norway remains in a very good position to maintain and develop the key features of the Nordic model in the foreseeable future.

An unfortunate feature of much of policy making is that the effects of various policy interventions are inherently very uncertain. This accentuates the difficulties in mustering the necessary political support for reforms which are painful in the short run. Thorough evidence-based ex ante evaluation of various reform proposals and their careful vetting in the political process are of course helpful, but cannot eliminate all uncertainty. This underlines the need to have an experimental approach to reforms to the extent possible. Two elements are essential in this: an open-minded approach to new ideas and a rigorous evaluation on the basis of well-designed pilots.

The directions of reform outlined above would in all likelihood improve the Nordics' capacity to sustain, and in some cases still elevate, the high employment rates and a competitive rate of productivity growth. At the same time, some widening of income disparities may not be avoided in an environment where there are significant pressures for the distribution of market incomes to widen and the size of the redistributive public sector cannot be increased but may even have to decline. However, such a change need not be big, if reforms succeed in producing continuously high employment rates and increasing the efficiency of the public sector. The impact on social cohesion and trust could also remain modest as long as one manages to keep social mobility high, particularly between generations. Strong emphasis on providing equal opportunities for chil-

dren of all backgrounds should limit the risk of weaker mobility. The Nordic model does not need dismantling and reconstruction but rather refocusing and recalibration.

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Sammanfattning

Den här boken granskar den nordiska modellen och diskuterar policy utmaningarna ur en ekonomisk synvinkel. Boken är uppdelad i tre delar. Del I analyserar hur de nordiska länderna under den senaste tiden presterat, sett från ett komparativt och huvudsakligen makroekonomiskt perspektiv och identifierar de största utmaningarna. Del II innehåller kortfattade tematiska analyser av konkurrenskraft, pensioner och förväntad livslängd, hälsovården, immigrationen, avhopp från skolan, unga pensionärer och beskattning. Slutligen går del III mer in på djupet av de viktigaste utmaningarna och diskuterar behovet av och valet av policy reformer.

Del I visar att de nordiska länderna inte är helt så unika eller likriktade som det ofta påstås. Många länder uppvisar likadan eller högre levnadsstandard och många har nästan lika låga inkomstskillnader. Det är emellertid ändå fortfarande legitimt att tala om den nordiska modellen. Kombinationerna av hög genomsnittlig levnadsstandard, låga inkomstskillnader och låg fattigdomsnivå som uppnåtts i de nordiska länderna är bland de bästa i världen. Ytterligare, dessa resultat har erhållits tack vare institutioner och policy orienteringar som har särskilda nordiska egenskaper: flexibilitet (flexibilitet och säkerhet) på arbetsmarknaderna, stora investeringar i humankapital, omfattande arbetsorienterade offentliga säkerhetsnätverk finansierade med höga skatter, effektiva offentliga sektorer inkluderande skattesystemen enligt internationella standarder, accepterandet av strukturella förändringar vilket stöds av en hög grad av tillit i samhället.

Fastän den makroekonomiska prestandan i de nordiska länderna var mycket god under decenniet som föregick den globala krisen, så undgick de nordiska länderna inte dess effekter. Island och Finland har drabbats speciellt hårt, av olika orsaker. De starka utgångspunkterna med hänsyn till sysselsättningen och de offentliga finanserna har emellertid dämpat effekterna. Arbetslösheten har stannat väl under det europeiska genomsnittet och – med undantag av Island – har drastiska policy åtgärder inte varit nödvändiga. Effekterna av krisen på sysselsättningen och de offentliga finanserna har ändå sammanfallit med förstärkningen av en del sekulära trender såsom effekten av den åldrande befolkningen på utbudet av arbetskraft och den teknologiska utvecklingen som gör av med rutinmässiga arbeten. Frågan hur de nordiska länderna anpassar sig till

dessa förändringar i den ekonomiska omgivningen har därför blivit mera brådskande.

Nedgången i produktivitetstillväxten är ett problem i de nordiska länderna såsom i andra utvecklade länder. En särskild fråga för de nordiska länderna är den lilla storleken på de enskilda ekonomierna vilket betonar utmaningen att främja tillväxtökande innovationer. Likaledes förblir pressen på de offentliga utgifterna hård på grund av den åldrande befolkningen och kombinationen av den så kallade Wagners lagen och Baumols sjukan, samtidigt som skattekonkurrensen sätter press neråt på många skattesatser. Policy reformer behövs för att förbereda dessa utmaningar. Del I kommer emellertid fram till ett självsäkert påpekande: den höga graden av tillit i de nordiska samhällena är en värdefull tillgång då det gäller att anpassa sig till olika förändringstryck.

De tematiska analyserna i Del II ger ny insyn i ett antal intressanta utvecklingsförlopp och policy frågor.

Konkurrenskraft: De nordiska ekonomiernas konkurrenskraft har varierat avsevärt över tiden. Studier på företagsnivå visar att kreativ förstörelse har betydelse för produktivitetstillväxten. Resultaten betonar å ena sidan flexibilitet på arbetsmarknaden och å andra sidan behovet av policy som ombesörjer lagom inkomsttrygghet för arbetslösa på kort sikt, som intensifierar jobbsökning och som erbjuder omskolning till dem som har föråldrade färdigheter.

Pensionspolitiken: Många av de fiskala problemen som härrör från att befolkningen åldras kunde lindras med högre pensionsålder. Det verkar emellertid som om utsikterna att få lägre pensioner inte driver arbetstagarerna att skjuta upp pensioneringen tillräckligt om valet är frivilligt. Policy reformer, som sammanlänkar de undre åldersgränserna för ålderspensionerna med förväntad livslängd skulle säkra pensionärernas inkomstnivå samtidigt som det stärker de offentliga finanserna.

Hälsa och långsikts vård: Den kontinuerliga tillväxten av de offentliga hälso- och långsikts vårdutgifterna reflekterar delvis medborgarnas preferenser och de ökade teknologiska möjligheterna att förbättra välfärden. Men trenden med snabbt ökande enhetskostnader tillsammans med ökande antal kunder som en följd av den åldrande befolkningen, sätter gränser på de offentliga finansernas kapacitet att fullfölja förväntningarna. Vi behöver därför samtidigt explicit prioritering, mer effektivitet i den offentliga försörjningen, icke-ideologiska val i användningen av privat produktion och ökad kostnadsfördelning i finansieringen av tjänsterna.

Immigrationen: Integrationen av de europeiska arbetsmarknaderna erbjuder möjligheter att lindra arbetsmarknads- och fiskala problem som förorsakas av åldrande population. Samtidigt sätter de stora skill-

naderna i lönerna och socialförsäkringsstandarderna mellan länderna också press på existerande institutioner i välfärdsstaten. Det kan leda till behov av att skapa en tätare länk mellan utbetalda bidrag och erhållna förmåner till exempel i arbetslöshetsskydd.

Unga pensionärer: En studie på individnivå visar att det sker överföring mellan generationerna då det gäller beroendet av invalidpension och att övergången från skola till arbete innehåller riskfyllda element. Det verkar också vara så att den yrkesrehabilitering som för tillfället är i bruk inte förbättrar anställningsbarheten och sysselsättningen hos de rehabiliterade så mycket som man förväntat sig.

Avhopp från skolan: De nordiska länderna placerar sig bland de bästa i termer av arbetslösa i procent av den unga icke-studerande populationen. Positiva nyheter är också att många av dem som inte har slutfört andra stadiets utbildning vid 21 års ålder kommer att göra det senare och skillnaden i utfallen på arbetsmarknaden är förvånansvärt små. Men för dem som hör till riskgruppen som slutar som "NEETs" (inte i utbildning eller sysselsättning), skulle en regelbunden uppföljning efter slutförd obligatorisk utbildning vara mycket nyttig för att underlätta tidiga ingrepp.

Beskattningen: Globaliseringen både ökar skattebasernas rörlighet och ger mer beskattningsbar inkomst och konsumtion tack vare nyttan av ökad handel. För att upprätthålla förmågan att finansiera de stora välfärdsstaterna, är det livsviktigt att skatte- och transfereringssystemen är uppgjorda så att sysselsättningsgraderna hålls höga. Socialförsäkringsskyddsnätet måste hållas sysselsättningsorienterat. Alternativa inkomstkällor (till inkomstbeskattning), såsom fastighetsbeskattning eller användarvederlag skulle vara mycket användbara.

Del III ser mer på djupet av policy utmaningarna som utstakades i Del I och diskuterar vad som kunde och borde göras inom olika policy områden. Det fundamentala policy dilemmat är att efterfrågan på offentliga säkerhetsnätverk och tjänster tenderar att öka medan kapaciteten att beskatta tenderar att minska på grund av den tilltagande rörligheten av viktiga skattebaser. Utvärderingen av sex olika policy områden antyder att samtidigt som de nordiska ländernas relativa position är bra inom många områden, finns det rum för förbättringar inom alla områden, i olika grad i olika länder. Anpassningar i en realistisk omfattning anses vara tillräckligt för att möta utmaningarna och ifall de implementeras väl skulle de inte radikalt förändra det sätt på vilket de nordiska samhällena fungerar.

Ännu mer insatser borde sättas på *kompetens-bildning*, och tyngdpunkten på statligt ingripande borde vara i livets tidiga år. Emedan jämlik chans till utbildning och livslångt lärande borde vara nyckelorden,

borde den statliga finansieringens roll progressivt sjunka med åldern. Vid universiteten, borde akademisk excellens klart prioriteras framom andra mål.

Högt deltagande på arbetsmarknaderna kräver bestämda åtgärder för att kompensera för den negativa inverkan av åldrandet på *arbetskraftsutbudet*. Förhöjning av lagstadgade pensionsåldrar och minskad dragning till de tidiga utgångsrutterna från arbetsmarknaden är centrala i detta avseende. Bättre utnyttjande av invandrarnas arbetskraftsresurser är också viktigt.

Arbetsmarknadsinstitutionerna och praxis borde reformeras för att minimera *arbetslösheten*. Löneflexibilitet och hög rörlighet mellan yrken och regioner efterlyses. Policyn borde inte ha som mål att skydda jobb utan att hjälpa människor att anpassa sig. Endast kombinationen av högt arbetskraftsutbud och låg arbetslöshet tillåter uppnåendet av de sysselsättningsgrader som behövs för att finansiera de offentliga utgiftsnivåerna som är nödvändiga för den nordiska modellen. Höga sysselsättningsgrader är också viktiga för att hålla inkomstojämlikheter i schack.

Befrämjandet av *innovationer och strukturella förändringar* är fortsättningsvis en central del i den nordiska modellen med sikte på konkurrenskraftig levnadsstandard. Mer offentlig finansiering av F&U är osannolikt den rätta vägen framåt, givet den höga nivån på sådant spenderande i utgångsläget. De nordiska staterna borde fortsätta att avhålla sig från att försöka "plocka vinnarna" och fokusera på horisontella satsningar för att skapa ett ramverk med goda förutsättningar för innovativ ekonomisk aktivitet.

Givet den ökande rörligheten av viktiga skattebaser och de skadliga incitamenten som höga skatter resulterar i, kan en ökning av de övergripande skattekvoterna knappast vara lösningen till trycket på de offentliga finanserna, även om nivån på beskattningen också är en fråga om politiska preferenser. Förbättring av *skattesystemets effektivitet och robustness* borde ställas i fokus. Skattereformerna borde sträva till att stimulera arbetskraftsutbudet, rörligheten av arbetskraften, risktagandet och tillfångatagandet av värdet i de globala värdekedjorna.

Givet den stora storleken på de offentliga sektorerna, är förbättrandet av *effektiviteten på produktionen av de offentliga tjänsterna* en väsentlig del av en tillämplig policy respons. Emedan det inte finns något enda överlägset sätt att organisera offentliga tjänster, skulle en bättre användning av marknadsmekanismerna högst sannolikt hjälpa, liksom en öppen inställning till användningen av digital teknologi. En förutsättning för varje framgångsrik reform är förbättrad information om kvaliteten på tjänsterna.

För att hålla modellen vid liv, behövs reformer, på olika sätt och i olika grad i de olika nordiska länderna. Anpassningsbehoven är störst i Finland och Island. Lyckligtvis har de nordiska länderna uppvisat en betydande kapacitet att genomföra reformer. Deras utgångspunkter är också i många avseenden starka. Fastän svåra tider alltså ligger framför en del av de nordiska länderna, och en viss breddning av inkomstjämligheterna kan vara oundvikligt, är bokens budskap att med ny fokusering och ny kalibrering i en realistisk omfattning så har den nordiska modellen goda möjligheter att blomstra väl in i framtiden.