Nordic Council of Ministers

FISCAL FRAMEWORKS AND FISCAL SUSTAINABILITY in the Nordics

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Foreword

Public finances in the Nordic countries exhibit many similarities including broad publicly financed welfare systems. Increasing life expectancy and ageing populations imply potential strains on the long-term sustainability of public finances. This applies to all advanced economies, including the Nordic ones. The anticipated future challenges underscore the importance of pursuing responsible and prudent fiscal policy. Such policy also creates room of manoeuvre for fiscal stabilization in unanticipated situations as the current corona crisis.

An important task of ministries of finance is to do long-term fiscal sustainability analyses helping politicians to take appropriate measures to deal with the long-term fiscal challenges. Such calculations are also made by other publicly financed institutions. The aim is to signal needs for policy change at an early stage.

The Nordic Council of Ministers commissioned this report from Professor Lars Calmfors on fiscal frameworks and fiscal sustainability in the Nordics. The report compares and evaluates the fiscal frameworks in the countries. It also provides an overview and evaluation of the fiscal sustainability analyses performed. The aim is to help the Nordic countries learn from each other. The report was finalized before the extreme consequences of the corona virus began to be felt. The crisis will likely cause huge deteriorations of public finances in the Nordics as elsewhere. This will make fiscal sustainability analyses more important in the future than ever.

An important objective of Nordic collaboration and the work of the Nordic Council of Ministers is to promote relevant knowledge-sharing between the Nordic governments and in this way help to improve the knowledge base for good policymaking. This report is an example of how the Nordic Council of Ministers in collaboration with our research institution Nordregio and academic researchers can contribute to this objective.

Paula Lehtomäki
Secretary General
Nordic Council of Ministers

1 Introduction

Like in other advanced economies, public finances are facing great future challenges in the Nordics due to demographic developments. Increasing longevity is changing the age structure of the population, significantly raising the share of elderly people and thus the old-age dependency ratio. Age-related expenditure, mainly for old-age and health care as well as for pensions, will increase. At the same time, tax revenues will be held back when the share of the population in working age falls. The challenges will be compounded to the extent that rising incomes cause the demand for tax-financed welfare services to increase.

The age-related challenges to public finances underscore the importance of pursuing a responsible and prudent fiscal policy. At the same time, it is well-known that fiscal policy may be subject to deficit bias. A number of mechanisms that could lead to such outcomes have been identified: short-termism in political decision-making, political competition in combination with uninformed voters, political parties that want to favour their constituencies while in power and time-inconsistency problems (difficulties of adhering ex post to ex-ante plans). Recent international experience, not least during the euro crisis, has also highlighted the risks associated with insufficient fiscal buffers that leave little room for stabilisation policy in situations of distress. The corona crisis raging at the time of finalising the report will provide further illustration.

Over the last two decades, there has been a strong international trend, especially in European countries, to strengthen *fiscal frameworks* by adopting more stringent fiscal rules as well as increasing transparency and accountability. Independent monitoring of fiscal policy has been emphasised. These trends have included the Nordics. A first aim of the report is to survey and evaluate the fiscal frameworks in the Nordic countries.

A second aim is to review how *long-run sustainability analyses of public finances* are made – and communicated to policymakers and the general public – in the Nordics, by Ministries of Finance as well as by other institutions. The report also draws conclusions on the severity of the fiscal-sustainability problems in the various Nordic countries

as they could be judged before the outbreak of the corona crisis. Needless to say, it will completely change all previous assessments. But once the acute crisis is over, or at least when the dust has settled so that the ramifications can be gauged, fiscal sustainability analyses will be more important than ever. Indeed, they will be crucial for future policymaking. The hope is that my review of fiscal frameworks and fiscal-sustainability analyses in the Nordics can help the countries to learn from each other and this way contribute to better fiscal policy.

The report is structured as follows:

- Section 2 summarises the main contents of the report.
- Section 3 reviews briefly recent developments of fiscal balances and government debts in the Nordics.
- Section 4 surveys the fiscal frameworks.
- Section 5 discusses monitoring of fiscal policy by independent fiscal institutions.
- Section 6 contains a general theoretical overview of how sustainability analysis can be performed.
- Section 7 reviews the sustainability analyses made in the various Nordic countries.

2 Summary

The report focuses on three main aspects of fiscal policy in the Nordics: (i) fiscal rules; (ii) monitoring of fiscal policy by independent institutions; and (iii) fiscal-sustainability analyses.

2.1 Fiscal rules

A country's possibility to pursue sustainable fiscal policy depends on its *fiscal framework*. There is no clear-cut definition of the concept of fiscal framework, but it is generally understood to encompass procedures for fiscal-policy decision-making, the formulation of fiscal-policy objectives and constraints, how binding these are, how compliance with them is monitored and how deviations from them are handled. During the last decades, there has been a strong international trend towards more formalisation of the fiscal frameworks. This has often implied the adoption of *fiscal rules*, i.e. numerical constraints on aggregate indicators of fiscal performance.

Fiscal-balance targets

All five Nordic countries have fiscal-balance targets or limits. The three EU members – Denmark, Finland and Sweden – are encompassed by the EU fiscal rules. They include a ceiling for the actual (nominal) fiscal deficit of three per cent of GDP, a medium-term objective (MTO) of "close to balance or in surplus" (which refers to the structural balance) and an expenditure benchmark requiring spending increases beyond a country's medium-term potential economic growth rate to be matched by additional discretionary revenue measures. The EU rules have been partly incorporated into national legislation in Denmark and Finland, whereas this is not the case in Sweden. Norway and Iceland have set their own fiscal-balance objectives.

In Denmark, Finland and Sweden, the fiscal-balance targets at the national level mainly refer to the general-government structural balance. In Iceland, they apply instead to the actual fiscal balance. Norway's fiscal target is a structural budget balance for the central government (after withdrawls from the petroleum wealth fund). Currently, this is the most ambitious target among the Nordics as it implies a large general-government surplus as long as there are substantial revenues from petroleum production flowing into the wealth fund. The Swedish surplus target of 1/3% of GDP is more ambitious than the fiscal targets (and limits) in Denmark, Finland and Iceland. The legal basis for the numerical fiscal-balance stipulations is, however, stronger in Denmark, Finland and Iceland, where the levels are written into law, than in Norway and Sweden, where they are not.

Denmark, Finland and Sweden have stipulations for similar speeds of correction of deviations from the fiscal targets: around 0.5% of GDP per year. Iceland and Norway have no such pre-specified adjustment paths. All countries have some form of escape clause allowing departures from the fiscal targets under exceptional circumstances.

Debt targets

Only Iceland and Sweden have explicit debt targets. The Icelandic target is that general-government debt should be below 30% of GDP. Sweden has a target (an "anchor") for Maastricht debt of 35% of GDP. The target has no operational significance for policy, but the relationship of actual debt to it should be considered in the regular reviews of the surplus target that are envisaged every eighth year. Finland has no explicit debt target, but an objective of lowering

Maastricht debt below the current level close to the EU 60% limit. Norway's fiscal rule of withdrawing only the real return from the petroleum wealth fund implies an objective of letting its real value increase as long as petroleum revenues flow into the fund.

Expenditure ceilings
Denmark, Finland and Sweden have multi-annual expenditure ceilings, whereas Iceland and Norway do not. The Danish and Swedish ceilings are law-based, while the Finnish one is an established practice. In Denmark and Finland, the ceilings are set in real terms, in Sweden in nominal terms.

The scope of the expenditure ceilings differs. The Swedish one encompasses all central-government expenditure except interest payments. In Denmark and Finland, investment expenditure and cyclically sensitive expenditure are also excluded. The Finnish ceiling applies only to the central government. Denmark has ceilings for both central-government and local-government expenditures. Denmark and Sweden both have stringent stipulations regarding how the government must respond to breaches of the ceilings. However, an odd feature of the Danish central-government expenditure ceilings is that breaches of them could be dealt with through tax increases, which could potentially make them less effective in controlling expenditure.

Fiscal rules for local governments
There are numerical rules for the local-government sector as an aggregate in Denmark and Finland, but not in Iceland and Sweden. Denmark has ceilings for operating expenditure as well as requirements on balance between revenues and expenditures in regions collectively and municipalities collectively (backed by sanction possibilities), Finland a target for the actual deficit of the local-government sector and Iceland agreements between the government and the local-government sector on the latter one's fiscal balance and balance sheet position.

All the Nordic countries have balanced-budget requirements for individual local governments. The rules are the strictest in Denmark since, unlike in the other Nordic countries, there is no general provision that investment expenditure can be financed by borrowing. In Denmark, Finland, Iceland and Norway, there are legal stipulations regulating how the government can exercise control over local gov-

ernments in distress. Here, Sweden stands out with no such legal possibilities. This may be a cause for concern, as demographic fiscal pressures will largely fall on local governments.

Overall strictness of the fiscal frameworks in the Nordics
A reasonable interpretation is that Denmark has the strictest fiscal framework (strong legal basis, tough expenditure rules and possibilities of sanctions against local governments) and Norway the least strict framework (weak legal basis, no expenditure rules), the three other Nordic countries lying in between. At the same time, both Denmark and Norway have strong fiscal records and the rules have been complied with in both countries. This may suggest that a political consensus on responsible fiscal policy could be more important than the formal status of the rules. But it is also easy to see challenges for the two countries ahead: lower growth in petroleum revenues together with rising ageing costs could threaten fiscal discipline in the Norwegian system, whereas the strict rules in Denmark could impair desirable fiscal-policy flexibility.

2.2 Fiscal-policy monitoring by independent institutions

Over the last two decades, there has been a strong international trend of setting up publicly funded independent fiscal institutions, often in the form of so-called *fiscal councils*, with a remit to monitor fiscal policy. The idea is that these institutions should act as "fiscal watchdogs" by alerting both policymakers and voters to fiscal risks. The discourse on independent fiscal institutions has often focused on their potential to raise the reputational costs for governments of bad policy. One way of doing this is to increase the transparency of policies by providing qualified analysis of their effects and scrutiny of the government's forecasts. Such analysis may be particularly important for upholding more complex fiscal rules, such as those concerning the structural fiscal balance, where there is considerable room for judgement.

Denmark, Finland, Iceland and Sweden have all established academically-oriented fiscal councils which are publicly funded. The absence of such an institution makes Norway an outlier in this respect. It may be explained by a strong corporatist tradition of consensus-based policymaking. However, it also represents a risk of insufficient public scrutiny of government policy and group think regarding it.

Broad remits

A common feature of the fiscal councils in Denmark, Finland and Sweden is the breadth of their remits. These do not only include fiscal policy but also other economic policy. The remits of the Economic Council(s) in Denmark (extending to environmental policy and productivity developments) and the Economic Policy Council in Finland (including also economic-policy goals and institutions) are wider than that of the Fiscal Policy Council in Sweden. Iceland stands out in comparison with the other three Nordic countries with fiscal councils because its council has an exclusive focus on fiscal policy. There are arguments both pro and con a broad remit. The main argument in favour is to use a fiscal council's expertise also for analysis of issues that are broader than, but related to, fiscal policy and this way exploit synergies. An argument against is that this might unduly weaken the focus on fiscal policy.

Legal basis and links to the political process

The legal basis for the various fiscal councils varies. It appears to be the strongest in Iceland where the provisions regarding the Fiscal Council are to be found in the Public Finance Act. In Denmark, there is a law regarding the Economic Council(s), whereas the stipulations regarding the councils in Finland and Sweden are given only in government regulations (decrees). There may, however, be a large difference between the *formal* and the *real* standing of a fiscal council. It would appear that the Danish Economic Council, with the longest history, is the one that has built up the strongest reputation for independent and qualified analysis, and therefore, the strongest de-facto position.

In Denmark and Iceland, the councils are the only publicly funded fiscal watchdogs. In Finland, the National Audit Office is the official watchdog with its monitoring remit regulated in the Fiscal Policy Act. In Sweden, three other government institutions also evaluate fiscal policy, although the Fiscal Policy Council has been singled out by the government as the most important one.

The Icelandic Fiscal Council has the clearest formal link to the fiscal policymaking process as it is tasked with giving the parliament its opinion on the government's fiscal-policy plans. The Swedish Fiscal Policy Council's annual report is regularly discussed in an open hearing, also involving the Minister for Finance, in the parliament's

finance committee. In Denmark, Finland and Sweden, there is extensive media coverage of the councils' reports and the government has in practice to respond even though there is no formal requirement to do so.

Qualification requirements and appointment procedures
The qualification requirements for council members differ. In practice, they are university chairs in Denmark and Finland. In Sweden, either academic competence or practical experience of economic-policy work is required (but the great majority of members have been selected on academic merits). Iceland has the lowest requirements: PhD for the chair and a university degree in economics for the other members. This is likely unfortunate but may be explained by a small pool of highly qualified candidates. The practice in both Sweden and Finland has been to have one foreign member.

Appointment procedures are potentially crucial for the independence and competency of a fiscal council. In all four countries with a fiscal council, appointments are made by the government. The procedures in Denmark and Finland are well designed to avoid the risk of political biases. In Denmark, appointments are made on proposal from the council chairs, in Finland on proposal from the academic community. The procedures are more vulnerable in Iceland and also Sweden. Nominations in Iceland are made by the prime minister and the parliament. In Sweden, there is a nomination committee consisting of three heads of government agencies and two MPs.

Resources
The councils' resources differ a lot. The Danish Economic Council(s) have staff of 20-25 persons. This is much more than the other councils. However, the task in Denmark, which includes making own forecasts and fiscal sustainability calculations, is heavier than in Finland, Iceland and Sweden. The resources of the Icelandic (no staff) and Finnish (staff of 2 persons) councils seem too small and not commensurate with their remits.

The OECD guidelines for fiscal councils emphasise budgetary autonomy. That recommendation has not been followed in any Nordic country. Financing comes instead via general budget appropriations. This represents a potential risk for undue pressures.

Overall evaluation of fiscal councils in the Nordics

Overall, the fiscal councils in Denmark, Finland, Iceland and Sweden function well. In Denmark, Finland and Sweden, where the councils have existed for several years, they have built up solid reputations for competence and independence. But the guarantees for independence in form of legal basis, formal stipulations on appointment procedures and budget autonomy are not that strong. This might represent a potential risk in a situation with more unstable political landscapes and where experiences also in some EU countries have shown that political reputation costs may not be enough to defend the integrity of various independent institutions.

2.3 Fiscal-sustainability analyses

A broad way of understanding fiscal sustainability is as "the ability of a government to service its debt at any point of time". A requirement for this is that the government is *solvent* in the sense that it meets its *intertemporal budget constraint*. The usual formulation of this is that current net financial wealth must at least equal the present value of all future primary fiscal deficits, i.e. the differences between expenditures and revenues, excluding net interest payments, over an infinite time horizon when all variables are measured as shares of GDP. The condition builds on the assumption that the interest rate at an infinite horizon is higher than the economy's growth rate. If the constraint were not to hold, the government debt-to-GDP ratio would ultimately tend to explode as there would be a never-ending need to borrow more relative to GDP in order to pay interest. Lenders would obviously then stop granting new loans at some point.

Judging the public sector's solvency must always be a very inexact science as it is a forward-looking exercise depending on unknown future developments in general and on actions of future governments in particular. Any judgement of government solvency must, therefore, be based on an evaluation of whether or not the required future fiscal policies are *credible*.

Sustainability analysis of current fiscal policy: common assumptions and methods

A simpler task than to judge the solvency of a government – but still very complex – is to evaluate the sustainability of *current* fiscal policy, i.e. whether or not *unchanged* fiscal policy is sustainable. This is what fiscal sustainability analyses usually focus on. In these

analyses, unchanged policy does *not* mean that fiscal-balance or government-debt targets according to current fiscal rules are complied with. Instead, unchanged policy implies that tax rates and the "generosity" of social benefits and public welfare services are held unchanged. Fiscal- balance and government-debt projections are made under these assumptions. Important no-policy-change assumptions usually made in the baseline scenarios in sustainability analyses are:

- Various tax bases are taxed at the same rates in the future as today.
- The levels of various transfers to households (social benefits) remain constant relative to wages. Separate assumptions are, however, usually made regarding pension benefits as they are governed by predetermined rules that often involve – credible – changes in pension benefits relative to wages.
- Expenditure on *collective* public consumption, such as defence, police, government administration etc., rises over time in in proportion to GDP or population.
- Expenditure per user on *individual* public consumption, i.e. consumption of welfare services such as education, child, health and old-age care, in various socio-economic groups – distinguished by age, gender and origin (native or immigrant) – rises in line with wages. As production of these services require not only input of labour, but also inputs of intermediate goods and capital, and the prices of the latter inputs are usually assumed to fall relative to wages, the implication is a continuous increase in consumption per user.

Other important assumptions include:

- Productivity growth is lower in the production of welfare services than in the production of goods. Usually, the assumption is zero productivity growth in welfare services.
- The wage share in the private sector is constant, so that nominal wages there rise at the same rate as the sum of the value-added price and productivity.
- Wage growth is the same in the public and the private sector.
- Capital-output ratios in various sectors of the economy are constant, so that investment is determined by output growth.
- The interest rate at which the government can borrow (and invest financially) is higher than the GDP growth rate. However,

as these interest rates are currently below the GDP growth rate, most projections assume a gradual "normalisation" of interest rates.

- There is usually some form of *healthy ageing* as research suggests that increased longevity also means more healthy years. Such age rejuvenation means that health and old-age care costs for individuals of a given age fall over time.
- Employment rates and average working time in the various socio-economic economic groups remain unchanged over time or develop in line with healthy ageing.

The dominant driver of change in the projections is *demographics*, mainly related to ageing but also to immigration. Combining a forecast on how the demographic structure changes over time with the assumptions on the development of per-capita individual public consumption in various demographic groups gives projections for expenditure on such consumption. The assumptions regarding labour market behaviour in the various socioeconomic groups together with the demographic forecast also allows revenue projections. Projections of transfers to households are obtained in a similar way.

The model set-up is usually very simple. The economy is regarded as a small open one unable to influence conditions in the rest of the world. Total output is supply-determined. Its path is derived from the assumptions on developments of productivity and hours worked (the latter in turn depending on demographic developments).

Usually, the models are quite mechanic since a number of exogenous trends building on extrapolation are imposed. This involves the risk of inconsistencies between different assumptions because interdependencies and adjustment mechanisms may not be taken into account properly. To do so requires the use of explicit calibrated intertemporal general-equilibrium models.

The fiscal-balance and government-debt trajectories derived from sustainability analyses are *projections*, not forecasts. Typically, both a baseline projection and alternative scenarios are presented. The baseline projection does not represent the most probable outcome. The aim is instead to illustrate what will happen under unchanged policy (although that can be given various interpretations) and under reasonable other assumptions in order to provide a basis for decisions to possibly change policy.

The S2 fiscal sustainability indicator

A common way of summarising the degree of sustainability of fiscal policy is by the help of the so-called S2 indicator. It measures the permanent upfront change in the current structural primary balance as a share of GDP which would imply that the intertemporal budget constraint is exactly met. A zero indicator implies that the constraint holds exactly if the structural primary balance remains unchanged. As a consequence, the ratio of net government debt (net financial wealth) to GDP will stabilise at some level in the long run. A positive indicator shows a need to strengthen the structural primary balance through expenditure cuts or tax rises. A negative indicator means instead that current fiscal policy is "oversustainable": it would be possible to meet the intertemporal budget constraint also if the primary balance is weakened. Unless this is done, government net financial wealth would be continuously increasing relative to GDP, which cannot be desirable as it would imply lower consumption over time for citizens than would be feasible.

Advantages and disadvantages of the S2 indicator

The advantage of condensing information on fiscal sustainability into one metric, the S2 indicator, is that one can compare the sustainability implications of different fiscal-balance and government debt paths. The indicator also offers a convenient way of comparing fiscal sustainability across countries with very different trajectories for the fiscal balance and government debt.

At the same time, the S2 indicator may squeeze too much information into one metric. Different paths of the fiscal balance and government debt with the same S2 value might have very different implications for the viability of policy. A zero or negative S2 metric, indicating fiscal sustainability, might be associated with a period of very high debt which might have adverse effects on market expectations. This may blur the distinction between solvency and liquidity problems, where the latter refer to acute short-term problems of covering gross financing needs (to roll over existing debt and finance both the interest bill and a primary deficit). A particular concern is the possibility of *multiple equilibria* and *self-fulfilling expectations*. If lenders *believe* a government to be solvent, borrowing costs may stay low and solvency is retained. But if lenders begin to doubt a government´s creditworthiness, funding may quickly dry up and borrowing costs rise dramatically so that earlier assumptions on low inter-

est rates in the future are violated and the government becomes insolvent.

Analysis of fiscal-balance and debt trajectories

The above considerations motivate a careful analysis of the fiscal-balance and debt trajectories consistent with unchanged fiscal policy. The aim is to examine whether or not debt might reach a "dangerous" level. The difficulty is how to define this level. One possibility is to try to identify debt limits at which various types of fiscal distress tend to occur. A problem is, however, that these debt levels have differed very much between countries. This suggests that debt limits may be country-specific and depend both on the country´s earlier debt behaviour and various institutional factors (fiscal framework, broader governance features like government effectiveness in general, the overall quality of political institutions etc.).

A prudent way to evaluate the riskiness of a debt path is to try to identify a debt limit and then choose a lower debt level, allowing a reasonable safety margin to the limit, that should not be exceeded. But the determination of such a "safe" debt level will be rather ad hoc. This holds all the more since recent research has emphasised the key role played in fiscal crises by the build-up of macro-financial imbalances resulting in *hidden* government debt which is turned into *explicit* debt when various state guarantees are called in or the government has to assume the responsibility for bank liabilities in order to stem a financial crisis: Ireland and Spain during the euro crisis are examples. Sudden rises in government debt due to such developments have usually been more important for the emergence of sovereign debt crises than irresponsible fiscal policy per se.

The S1 indicator

Another frequently used sustainability indicator is the so-called *S1 indicator*. It measures the permanent annual improvement in the primary balance as a percentage of GDP needed to reach a specific debt ratio in a given future year. The European Commission usually sets the debt ratio to 60% of GDP, which is the debt ceiling according to the stability pact. The time horizon is usually 10-15 years, but can, of course, be longer.

An S1 indicator can be computed for any debt target. As is clear from the discussion above, a main problem with the indicator is the more or less arbitrary choice of this target.

Fiscal sustainability analyses in the Nordics

Fiscal sustainability analyses along the lines sketched above have been made since the early 2000s in Denmark, Finland, Norway and Sweden. Such analyses have not been made in Iceland earlier, but the Ministry of Finance there is now starting with such calculations. There are both similarities and differences between the four large Nordic countries in the way the analyses are made, by which institutions they are produced, in what manner they are communicated and how they are used. However, the basic methodology and assumptions behind the projections are the same and follow the template described above.

In Denmark, Finland and Sweden fiscal sustainability analyses are published twice a year by the Ministry of Finance. Summary S2 indicators are always reported. They have played an operational role for economic policy in Denmark and Finland, but not in Sweden. In Norway, the Ministry of Finance publishes full-blown sustainability analyses only every fourth year (but usually with updates two years later). The focus is on the time path of the so-called *fiscal gap* – the fiscal strengthening required for the non-oil structural fiscal balance to continuously equal the expected return of the petroleum wealth fund. An S2 indicator is usually not computed. This is explained by the special conditions created by the country's petroleum wealth and the fiscal framework adopted to spread the gains from it over time and across generations (see Section 2.1). Still, for reasons of international comparability, it would be worthwhile if S2 calculations were produced regularly also in Norway.

In Finnish sustainability analyses, the main emphasis has been on the S2 indicator, whereas less stress has been put on analysis of the exact long-term fiscal-balance and government-debt paths. This is surprising in view of the fact that government gross debt is close to the EU ceiling. In contrast, Swedish analyses – especially in recent years – have focused more on the fiscal-balance and debt trajectories and less on the S2 indicator. Sustainability analyses in Denmark treat the S2 indicator and the paths for the fiscal balance and debt more equally.

Number of providers

The sustainability analyses by the ministries of finance in all the four large Nordic countries are of high quality. In principle, one should expect the existence of also other providers to help raise quality.

Therefore, it is of great value that there are also other domestic providers in the three Nordic EU member states (in addition to the European Commission which makes sustainability analyses for all member states): the Economic Council and occasionally DREAM in Denmark, Bank of Finland and occasionally ETLA as well the Economic Policy Council in Finland, and the National Institute of Economic Research in Sweden.

In this respect, Norway stands out, as the Ministry of Finance is the only regular provider. However, high-quality supplementary analyses of specific issues are occasionally made by Statistics Norway. But a drawback is that these analyses are hard to compare with those of the ministry. Norway would probably benefit from having also other regular providers of sustainability analyses.

Model set-up

The sustainability analyses by the ministries of finance are, broadly speaking, based on the extrapolation method rather than on dynamic overlapping-generations general-equilibrium models. Such more elaborate models have been used by some of the additional providers: DREAM in Denmark, ETLA in Finland and to some extent the National Institute of Economic Research in Sweden. The differences in methodology do not, however, usually seem to change the results much relative to the analyses made by the ministries of finance.

Frequency and communication of analyses

It is not obvious whether it is better to do fiscal sustainability analysis annually (or even more often) as in Denmark, Finland and Sweden or more infrequently as in Norway. It may, of course, be helpful for policy to have continuous access to updated sustainability assessments. However, changes between subsequent years have usually been small. Very frequent analyses also run the risk of becoming mechanical and repetitive. This is clearly the case with the analyses made by the ministries of finance in Finland and Sweden where similar reasoning and formulations tend to be repeated from year to year.

There are important differences between the countries in the way the analyses are communicated. In Denmark and Sweden, presentations are extensive and pedagogical. In contrast, the sustainability analyses in Finland are presented and explained very briefly, which likely make them less accessible to a wider audience. This is

contradictory in view of the large policy importance which has been attributed to the sustainability analyses in that country. The Norwegian Ministry of Finance's sustainability analyses are clearly communicated, even though the expositions are less extensive than in Denmark and Sweden.

Differences in methodology
Both Denmark and Sweden are good examples of how analytical differences between providers can be reported. The Economic Council in Denmark and the Ministry of Finance in Sweden (and to some extent the National Institute of Economic Research) in Sweden provide good explanations of such differences.

The baseline fiscal projections by the Swedish Ministry of Finance differ in one important respect from most other calculations: unchanged standards of welfare services as well as unchanged exit ages from the labour market and no healthy ageing are assumed. These assumptions are unrealistic. The net effect is likely to overstate fiscal sustainability. Although also alternative scenarios are presented, these are not matched to the scenarios presented by the National Institute of Economic Research and the European Commission in such a way that the results can be easily compared. More realistic assumptions on the part of the Swedish Ministry of Finance would be desirable.

The sustainability analyses in the Nordic countries all include alternative scenarios. A particularly pedagogical device for the policy discussion – that could serve as a model also for others – is the analysis by the Norwegian Ministry of Finance of how large a change in a specific "policy" variable (for example, average tax rate on labour income, user charges, productivity growth in welfare services or employment) would be required if sustainability gaps are to be closed by adjustment in that variable only.

Extent of sustainability problems
It is clear from the published analyses that Finland and Norway have the largest fiscal sustainability problems. Considerable sustainability gaps have been found in both countries. In Finland this is mainly related to ageing, in Norway to both ageing and future falls in the contribution to the state budget from the petroleum wealth fund as a share of GDP. Denmark does not seem to have any sustainability problems: rather it has been discussed whether fiscal policy there

is "oversustainable", i.e. if tax revenues are too high and/or public expenditure too low in a long-term perspective. It is noteworthy that the various sustainability analyses for Denmark and for Finland reach broadly similar conclusions, whereas there is more variability in the analyses for Sweden: for this country, the S2 indicator has been found to be positive by the European Commission, to be around zero by the National Institute of Economic Research, and to be negative by the Ministry of Finance.

Missing elements

The exact assumptions behind the sustainability calculations can always be discussed. Two circumstances should be noticed in particular:

- There is reason to expect defence expenditure to increase relative to GDP in all four large Nordic countries. Denmark and Norway are members of NATO where rises to 2% of GDP by 2024 have been agreed. In Sweden there appears to be a political consensus on a rise from the current very low level of 1% of GDP to at least 1.5% in 2025. Still, none of the sustainability calculations takes this into account (not even in alternative scenarios).
- A usual assumption is that wage increases will be the same across the whole economy. This is probably not consistent with the projections that age-related welfare services will expand and employ an increasing share of the labour force. It might be realistic to assume future relative-wage rises for employees in welfare services in all the Nordic countries.

The interest-growth differential is crucial for fiscal sustainability analyses. A positive such differential in the long run is a fundamental assumption underlying the model set-ups used. At present interest rates are, however, lower than growth rates. It is a common judgement that this situation will persist in the foreseeable future. This is taken into account in the projections by assuming that there will only be a gradual convergence to a positive interest-growth differential. Given the importance of the interest-growth differential, more sensitivity analyses of different paths for this difference and of how it depends on the level of debt are warranted.

Denmark, Finland and Sweden are all encompassed by the EU ceiling for government gross debt of 60% of GDP. Sweden has an explicit lower national debt target (anchor) of 35% of GDP. And Finland likely

has a lower implicit debt target than the 60% ceiling. In view of this, it is surprising that more calculations regarding the requirements to reach such alternative targets in specific years are not made.

A common deficiency in the sustainability analyses in Denmark, Finland and Sweden is that differences between the paths of general-government net financial and Maastricht debt (general-government consolidated gross debt) are not well explained. There are usually no transparent accounts of the differences between these two stock concepts and of which exact assumptions have been made regarding the future developments of various types of government assets and debts.

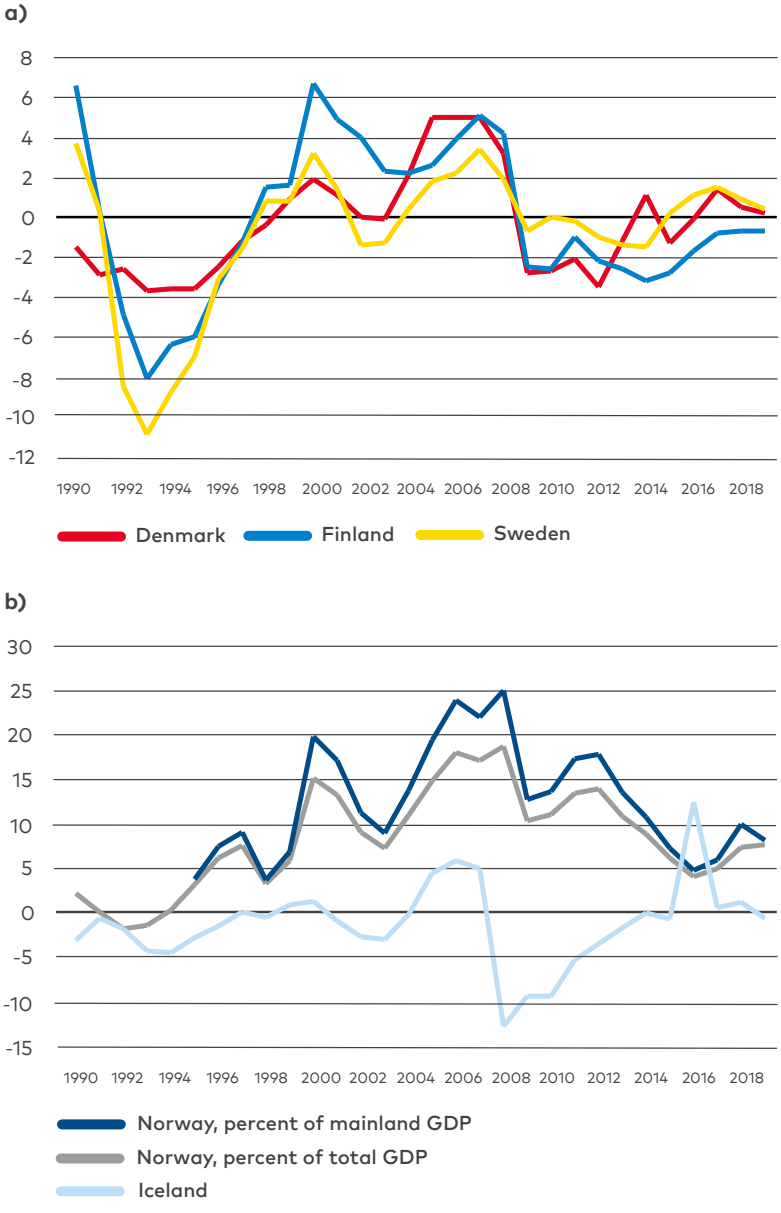
A final observation concerns explicit analyses of intergenerational distribution. Although such aspects are discussed in all four large Nordic countries, this is usually done only in an informal way: Denmark is an exception where more formalised analyses have been tried (but are still at a very preliminary stage). If one takes the intergenerational aspects seriously, explicit analyses of them ought to be made.

3 Public finances in the Nordics

3.1 Fiscal balances

Figure 1 shows how the general government fiscal balance (more exactly general government net lending) has developed over the last three decades in the Nordics. Developments have followed a similar pattern in Denmark, Finland and Sweden (panel a). The three countries had substantial deficits during the severe economic downturns in the early 1990s (reaching as much as 10.9% of GDP in Sweden and 8.1% in Finland in 1993). During the subsequent recovery there were large fiscal consolidations (interrupted only temporarily by a deterioration in 2000–2003 during the downturn in connection with the bursting of the dotcom bubble) with all three countries attaining substantial fiscal surpluses in 2000–2008. The surpluses turned into deficits again during the international financial crisis in 2009–2010 and the subsequent downturns. These were more severe in Denmark and Finland than in Sweden. This explains why the deficits in the former two countries were larger than in Sweden. More recently, fiscal balances have improved again. In 2019, there were small surpluses in Denmark and Sweden, and a small deficit in Finland.

Figure 1 Fiscal balance, percent of GDP



Note: Fiscal balance refers to general government net lending.
Source: IMF (2019) except for Norway as percent of mainland GDP, where data from Finansdepartementet (2019b) and Statistics Norway have been used.

Fiscal-balance developments in Iceland (see panel b) show some similarities with those in Denmark, Finland and Sweden. There were deficits in the first half of the 1990s followed by a trendwise improvement, culminating in surpluses of 4–5% of GDP during the boom in 2005–2007. The subsequent deterioration of the fiscal balance, which occurred in connection with Iceland's banking crisis, was much larger than in Denmark, Finland and Sweden. In 2008, the deficit was as large as 12.9% of GDP. After that, there has been a gradual improvement in the fiscal balance. In 2016, a surplus of as much as 12.4% of GDP was recorded, but this was due to a one-off "stability contribution" from the failed banks.[1] In 2018, there was a small surplus. It turned into a small deficit in 2019s.

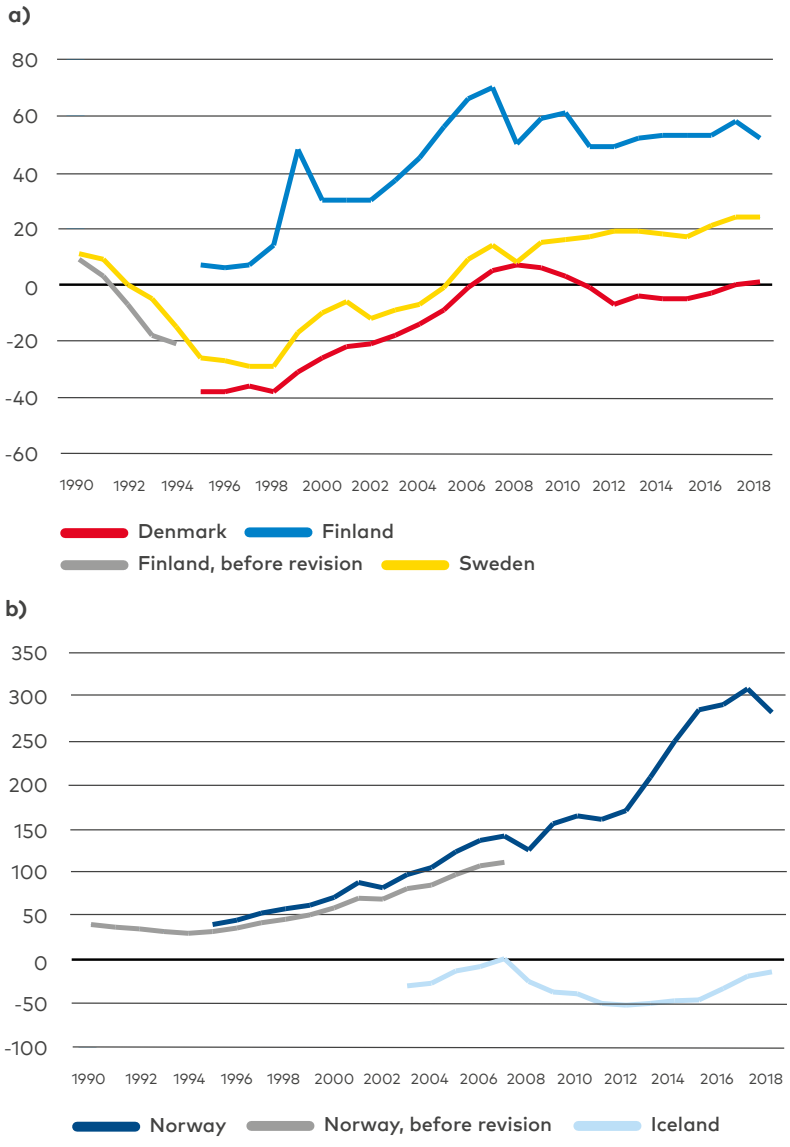
Fiscal-balance developments in Norway stand out in comparison with the other Nordic countries. The Norwegian general government fiscal balance has exhibited consistent surpluses since the early 1990s. In some years (2000 and 2006–2008), the surpluses amounted to as much as 15–19% of total GDP and even more in percent of mainland GDP (excluding oil production). This is explained by the high petroleum revenues.

3.2 Government net financial wealth

The general government fiscal balance is one of the determinants of the change in general government net financial wealth, which is defined as the difference between the sector's financial assets and its liabilities. Panel (a) in Figure 2 shows how the improving fiscal balances from the mid-1990s to 2007/08 in Denmark, Finland and Sweden coincided with improving net-financial-wealth positions. Denmark and Sweden moved from substantial net debts to positive net financial wealth. Finland had positive general government net financial wealth already in the mid-1990s but it increased to nearly 70% of GDP in 2007. Too much should not be made of the high *level* of general government net financial wealth in Finland, as it reflects a different set-up of the pension system than in the other Nordic countries – with a larger funded part but also with pension assets in private insurance companies recorded in the general-government sector. In general institutional differences between the countries as well as an inescapable degree of arbitrariness in how to treat these in the statistics imply that changes in net financial wealth is more

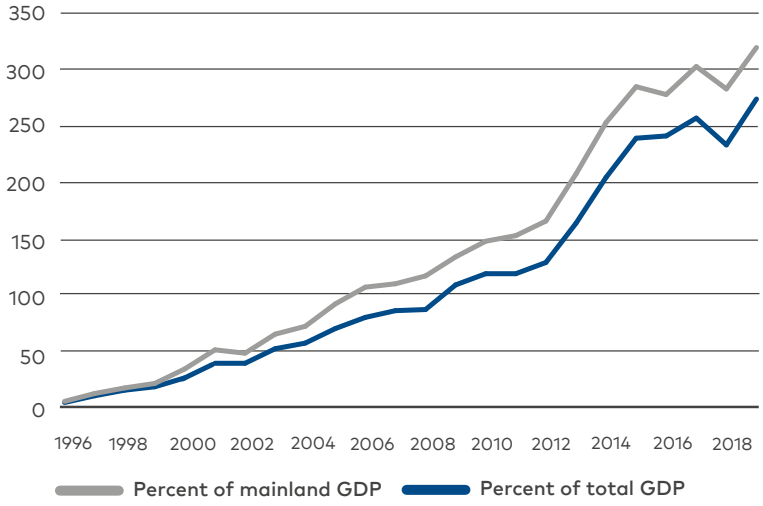
[1] OECD (2019e).

Figure 2 General government net financial wealth, percent of GDP



Note: The net financial wealth of the general government sector is the total value of its financial assets minus the total value of its liabilities. In Finland, data were from 1995 onwards to correspond with the European System of Accounts. This implied large differences due to large changes in financial-asset valuation and coverage as well as in unit classifications (Statistics Finland 2019a). Norway revised data on financial assets in 2009 (Statistics Norway 2019).
Sources: OECD (2019a) for all countries for the years 1995–2018, Statistics Sweden (2019) for earlier years in Sweden, Statistics Finland (2019b) for Finland before the revision and Statistics Norway (2020) for Norway before the revision.

Figure 3 The Norwegian petroleum wealth fund's market value, percent of total GDP and of mainland GDP



Source: Norges Bank Investment Management (2019) and Statistics Norway (2020).

comparable between countries than levels.[2] In connection with the international financial crisis in 2008/09 general government net financial wealth fell in both Denmark and Finland but it has since stabilised again. In Sweden, government net financial wealth continued to rise almost uninterruptedly also after 2007, but at a slower pace than before.

Norway has experienced an almost uninterrupted rise in general government net financial wealth since the mid-1990s (see panel b in Figure 2). It amounted to a staggering 282% of GDP in 2018. This reflects mainly the fiscal surpluses associated with the state's petroleum revenues discussed in Section 2.1. These have been channeled into a petroleum wealth fund, the Government Pension Fund

[2] The mandatory earnings-related pension system in the private sector in Finland is run by pension companies that initially were defined as belonging to the financial sector. When Finland joined the EU in 1995, the definition was changed and from that date they are classified as part of the social-security system included in the general-government sector. The re-classification of the pension funds explains the 1995 jump in general government net financial wealth in Figure 2.

Global, which invests only in foreign assets.[3] As can be seen in Figure 3, the fund has grown more or less continuously: the sum of inflows of petroleum revenues into the fund and return on the accumulated assets has been larger than withdrawals. In 2019, the fund amounted to 321% of mainland GDP and to 275% of total GDP.

Panel b of Figure 2 also shows the large swings in general government net financial wealth which have occurred in Iceland. In 2007, net financial wealth was slightly positive, 0.8% of GDP, but it then fell very strongly in the aftermath of the country's financial crisis in 2008. In 2011–2013, net debt reached a level of around 50% of GDP. After that, fiscal consolidation and an economic recovery have brought down the net debt ratio again: in 2018, it was 14% of GDP.

3.3 Government debt

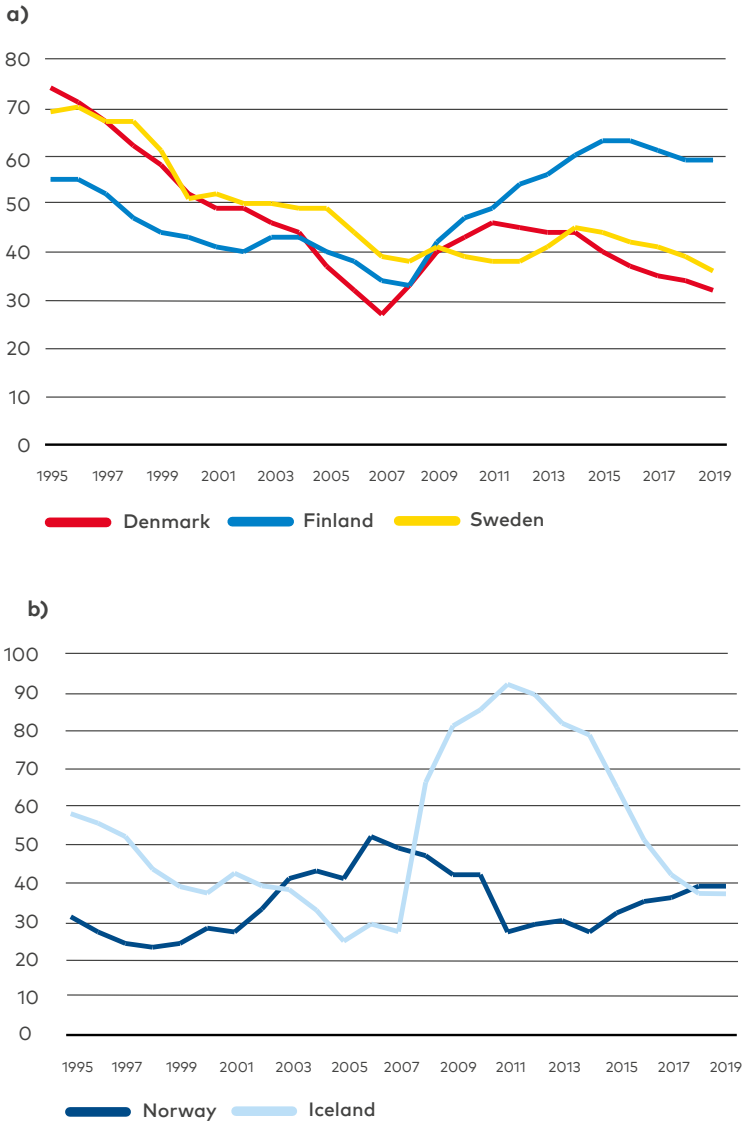
Figure 4 gives the development of general government consolidated gross debt (Maastricht debt) from the mid-1990s. The debt concept implies that claims and debts within the general government sector are netted out (but, unlike in the computation of net financial wealth, claims on the private sector are not deducted). As a government can issue debt and use the borrowed funds to buy financial assets or repay debt by using proceeds from the sale of financial assets, net and gross debt can develop very differently.

Panel (a) shows a similar pattern for Maastricht debt in Denmark, Finland and Sweden between 1995 and 2007/08. The debt ratio fell strongly in all three countries, but less in Finland which had a lower initial ratio than Denmark and Sweden: whereas in 1995 the debt-to-GDP ratio was 74% and 69%, respectively, in the latter two countries, it was 55% in Finland. In 2008, the debt ratios in the three countries all lay in an interval of 30-40%. The debt ratios then increased again during and after the international financial crisis in 2008/09: least in Sweden and most in Finland (where it reached as high as 63% of GDP in 2015). During the last few years, the debt ratio has been falling in all three countries.

Government debt developments in Norway differ from those in Denmark, Finland and Sweden (panel b). Maastricht debt increased strongly in Norway from the end of the 1990s to 2006, whereas it fell in the three other large Nordic economies during this period.

[3] See the discussion of Norway in Section 4.1 and Section 7.5.

Figure 4 General government consolidated gross debt (Maastricht debt), percent of GDP



Note: Debt is consolidated within the general government. Financial liabilities such as trade credits extended to the government are not included. Debt is valued at nominal (face) value.
Sources: OECD (2019b) for all countries except for Norway 2019 and Iceland. Data for the latter country have been obtained from the Icelandic Ministry of Finance and Economic Affairs, while data for Norway 2019 is from Finansdepartementet (2019b).

In 2006, Maastricht debt in Norway amounted to 52% of GDP. It subsequently fell to under 30% of GDP in 2011–2014, after which it has risen again (to 39% of GDP in 2018). Norway's Maastricht debt position is, however, neither very interesting nor comparable with the situation in other countries. The reason is that this definition of debt includes short-term lending of shares owned by the petroleum wealth fund against collateral in the form of cash – a repo transaction – for the pure purpose of earning a profit.[4]

In Iceland, government debt fell strongly from 1995 to 2005. In the latter year, it reached 25% of GDP. The financial crisis and the subsequent recession resulted in a huge rise. Debt peaked as high as at 92% of GDP in 2011. After that, there has been a steady decrease. In 2018, government debt was down to 37% of GDP.

4 Fiscal frameworks in the Nordic countries

A country's possibility to pursue sustainable fiscal policy likely depends on its *fiscal framework*. There is no clear-cut definition of the concept of fiscal framework, but it is generally understood to encompass the procedures for fiscal-policy decision-making, the formulation of fiscal-policy objectives and constraints, how binding these are, how compliance with them is monitored and how deviations from them are handled.

During the last decades, there has been a strong international trend towards more formalisation of the fiscal frameworks. This has often implied the adoption of *fiscal rules*, i.e. numerical constraints on aggregate indicators of fiscal performance, and monitoring of them by external bodies, often in the form of *independent fiscal institutions* (fiscal councils). In 2015, 90 countries were estimated to have fiscal rules constraining the central-government budget and 31 countries independent fiscal institutions monitoring these rules.[5] At the same time, the average number of rules per country has increased. This development has been particularly pronounced in EU countries. [6]

[4] Lending of shares against collateral in the form of cash resembles very much borrowing (of cash) against collateral in the form of shares. According to EU rules, the former type of lending shall therefore be included in Maastricht (general government consolidated gross) debt. However, such short-term financial transactions do not have much relevance when comparing Norway's government debt situation with the situation in of other countries.
[5] See Caselli et al. (2018) and Debrun, Eyraud et al. (2018).
[6] The average number of fiscal rules per country in the EU was six in 2015 to be compared with two in 2000 (Caselli et al. 2018).

One aim behind the strengthening of the fiscal frameworks has been to improve the quality of fiscal policy by making it more transparent and increasing accountability of policymakers. Another aim has been to reduce the risks that a *deficit bias* – arising from factors such as short-termism, informational deficiencies and opportunistic behaviour – causes excessive accumulation of government debt.[7] The first aim likely contributes to the second. At the same time, it is desirable that more prudent fiscal policy does not unduly constrain the use of fiscal policy as a stabilisation policy tool: rather the hope is that avoiding deficit bias increases the room of manoeuvre of fiscal policy to counter economic downturns.[8]

The discourse on fiscal rules has emphasised a conflict between simple and adequate fiscal targets.[9] *Simplicity* makes it easier to verify the fulfilment of a target and thus to *enforce* it. Simple targets also facilitate *communication* to the general public. Such communication is essential if a target is to serve as a benchmark in the public debate and this way exert pressure on the government to achieve it. *Adequacy* means that targets should reflect the objectives that society really cares about. The specific circumstances in different situations should also be duly considered, i.e. the rules should allow *flexibility*. This, however, makes the targets more *complex* and hence more difficult to communicate, verify and enforce. This likely weakens their impact as benchmarks that the general public finds important to attain, thus reducing the reputation costs for governments of deviating from them. But at the same time, simple targets that are obviously inappropriate in certain situations risk losing their *legitimacy*.

The difference between rules for the *actual* fiscal balance and rules for the *structural* fiscal balance can illustrate the trade-offs discussed. A target for the actual balance is easy to communicate and to verify (provided that the government does not cook the books, as in Greece in the years leading up to the euro crisis). But such a rule can apparently be very inadequate in a recession if it requires fiscal tightening that further reduces aggregate demand. From this point of view, a rule focusing on the structural budget balance is clearly

[7] See Calmfors (2005), Debrun et al. (2009), Calmfors and Wren-Lewis (2011), and Portes and Wren-Lewis (2015) for various explanations of deficit bias.
[8] For example, European Commission (2018a) finds evidence that respecting the EU fiscal rules has made fiscal policy less procyclical.
[9] The standard reference is Kopits and Symansky (1998). See also Calmfors (2017a) and Caselli et al. (2018).

preferable as it concerns the fiscal balance in a normal cyclical situation and therefore allows the actual balance to vary over the cycle. A rule for the structural balance is, however, more difficult to verify and to enforce as there are many ways of computing it. The concept of structural balance is also more difficult to understand for the general public. Violations of such a rule will therefore receive less attention in the public debate.

One way to ease the goal conflict between simplicity and adequacy is through *external monitoring* of the adherence to a fiscal rule. This is a strong argument in favour of independent fiscal institutions (fiscal councils). Such an institution can, for example, scrutinise a government's calculations of the structural fiscal balance. Credible monitoring can allow for more adequate, and therefore also more complex, rules.[10]

A further common requirement on fiscal rules is that they should refer to variables over which the government has *operational control*. This speaks in favour of a target for the structural, rather than the actual, fiscal balance, as the former should not be affected by cyclical developments outside the government's control. Operational-control aspects have also been advanced as arguments for expenditure rules instead of fiscal-balance rules, as it is easier for governments to control expenditure than tax revenues (which in addition to tax rates depend on the size of tax bases which can be difficult to forecast).

Explicit fiscal-balance targets are much more common than explicit debt targets. However, a target for the fiscal balance as a ratio of GDP also implies a target for net government financial wealth (debt) as a ratio of GDP.[11] The probable explanation why fiscal-balance rather than long-run debt targets are usually preferred is the time perspective: a government can already in the short run affect the fiscal balance, whereas it may take time before a debt target can be reached (and where outcomes may depend on the policies of successive governments).

[10] See, for example, Calmfors (2003, 2010, 2012, 2016), Wyplosz (2005), Debrun et al. (2009), Debrun (2011), and Debrun and Kinda (2014).
[11] Assuming a constant growth rate for nominal GDP, a given overall fiscal balance in percent of GDP implies that net government financial wealth in percent of GDP must in the long run converge to a specific value (see, for example, Swedish Fiscal Policy Council 2008).

A final consideration concerns the number of fiscal rules. On one hand, a large number of rules may give a government control over more fiscal variables and hence increase the probability of prudent and sustainable policies. On the other hand, many rules may reduce the importance attached to each one of them by the general public and hence weaken the reputation cost of violating them. This has been discussed in particular regarding the many fiscal rules in the eurozone.[12] It is, of course, extra problematic if some of the rules are inconsistent with each other.

The exposition below surveys various aspects of the fiscal frameworks in the Nordics. Section 4.1 discusses fiscal-balance targets and Section 4.2 debt targets. The theme of Section 4.3 is expenditure rules. Section 4.4 analyses the rules for local governments.

4.1 Fiscal-balance targets

All the five Nordic countries have fiscal-balance targets or limits. The three EU members – Denmark, Finland and Sweden – are encompassed by the EU fiscal rules. They include a ceiling for the actual (nominal) deficit of three per cent of GDP, a medium-term objective (MTO) of "close to balance or in surplus" (which is a minimum requirement for the structural fiscal balance) and an expenditure benchmark requiring spending increases beyond a country's medium-term potential economic growth rate to be matched by additional discretionary revenue measures.[13] The EU rules have been partly incorporated into national legislation in Finland and Denmark, whereas this is not the case in Sweden. Norway and Iceland have set their own fiscal-balance objectives.

Finland

As a member of the eurozone, Finland is bound by the Fiscal Compact in the Treaty on Stability, Coordination and Governance in the Economic and Monetary Union. Thus, the provisions of the compact have been incorporated into national legislation. The Fiscal Policy Act[14] from 2012 requires the government to formulate a medium-term objective for the structural balance in the public finances

[12] See, for example, Andrle et al. (2015), Eyraud and Wu (2015), Pisany-Ferry (2016), and Calmfors (2017a).
[13] See, for example, Calmfors (2016, 2017a) regarding the EU fiscal rules.
[14] Lag om sättande i kraft av de bestämmelser som hör till området för lagstiftningen i fördraget om stabilitet, samordning och styrning inom Ekonomiska och monetära unionen och om tillämpning av fördraget samt om kraven på de fleråriga ramarna för de offentliga finanserna 869/2012.

in accordance with the Fiscal Compact. According to the Decree on the General Government Fiscal Plan[15], the medium-term objective has to be set in such a plan. In addition, the decree stipulates that the government must decide separate numerical fiscal targets for the various subsectors of government and that these targets must be consistent with the overall structural fiscal target. The various fiscal targets are set in the first General Government Fiscal Plan of a parliamentary term.[16]

In line with the provisions in the compact, the medium-term objective for the entire public sector is a structural deficit of at most 0.5% of GDP.[17] The subsector targets are a deficit target for central government of 0.5% of GDP, a deficit target for local governments of 0.5% of GDP, a surplus target for the earnings-related pension funds of 1% of GDP, and a balance-target of 0% of GDP for the other social-security funds.[18]

The Economic Policy Council (2016, 2017) criticised the fiscal targets in the 2016–2019 government plan for not being consistent with each other: the overall target applies to the structural balance, i.e. it is cyclically adjusted, whereas this is not the case for the subsector targets, which refer to actual balances.[19] The same problem remains in the 2020–2023 plan (Finansministeriet 2019b).[20] The 2020–2023 plan sets an objective of balance in the overall public finances in 2023, i.e. a more ambitious target than the MTO (provided that there is a zero, or negative, output gap in that year.

The Fiscal Policy Act also includes provisions on how a significant deviation from the MTO or the adjustment path to it is to be

[15] Statsrådets förordning om en plan för de offentliga finanserna 120/2014.
[16] The latest General Government Fiscal Plan is Finansministeriet (2019b). The previous government's corresponding plan was Finansministeriet (2015).
[17] However, in view of structural reforms of the pension system and an agreement on wage restraint, the European Council granted Finland a temporary deviation from its MTO in 2017–2019, reducing the target to a deficit of maximum 1% of GDP. The structural deficit, as calculated by the Ministry of Finance, was lower in 2016–2018 but not in 2019. In 2012–2014, the estimated structural deficits were around 1% of GDP (Economic Policy Council 2019).
[18] See Section 3.2 regarding the pension and other social-security funds.
[19] See Section 5.3 regarding the Economic Policy Council. In addition, it has been critical of the fact that the subsector targets do not add up to the MTO. The sum of the subsector targets is 0% of GDP, whereas the MTO is a deficit of 0.5% of GDP. However, attaining the sub-sector targets in a normal cyclical situation or downturn ensures that the MTO is exceeded.
[20] The text in the Swedish version of the plan is confused as it talks about "nominal targets for the structural balance of the subsectors". This does not make sense since the term nominal target usually refers to the actual fiscal balance. However, the Finnish version only talks about nominal targets without any mention of structural balances.

addressed. If the Ecofin Council gives Finland a recommendation to take action in order to correct such a deviation, the government has to send the parliament a report on the magnitude of the deviation and how it is to be handled. If the Ecofin Council finds that Finland has not taken effective action to correct the deviation, the government is obliged to inform the parliament in a communication which actions are required to correct the deviation before the end of the next calendar year.[21] There is an escape clause according to which action need not be taken in the case of exceptional circumstances as defined in the EU's stability pact.[22] But if the Ecofin Council has decided that there are no such circumstances, the government is obliged to decide on measures (to be implemented this or the next calendar year) that will strengthen the overall structural balance by at least 0.5% of GDP.

Denmark

Objectives for the structural fiscal balance has guided Danish fiscal policy since the 1990s. Denmark is not a member of the eurozone but has yet committed itself to be bound by the rules in the Fiscal Compact (which are mandatory only for eurozone members). Thus like in Finland, the provisions of the compact have been incorporated into law (the Budget Law from 2012).[23] These include a stipulation that the structural deficit must not exceed Denmark's MTO, which has been set to a deficit of 0.5% of GDP.[24] As an MTO of a deficit of 1% is allowed according to the EU rules if Maastricht debt is significantly below 60% of GDP and risks to long-run fiscal sustainability are low – two conditions that Denmark clearly meets[25] – the current Danish limit for the structural fiscal balance is more stringent than required by the compact. According to the calculations by the Ministry of Finance, the limit has been respected since 2017 but was exceeded in 2014–16 (De Økonomiske Råd Formandskabet 2019).

[21] The difference between a report and a communication to the parliament is that in the latter case, there may be a vote of no confidence in the Minister of Finance/government.
[22] These circumstances are defined as an unusual event outside the control of the government or a period of severe economic downturn.
[23] Budgetloven (2012). See also, for example, Finansministeriet (2014), Danish Ministry of Finance (2019), and OECD (2019a).
[24] In addition to cyclical adjustments of the actual fiscal balance, the computation of the structural balance also involves other important adjustments, mainly for variations in revenues from petroleum production and taxation of pension revenues (Danish Ministry of Finance 2019).
[25] According to Figure 4, Maastricht debt was 32% of GDP at the end of 2019. Sustainability calculations for Denmark are discussed in Section 7.2.

The Budget Law allows for temporary deviations from the MTO or the adjustment path to it in case of exceptional circumstances if this does not threaten fiscal sustainability in the medium term. As in the stability pact and the Fiscal Compact, these circumstances are defined as an unusual event outside the control of the government or a period of severe economic downturn.

In line with the compact, the Budget Law also stipulates that measures must be taken to correct a significant deviation from the MTO or the adjustment path to it. A deviation is regarded as significant if it exceeds 0.5% of GDP. The correction measures must amount to an improvement of at least 0.5% of GDP in the subsequent fiscal year.

In addition to the deficit limit in the Budget Law, the government sets a target for the structural budget balance in its multi-year fiscal plans. According to the previous government's so called 2025-plan, there was an objective of attaining structural budget balance in 2025.[26] In the current government's updated economic forecasts, this objective still remains.[27] The memorandum of understanding between the new government and the parties supporting it in the parliament from 2019 includes a budget-balance target for both 2025 and 2030.[28]

The Danish Economic Council has provided interesting perspectives on Denmark's fiscal- balance rules.[29] The council has emphasised the uncertainty associated with future fiscal projections and raised the possibility that there could be future periods when unchanged fiscal policy might imply violations of the structural-balance limit in the Budget Law even though the policy could be sustainable in the long run. According to the council, a problem in this context is that the interest on deferred taxes on private pension wealth is not included in the fiscal balance as it is calculated.[30]

There is a parliamentary decision to evaluate and potentially revise the Budget Law in the parliamentary year 2019/2020. In this con-

[26] Finansministeriet (2017b).
[27] Finansministeriet (2019a).
[28] Politisk forståelse mellem Socialdemokratiet, Radikale Venstre, SF og Enhedslisten: Retfaerdig retning for Danmark (2019).
[29] De Økonomiske Råd Formandskabet (2017, 2018)
[30] Pension contributions are tax-deductible when they are paid in. In exchange, pension benefits are taxed when they are paid out. Private pension wealth amounts to around 150% of GDP and the deferred taxes to around 60% of GDP. The implicit interest income for the government is 2–3% of GDP but is not included in the calculation of the fiscal balance.

text, the Economic Council has pointed to the fact that the Danish fiscal-balance rules are stricter than required by the stability pact and the Fiscal Compact.[31] This applies to the structural-deficit limit, as discussed above, but also to the correction of deviations. The Ministry of Finance's interpretation of the stipulation on correction is that it applies not only ex post, but also ex ante, so that any excess over the structural deficit limit in the budget proposal should always trigger correction.[32] The council finds this problematic, as such a deviation can arise as a consequence of revisions of structural-balance estimates (which occur frequently). It is therefore recommended that ex-ante deviations of up to 0.5% of GDP in one year, or 0.25% per year in two years, are allowed (as they are in the Fiscal Compact). In general, the council worries that the stricter interpretation of the EU rules in Denmark than elsewhere may unduly restrict the use of fiscal policy for short-run stabilisation purposes and prevent an appropriate long-term weakening of the fiscal balance in response to demographic pressures.[33]

Sweden

Sweden is not a party to the Fiscal Compact.[34] Therefore, the provisions in it and the Swedish MTO of a structural deficit of 1% of GDP have not been incorporated into domestic legislation. Overall, it is less influenced by the EU fiscal rules than is the case in Denmark and Finland.

The basic provision regarding fiscal targets in the Budget Act is a stipulation that "the government shall propose a target for the public sector's net lending (a surplus target) to the parliament".[35] The act does not, however, specify any number.[36] If the parliament has decided on such a surplus target, the government is obliged to report at least twice a year on whether or not the target has been attained. If the government judges that there is a deviation from the target, it must explain to the parliament how a return to the target is to occur.

[31] De Økonomiske Råd Formandskabet (2019).
[32] Finansministeriet (2017c).
[33] Ex-post deviations of this magnitude do not have to be corrected under the Danish Budget Law either, so the novelty of the proposal is to allow such deviations also ex ante in the budget proposal.
[34] The Swedish parliament has "approved" the pact but without making Sweden bound by its stipulations.
[35] Budgetlag (2011:203).
[36] The parenthesis regarding a *surplus* target in the quote from the Budget Act should probably not be interpreted literally, as a surplus could be negative (!).

From 2019, the target decided by the parliament, after the government proposed it in the budget bill for 2018 (Regeringen 2017b), is a surplus of 1/3% of GDP on average over a business cycle. The earlier target was a surplus of 1% of GDP. The new lower target was recommended by a government commission (Överskottsmålskommittén 2016). Since 2014, the budget law stipulates that, in case of a significant deviation from the surplus target, the government should report to the parliament how a return to it should be achieved. This is further specified in a communication from the government to the parliament regarding the fiscal framework (Regeringen 2018b).

The communication stipulates that the government is responsible for following up the surplus target. There is considered to be a deviation if the structural balance differs *clearly* from the surplus target in the current or subsequent fiscal year.[37] Compared to Denmark and Finland, the stipulations regarding what is a deviation and how it is to be corrected are less precise and leave more room for discretion. The government has not indicated what constitutes a "clear deviation". Such a specification was, however, discussed in a background report (Mattson and Håkansson 2015) to the government commission on the surplus target discussed above. The proposed limit was 0.5% of GDP – the same level as in Denmark and Finland, and in the EU rules. This is also the limit indicated by the Fiscal Policy Council (tasked with external monitoring of fiscal policy)[38], which, however, also acknowledges that persistent small deviations over time can constitute a clear deviation.[39]

In a normal cyclical situation – defined as an output gap between -1.5% and +1.5% of GDP – a deviation from the target should be corrected at the same rate as the fiscal balance normally improves in the absence of discretionary decisions (because tax revenue tends to rise in proportion to GDP, whereas government expenditure tends to fall relative to GDP since many expenditure items are set in nominal

[37] This is an ex-ante evaluation of the structural fiscal balance. However, at the same time, there is to be an ex-post evaluation based on a backward-looking eight-year average of the actual fiscal balance. But the ex-ante evaluation of the structural balance obviously takes precedence over the ex-post evaluation of the actual balance, as deviations and measures to correct them are defined in terms of the former. According to the 2020 budget bill (Regeringen 2019b), the structural fiscal balance in 2019 and 2020 is slightly below the surplus target of 1/3% of GDP. So is the backward-looking eight-year average of actual fiscal balances. Both measures have been substantially below the earlier surplus target of 1% of GDP during the whole period after the global financial crisis.
[38] The Fiscal Policy Council is discussed in Section 5.2.
[39] Finanspolitiska rådet (2019). See also Section 5.2.

terms, are indexed to prices or are indexed to wages with a productivity deduction). This automatic annual fiscal-balance improvement amounts to 0.4–0.5% of GDP, i.e. it is of the same magnitude as the required correction in the case of significant deviations from the MTOs in Denmark and Finland.[40]

The communication regarding the fiscal framework stresses that a deviation from the surplus target could be motivated by cyclical conditions and that corrections of deviations must take these into account so that procyclical policies are avoided. A persistent upward deviation from the surplus target should not be corrected until in the next downturn and a persistent downward deviation not until in the next upswing. If faster adjustments are made, the aggregate-demand effects should not be larger than that they can be handled by the Riksbank's monetary policy.

A novel feature from 2019 in the Swedish fiscal framework is that a process of regular reviews of the surplus target is envisaged. Such a review is to take place in every second parliamentary term of office and a possible new target should apply from the first year after an ordinary parliamentary election.

Norway

The fiscal framework in Norway differs from the frameworks in the three other large Nordic countries in several respects.[41] One important difference, in particular to Denmark and Finland, is that Norway, being outside the EU, has not adapted its fiscal framework to fit in with its rules. But the most important difference is that the framework is governed by considerations regarding petroleum revenues.

The government's revenues from petroleum production do not enter the state budget directly but are channelled into a petroleum wealth fund, the Government Pension Fund Global. For the central government, there is a balanced-budget rule implying that the non-oil fiscal deficit (8% of mainland GDP in 2019) is covered by withdrawal from the fund. According to the fiscal rule (*handlingsregelen* in Norwegian) that has been in place since 2001, the central government structural

[40] See, for example, Finanspolitiska rådet (2011).
[41] See, for example, Thøgersenutvalget (2015), Holden (2016), Morkutvalget (2016), Finansdepartementet (2017, 2018, 2019b), Holte Wingaard (2018), and OECD (2018, 2019d) for analyses of the Norwegian fiscal rule and the use of petroleum revenues. See also Section 7.5.

non-oil deficit, and thus the withdrawals from the fund over time, should correspond to the expected real return on the fund's assets. There are several motivations for this rule.

- It has helped counteract the so-called Dutch disease, i.e. the contractionary effects on the non-oil traded-goods sector arising from the bidding-up of wages when spending of oil revenues increases aggregate demand and causes the non-traded goods sector to expand. The gradual phasing-in of petroleum revenues into the budget has slowed down this process.
- The build-up of the assets of the wealth fund implies that also future generations will benefit from the petroleum revenues.
- The non-oil budget, and hence the economy, are isolated from both the large variations in oil revenues that follow from swings in oil prices and the large volatility in the wealth fund's value due to variations in stock prices. This dampens cyclical swings in the economy.

The linking of the structural, and not the actual, non-oil fiscal deficit to the expected real return on the assets of the wealth fund, allows the automatic stabilisers to work. In addition, the structural non-oil deficit is varied over the business cycle. This reflects that an important aim of Norwegian fiscal policy is to "even out swings in the economy in order to safeguard good resource utilisation and low unemployment".[42]

In 2001–2016, the expected return on the wealth fund's assets was set to 4%. In 2017, the expected return was lowered to 3%. This was a response to the worldwide fall in real interest rates that has occurred over the last decades.

The fiscal-balance rule in Norway has a weaker legal status than the fiscal targets in Denmark, Finland, Sweden and Iceland as it is not supported by law. The rule was initially formulated in 2001 in a government report to the Parliament[43], which expressed its approval in a written opinion (*innstilling*).[44] The reduction in the expected real return of the wealth fund in 2017 was also formulated in a government report to the Parliament.

[42] OECD (2018).
[43] Finansdepartementet (2001).
[44] Finanskomiteen (2001). See also Morkutvalget (2016).

The weaker legal status of the fiscal-balance objective in Norway than in the other Nordic countries has not impacted negatively on the commitment to the rule. In 2002–2017, withdrawals from the wealth fund were in fact below the expected return of 4% during this period.[45] The likely explanation is a widely held view that withdrawals according to the 4% benchmark would have resulted in excessive fiscal stimulation. In addition, the actual return in domestic currency – 4.6% – was in excess of the expected return: All this illustrates that political consensus on respecting a fiscal target, as has prevailed in Norway, may be more important than the target's precise legal status.

Iceland

According to the Public Finance Act (2015) – the "Organic Budget Law" – fiscal policymaking must be based on the following five principles: sustainability, prudence, stability, predictability, and transparency. The general government "net lending/borrowing balance over a five-year period shall always be positive and the annual deficit always below 2.5% of gross domestic product".[46] This formulation is consistent with objectives of both long-term fiscal sustainability and countercyclical stabilisation as it combines a strict objective for the cumulative balance over five years with the possibility to run deficits in individual years.[47]

The Public Finance Act requires each new government to formulate a Statement of Fiscal Policy to be submitted to the parliament "in the form of a proposal for a parliamentary resolution". The statement should contain a policy for fiscal balances for at least five years and confirm that the policy is in accordance with the targets set out in the act. The government is also obliged each year to submit to the parliament a proposal for a parliamentary resolution on a Fiscal Strategy Plan, based on the Statement of Fiscal Policy, for at least the next five years. The plan has to include fiscal-balance targets for the general government as a whole and be in accordance with the Statement of Fiscal Policy.[48]

[45] Holte Wingaard (2018).
[46] The fiscal-balance target applies to both central government and local government (municipal) "activities and programmes funded mostly by tax revenue, statutory service revenue or grants".
[47] See also OECD (2017, 2019e).
[48] The Fiscal Strategy Plan has also to set a number of subsector fiscal-balance targets: for central-government activities and programmes funded mostly by tax revenue, for local-government activities and programmes of the same type, for public corporations under direct central-government control, for public corporations under direct local-government control, and for partnerships and limited companies majority-owned by the central government.

According to the Public Finance Act, the Fiscal Strategy Plan shall also summarise the fiscal performance "of the general government as a whole as compared with the objectives specified in the Fiscal Policy Statement and Fiscal Strategy Plans for the preceding three years".

Iceland's fiscal framework contains an escape clause. The Public Finance Act states that the government "shall submit to the Althingi (the parliament, my comment) a proposal for a parliamentary resolution to amend the policy" formulated in the Fiscal Policy Statement if "the basic assumptions underlying the fiscal policy fail to materialise or it is foreseeable that they will not materialise owing to economic shocks, national crisis or other circumstances that cannot be remedied by available measures". In such a situation, the fiscal objectives in the act may be departed from for up to three years. The formulation of the escape clause is rather imprecise, as it does not specify how large a disturbance is required to trigger it. However, a provision that the independent Fiscal Council shall evaluate "whether there are valid reasons" to revise policy is supposed to work as a safeguard.[49]

The escape clause was used in 2019 when the economic situation deteriorated due to two economic shocks: the failure of WOW air, one of Iceland's largest companies, and a major decrease in catches of capelin fish, a major marine export. This caused Statistics Iceland to revise GDP growth in 2019 downwards from 1.7% to a contraction of 0.2%. As a consequence, a revision of the Fiscal Policy Statement was submitted to the parliament, lowering the floor for the general government fiscal balance in 2019–2020 from 1.1–1.2% of GDP to 0. In addition, a deficit of up to 0.8% of GDP was allowed in each year if – but only if – the economic outlook were to deteriorate even further.[50]

4.2 Debt (financial-wealth) targets

Targets for government debt (or financial wealth) are in general less common and tend to have a weaker legal standing than fiscal-balance targets. This applies to the Nordics as well. The three Nordic EU members are, however, bound by the EU debt criterion according to which Maastricht debt must not exceed 60% of GDP "unless

[49] The council is discussed in Section 5.4.
[50] Helgason (2019) describes briefly the revision and the reasons for it.

the ratio is sufficiently diminishing and approaching the reference value at a satisfactory pace". The latter conditions have been more precisely defined as an average yearly reduction in the debt ratio by 1/20 of the difference to the 60% limit. But none of the Nordic EU members has incorporated these debt rules into national legislation.

Denmark and Finland

The *Danish* government's policy documents do not include any explicit debt objectives except the "soft" target to maintain a good safety margin to the EU debt ceiling of 60% of GDP. In *Finland*, where Maastricht debt exceeded 60% of GDP in 2014–2017, debt considerations have played a greater role. The Strategic Programme of Prime Minister Juha Sipilä's Government (2015) stated that "the debt-to-GDP ratio will level off by the end of the government term and living on debt will be brought to an end in 2021". The Economic Policy Council (2016) noted that the formulation was unclear but interpreted it to mean that the debt ratio should stabilise by 2019 and the real value of debt by 2021. According to the council, the Sipilä government's fiscal-balance targets were derived from an implicit debt target, aimed at creating a safety margin to the EU 60% debt limit, proposed by the Ministry of Finance (2015), but never formally adopted by the government.[51] The current government´s fiscal plan for 2020–2023 states that the debt-to-GDP ratio should fall (from the forecast level of 58.8% in 2019).[52]

Sweden

Sweden has introduced a so-called *debt anchor* for Maastricht debt of 35% of GDP. The anchor is not mentioned in the Budget Act but was decided in the 2018 Budget Bill (Regeringen 2017b). The anchor is not an operational target, but rather a benchmark to consider in the reviews of the surplus target that are to be made in every second parliamentary term of office (see Section 4.1).

According to the government, the level of the anchor gives a desirable margin to the EU debt limit as well as to the critical debt limits that have been identified in international studies.[53] If there is a deviation from the anchor of more than five percentage points (in any direction) the government is required to explain to the parliament

[51] The ministry´s proposed debt target was 55% of GDP (Valtiovarainministeriö 2015), although the council reported the number 50%.
[52] Finansministeriet (2019b).
[53] Regeringen (2018b). See also Section 6.2.

why this has occurred and how the situation is to be addressed. The parliament´s finance committee can decide to hold a public hearing with the Minister for Finance regarding the debt situation. Although not stated explicitly, it is conceivable that a deviation from the debt anchor in excess of five percentage points could trigger a reformulation of the surplus target.[54]

The debt anchor was originally proposed by a government commission with the remit to review the surplus target (Överskottsmålskommittén 2016). According to the commission, a fiscal-balance surplus target of 1/3% of GDP – which the commission proposed and which was later decided by the parliament as discussed in Section 4.1 – would cause Maastricht debt to stabilise around 35% of GDP in the long run.[55] The commission preferred such a debt target to a debt ceiling (like in the EU fiscal rules) because it clarifies what debt level is regarded as desirable and because a ceiling is less likely to have a major impact on policy as long as debt is considerably below it.

The government commission argued that an anchor for gross (Maastricht) debt is more appropriate than one for financial net wealth. The motivation given was that financial markets probably focus more on the former variable when judging the government's creditworthiness as many financial assets may have low liquidity. It is also the debt concept used in the EU rules. A drawback, is however, that government sales or purchases of financial assets, which do not change its net financial wealth, have an effect on gross debt. This can be used to manipulate the debt figures. To reduce this risk, the government commission stressed that the Fiscal Policy Council should analyse the development of government gross debt in its annual reports.

Iceland

Iceland is the Nordic country where debt considerations have the strongest legal status. According to the Public Finance Act, there is a general government debt ceiling of 30% of GDP.[56] It refers to "total liabilities, excluding pension liabilities and accounts payable,

[54] See Calmfors (2019).
[55] However, this judgement seems to have been incorrect as current projections suggest that Maastricht debt will in a few years' time fall significantly below 30% of GDP (see Regeringen 2019b and Calmfors 2019).
[56] Public Finance Act (2015). General government refers to central- and local-government activities and programmes funded mostly by tax revenue.

minus currency and bank deposits". It is also stipulated that, if the debt ratio exceeds this ceiling, the part in excess shall on average be reduced by at least 1/20 per year in every three-year period (the same stipulation as in the EU rules).

The Public Finance Act also requires the government to set targets for the financial (balance-sheet) positions of both the general government and various subsectors for the next five years in the Fiscal Policy Statement and the Fiscal Strategy Plan.[57] There are also plans over time to build up a disaster relief fund – only to be used as a reserve for events such as natural catastrophes, but not for countercyclical stabilisation – of around 10% of GDP after 20 years rather than cutting gross debt to very low levels.[58]

Norway

Norway can be said to have a well-defined policy for part of its financial wealth, the petroleum fund (the Government Pension Fund Global). As discussed in Sections 4.1 and 7.5, there is no target for the stock of assets in the fund but for the change in it. As long as petroleum revenues flow into the fund, the fiscal rule that withdrawal should equal the real return implies that the real value of the fund continues to increase. At some time in the future, petroleum revenues will become so low that the fund value begins to fall relative to GDP. When petroleum revenues cease completely, the real value of the fund will stabilise and the fund value will fall faster relative to GDP.

4.3 Expenditure rules

Several countries have government-expenditure rules in addition to fiscal-balance targets. The expenditure rules are usually seen as a way of supporting the fiscal-balance targets and raising the probability that the latter are respected.[59] This is often motivated by experiences that deficit problems tend to originate on the expenditure side. There also exists a body of research finding than fiscal consolidation tends to be more successful if it relies heavily on the expenditure side. It has also been found that the existence of expenditure rules is associated with lower primary expenditure and stronger pri-

[57] See the discussion of Iceland in Section 4.1.
[58] IMF (2018). The motivation appears to be a desire to preserve a sufficient level of government debt for it to continue to play a benchmarking role in financial markets.
[59] See Ayuso-i-Casals (2012) for a brief overview of research on expenditure rules.

mary balances.[60] Some research also suggests that fiscal-balance rules have a larger effect on fiscal outcomes when combined with expenditure rules.[61]

Expenditure rules have several theoretical advantages. They are fairly simple and hence easy to verify and to communicate. Expenditure is also easier to control for a government than tax revenues. This may have contributed to more compliance with expenditure rules than with fiscal-balance rules in general, as found by Cordes et al. (2015). Expenditure rules may be particularly helpful in preventing temporary increases in government revenues from leading to permanent increases in expenditure. For this reason, expenditure ceilings are usually multi-annual. Finally, as the automatic stabilisers work mainly on the revenue side, expenditure rules do not interfere with them to any large extent.

Expenditure rules function by increasing pressure on political decision-makers to prioritise between expenditure increases in various area. One can also view such rules as a constraint on taxes: a target for government expenditure together with a target for the fiscal balance (and projections for other government revenues) together determine an implicit target for the tax ratio.

One issue is whether expenditure rules should be formulated in nominal or in real terms (the latter implying that the ceilings are adjusted for price, and possibly also wage, developments). On one hand, nominal rules may help stabilise the economy when there are unanticipated changes in inflation due to demand shocks: higher (lower) inflation than expected because of a positive (negative) demand shock implies a decrease (increase) in real government expenditure counteracting the shock. On the other hand, nominal ceilings have the drawback that goals for the development of real expenditures are not met in the case of unanticipated inflation. The latter consideration is likely more of a concern, the longer the time period for which an expenditure rule applies.

There are no EU provisions on expenditure rules. (The stability pact's expenditure benchmark is not really such a rule as it allows spending increases beyond a country's medium-term potential eco-

[60] A recent study is Cordes et al. (2015).
[61] See Guichard et al. (2007).

nomic growth rate if they are matched by additional discretionary revenue measures.[62]) Still, the three Nordic EU members – Denmark, Sweden and Finland – all have expenditure ceilings, whereas Iceland and Norway do not.

Sweden

Sweden was the first Nordic country to introduce an expenditure rule. Already the Budget Act from 1997 stipulated that the government shall propose an expenditure ceiling for three years ahead in the budget bill. If a ceiling decided by the parliament is in threat of being breached, the government must take action to prevent this or propose necessary actions to the parliament.[63]

The Budget Act does not regulate which expenditures should be encompassed by the ceiling. But according to established practice, all central government expenditures except interest payments on central government debt are covered by the ceiling. The multi-annual ceiling is determined in *nominal* terms, i.e. it is not adjusted for price and wage increases.

Although there are no formal obstacles to changing an expenditure ceiling that has been decided by the parliament, the established practice is to not make changes during the term of office of a government except for technical reasons (such as changes in tax expenditures[64]) or in the division of responsibilities between the central government and local governments. But ceilings have been adjusted in connection with changes of government (a lowering when the liberal-conservative government took office in 2006 and a raising when a new government was formed by the Social Democrats and the Greens in 2014).

There is no formal escape clause regarding the expenditure ceiling. Uncertainty is instead handled by providing a so-called *budgeting margin,* i.e. by setting the ceiling above planned expenditure according to predetermined principles. They state that the margin should be at least 1% of the expenditures encompassed by the ceiling in the

[62] See the introduction to Section 4.1.
[63] Budgetlag (2011:203). See also Molander and Holmquist (2013) and Calmfors (2015).
[64] Tax expenditures are special tax provisions, regarding for example exclusions, deductions, deferrals and tax rates, that benefit specific activities or groups of taxpayers. Tax expenditures may serve the same purpose as various types of expenditures.

current fiscal year, 1.5% one year ahead, 2% two years ahead and 3% three years ahead.

At times, the budgeting margin has been so large that the expenditure ceiling has been criticised for not having any influence on fiscal policy.[65] The ceiling has never formally been breached. But sometimes governments have resorted to questionable manipulations, such as increasing tax expenditures and changing the timing of payments between years with the sole purpose of avoiding breaches in a formal sense.[66] This has triggered proposals for the introduction of a formal escape clause in order to increase the transparency of fiscal policy.[67]

Denmark

Since the adoption of the Budget Law in 2012, the Danish expenditure framework is according to OECD (2019a) one of the most comprehensive across OECD countries. It is the strictest among the Nordic countries. The Budget Law includes detailed provisions regarding binding expenditure ceilings.[68] They are set for four years ahead.

There are separate ceilings for central government, (the aggregate of) regions and (the aggregate of) municipalities. Two separate sub-ceilings exist for the central government: one for operating expenditure and one for income transfers. Similarly, there are two separate sub-ceilings for regions: one for health expenses and one for "development" expenses. Interest payments on government debt, investment expenditure and unemployment-related expenditure are not encompassed by the ceilings. In all, they cover around ¾ of total public expenditure. Unlike in Sweden, the ceilings are set in real terms, i.e. they are adjusted for price and wage increases.

There are provisions for adjusting the expenditure ceilings for "technical reasons". The Minister of Finance can lower (raise) the expenditure ceilings if new legislation implies higher (lower) unemployment-related expenditures (which are not covered by the ceilings) or higher (lower) tax expenditures. The minister can also change existing ceilings when the distribution of responsibilities and expenditures

[65] See, for example, Finanspolitiska rådet (2011).
[66] See Finanspolitiska rådet (2008, 2011).
[67] See Finanspolitiska rådet (2011) and OECD (2011).
[68] See Budgetloven (2012), Danish Ministry of Finance (2015, 2019) and De Økonomiske Råd Formandskabet (2019) for descriptions of the expenditure ceilings.

have been reallocated between the central government, regions and municipalities. In addition to the "technical" adjustments, the Minister of Finance can in particular circumstances (*i saerlige tilfaele* in Danish) propose to the parliament that the ceilings in force should be changed.[69] According to the Economic Council, the principles for how these changes should be made are not well-defined and in need of clarification.[70]

The Budget Law prescribes automatic actions that must be taken in case of violations of the central government expenditure ceilings. The Minister of Finance is obliged to exercise expenditure control both ex ante and ex post. If the ex-ante control during the fiscal year reveals an expected overdraft for operating expenditure, the minister must limit these expenditures by a corresponding amount. If the ex-post control discovers a realised overdraft for operating expenditure in the preceding fiscal year, the minister must limit these expenditures in the new fiscal year by a corresponding amount. It is, however, possible to avoid the described expenditure cuts if discretionary tax increases are decided by the parliament. Hence, the provisions for correcting an expenditure overrun appear designed more to support the fiscal-balance target than to limit expenditures per se.

The central-government sub-ceiling for operating expenditures is an upper limit for these expenditures. In practice the government can choose not to use the full sub-ceiling, e.g. if the government wishes to reduce taxes or increase expenditures outside the ceiling without affecting the structural fiscal balance. The whole "fiscal space" for new initiatives (i.e. the room for spending increases or tax cuts consistent with the structural-balance target) is initially placed under the sub-ceiling for central-government operating expenditures. This practice seems less appropriate as it contributes to low transparency regarding future expenditure. For this reason, it has been criticised by the Economic Council.[71]

If the aggregate expenditure ceilings for municipalities and regions, respectively, are not complied with, the government can impose sanctions on them. This is discussed in Section 4.4.

[69] This could be done after a parliamentary election and when large economic reforms or discretionary measures on the revenue side are carried out. Some flexibility is also provided by a reserve of around 2% under the central government sub-ceiling for income transfers.
[70] De Økonomiske Råd Formandskabet (2019).
[71] Ibid.

The expenditure ceilings, which have existed from 2014, have been complied with. The central-government sub-ceiling for income transfers has been set so high that it has not in practice been a binding constraint (De Økonomiske Råd Formandskabet 2019). Still, in contrast to the 1990s and 2000s, recent years have not seen budget overruns relative to budget plans. This applies also to municipalities.[72] The expenditure ceilings in combination with sanctions in the case of violations (to be further discussed in Section 4.4) has likely contributed to this.

Finland

Finland also operates a system with expenditure ceilings (denoted spending limits) for the central government. Unlike in Denmark and Sweden, the system is not anchored in law but based on a practice that has been employed in its current form since 2003. The spending limits for a parliament's term of office are set in a new government's first General Government Fiscal Plan (see Section 4.1). The limits cover about 80% of expenditures but exclude, for example, cyclical items, interest on central government debt and financial investment expenditure.[73]

The ceiling decision allocates a spending limit to each administrative branch. The government can, however, reallocate expenditure between branches, but overall expenditure may not exceed the ceiling. There is also a specific spending limit for discretionary central-government measures that affect local-government operating expenses. The aim is to reduce pressures on the finances of municipalities arising from central-government decisions on their obligations. When this spending limit is negative – as it was in the 2016–2019 General Government Fiscal Plan – it can be seen as a measure of the amount of savings in local-government operating expenditure that could potentially be achieved because of decisions made by the central government.

Like in Denmark, but unlike in Sweden, the spending limits are set in real terms. Similar "technical adjustments" as in Denmark and Sweden are made. To allow some flexibility, each ceiling decision includes a small unallocated reserve and a provision for supplementary bud-

[72] See Danish Ministry of Finance (2015, 2019) and De Økonomiske Råd Formandskabet (2019).
[73] See, for example, Economic Policy Council (2018) and Finnish Ministry of Finance (2019b).

gets. Compared to Sweden, the reserve is marginal. This difference reflects the fact that cyclically sensitive expenditures are not covered by the expenditure ceilings in Finland, whereas they are in Sweden. In the 2020–2023 General Government Fiscal Plan, a novelty concerning the expenditure limits is an escape clause allowing an extra spending increase in the case of an "exceptionally serious downturn".[74]

The spending limits in Finland have so far always been respected.[75] However, the limits have in some cases been circumvented by using off-budget funds, tax deductions and asset transfers. In the parliamentary term 2015–2019, there were many examples of asset transfers where the state donated shares to off-budget units. In addition, it has not always been clear if transactions classified as financial investments (and not encompassed by the spending limits) do not also involve final expenditure.[76]

Norway and Iceland

In contrast to the EU members Denmark, Finland and Sweden, the non-EU members Norway and Iceland do not have government expenditure ceilings.[77]

For Norway, the OECD has for a long time been recommending multi-annual expenditure ceilings.[78] A government commission looked into the issue in 2015. It did recommend more comprehensive multi-annual budget projections, which have also been used from 2017, but dismissed expenditure ceilings. The motivation was a judgement that "an expenditure ceiling could easily get the character of an expenditure floor" in a situation with high expectations "in the political environment and elsewhere" of continued room for new initiatives due to increased use of oil revenues.[79] This reasoning

[74] The clause will be triggered if (i) the European economy experiences a fall in GDP of at least 0.5% over two consecutive quarters and a cumulative increase in the euro area's seasonally adjusted unemployment rate of at least 0.5 percentage points over three consecutive months or (ii) there is a fall in GDP of at least 1.0% over two consecutive quarters and a rise in the unemployment rate of at least 0.5 percentage points over three months in Finland (Finansministeriet 2019b and Economic Policy Council 2019).
[75] See, for example, National Audit Office of Finland (2018a,b).
[76] The paragraph is based on information obtained in conversations with officials in the Ministry of Finance.
[77] However, before the 2008 financial crisis, ceilings on real government expenditure were in place in Iceland.
[78] See OECD (2010, 2016, 2018),
[79] Børmerutvalget (2015), p. 19. OECD (2018) argues that the case for expenditure ceilings will be strengthened in a situation where "the risk of government resorting to tax-raising measures to achieve deficit goals increase" (p. 31).

is difficult to understand: one would rather believe that expenditure ceilings would be particularly appropriate in the future when such expectations may be inconsistent with slower growth in the value of the wealth fund and ultimately decreasing withdrawals as a share of GDP.[80]

In Iceland, the Public Finance Act (2015) does not mention expenditure rules. It is, however, stated that there should be targets for the nominal increase of total government expenditure. Such targets are set in the Fiscal Strategy Plan, which is updated every year.[81]

4.4 Rules constraining local governments

Lack of fiscal discipline at lower levels of government has contributed to government debt problems in many countries. This has motivated fiscal rules constraining fiscal behaviour of local governments. Such rules exist in all the five Nordic countries. In Denmark, Norway and Sweden, there are two local-government levels: regions and municipalities. In Finland and Iceland, there are only municipalities.

Denmark

Section 4.3 already described how expenditure ceilings apply to both municipalities and regions in the aggregate. Violations of the ceilings can trigger sanctions in the form of reductions in grants from the central government. For municipalities, 40% of the reductions are allocated collectively among them according to population size and 60% individually among those municipalities that have exceeded their budgets. Similar provisions apply to regions.[82] So far, the sanctions, which were introduced in 2011 for municipalities and in 2013 for regions, have never had to be used.[83]

The Economic Council has pointed to problems with the expenditure ceilings for local governments.[84] As they only apply to operating expenditure, but not to investment expenditure, they may cause an imbalance between the two types of expenditure: there appears to be a systematic tendency to exceed budgeted investment expenditure, whereas the reverse is the case for operating expenditure. The council has also pointed to the risk that annual ceilings, as opposed

[80] See Section 7.5.
[81] See Section 4.1.
[82] Social- og Indenrigsministeriet (2019).
[83] De Økonomiske Råd Formandskabet (2019).
[84] Ibid.

to multi-annual ones, may affects the timing of expenditure in an inefficient way.

According to the Law on Municipal Governance, the government can decide on rules regarding borrowing by municipalities.[85] This has also been done.[86] Borrowing is in principle not allowed but can be used to finance *some* types of investment expenditure according to very detailed stipulations.

The government can also decide on rules regarding the balance between revenues and expenditures in the annual budget or multi-annual budget plans of an individual municipality. A similar legal provision exists for regions. The government can also in particular circumstances (*i saerlige tilfaelde)* decide on rules regarding an extraordinary economic follow-up for a region. This could imply a stipulation that the regional council must determine binding targets for a "region's economic development" for a certain period.

Finland

Section 4.1 discussed the deficit target of 0.5% of GDP for the local-government sector and Section 4.3 the ceiling for discretionary central-government measures that affect local-government operating expenses (designed to reduce pressures on local government finances arising from central-government decisions on the obligations of municipalities). In addition, the Local Government Act (410/2015) requires municipalities to draw up a financial plan for at least three years "which is in balance or in surplus".[87] An accumulated deficit in the balance sheet must be covered within four years and subsequent fiscal plans must specify through which measures this is to be achieved.

If a municipality has not covered accumulated deficits in its balance sheet within the stipulated four years, there are to be crisis negotiations with the government. A procedure assessing the municipality´s ability to provide services and correct its deficit is started. The ultimate sanction is forced mergers between municipalities. This sanction has been used, but it is more common that the assessment

[85] Bekendtgørelse af lov om kommunernes styrelse (2019), § 58.
[86] See Social- og Indenrigsministeriet (2015).
[87] The requirement applies to the municipality's economic result. See the discussion in the case of Sweden below regarding the difference between economic result and net lending.

process induces municipalities to take voluntary actions to correct the situation.[88]

Sweden

According to the Swedish Local Government Act, there is a balanced-budget requirement for both municipalities and regions.[89] If a deficit arises ex post, it should be covered within a three-year period. However, there are no sanction mechanisms if the requirements are not met. A balanced budget is only a minimum requirement. Local governments are also required to observe "good economic housekeeping" (*god ekonomisk hushållning* in Swedish). This is usually interpreted as an economic result amounting to 2% of the revenues from local-government taxes and general central-government grants.[90] Unlike in the other Nordic countries, no rules exist for how to deal with local governments in economic distress: there is no legal stipulation according to which the central government can exercise control.[91] This would seem to be a deficiency that could become problematic in the future when ageing costs, which to a large extent fall on local governments, will be increasing.

The fiscal-balance requirements on local governments do not refer to net lending (like the surplus target for the overall public sector; see Section 4.1), but to the economic result. The main difference concerns investment expenditure. Net lending is calculated by subtracting all expenditures, including investment expenditure, from revenues. When calculating the economic result, depreciation, instead of investment expenditure is subtracted. Currently with increasing local government investment, and hence larger investment expenditures than depreciations, the economic result is more positive than net lending: in fact for the local-government sector as a whole there was in 2019 a small positive economic result, whereas net lending amounted to about -0.8% of GDP.[92]

[88] In 2007-2015, the conditions for starting an assessment procedure applied to 47 municipalities. 15 of them decided to merge with another municipality before the process was started. For the remaining 32 municipalities, plans to stabilise the finances were negotiated. In eleven cases there were mergers, but only three of them were forced ones (Valtiovarainministeriö 2019).
[89] Kommunallag (2017:725).
[90] Regeringen (2018b).
[91] A few cases of municipalities in economic distress in the 1990s were handled through economic aid from the central government and voluntary agreements (Leffler 2015).
[92] Information from the Ministry of Finance in January 2020.

In 2018, around 25% of the municipalities and 30% of the regions had negative economic results. But since 2004, the result (before extraordinary items) for the local-government sector as a whole has been positive.[93]

The balanced-budget requirement on local governments works in the direction of making fiscal policy procyclical, as variations in tax revenues over the business cycle tend to cause corresponding variations in expenditure. To cushion such effects, local governments can accumulate rainy-day funds (*resultatutjämningsreserver* in Swedish). In 2018, this had been done by around 50% of the municipalities and 30% of the regions. But the overall size of these funds is small, only around 0.3% of GDP, with the bulk of the funds in the municipalities.[94]

Norway

Like in Finland and Sweden, there is a budget-balance requirement which applies to the economic result. Loan-financing of operating expenditure is not permitted. Deficits that have occurred must be covered within two years.[95]

There exists a Technical Computation Commission for Municipal and Regional Economy (*Teknisk beregningsutvalg for kommunal og fylkeskomunal økonomi*, *TBU*). It recommends that the net operating result for the local-government sector should over time correspond to 2% of its revenues: for municipalities the recommendation is 1.75% and for regions 4%.[96]

The government can under certain circumstances exercise control over the legality of local-government decisions on budgets and borrowing. This is done, for example, if local governments budget deficits, do not cover past deficits within two years or have ex post accumulated deficits in excess of 3% of net operating revenues.[97] There exists an official register (ROBEK) over municipalities and regions subjected to such control. In September 2019, ten municipalities, but no regions, were in the register. This was an all-time low.[98]

[93] Ibid.
[94] Ibid.
[95] Lov om kommuner og fylkeskommuner (2018).
[96] Finansdepartementet (2018).
[97] Lov om kommuner og fylkeskommuner (2018).
[98] Finansdepartementet (2019b).

Iceland

According to the country´s Public Finance Act (2015), the government shall during the formulation of the Fiscal Strategy Plan seek an agreement with the Association of Local Authorities in Iceland covering among other things "a target for the fiscal balances and balance sheet position of municipalities for the next five years, broken down by year and measures to ensure the achievement of the municipal fiscal performance targets". The agreement is subject to the parliament's approval of the fiscal strategy. There are no sanctions if the municipal sector violates the agreement.

In addition, the Local Authorities Act (No. 138/2011) regulates the finances of individual municipalities. According to it, operating expenditure must not, during each three-year period, be larger than regular income, and debt and commitments may not exceed 150% of regular income.

There exists an independent Municipal Finances Monitoring Committee, appointed by the government to oversee the financial position of individual municipalities. The committee can, on its own initiative, make recommendations to municipalities to improve their finances. If proposed by the committee, the government and a municipality are to seek an agreement to rectify a weak financial situation. If this does not work out, stronger measures are available to the government. It may interfere directly and give the municipality instructions on its operation and administration. The municipality's fiscal powers may even be suspended and taken over by a specially appointed financial management board.[99] The ultimate measure for the government is to seek an agreement with neighbouring municipalities on a merger.

4.5 Summary of fiscal rules in the Nordics

Table 1 summarises the above account of the *national* fiscal rules in the Nordics. (Stipulations in EU rules that apply to all EU members, such as the 3%-of-GDP fiscal-deficit ceiling and the 60%-of-GDP debt ceilings are not included).

[99] Since 2010, this has happened only once. The process ended with a merger with another municipality (information from Ólafur Helgason at the Icelandic Ministry of Finance).

Table 1 National fiscal rules in the Nordics

	Denmark	Finland	Iceland	Norway	Sweden
Overall fiscal-balance target	Maximum *structural* deficit of 0.5% of GDP. Structural balance in 2025.	Maximum *structural* deficit of 0.5% of GDP. Structural balance in 2023.	*Actual* fiscal balance in surplus over a five-year period. Annual actual deficit always below 2.5% of GDP.		Average surplus of 1/3% of GDP over a business cycle: in practice a target for the structural balance.
Correction in case of deviation	Annual improvement of structural balance by at least 0.5% of GDP if significant deviation (>0.5% of GDP).	Annual improvement of structural balance by at least 0.5% of GDP on recommendation from Ecofin Council.			Annual improvement of the structural balance at the same rate as normally would occur in the absence of discretionary decisions (0.4–0.5% of GDP).
Escape clause	Deviation from structural deficit limit allowed in case of exceptional circumstances (defined in EU stability pact). Correction required after end of exceptional circumstance.	No correction required in case of exceptional circumstances as defined in EU stability pact.	Fiscal-balance objectives may be departed from for up to three years in case of "economic shocks, national crisis or other circumstances that cannot be remedied by available measures".		A correction should take the cyclical situation into account.
Subsector fiscal-balance targets	Municipal sector and regional sector are required to balance their budgets (on a cash basis – on national accounts basis there may be small annual fluctuations). The central government insures lower government against impact of cyclical fluctuations.	Central government: *actual* deficit of 0.5% of GDP. Municipal sector: *actual* deficit of 0.5% of GDP. Earnings-related pension funds: actual surplus of 1% of GDP. Other social-security funds: 0 deficit.		Balanced central-government budget: non-oil deficit is covered by withdrawal from petroleum wealth fund. Structural non-oil deficit should over time equal expected real return (3%) of petroleum wealth fund. The structural non-oil deficit is allowed to vary over the business cycle.	
Debt or financial-wealth targets		Maastricht debt-to-GDP ratio should fall from the level in 2019. (around 59%). Earlier implicit debt objective of 55% of GDP.	General-government debt ceiling of 30% of GDP.	As long as petroleum revenues flow into the petroleum wealth fund, it should grow in real terms; when petroleum revenues cease the real value of the fund should be held constant.	Maastricht debt anchor (target) of 35% of GDP).

	Denmark	Finland	Iceland	Norway	Sweden
Expenditure ceilings	Ceilings for central-government operating expenditure and central-government income transfers, regions' operating expenditure and municipalities' operating expenditure. Ceilings are in real terms and are set four years ahead. Interest payments, investment expenditure and unemployment-related expenditure are not covered.	Ceiling in *real* terms for all central-government expenditure except interest payments, financial-investment expenditure and cyclically dependent expenditure for a parliament's term of office (four years). Also spending limit for discretionary central-government measures that affect local-government operating expenditure.			Ceiling in *nominal* terms for all central-government expenditure except interest payments *three years* ahead.
Mechanism to deal with breaches of expenditure ceiling	Minister of Finance must compensate for breaches of central-government ceilings with expenditure cuts unless corresponding tax increases are decided by the parliament. Sanctions can be imposed on local governments (see below).				If there is a threat of breach, the government must take action to prevent it.
Escape clause	Expenditure ceiling can be changed under exceptional circumstances.	Extra spending is allowed in case of an exceptionally serious downturn.			
Fiscal rules for local-government sector	Ceilings for regions' operating expenditure and municipalities' operating expenditure (see above). Balanced-budget requirement for municipal sector and for regional sector.	Target for actual deficit of local-government sector of 0.5% of GDP.	Multi-annual agreement between government and Association of Local Authorities on fiscal balances and balance-sheet positions of local-government sector.		

	Denmark	Finland	Iceland	Norway	Sweden
Sanction possibilities	Breaches of aggregate expenditure ceilings for regions and municipalities, respectively, can trigger reductions of central-government grants that are both collective and individual.				
Fiscal rules for individual local governments	Borrowing only allowed for some investment expenditure, not for operating expenditure.	Ex-ante budget-balance requirement. Accumulated deficit in balance sheet to be covered within four years.	Ex-ante budget-balance requirement. Debt must be lower than 150% of regular income.	Ex-ante budget-balance requirement. Ex-post deficit to be covered within two years.	Ex-ante budget-balance requirement. Ex-post deficit to be covered within three years.
Sanction possibilities	Extra reduction in central-government grants to local governments which have exceeded their budgets if aggregate expenditure ceilings have been breached (see above). The government can decide on budget-balance targets and extraordinary economic follow-ups.	Negotiations with the government if accumulated deficit in balance sheet has not been covered within four years. Ultimate sanction is forced mergers between municipalities.	Government can give a municipality in financial distress instructions on its budget. The municipality's fiscal powers may be suspended. Ultimate sanction is that the government seeks an agreement on merger with neighbouring municipalities.	Ministry of Finance can exercise control over local-government budget decisions if rules have been violated.	

All Nordic countries have *fiscal-balance* targets or limits. In Denmark, Finland and Sweden, they refer to the general-government structural balance. In Iceland, they apply instead to the actual fiscal balance. Norway's fiscal target is structural budget balance for the central government (after withdrawals from the petroleum wealth fund). Currently, this is the most ambitious target among the Nordics as it implies a large general-government surplus (7.6% of total GDP in 2019) as long as there are substantial revenues from petroleum

production flowing into the wealth fund.[100] The Swedish surplus target of 1/3% of GDP is more ambitious than the fiscal targets (and limits) in Denmark, Finland and Iceland. The legal basis for the numerical fiscal-balance stipulations is, however, stronger in Denmark, Finland and Iceland, where the (minimum) levels are written into law, than in Norway and Sweden, where they are not.[101]

Although the exact formulations differ, Denmark, Finland and Sweden have stipulations for similar speeds of correction of deviations from the fiscal targets: around 0.5% of GDP per year. Iceland and Norway have no such pre-specified adjustment paths. All the countries have some form of escape clause. In Denmark, Finland and Iceland, departures from the fiscal targets are allowed only under exceptional circumstances. In Sweden and Norway, the structural fiscal balance should be adjusted to the cyclical situation. This appears to leave more discretion to the government than in Denmark, Finland and Iceland. However, in the latter three countries (especially in Denmark and Iceland), there is room for different interpretations of the concept of exceptional circumstances.

Finland has subsector fiscal-balance targets: for central government, the local-government sector, the earnings-related pension funds and other social-security funds. A potential problem is that these targets could in some situations be inconsistent with the general-government fiscal target, as the former concern actual balances and the latter the structural balance.

Only Iceland and Sweden have explicit *debt targets*. The Icelandic target is that general-government debt should be below 30% of GDP. Sweden has a target for Maastricht debt of 35% of GDP. The target has not operational significance for policy, but the relationship of actual debt to it should be considered in

[100] As withdrawals from the petroleum wealth fund should correspond to the expected real return on the fund's assets and there is balanced-budget requirement on local governments, it follows that there is also an implicit target for the general government fiscal balance which amounts to the sum of oil revenues and the fund's nominal return as a share of GDP.
[101] In Sweden, the budget law stipulates that there should be a surplus target but does not specify the level. In Norway, neither the existence of the fiscal target nor its numerical value is regulated in law.

the regular reviews of the surplus target envisaged every eighth year. Finland and Denmark have no explicit debt targets, but Finland has an objective of lowering Maastricht debt below the current level close to the EU 60% limit and Denmark an objective of keeping a safe distance to it. Norway's fiscal rule of withdrawing only the real return from the petroleum wealth fund implies an objective of letting its real value increase as long as petroleum revenues flow into the fund.

Denmark, Finland and Sweden all have multi-annual *expenditure ceilings*, whereas Iceland and Norway do not. The Danish and Swedish ones are law-based, whereas the Finnish one is an established practice. In Denmark and Finland, the ceilings are set in real terms, in Sweden in nominal terms. The scope of the ceilings differs. The Swedish ceiling encompasses all central-government expenditure except interest payments. In Denmark and Finland, investment expenditure and cyclically sensitive expenditure are also excluded. The Finnish ceiling applies only to the central government. Denmark has ceilings for both central-government and local-government expenditures. Denmark and Sweden both have stringent stipulations regarding how the government must respond to breaches of the expenditure ceilings. However, an odd feature of the Danish central-government expenditure ceilings is that the formal rules allow breaches of them to be dealt with through tax increases.[102] This could potentially make the ceilings less effective in controlling expenditure.

There are *numerical rules for the local-government sector* as an aggregate in Denmark and Finland, but not in Iceland and Sweden. Denmark has ceilings for operating expenditure in regions and municipalities (backed by sanction possibilities), Finland a target for the actual deficit of local governments and Iceland agreements between the government and the local-government sector on the latter one's fiscal balances and balance sheet positions.

All the Nordic countries have balanced-budget requirements for individual local governments. The rules appear the strictest in Denmark since, unlike in the other Nordic countries, there is no general provision that investment expenditure can be financed by borrowing. In Denmark, Finland, Iceland and Norway, there are legal stipulations regulating how the government can exercise control over local gov-

[102] This has, however, so far never happened.

ernments in distress. Here, Sweden stands out with no such legal possibilities. This should be a cause for concern, as demographic fiscal pressures will to a large extent fall on local governments.

A reasonable interpretation is that Denmark has the strictest fiscal framework (strong legal basis, tough expenditure rules and possibilities of sanctions against local governments) and Norway the least strict framework (weak legal basis, no expenditure rules), the three other Nordic countries lying in between. However, in both Denmark and Norway the rules have been observed and the fiscal records have been strong (see Section 3). This could suggest that political consensus on responsible fiscal policy can be more important than the formal strictness of the rules.[103] But it is also easy to see challenges for the two countries ahead: lower growth in petroleum revenues and rising ageing costs could threaten fiscal discipline in Norway, whereas the strict rules in Denmark could impair desirable fiscal-policy flexibility.

5 Monitoring of fiscal policy by independent institutions

Over the last two decades there has been a strong international trend of setting up publicly funded independent fiscal institutions, often in the form of so-called *fiscal councils*, with a remit to monitor fiscal policy. This trend received an additional boost with the adoption of the two-pack regulation[104] and the Fiscal Compact[105] in the EU in 2013. They made it mandatory for eurozone countries to have independent bodies tasked with monitoring compliance with the stability pact's medium-term fiscal objectives and providing public assessments on the use of budgetary correction mechanisms in the case of deviations from the objectives.[106]

[103] Research comparing the fiscal experiences of countries over time has documented a positive association between the existence of fiscal rules and fiscal balances (see, for example, Ayuso-i-Casals 2012). There is, however, a long-standing debate whether this is due to the rules per se or that countries with a preference for more fiscal discipline tend to adopt such rules. A recent study found no relationship between the existence of rules and fiscal performance when trying to control for differences in preferences (reflected by changes in rules in neighbouring countries) but between the quality of rules and fiscal performance (Caselli et al. 2018).
[104] Regulation No 473/2013 of the European Parliament and of the Council.
[105] Treaty on Stability, Coordination and Governance in the Economic and Monetary Union (2013).
[106] See the discussion of the fiscal-balance targets in Denmark and Finland in Section 4.1.

The idea behind independent fiscal monitoring institutions is that they should act as "fiscal watchdogs" by alerting both policymakers and voters to fiscal risks. Policy could be influenced either directly through inputs into the government decision-making process or indirectly through participation in the public discussion. The discourse on independent fiscal institutions has often focused on their potential to raise the reputational costs for governments of bad policy. One way of doing this is to increase the transparency of policies by providing qualified analysis of their effects and scrutiny of the government's forecasts. Such independent analysis may be of particular importance for upholding more complex fiscal rules, such as those concerning the structural fiscal balance, where there is considerable room for judgement.

OECD (2014) has provided a set of recommendations regarding independent fiscal institutions.

These include:

- Leadership should be selected only on the basis of merit and technical competence, including professional standing and relevant government or academic experience.
- The position of head should be a remunerated and preferably full-time position.
- The leadership should have full freedom to hire and dismiss staff in accordance with applicable labour laws.
- The mandate should be clearly defined in higher-level legislation.
- Reports and analysis should be produced on the institution's own initiative (provided that they are consistent with the mandate).
- Clear links to the budget process should be established. Typical tasks might include economic and fiscal projections, baseline scenarios (assuming unchanged policies), analysis of the executive's budget proposals, monitoring compliance with fiscal rules or official targets, costing of major legislative proposals and analytical studies of selected issues.
- The resources allocated must be commensurate with the mandate. The appropriations should be published and treated in the same manner as the budgets of other independent bodies, such as audit offices.
- The budgetary calendar should allow sufficient time to carry out analysis for parliamentary work.

- The institution should have full access to all relevant information in a timely manner.
- The institution should develop a mechanism for external evaluation of its work.
- As the influence of an independent fiscal institution is mainly persuasive, it should develop effective communication channels, especially with the media, civil society and other stakeholders.

Currently Denmark, Finland, Iceland and Sweden have independent institutions monitoring fiscal policy. Norway has not. Denmark instituted its Economic Council already in 1962. Sweden established its Fiscal Policy Council in 2007. The Economic Policy Council in Finland started its work in 2014, whereas Iceland's Fiscal Council was created as late as in 2016. In Sweden and Finland, also other institutions have a monitoring role for fiscal policy. Norway has instead established a "model-and-method commission" to strengthen the links between the Ministry of Finance and the academic community.

Although the institutions monitoring fiscal policy in Denmark, Finland, Sweden and Iceland have a similar aim of contributing to sustainable fiscal policy, there are also important differences. The exposition below focuses on aspects such as legal basis, exact remit, interaction with the government, qualification requirements for members, appointment procedure, terms of office, resources, cooperation with other institutions, access to information and media coverage.

5.1 Denmark[107]

Denmark is the Nordic country with the longest experience of a publicly funded independent institution with a remit to evaluate economic policy. The *Danish Economic Council* was established by law in 1962. Its construction provided inspiration when, for example, the Swedish Fiscal Policy Council was set up in 2007. The Danish council is a government body under the Ministry of Finance. The original formulation of the task, which still remains, is "to follow the country's economic development and highlight long-term development perspectives and to contribute to the coordination of different economic interests".[108]

[107] Most of the information on the Danish Economic Councils has been retrieved from the councils' website. See https://dors.dk/.
[108] Bekendtgørelse af lov om Det Økonomiske Råd og Det Miljøøkonomiske Råd (2016), § 1.

Over the years, there have been changes in the way the Economic Council works. In 2007, also an Environmental Economic Council was set up. The two Economic Councils have a joint chairmanship (more of this below). In 2012, in connection with the conclusion of the Fiscal Compact, the chairmanship was given an explicit remit to act as a fiscal watchdog. The task encompasses evaluation of the long-run sustainability of public finances and the medium-term development of the fiscal balance. The council is also to monitor that the expenditure ceilings are in line with the fiscal-balance targets and that the ceilings are respected (see Section 4.3). In 2017, the chairmanship was also appointed the country's National Productivity Board with a responsibility to analyse productivity developments and provide recommendations on how to strengthen them.[109]

The Danish Councils have a particular structure. They are led by a joint chairmanship consisting of four persons "with knowledge in economics" (of which one should have particular knowledge on the interaction between the economy and the environment). In practice, this has come to mean that the chairmanship consists of university professors (but with an interest in applied policy issues as a side requirement). The chairs are appointed by the Minister for Finance. The term of office is three years, but reappointment is possible. Terms of office are overlapping. Although not regulated in law, the established practice is that new chairs are proposed by the sitting ones and that the government follows the proposals.[110] This practice can be seen as a way of guaranteeing that appointments are made on professional, and not political, grounds. A risk, at least in theory, could, however, be a certain "conservative" bias in the selection of new chairs in the sense that incumbents might prefer to nominate colleagues with similar general scientific views.[111]

In addition to the chairmanship, the Economic Council is composed of 22 members representing unions, employers´ federations, the central bank and the government, and of three academic experts. The members are nominated by the individual organisations but for-

[109] The Ecofin Council has "recommended" all eurozone countries and "encouraged" non-eurozone members to establish national productivity boards (Council of the European Union 2016).
[110] According to the Economic Councils' website, when choosing candidates there is particular emphasis on finding candidates "who have professional qualifications in economic theory and methods at the level of professors at universities and corresponding institutions" (Ny formand De Økonomiske Råd 2019).
[111] Such a risk was raised by Överskottsmålskommittén (2016) in Sweden, but the argument was criticised by the Fiscal Policy Council (Finanspolitiska rådet 2016).

mally appointed by the Minister for Finance. There is a similar construction for the Environmental Economic Council.

The chairmanship produces four reports each year. Two reports contain evaluations and analyses of fiscal as well as general economic policy, and forecasts on the Danish economy. On top of this, the reports often include in-depth analyses of particular issues such as labour market policy, income distribution, the welfare state or the EMU. In addition, there is one annual report on environmental and one on productivity issues.

The chairmanship's reports are discussed at meetings with the whole council(s). But it is the chairmanship that is responsible for the reports. Comments from other council members at the meetings do not usually lead to any changes but are reported in the final publication.

The councils' chairmanship is aided by a secretariat of 20-25 professional economists. The secretariat is headed by a director appointed by the Minister for Finance on recommendation by the chairmanship. The secretariat consists of three units: one for forecasts and public finances, one for structural analysis (of issues such as the tax system, design of the welfare state and labour market policy), and one for analysis of environmental issues.

The particular structure of the economic councils with representatives from various interest organisations reflects an original corporatist idea to provide a forum for wage and income settlements, where experts would provide an analytical basis. This idea has since long been abandoned. Instead, the chairmanship has turned into an independent voice in the economic-policy debate and during the last decade been given the task of independent evaluation of fiscal policy and its adherence to the targets set.[112]

The government is not formally obliged to comment on the Economic Councils' reports (except for a comply-or-explain stipulation with regard to whether or not there are "exceptional circumstances" motivating a deviation from the medium-term objective).[113] But since

[112] See Andersen (2010) and OECD (2019a).
[113] The Ministry of Finance also has a member of the council who provides a written comment to the chairmanship's reports which is published together with them (see above).

the chairmanship of the councils has over time built up a reputation for qualified analysis, the government has in practice to respond to the analyses. This is all the more necessary as there is intense media coverage of the reports and opposition parties often can find ammunition in them that can be used to criticise the government. In effect, this means that there is a comply-or-explain requirement on the government also as regards adherence in general to the fiscal targets and other economic-policy issues.[114]

Formally, the Economic Councils are a unit under the government, submitting their reports to it, with fairly weak formal guarantees for independence. But in practice, the chairmanship has over time acquired a very strong position with great influence on the economic-policy debate. This is a good example of the importance of distinguishing between formal and real powers. The Danish case is also a good illustration of how particular institutions for monitoring policy can develop in a process over time where an existing structure is adapted to new demands. This also highlights how important it may be to base such institutions on existing country-specific features.

A recent problem for the Economic Councils has been the government decision to move the secretariat from Copenhagen to Horsens in the western part of Denmark from 2019 as a part of a general decentralisation programme. This led to a temporary loss of staff which impaired the functioning of the secretariat.[115] To help the secretariat fulfil its role as a fiscal watchdog, a satellite unit has been created in Copenhagen, but it is unclear how well this will function.[116]

5.2 Sweden

The Budget Act does not include any stipulations on external monitoring of fiscal policy. This is instead treated in the government's communication to the Parliament regarding the fiscal framework.[117] The communication stresses the importance of such monitoring for compliance of policy with set objectives and constraints. Monitoring is seen as a way of raising the political costs of violating the rules.

The government's communication mentions four government authorities with responsibility for following up fiscal policy: the Fiscal

[114] See, for example, OECD (2019a).
[115] In 2018–2020 three reports were delayed and one was cancelled.
[116] See OECD (2019a).
[117] Regeringen (2018b).

Policy Council (*Finanspolitiska rådet*), the National Institute of Economic Research (*Konjunkturinstitutet*), the National Financial Management Authority (*Ekonomistyrningsverket*) and the National Audit Office (*Riksrevisionen*). The National Institute of Economic Research and the National Financial Management Authority regularly evaluate fiscal policy and the public finances in their forecasts which are published several times during the year. The National Audit Office makes such evaluations at more irregular intervals.

The government's communication gives the most emphasis to the monitoring by the Fiscal Policy Council. It was established in 2007 and is formally a body under the Ministry of Finance.[118] According to the council's regulation it shall "evaluate if fiscal policy is consistent with long-run sustainable public finances and the budget targets, especially the surplus target and the expenditure ceiling, but also the debt anchor and, if necessary, the budget-balance requirement for local governments".[119] More precisely, the council is to evaluate whether there is a clear deviation from the surplus target, whether any such deviation is motivated and at what pace a deviation should be corrected.[120]

The council shall also evaluate the fiscal stance in relation to cyclical developments. In addition, the council is to assess the government's macroeconomic forecasts and its reporting to the parliament on the public finances and the costs for reform proposals.

The council has six members. The chair can serve for maximum six years and other members for maximum three years. The council shall include both "members with high scientific competence in economics and members with practical experience of economic-policy work".[121] This formulation seems to imply a larger stress on practical experience than in the corresponding councils in Denmark and Finland where only academic competence is required.[122] So far, the differ-

[118] The author of this report was the council's first chair (2007–2011). The council was thus set up before the wave of new publicly funded independent fiscal institutions in EU countries initiated by the two-pack regulation and the Fiscal Compact during the eurozone crisis. The establishment of a Swedish fiscal council was first proposed in 2002 by a Swedish government commission examining how fiscal policy would best be pursued in the event of entry into the EU's monetary union (STEMU-utredningen 2002). The motives behind the establishment of the council and its early activities have been discussed by Calmfors (2010, 2012, 2015, 2017b) and Calmfors and Wren-Lewis (2011).
[119] SFS 2017:1316, § 6.
[120] See also the discussion of Sweden in Section 4.1.
[121] SFS 2017:1316, § 11.
[122] See Sections 5.1 and 5.3, respectively.

ence has, however, been of small importance as the practice has been to have only one "practioner" as member. One of the members has always been from another Nordic country (so far Denmark or Norway).

During the council's first decade, the appointment procedure followed the Danish blueprint discussed in Section 5.1: new members were appointed by the government on proposal from the council itself. This procedure was seen as a way of guaranteeing that appointments would not be made on political grounds.[123] But from 2017, the rules regarding the appointment procedure were changed. New members are now proposed by a nomination committee consisting of the heads of three government bodies – the National Institute of Economic Research, Statistics Sweden and the Institute for Evaluation of Labour Market and Education Policy (IFAU) – and two other members appointed by the government. At present, the latter two members are the chair and vice chair of the parliament's finance committee. The change in the nomination procedure was originally proposed by Överskottsmålskommittén (2016) which pointed to a potential risk that the earlier procedure would not guarantee "sufficient breadth and competency", although there were no claims that this had been a problem in the past. The new procedure has been criticised by the council itself which has argued that it could open up for undue political considerations to affect appointments.[124]

Like its Danish and Finnish counterparts, the Swedish Fiscal Policy Council has a broader remit than just to monitor fiscal policy. According to its current instruction, it *may* (my italicisation) also analyse growth and employment issues, the clarity of the government's economic-policy documents and income distribution.[125] This is a change relative to the earlier instruction according to which it *should* analyse

[123] See, for example, Proposition 2013/14:173.
[124] Finanspolitiska rådet (2016). The new appointment procedure was used for the first time in 2019. The only clear change in appointment practices seen so far is that in 2020 a chair without a background as a university professor was nominated for the first time; all four earlier chairs belonged to this category. The nominated chair, Lars Heikensten, has a background as undersecretary in the Ministry of Finance, head of Riksbanken and CEO of the Nobel Foundation.
[125] SFS 2017:1316.

these issues.[126] The change reflected the government's view that the council should focus its analysis more on fiscal policy.[127]

The Fiscal Policy Council is hosted by the National Institute of Economic Research from which it buys some administrative services. There is a small secretariat to serve the council, consisting of five persons (four economists, one of which is appointed as head by the Ministry of Finance). The council publishes an annual report in May each year. The budget also allows commissioning of background reports.

The annual report is formally submitted to the government. The forms for interaction with the government are not regulated but follow an established practice. After the submission of the report, the parliament's finance committee arranges a public hearing with participation of both the council's chair and the Minister for Finance. The government also responds regularly to the council's report in the budget bill in the autumn. There is usually substantial media coverage of the report. This has induced both the government and the opposition parties to comment on it.

The council does not have budget autonomy: it is financed by yearly appropriations over the central-government budget. The status as an agency under the Ministry of Finance also implies that there is a dialogue with the ministry regarding the council's activities at the same time as the council evaluates policy. These conditions could imply risks for the council's independence. In the past, there have been examples when undue pressure has been put on the council from the ministry in discussions about budget appropriations and the dialogue about activities. This occurred in situations where there was disagreement between the council and the government about the appropriate fiscal policy.[128] The alternative of placing the council directly under the parliament has been aired but has come to

[126] SFS 2011:446.
[127] See Regeringen (2018b). The government's view was likely influenced by the argumentation in Mattson and Håkansson (2015) and Överskottsmålskommittén (2016). In the latter government commission, where the author of this report participated as an expert, there appeared to be a large amount of irritation on the part of the representatives from all political parties regarding the fact that the council in the past – and in line with its instruction – had expressed views on, for example, employment and tax policy (see Calmfors 2017b).
[128] See Calmfors and Wren-Lewis (2011), OECD (2011) and Calmfors (2012, 2015, 2017b),

nothing, perhaps because this is an unusual construction in the Swedish system of public administration.[129]

5.3 Finland

Compared to Denmark in particular, but also to Sweden, Finland is a latecomer with respect to publicly funded but independent fiscal- and economic-policy evaluation. Such monitoring was initiated first after the EU's adoption of the two-pack regulation and the Fiscal Compact.[130]

According to the Fiscal Policy Act[131] from 2012, the National Audit Office (*Statens revisionsverk* in Swedish) is responsible for evaluating compliance with the fiscal rules. The monitoring covers adherence to the medium-term fiscal objective and the related correction mechanism, preparation and implementation of the General Government Fiscal Plan and compliance with the stability pact. The government's macroeconomic forecasts used in fiscal policymaking are also assessed.[132] In case of violations of the rules, the head of the audit office can give a speech in the parliament. MPs can then ask questions to the government.

The National Audit Office produces both an annual report and a report every fourth year on the government's fiscal policy during the parliament's term of office. 2–4 persons at the office, but who also have other tasks, have been working with the evaluations. There have been problems with high staff turnover.

Publicly funded independent evaluation is also made by the Economic Policy Council, which was established in 2014. The council's construction appears to a large extent to have been inspired by the set-ups of the Economic Council in Denmark and the Fiscal Policy Council in Sweden.[133] Like these, the Finnish council has a broad remit. According to the government regulation on the council it shall evaluate the appropriateness of economic-policy goals; the achieve-

[129] See Mattson and Håkansson (2015) and Överskottsmålskommittén (2016).
[130] Regulation No 473/2013 of the European Parliament and of the Council, and Treaty on Stability, Coordination and Governance in the Economic and Monetary Union (2013).
[131] Lag om sättande i kraft av de bestämmelser som hör till området för lagstiftningen i fördraget om stabilitet, samordning och styrning inom Ekonomiska och monetära unionen och om tillämpning av fördraget samt om kraven på de fleråriga ramarna för de offentliga finanserna (869/2012).
[132] National Audit Office of Finland (2018a). See also the discussion on Finland in Section 4.1.
[133] The pros and cons of these and other constructions were discussed in a report to the Prime Minister's office (Calmfors 2010).

ment of the goals; the forecasting and assessment methods used in policy planning; coordination of different aspects of policy; the success of economic policy, especially with respect to growth and stability, employment and the long-term sustainability of public finances; and the appropriateness of economic-policy institutions.[134]

The Economic Policy Council publishes an annual report. Fiscal-policy evaluation has been a main focus in all the reports so far. In addition, selected key issues are analysed. Recently, much attention has been devoted to the government plans on social and health care, and regional governance reform.[135]

A particularity is that the council´s annual report is first published in English and translated into Finnish first several months later. This reflects the fact that the working language of the council is English. One motive for this is that it makes it possible to recruit also foreign members.[136] An obvious drawback is that the original publishing of the report only in English may make the council's analysis less accessible to a broader audience. However, given the council's limited resources (see below), simultaneous publication of the report in several languages would likely represent too large a strain on capacity.

Like with the chairmanship of the Danish Economic Councils, the Finnish council's composition is purely academic. There are a chair and four other members. The chair and three of the members "shall represent high-quality scientific expertise within various areas of economic science". One member "shall represent corresponding expertise within other social sciences". At least one member should be active in the international scientific community.[137] The term of office is four years and there is a rotating scheme, with two of the members changing every two years.

Finland has chosen another way of trying to guarantee that appointments to the council are based only on professional competence, and not influenced by political considerations, than Denmark (see Section

[134] Statsrådets förordning om rådet för utvärdering av den ekonomiska politiken (61/2014).
[135] See, for example, Economic Policy Council (2018, 2019).
[136] During the council's first five years of existence, the Danish economist Torben Andersen, who earlier served in both the Danish Economic Council and the Swedish Fiscal Policy Council, was a member. Currently (2020), one of the members is a British economics professor.
[137] Statsrådets förordning om rådet för utvärdering av den ekonomiska politiken (61/2014), § 3.

5.1). The chair and the three other economists are jointly proposed by the economics departments of Finnish universities. The fifth member, representing other social sciences, is proposed by the Academy of Finland. Although the procedure for nominating members is fine in principle, a problem has been that there is no defined procedure for how the economic departments should go about this. It would probably be helpful with a formalised procedure for this, perhaps involving the establishment of a nomination committee with representatives from various university economics departments.

The Economic Policy Council's resources are limited. The council is hosted by the government's Institute for Economic Research (VATT, *Statens ekonomiska forskningscentral* in Swedish) and uses administrative services there. This arrangement is similar to that of the Swedish Fiscal Policy Council, which is hosted by the National Institute for Economic Research. The Finnish council has a secretariat of only two full-time economists. One is the Secretary General, whose formal employer is VATT. The Secretary General is appointed by the Ministry of Finance on proposal by VATT after consulting with the council. There are resources for commissioning several background reports each year. Still, the small size of the secretariat means that the bulk of the work is done by the council members. Unlike the Danish council, but like the Swedish one, the Finnish council neither makes own fiscal forecasts nor (yet) operates large own macroeconomic models.[138]

There is no formal procedure requiring the government to respond to the council's evaluations. However, the Minister of Finance has regularly commented the report in public at the time of publication. Also, a written comment from the ministry has been published in the spring issue of the Finnish Economic Journal.[139] There has been extensive media coverage of the council's reports.

An obvious question concerns the division of responsibilities between the Economic Policy Council and the National Audit Office. It is not obvious why there should be two publicly funded independent monitoring institutions. On one hand, pluralism in evaluations might have a value. On the other hand, given the limited resources of both bod-

[138] A DSGE (dynamic stochastic general-equilibrium) model is being developed.
[139] The two most recent comments are Yläoutinen (2018) and Nerg (2019).

ies, it could make sense to combine resources into just one monitoring body. If that were to be made, it seems vital to maintain the academic orientation that characterises the Economic Policy Council.

5.4 Iceland

Iceland was later than Denmark, Sweden and Finland in establishing a publicly funded independent institution for monitoring fiscal policy. This was done in 2016 with the creation of the Fiscal Council. The Icelandic council differs in several respects from its counterparts in Denmark, Finland and Sweden.

- The Icelandic council has a stronger legal status as its existence and role is regulated already in the basic Public Finance Act (the "Organic Budget Law") together with fiscal policymaking in general.[140]
- The council's remit is narrower than those of the councils in Denmark, Finland and Sweden. The task is limited to monitoring of fiscal policy. The Public Finance Act does not mention other policy areas. Generally, the council shall evaluate whether fiscal policy is in accordance with the principles for fiscal policy formulated in the act: sustainability, prudence, stability, predictability and transparency. More precisely, the council shall also evaluate the government's compliance with the fiscal targets regarding the fiscal balance and debt (see Section 4.1).
- The council's monitoring is more integrated into the formal political decision process than in the other Nordic countries. According to the Public Finance Act, "no later than two weeks after the submission to the Althingi of a proposal for parliamentary resolution on the Statement of Fiscal Policy or Fiscal Strategy Plan, or of a proposal for a parliamentary resolution to amend current strategies/plans, the Fiscal Council shall submit its opinion on the proposal to the Althingi".[141]
- The council has three members. Appointment procedures gives a larger role to politicians than for the councils in Denmark, Finland and Sweden. Two members shall be appointed (for three years) by the Minister of Finance on nomination by the parliament and one,

[140] Public Finance Act (2015).
[141] Ibid., § 13. As discussed in Section 4.1, the fiscal framework contains an escape clause according to which the original Fiscal Strategy Plan can be revised and the fiscal objectives departed from due to unforeseen circumstances. The quoted formulation gives the council an important role to assess whether or not the clause shall be activated. As described in Section 4.1, this was done in 2019 after approval by the council (which, however, criticised the government for earlier not having provided more room of manoeuvre for fiscal policy in such a situation (Helgason 2019).

the chair, (for five years) on nomination by the Prime Minister.[142] These procedures would seem to imply larger risks for appointments on political, rather than purely professional, grounds than in the other Nordic countries.

- Formal requirements on appointees are weaker than in Denmark, Finland and Sweden. In addition to being impartial and possessing knowledge of public finances, members need just to have completed a university programme. The requirements on the chair are only slightly stronger: he/she must have "completed a postgraduate programme in a subject relevant to the role of the Council".[143] The rather low qualification requirements can perhaps be understood against the background of Iceland's smallness and a shortness of supply of candidates, but still represents a potential problem. One way of mitigating it might be to recruit members also from abroad. This would, however, require a change in the council's working language from the national one to English as in Finland.[144]
- The council's work is done by the members. There is so far no secretariat. This is an obvious weakness as the council may become too dependent on data and other material from the Ministry of Finance, which the latter is obliged to provide.

According to OECD (2019e), the council "has so far been cautious, focusing on procedural aspects and budget transparency rather than on a substantive assessment of fiscal policy".[145] This OECD report also worries that the council's effectiveness is hampered by a limited remit and a lack of resources, and suggests an improvement in these and more co-operation with other independent institutions like the National Audit Office.

Summing up, there is a clear contrast between, on one hand, the important role assigned to the Icelandic Fiscal Council in the parliamentary process and, on the other hand, the provisions that affects its possibilities to carry out its functions. Indeed, the direct involvement in the political decision-making process would seem to

[142] No member can serve for more than two terms.
[143] Public Finance Act (2015), § 13.
[144] The council's evaluations are only published in Icelandic. Indeed, the website is also only in Icelandic.
[145] P. 33.

warrant stronger provisions for guaranteeing independence and competence, and securing sufficient resources.[146]

5.5 Norway

Norway differs from the other Nordic countries in not having any publicly-funded independent body monitoring fiscal – or other – economic policy. Instead, the country has a Model and Method Commission which advises the Ministry of Finance.[147] The commission was established in 2011. In 2019, it had ten members including from academic institutions, Statistics Norway, Bank of Norway and the ministry. One member is from the National Institute of Economic Research in Sweden and one from the DREAM group in Denmark.[148]

The commission's remit is to give evaluations and advice regarding (i) use and development of model tools that are employed in the Ministry of Finance; (ii) computations and analyses related to economic developments, long-term projections for the Norwegian economy and calculations of budget indicators in the ministry's policy document; and (iii) presentation of macroeconomic problems in the ministry's policy documents.

The commission meets four times a year. It arranges an open seminar on issues within its remit once a year. Recent topics have been economists' advice and economic policy, fiscal policy and uncertainty regarding the value of the oil wealth fund, long-term projections for fiscal sustainability analysis, the future of macroeconomic models for policy analysis and the macroeconomic effects of fiscal policy. The commission does not publish reports, but minutes from its meetings are available on the Ministry of Finance's webpage.

The Model and Method Commission is thus not an external monitoring institution but an internal advisory body working inside the Ministry of Finance, which also serves as the commission's secretariat.

[146] This conclusion is only based on my interpretation of the formal provisions and not on any assessment of the council's work, which I have not been able to read, as it is available only in Icelandic. However, OECD (2017) appears to share my worry as it concludes its discussion of the Fiscal Council with the comment that "the authorities should ensure that the fiscal council has adequate resources and is independent enough to perform its role according to the law".
[147] See Mandat for modell- og metodeutvalget 2017–2019.
[148] See Sections 5.2 and 7.2.

An explicit objective is to strengthen contacts between the ministry and other institutions where economists work.

An interesting question is why Norway has not followed the international trend of establishing publicly funded independent monitoring institutions for fiscal (and other economic) policy despite advice to this end from, for example, the OECD.[149] The fact that Norway is not an EU member implies that the country has not been exposed to the same influences as Denmark, Finland and Sweden. Another possible explanation is the success in adhering to the fiscal rule regarding the use of petroleum revenues and the balanced-budget objective for the non-oil central-government sector. Hence, there have not been any pressing needs to strengthen the fiscal framework as in many euro-zone countries. A third explanation may be a surviving corporatist tradition, implying a bias towards consensus-based and cooperative policy solutions. This tradition is, for example, manifested in much greater use of academic economists as chairs and/or members of various government commissions analysing the need for – and often proposing – policy reforms in many areas.[150] Public – and often critical and sometimes adversarial – policy evaluation, with the implicit aim of raising the reputation cost of bad policy and increasing the possibilities to hold policymakers accountable may be seen as inconsistent with such a more consensus-based approach.[151]

5.6 Conclusions on fiscal-policy monitoring

Denmark, Finland, Iceland and Sweden have all established academically-oriented fiscal councils which are publicly funded. They are designed to independently evaluate fiscal policy. The absence of such an institution makes Norway an outlier in this respect. It may be explained by the strong corporatist tradition of consensus-based policymaking. However, it also represents a risk of insufficient public scrutiny of government policy.

Table 2 summarises the information on the fiscal councils in the Nordic countries in Sections 5.1–5.5 above.

[149] See OECD (2010, 2018).
[150] An outside observer is struck by the great number of government commissions named after their (often academic) chairs.
[151] In 2009–2011 there was a discussion in Norway about the merits of establishing a fiscal council of the Swedish type. It was actually proposed by the Tory party, which was then in opposition (Finansavisen 2011). The author of this report was invited to both the Ministry of Finance and the parliament to present the Swedish Fiscal Policy Council (see Calmfors 2011). The ideas behind a set-up like the Swedish one was, however, met with much scepticism. Instead, the Model and Method Commission was established.

A common feature of the fiscal councils in Denmark, Finland and Sweden is the breadth of the remits. They do not only include fiscal policy but also other economic policy. The remit of the Economic Council(s) in Denmark (which extends to environmental policy and productivity developments) and the Economic Policy Council in Finland (including also economic-policy goals and institutions) are wider than that of the Fiscal Policy Council in Sweden. In fact, politicians in Sweden have chosen over time to reduce the focus on other economic policy. Iceland stands out in comparison with the other three Nordic countries with independent policy evaluation because its council has an exclusive focus on fiscal policy. There are arguments both in favour and against a broad remit. The main argument in favour is to use a fiscal council's expertise also for analysis of issues that are broader than, but related to, fiscal policy and this way exploit synergies. An argument against is that this might unduly weaken the focus on fiscal policy. It is not obvious which trade-off to make: my preference is for a quite broad remit as this makes work in a fiscal council more interesting and thus helps broaden the pool of potential members, which in turn likely also increases the quality of the fiscal analyses.

The legal basis for the fiscal councils varies. It is the strongest in Iceland where the provisions regarding the Fiscal Council are to be found in the Public Finance Act. In Denmark, there is a law regarding the Economic Council(s), whereas the stipulations regarding the councils in Finland and Sweden are given only in government regulations (decrees). There may, however, be a large difference between the *formal* and the *real* standing of a fiscal council. The Danish council, with the longest history, is the one that has built up the strongest reputation for independent and qualified analysis and therefore the strongest de facto position.

In Denmark and Iceland, the councils are the only publicly funded fiscal watchdogs. In Finland, the National Audit Office is the official watchdog with its monitoring remit regulated in the Fiscal Policy Act. In Sweden, three other government institutions also evaluate fiscal policy, although the Fiscal Policy Council has been singled out by the government as the most important one.

The Icelandic Fiscal Council has the clearest formal link to the fiscal policy-making process as it is tasked with giving the parliament its

Table 2 Fiscal councils in the Nordics

	Denmark	Finland	Iceland	Norway	Sweden
Fiscal council	Economic Council(s): Economic Council and Environmental Economic Council.	Economic Policy Council.	Fiscal Council.		Fiscal Policy Council.
Legal basis	Law regarding the Economic Councils.	Government regulation (decree).	Public Finance Act.		Government regulation (decree).
Other institutions evaluating fiscal policy		National Audit Office of Finland is official fiscal watchdog with monitoring remit regulated in Fiscal Policy Act.			National Institute of Economic Research, National Financial Management Authority, National Audit Office.
Remit	Fiscal policy, other economic policy and environmental policy. The Economic Council chairmanship is also the country's National Productivity Board.	Fiscal and other economic policy, economic-policy goals and economic-policy institutions.	Only fiscal policy.		Fiscal policy (and employment, growth, clarity of the government's economic-policy documents and income distribution).
Own model and forecasts	Yes.	Not yet.	No.		No.
Formal link to budget process			Opinion on government proposal on Statement of Fiscal Policy and on Fiscal Strategy Plan is to be submitted to the parliament within two weeks.		Report after the spring fiscal policy bill and public hearing in the parliament's finance committee.
Media coverage	Extensive.	Extensive.	Limited.		Extensive.

	Denmark	Finland	Iceland	Norway	Sweden
Members	4 members (chairs).	5 members. Practice to have one foreign member.	3 members.		6 members. Practice to have one member from another Nordic country.
Qualifications	"Knowledge in economics" (one with particular knowledge on the interaction between the economy and the environment). In practice university professors.	High-quality scientific expertise in economics for chair and 3 members. Corresponding expertise in other social sciences for fifth member.	Knowledge on public finances. Ph.D. in economics for chair; university degree for other members.		High scientific competence in economics or practical experience of economic-policy work.
Appointment procedure	Minister for Finance on proposal from the chairs of the council(s).	Minister of Finance on joint proposal from economics departments of Finnish universities for chair and 3 members. Academy of Finland for fifth member.	Minister of Finance on proposal from the Prime Minister for the chair and from the parliament for the two other members.		Government on proposal from nomination committee consisting of heads of three government authorities and two MPs.
Terms of office	Up to 6 years. In practice 3 years. Reappointment is possible. Overlapping terms of office.	4 years. Over-lapping terms of office.	5 years for chair and 3 years for the two other members.		3 years, reappointment for another 3 years only for chair. Over-lapping terms of office.
Secretariat	20–25 persons	2 persons.	So far 0.		5 persons
Budget autonomy	Financing out of the general budget.	Financing out of the general budget.	Financing out of the general budget.		Financing out of the general budget.

opinion on the government's fiscal plans. The Swedish Fiscal Policy Council's annual report is regularly discussed in an open hearing, also involving the Minister for Finance, in the parliament's finance committee. In Denmark, Finland and Sweden, there is extensive media coverage of the councils' reports and the government has in practice to respond even when there is no formal requirement to do so.

The qualification requirements for council members differ. In practice, they are university chairs in Denmark and Finland. In Sweden, either academic competence or practical experience of economic-policy work is required (but the great majority of members have been chosen on academic merits). Iceland has the lowest requirements: PhD for the chair and a university degree in economics for the other members. This is likely unfortunate but may be explained by a small pool of highly qualified candidates. The practice in both Sweden and Finland has been to have one foreign member. This is very valuable because it brings in an outside perspective. It also serves the purpose of increasing the pool of highly qualified candidates. It might be something for especially Iceland to contemplate.

Appointment procedures are potentially crucial for the independence and competency of a fiscal council. In all four countries with a fiscal council, appointments are made by the government. The procedures in Denmark and Finland are well designed to avoid the risk of political biases. In Denmark appointments are made on proposal from the council chairs, in Finland on proposal from the academic community. The procedures are more vulnerable in Iceland and also Sweden. Nominations in Iceland are made by the parliament and the Prime Minister. In Sweden, there is a nomination committee consisting of three heads of government agencies and two MPs.

The councils' resources differ a lot. The Danish Economic Council(s) have a staff of 20-25 persons. This is much more than the other councils. However, the Danish council(s) are entrusted with heavier tasks, such as making their own forecasts and fiscal sustainability calculations, than the councils in Finland, Iceland and Sweden. Doing such tasks is not necessary for a well-functioning council: monitoring of the government's forecasts and sustainability analyses may be sufficient. In the latter case, less resources are needed. However, the resources of the Icelandic (no staff) and Finnish (staff of 2 persons) councils seem too small and not commensurate with their remits.

The OECD (2014) guidelines for fiscal councils emphasise budgetary autonomy. This recommendation has not been followed in any Nordic country. Financing comes instead via general budget appropriations. This represents a potential risk for undue pressures.

Overall, the fiscal councils in Denmark, Finland, Iceland and Sweden function well. In Denmark, Finland and Sweden, where the councils have existed for at least several years, they have built up solid reputations for competence and independence. But the guarantees for independence in the form of legal basis, formal stipulations on appointment procedures and budget autonomy are not that strong. This might represent a potential risk in a situation with more unstable political landscapes and where experiences also in some EU countries has shown that political reputation costs may not be enough to defend the integrity of independent institutions.[152]

6 Fiscal sustainability analysis – a general overview

A broad way of understanding fiscal sustainability is as "the ability of a government to service its debt at any point of time".[153] A requirement for this is that the government is *solvent* in the sense that it meets its *intertemporal budget constraint*. The usual formulation is that current net financial wealth must at least equal the present value of all future primary fiscal deficits, i.e. the differences between expenditures and revenues, excluding net interest payments, over an infinite time horizon when all variables are measured as shares of GDP. An alternative formulation is that the present value of all future primary fiscal surpluses must be larger or equal to current net debt. The condition builds on the assumption that the interest rate at an infinite horizon is higher than the economy's growth rate (this is discussed more in Section 6.4). If, under this assumption, the constraint were not to hold, the government debt-to-GDP ratio would ultimately tend to explode as there would be a never-ending need to borrow more relative to GDP in order to pay interest.[154] Lenders would obviously then stop granting new loans at some point.

[152] It may seem as a peculiarity, but the dismantling of independent institutions in Hungary started with stripping the country's fiscal council of its powers (Calmfors et al. 2010).
[153] European Commission (2019), p 32.
[154] The focus on the debt-to-GDP ratio is explained by the presumption that if government revenues grow (which likely happens if GDP rises), so can expenditure and debt.

Box 1 defines the intertemporal budget constraint in mathematical terms.

Box 1
The intertemporal budget constraint

The intertemporal budget constraint is exactly met if

$$w_0 = \sum_{t=1}^{\infty} p_t \prod_{k=1}^{t} \frac{1}{(1+R_t)} = \frac{p_1}{(1+R_1)} + \frac{p_2}{(1+R_1)(1+R_2)} + \cdots \frac{p_n}{(1+R_1)(1+R_2)\cdots(1+R_n)}, \quad (1)$$

where w = government net financial wealth as a share of GDP, p = primary fiscal deficit as a share of GDP and R = the growth-adjusted real interest rate. The latter variable is given by

$$R = (1+r)/(1+g) - 1 = (r-g)/(1+g),$$

where r = real interest rate and g = GDP growth rate. Subscripts indicate time periods. 0 denotes the initial time period. It is assumed that $r > g$, so that $R > 1$.

If the growth-adjusted interest rate is constant over time, (1) simplifies to

$$w_0 = \sum_{t=1}^{\infty} \frac{p_t}{(1+R)^t} = \frac{p_1}{1+R} + \frac{p_2}{(1+R)^2} + \cdots \frac{p_n}{(1+R)^n} + \ldots \quad (2)$$

An alternative way of formulating the intertemporal budget constraint is in terms of net *overall* wealth, including the government-owned real capital stock on the asset side.[155] This is usually not done because a government cannot credibly be expected to dispose of much of its real capital stock (which may be needed for government activities). And if it does, real capital may have a low market value (which under all circumstances is difficult to assess) especially in a situation when sales are required. Formulation of the constraint

[155] See, for example, Finanspolitiska rådet (2009).

in terms of net overall wealth thus risks being too generous. However, at the same time the formulation in terms of net financial wealth is too cautious, as it should always be possible for a government to sell *some* of its physical capital stock. But for precautionary reasons, the latter formulation has generally been preferred in practice.

Judging the public sector's solvency must always be a very inexact science as it is a forward-looking exercise depending on unknown future developments in general and on actions of future governments in particular. There is no way that a current government can *commit* future governments to generate sufficiently large primary surpluses to cover existing debt today. Any judgement of government solvency must therefore be based on an evaluation of whether or not the required future fiscal balances are *credible*. This is why the IMF's recent definition of public-debt sustainability requires "the primary balance needed to at least stabilise debt under the baseline and realistic shock scenarios" to be "*economically and politically feasible*" (italics added).[156] An operational specification of feasibility could be that it should be possible to reach the required primary balances without unrealistically large adjustments of tax revenues and government expenditure.[157]

6.1 Sustainability of current fiscal policy

A simpler task than to judge the overall solvency of a government – but still very complex – is to evaluate the sustainability of *current* fiscal policy, i.e. whether or not *unchanged* fiscal policy is sustainable. This is what fiscal sustainability analyses usually focus on. In these analyses, unchanged policy does *not* mean that fiscal-balance or government-debt targets according to current fiscal rules, as discussed in Sections 4.1 and 4.2, are respected. Instead, unchanged policy implies that tax rates and the "generosity" of social benefits and public welfare services are held unchanged. Projections of future fiscal balances and government debt are made under these assumptions independently of whether or not currently existing fiscal-balance and debt rules are observed in the future. It is not, however, always obvious what unchanged policies regarding tax rates, transfers and public consumption mean. The following describes important no-policy-change assumptions usually made in the baseline scenarios in the sustainability analyses by the European Commission,

[156] IMF (2013).
[157] See also Andersen (2013) and IMF (2014).

national ministries of finance and other national institutions in the EU countries:

- Various tax bases are taxed at the same rates in the future as today. Changes in the tax-to-GDP ratio will then follow only from changes in the relative sizes of different tax bases.
- The levels of various transfers to households (social benefits) remain constant relative to wages. In a formal sense, this may not reflect unchanged policy, as transfer levels are often set in nominal terms or indexed to prices (rather than wages), but over longer periods transfers tend to rise with wages. Separate assumptions are, however, usually made regarding pension benefits. The reason is that they are governed by predetermined rules that often involve – credible – changes in pension benefits relative to wages.
- Expenditure on *collective* public consumption, such as defence, police, government administration etc., rises over time in proportion to GDP or population.
- Expenditure per user on *individual* public consumption, i.e. consumption of welfare services such as education, child, health and old-age care, in various socio-economic groups – distinguished by age, gender and origin (native or immigrant) – rises in line with wages. As production of these services require not only input of labour, but also inputs of intermediate goods and capital, and the prices of the latter inputs are usually assumed to fall relative to wages, the implication is a continuous increase in consumption per user. This is often labelled an increase in the standard of welfare services.

Other important assumptions include:

- Productivity growth is lower in the production of welfare services than in the production of goods. Usually, the assumption is zero productivity growth in welfare services.
- The wage share in the private sector is constant, so that nominal wages there rise at the same rate as the sum of the value-added price and productivity.
- Wage growth is the same in the public and the private sector.
- Capital-output ratios in various sectors of the economy are constant, so that investment is determined by output growth.
- The growth-adjusted interest rate is positive in the long run. This means that the interest rate at which the government can bor-

row (and invest financially) is higher than the GDP growth rate. However, as these interest rates are currently very low – below the GDP growth rate – most projections assume a gradual "normalisation" of interest rates.[158]

- There is usually some form of *healthy ageing*. Research suggests that increased longevity also means more healthy years: at some point of time in the future, health and old-age care costs for, say, an 81-year old will fall to the levels that today apply for an 80-year old etc.[159]
- Employment rates and average working time in the various socio-economic economic groups remain unchanged over time or develop in line with healthy ageing.

The standard procedure is to start the projections a few years ahead. For the years before the starting year, a medium-term forecast is employed. A common assumption is that GDP gaps will be closed when the starting year is reached, so that the actual and the structural fiscal balance, i.e. the balance adjusted for cyclical changes and one-off effects, coincide.

The dominant driver of change in the projections is changing *demographics*, mainly related to ageing but also to immigration. Combining a forecast on how the demographic structure changes over time with the assumptions on the development of per-capita individual public consumption in various demographic groups gives projections for expenditure on such consumption. The assumptions regarding labour market behaviour in the various socioeconomic groups together with the demographic forecast allows revenue projections. Projections of transfers to households are obtained in a similar way.

The model set-up is in most cases very simple. The economy is regarded as a small open one unable to influence conditions in the rest of the world. Total output is supply-determined. Its path is derived from the assumptions on developments of productivity and hours worked. The role of the demand side is to determine the composition of output. A crucial role in this respect is played by the

[158] Section 6.4 discusses this assumption further.
[159] See, for example, Lindgren (2016), Lassila and Valkonen (2018) and Economic Council (2019).

development of public consumption which is highly dependent on the change in the population's age structure.

Usually, the models are quite mechanic since a number of exogenous trends building on extrapolation are imposed. This involves a risk of inconsistencies between different assumptions because interdependencies and adjustment mechanisms may not be taken into account properly. To do so requires the use of explicit calibrated intertemporal general-equilibrium models. So far this has been done to a rather limited extent as their development is both complex and resource-demanding.[160] Such more elaborate models are likely to be particularly useful for analysing policy changes – for example tax rises – in order to address sustainability problems but which could generate substantial behavioural adjustments (mainly in labour supply).

The fiscal-balance and government-debt trajectories derived from sustainability analyses are *projections*, not forecasts.[161] The baseline projection does not represent the most probable outcome. The aim is instead to illustrate what will happen under unchanged policy (although that can be given various interpretations) and under reasonable other assumptions in order to provide a basis for decisions to possibly change policy. Sustainability analyses aim at identifying such policy needs at an early stage so that abrupt later policy changes can be avoided. However, one could view the baseline projection as the best *conditional* forecast given the policy assumptions made.

Sustainability analyses typically present both a baseline scenario and various alternative scenarios. A problem with the alternative scenarios is that they often only represent a general sensitivity analysis. It is usually left to the reader to take a stand on the likelihood that various scenarios materialise. Any evaluation of such probabilities would, of course, be highly subjective. Still, it might be valuable if sustainability analyses tried more often to make informed guesses about probability distributions over the various scenarios based on historical patterns and assessments of how the determinants of various macroeconomic factors may differ from those in the past.

[160] See also Andersen (2013).
[161] See, for example, European Commission (2018a, 2019).

Another problem with the analysis of alternative scenarios is that the relationship between them and policy is not always clear. For example, it is customary to vary assumptions regarding employment and working-time developments. But it is problematic to view these developments as exogenous; rather one would expect them to be endogenous responses to changes in policy (regarding taxes, benefits, education etc.) that may also have direct consequences for the fiscal balance. Such links are usually not analysed when the extrapolation approach is used. Here, there appears to be a great potential for improving the analysis through more use of general-equilibrium models.

6.2 The S2 fiscal sustainability indicator

A common way of summarising the degree of sustainability of fiscal policy is by help of the so-called *S2 indicator*. This metric has been published by the European Commission since 2006.[162] It is also used in national sustainability analyses in the EU member states, including Denmark, Finland and Sweden.

The S2 indicator measures the permanent upfront change in the current structural primary balance measured as a share of GDP which would imply that the intertemporal budget constraint is exactly met. As explained in the section above, this means that current net financial wealth (net debt) equals the present value of all future primary deficits (surpluses) when the variables are scaled by GDP.[163] A zero indicator implies that the constraint holds exactly if the structural primary balance remains unchanged. As a consequence, the ratio of net government debt (net financial wealth) to GDP will stabilise at some level in the long run. A positive indicator shows a need to strengthen the structural primary balance through expenditure cuts or tax rises if the intertemporal budget constraint is to be met. A negative indicator means instead that current fiscal policy is "oversustainable": it would be possible to meet the constraint also if the primary balance is weakened (implying higher government expenditure or lower taxes). Unless this is done, government net financial wealth would be continuously increasing relative to GDP, which cannot be desirable as it would imply lower consumption over time for citizens than would be feasible.

[162] See e.g. European Commission (2018a, 2019).
[163] That the upfront change is permanent means that, after the change in the current year, the structural primary balance is held constant for ever at the new level.

Box 2 Mathematical definition of S2 indicator

Starting from equation (2) in Box 1, which assumes a constant growth-adjusted interest rate, we have in general that

$$I = w_0 - \sum_{t=1}^{\infty} \frac{p_t}{(1+R)^t}, \tag{3}$$

where *I* = intertemporal net financial worth. It equals the difference between current net financial wealth and the present value of future primary deficits (all variables measured as shares of GDP). Sustainability of fiscal policy implies that $I \geq 0$. The intertemporal budget constraint is met exactly if $I = 0$.

The S2 indicator, *s*, is defined as the permanent improvement in the primary balance that would give $I = 0$. Hence, it holds that

$$w_0 = \sum_{t=1}^{\infty} \frac{p_t}{(1+R)^t} - \sum_{t=1}^{\infty} \frac{s}{(1+R)^t} = \sum_{t=1}^{\infty} \frac{p_t}{(1+R)^t} - \frac{s}{R}.$$

Solving the equation for *s* gives

$$s = R\sum_{t=1}^{\infty} \frac{p_t}{(1+R)^t} - Rw_0. \tag{4}$$

The S2 indicator thus equals the annual growth-adjusted interest payment on the present value of future primary deficits minus the annual growth-adjusted interest income on initial net financial wealth. Equation (4) shows that the future primary balances affect the S2 indicator with successively declining weights as

$$R\sum_{t=1}^{\infty} \frac{p_t}{(1+R)^t} = \frac{R}{1+R} p_1 + \frac{R}{(1+R)^2} p_2 + \cdots \frac{R}{(1+R)^n} p_n + \ldots \tag{5}$$

Primary balances in the far future matter more relative to primary balances in the near future, the lower is *R*. For example, *R = 2%* gives weights for year 1 and year 50 of 1.96% and 0.74%, respectively. This means that the weight of year 50 is only 37% of the weight for year 1. If instead *R = 0.5%*, the weights become 0.50% and 0.37%, respectively. In this case, the weight of year 50 is as high as 78% of the weight of year 1. This shows that the assumptions on the growth-adjusted real interest rate are crucial for S2 calculations.

In sustainability analyses, fiscal-balance projections are only carried out for a certain time interval. After a final year, t_s, the primary balance is usually taken to remain a constant fraction of GDP, $\overline{p}$. Taking this into account, equation (4) can be rewritten as

$$s = R\sum_{t=1}^{t_s}\frac{p_t}{(1+R)^t} + R\sum_{t_s}^{\infty}\frac{\overline{p}}{(1+R)^t} - Rw_0 = R\sum_{t=1}^{t_s}\frac{p_t}{(1+R)^t} + \frac{\overline{p}}{(1+R)^t} - Rw_0, \qquad (4a)$$

Equation (4a) is often used to decompose the S2 indicator. In particular, one may be interested in how much the second term, which measures the effect of primary deficits in the far future beyond the period for which the projections are made, contribute to the indicator. One might also want to decompose the first term into several sub-terms indicating the contributions of primary balances in different sub-periods of the projection period.

An alternative way of decomposing the S2 indicator focuses on the contribution made by the increases of (age-related) expenditure over time. Denote the increase in expenditure in year *t* relative to year 1 by Δa_t. Then the primary deficit in year *t* can be written

$$p_t = p_1 + \Delta a_t. \qquad (6)$$

Inserting (6) into (4) gives

$$s = R\sum_{t=1}^{\infty}\frac{p_t}{(1+R)^t} - Rw_0 = R\sum_{t=1}^{\infty}\frac{p_1}{(1+R)^t} + R\sum_{t=2}^{\infty}\frac{\Delta a_t}{(1+R)^t} - Rw_0 = p_1 + R\sum_{t=2}^{\infty}\frac{\Delta a_t}{(1+R)^t} - Rw_0. \qquad (4b)$$

The S2 indicator is then expressed as the current primary deficit plus the growth-adjusted annual interest payment on the present value of future increases in (age-related) expenditure minus the growth-adjusted interest income on initial net financial wealth. The second term can, of course, be decomposed into contributions from expenditure increases in different sub-periods.

Box 2 gives the exact mathematical definition of the S2 indicator. It is shown that the indicator gives similar information on the sustainability of current fiscal policy as the *intertemporal net financial worth*.[164] This variable is defined as the difference between today's net financial wealth and the present value of future primary deficits. If the difference is negative (so that there is intertemporal net debt), the intertemporal budget constraint is not met and there is a need for strengthening the primary fiscal balance; if the difference is positive the primary balance can instead be weakened. However, the intertemporal net-financial-worth measure is seldom used to illustrate whether or not fiscal policy is sustainable. The reason is that a measure of the annual permanent strengthening of the primary balance required for sustainability (or weakening that is possible without policy becoming unsustainable) is easier to understand.

When calculating the S2 indicator, forecasts of, for example, age-related costs are usually only made for a finite period of time some 60–100 years ahead. After that, all government expenditures are usually assumed to increase at the same rate as GDP and the economy thus to find itself in an equilibrium with a primary fiscal balance that is constant relative to GDP from year to year. However, since ageing likely continues after the end point of the projection period, the assumption of a fixed expenditure-GDP ratio implies that the S2 calculation becomes too optimistic. A general problem is that developments in the very long run may have a large impact on the S2 metric. The effect is larger, the lower the growth-adjusted interest rate that is used for discounting.[165]

Decomposition of the S2 indicator

It may be useful to decompose the S2 indicator into contributions from different components. This provides information on to what extent the indicator depends on the initial situation and to what extent on what is expected to happen in the future. As shown in Box 2, this can be done in various ways. One possibility is the following:

[164] See e.g Finanspolitiska rådet (2009), Andersen (2013) and European Commission (2019).
[165] See Finanspolitiska rådet (2011) and Andersen (2013) for more discussion of this. Replacing the infinite time horizon with a finite one would lead to other problems. With trendwise increasing government consumption, the indicator would be lower, the shorter the time horizon. And if the end point is shifted (in order to maintain a constant time horizon over time), the value could "jump" just because of this without reflecting any change in the long-run trajectories.

S2 = Contribution from current and future primary deficits – Contribution from initial net financial wealth

The first term can be interpreted as the interest payment on the present value of all primary deficits (including both the current and all future years). The second term can be seen as the interest income on initial net financial wealth.

Since uncertainty grows over time, it can make sense to split the S2 metric into contributions from different time periods. For example, fiscal sustainability may be very uncertain if a negative or zero S2 value, indicating sustainability, derives from a time profile with large primary deficits in the near future and primary surpluses first in the very long run (especially if they mainly refer to the post-projection period with an assumed constant primary balance relative to GDP).

As also shown in Box 2, an alternative way of decomposing the S2 indicator is:

S2 = Current structural primary deficit + Contribution from future increases in (age-related or other net) expenditure – Contribution from initial net financial wealth

This decomposition is the standard one used by the EU Commission. The last term is the same as before. But instead of calculating the contribution from all primary deficits today and in the future as above, this contribution is now split into the current structural primary deficit and the contribution from future deteriorations in this balance due to increased age-related or other costs. The latter contribution can be interpreted as the interest payment on the present value of future increases in expenditure.

The S2 indicator and normative policy conclusions

The S2 indicator is a way of condensing information on the sustainability of current fiscal policy into a single metric that can be compared over time and across countries: the *immediate permanent* fiscal adjustment that would ensure that the intertemporal budget constraint is exactly fulfilled. But the metric does not offer normative guidance on exactly how and when policy should be adjusted. It just tells us that an immediate and permanent change in the pri-

mary fiscal balance of a certain magnitude is one possible way of making an adjustment.

The adjustment can be made on both the government revenue and the government expenditure side. If tax rates are to be changed, the dynamic effects on various tax bases arising from behavioural changes must be assessed. Changes in government expenditures can also have behavioural effects through various channels, including wage formation, which should be taken into account. The best use of general-equilibrium models in fiscal sustainability analysis is probably in gauging such dynamic effects.

If an adjustment is to be made on the tax side, there is an *efficiency* argument for making it as soon as possible. The conclusion is based on the idea of *tax smoothing*: since the distortionary cost of taxation is likely to rise more than proportionally with (marginal) tax rates, it is better from a social-efficiency point of view to raise tax rates immediately to a higher permanent level than to raise them gradually.[166]

Intergenerational *equity* considerations, however, likely lead to other conclusions. If an unsustainable fiscal policy (S2>0) is caused by increasing longevity, prefunding of future fiscal costs through tax increases today implies a redistribution from current generations to future generations who will anyway experience higher welfare because a longer life implies a utility gain in itself. From an equity perspective, it may therefore be reasonable that future generations themselves pay for the age-related deterioration in public finances. Similar reasoning applies to increased net costs following from trends of shorter working time or increasing standards in welfare services associated with rising demand as incomes grow over time.[167] These issues can be analysed through *generational accounting* comparing lifetime net tax payments of future and current generations. If these net tax payments are larger for future generations than for current new-borns, generations are not treated equally.[168]

The proper interpretation of a positive S2 indicator is as a signal that at some point of time policy must be adjusted. But the adjustment may very well best be made in the future and should in many

[166] This tax-smoothing argument was first formulated by Barro (1979).
[167] See e.g. Swedish Fiscal Policy Council (2009, 2011) and Andersen (2013).
[168] Two seminal contributions on generational accounting are Auerbach et al. (1991) and Cardarelli et al. (2000).

cases be in the form of structural reform – change in pension rules or in labour market institutions affecting employment – rather than in the form of changes in tax rates and discretionary government expenditure in order to have a direct impact on the fiscal balance.[169]

Advantages and disadvantages of the S2 indicator

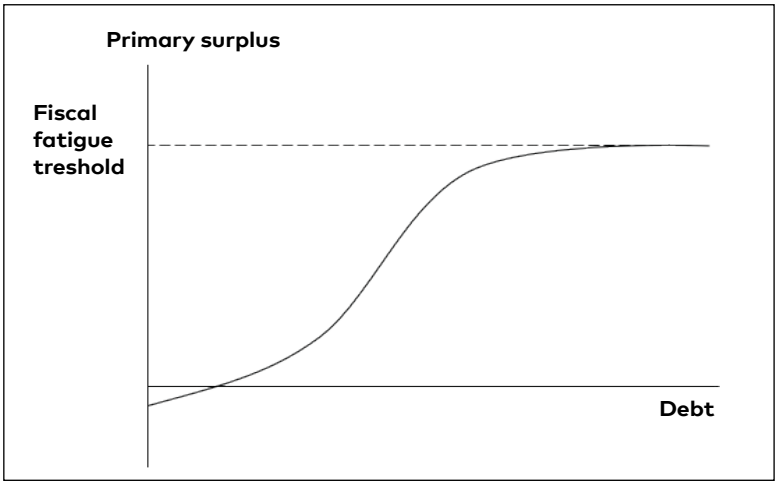
To condense information on fiscal sustainability into one metric, the S2 indicator, is both an advantage and a disadvantage. The advantage is that one can compare the sustainability implications of different fiscal-balance and government-debt paths. For example, it might be worthwhile to know how the fulfilment of the intertemporal budget constraint is affected by a tax reform which implies changing from taxation of private pensions when they are paid out (and deductions from taxation when contributions are paid in) to taxation of pension wealth: such a reform changes the time path of the fiscal balance – improving it in the short term and deteriorating it in the long term – but could be carried out in such a way that the intertemporal budget constraint is not affected.[170] This would show up in an unchanged value of the S2 indicator. It also offers a convenient way of comparing fiscal sustainability across countries with very different fiscal-balance and government-debt trajectories.

The disadvantage of the S2 indicator is that it may squeeze too much information into one metric. Different paths of the fiscal balance and government debt with the same S2 value might have very different implications for the viability of policy. A zero or negative S2 metric, indicating fiscal sustainability, might be associated with a period of very high debt which might have adverse effects on market expectations. This may blur the distinction between solvency and liquidity problems, where the latter refer to acute short-term problems of covering gross financing needs (to roll over existing debt and finance both the interest bill and a primary deficit). A particular

[169] The European Commission complements their presentation of the S2 indicator with another indicator, the required primary structural balance (see e.g. European Commission 2019). It is obtained by adding the current primary structural balance and the S2 indicator, and shows the primary structural balance that, if maintained for ever, would imply that the intertemporal budget constraint is exactly met. This measure would seem to lend itself more easily than the S2 metric to the misinterpretation that such a fiscal outcome always ought to be reached in the short term.

[170] This is discussed in Section 7.2 below. See also De Økonomiske Råd Formandskapet (2017, 2018). A complication might, however, be that a stronger fiscal balance in the short and medium term could in practice lead to increased spending, thus raising the risk of policies becoming unsustainable.

Figure 5 Fiscal reaction function



concern here is the possibility of *multiple equilibria* and *self-fulfilling expectations*. If lenders *believe* a government to be solvent, borrowing costs may stay low and solvency be retained. But if market expectations change and lenders begin to doubt a government's creditworthiness, funding may quickly dry up and borrowing costs rise dramatically so that earlier assumptions on low interest rates in the future are violated and the government becomes insolvent.[171]

An important notion in this context is that of a *debt limit*, i.e. that there exists a bound for the debt level beyond which it will be impossible to respect the intertemporal budget constraint and prevent debt from exploding. This thinking is based on the idea of a *fiscal reaction function* indicating how the primary balance responds to debt. There is widespread empirical support for the hypothesis that the primary balance is positively related to the debt level, i.e. that fiscal policy responds to a higher debt level by strengthening the primary balance. This tends to reduce debt accumulation (see Box 3).[172] But it has also been claimed that the response is non-linear as in Figure 5:

[171] See e.g. Corsetti (2018) and Debrun et. al. (2018). The seminal contribution in this field is Calvo (1988).
[172] The first to estimate such fiscal reaction functions was Bohn (1998). See e.g. European Commission (2018a) for a more recent attempt and Debrun, Ostry et al. (2018) for a general discussion.

small at low debt levels, then larger when debt reaches higher levels and finally tapering off at very high debt levels because the marginal cost of improving the primary balance (through tax rises or expenditure cuts) increases.[173] Put in another way, *fiscal fatigue* gradually sets in. Ultimately, the economy reaches a maximum level for the primary surplus (a fiscal fatigue threshold) which cannot be exceeded.[174]

The workings of the model can be understood from the equation for debt dynamics derived in Box 3, according to which:

Change in the debt-to-GDP ratio = (Growth-adjusted interest rate Last year's debt ratio) – Current primary surplus as a share of GDP.

It follows that a zero change in the debt-to-GDP ratio requires that the current primary surplus divided by the growth-adjusted interest rate is set equal to last year's debt-to-GDP ratio. Provided that debt is not too high and that the primary balance responds strongly enough to debt, the economy will converge over time to an equilibrium debt ratio (see Box 3). But this may not happen if debt is very high and there exists a maximum primary surplus that can be exceeded. Then the debt ratio would increase without bound (provided there were lenders willing to lend). Even with a fixed growth-adjusted interest rate, there would be a *snowball effect* because the debt ratio would grow faster and faster, the higher it becomes, as interest payments increase progressively. This will happen if debt exceeds a limit. In a deterministic world without uncertainty, the debt limit would be given by the ratio between the maximum primary surplus and the risk-free growth-adjusted interest rate. It would not be possible for a government to borrow more than this limit, as lenders would realise that more debt cannot be serviced: hence the interest rate would rise to infinity and the government would effectively lose market access.

In a stochastic world with uncertainty, where shocks could lead to unanticipated jumps in the debt level, the government would have to pay a risk premium, causing the interest rate to start rising well before the debt limit described above is reached, in order to compensate for an increasing probability of default. The interest rate at which the government can borrow would rise to infinity at some

[173] See Ostry et al. (2010) and Ghosh et al. (2013).
[174] The simplified discussion here builds on Debrun, Ostry et al. (2018).

Box 3 Debt dynamics and debt limits

The evolution of government net debt is given by

$$D_t = \left(1+r_t\right)D_{t-1} + P_t, \tag{7}$$

where *D* = government net debt, *r* = the real interest rate, *P* = the fiscal deficit and subscripts indicate the time period. The equation says that debt at the end of the year equals debt in the preceding year + interest payment on that debt + the primary deficit in the current year.

Dividing both sides of the equation by current GDP, Y_t, and recognizing that $Y_t = \left(1+g_t\right)Y_{t-1}$, where $g_t = \left(Y_t - Y_{t-1}\right)/Y_{t-1}$ is the growth rate of GDP, we obtain

$$d_t = \frac{\left(1+r_t\right)}{\left(1+g_t\right)}d_{t-1} + p_t, \tag{8}$$

where $d = D/Y$ is the debt-to-GDP ratio and $p = P/Y$ is the primary deficit-to-GDP ratio. (8) can be written

$$\Delta d_t = d_t - d_{t-1} = R_t d_{t-1} - b_t, \tag{9}$$

where $R = \left(r-g\right)/\left(1+g\right)\right)$ is approximately the interest-growth differential and $b = -p$ is the primary surplus as a share of GDP. (9) states that the change in the debt ratio equals the difference between a "snowball effect" tending to raise the debt ratio (under the assumption that the interest-growth differential is positive) and the primary surplus (representing an amortisation). If the debt ratio is to be held constant, the snowball effect must be exactly matched by a primary surplus, i.e. $b_t = R_t d_{t-1}$

Assume now that fiscal policy is described by a reaction function, according to which

$$b_t = \alpha + \beta d_{t-1}, \tag{10}$$

where $\alpha \gtreqless 0$ and $\beta > 0$ are constant parameters. $\beta > 0$ implies that the government reacts to a rise in the debt ratio by increasing the primary surplus.

Substituting (10) into (9) gives

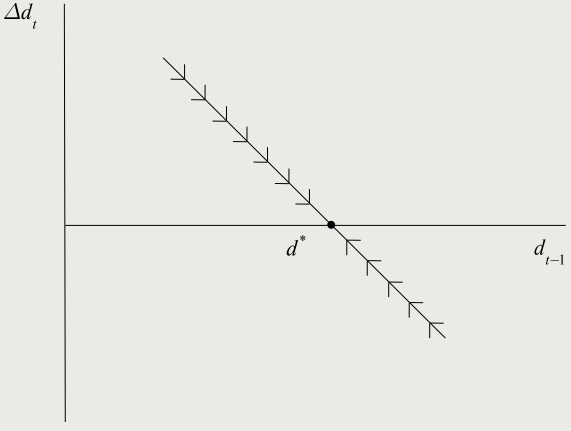
$$\Delta d_t = \left(R_t - \beta\right) d_{t-1} - \alpha. \tag{11}$$

(11) is a first-order difference equation. Assuming a constant interest-growth differential, i.e. that $R_t = R$ for all *t*, the debt ratio converges to an equilibrium value if $\left|1 + R - \beta\right| < 1$. Convergence is monotonic if $1 + R - \beta < 1$, which is equivalent to $\beta > R$, i.e. if the fiscal strengthening as a response to higher debt is strong enough so that it trumps the snowball effect. The equilibrium debt ratio, d^*, is obtained by setting $\Delta d_t = 0$ and solving for $d^* = d_{t-1}$. This gives

$$d^* = -\frac{\alpha}{\beta - R}, \tag{12}$$

which is a positive number if there is a deficit bias, so that $\alpha < 0$.
The convergence process is shown in Figure 6.

Figure 6 The convergence process



Assume now that there exists a maximum primary surplus, a fiscal fatigue threshold, $\overline{b}$, because voters (and the government) do not accept tax rises or government expenditure cuts beyond a certain point. In other words, the fiscal policy reaction function (10) is replaced by the function

$$b_t = Min\left(\alpha + \beta d_{t-1}, \overline{b}\right). \qquad (10a)$$

From (10a) we can compute the debt ratio at which the fatigue threshold starts to bite. It is

$$d^{**} = d_{t-1} = \frac{\overline{b} - \alpha}{\beta}.$$

The equation for the change in the debt ratio below the threshold is

$$\Delta d_t^b = \left(R - \beta\right) d_{t-1} - \alpha,$$

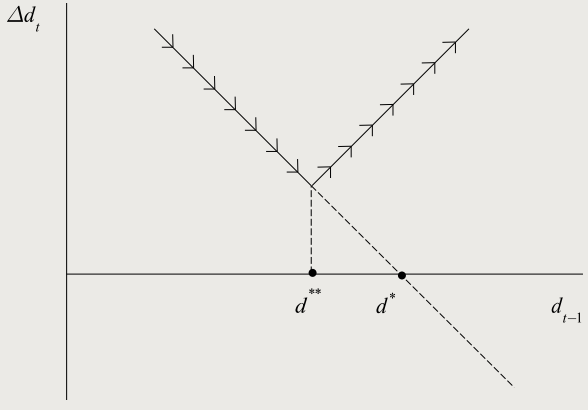
where superscript *b* indicates that the economy is below the threshold. Above the threshold we have

$$\Delta d_t^a = R d_{t-1} - \overline{b},$$

where superscript *a* indicates that the economy is above the threshold.

If $\beta > R > 0$, Δd_t is negatively related to d_{t-1} below the threshold and positively related above it. Assuming that $\Delta d_t > 0$ when approaching the threshold from below and that $d^{**} < d^*$, the relationship between Δd_t and d_{t-1} is depicted in Figure 7.

Figure 7 Exploding debt



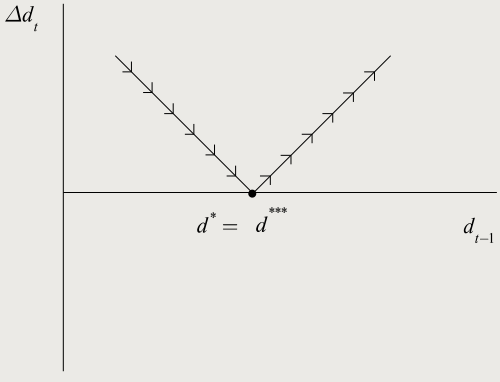
To the left of d^{**}, debt is increasing but at a decreasing speed. But when d^{**} is passed, debt begins to increase faster and faster. There is no convergence. Instead, the debt ratio explodes. d^{**} is a debt limit beyond which indebtedness accelerates.

There is also another debt limit. Assume that d^{*} is very close to the debt ratio at which the maximum primary surplus exactly balances the snowball effect. This debt ratio d^{***} is obtained by setting $\Delta d_t = 0$ and $b_t = \overline{b}$ in equation (9). This gives

$$d^{***} = d_{t-1} = \frac{\overline{b}}{R} .$$

One can think of this debt level having been reached from the left in a convergence process in Figure 8, so that $d^{***} = d^{*}$. This is an unstable equilibrium as a temporary shock raising the debt ratio above d^{***} will trigger an explosive debt increase. Hence, d^{***} represents a debt limit as well. It would be wise to have a substantial safety margin to it.

Figure 8 Unstable equilibrium



lower debt level.[175] Hence, the *effective debt limit* is considerably lower than the debt limit under perfect foresight described above.

An S2-value of zero only guarantees that the ratio between government net debt (net financial wealth) will converge to *some* level in the long run. This debt level could be very high. It might even exceed the debt limit defined above. More generally, debt might become higher than the level which a government is willing to service: one can think of this level as the outcome of a cost-benefit calculation on the part of the government where it weighs the capital gain from default (because outstanding obligations then do not have to be honoured in full) against the expected penalty cost of worsened access to market borrowing.[176]

6.3 Analysis of fiscal-balance and debt trajectories

The above considerations motivate careful analysis of the fiscal-balance and debt trajectories consistent with unchanged fiscal policy. The aim is to examine whether or not debt might reach a "dangerous" level. The difficulty is how to define this level. One possibility is to try to identify a debt limit of the type discussed above based on the estimation of a fiscal reaction function. Another approach examines at what debt levels various types of fiscal distress tend to occur.[177] A problem is, however, that these debt levels have differed very much between countries. This suggests that debt limits may be country-specific and depend both on the country´s earlier debt behaviour and various institutional factors (such as fiscal framework, broader governance features like government effectiveness in general, the overall quality of political institutions etc.).[178] A corollary of this is that the difference in average debt levels between countries having experienced fiscal distress and those that have not is

[175] This will occur at a debt level where an interest rate rise in response to an increased default probability causes such a large debt increase that the default probability stays unchanged.
[176] Eaton and Gersovitz (1981) is the seminal contribution regarding a government's willingness to honour its debt.
[177] According to European Commission (2018a), fiscal distress encompasses: (i) a credit event, i.e. outright sovereign default or debt restructuring; (ii) a large-scale official financing programme (notably an EU or IMF one); (iii) loss of or high price of market access (through high risk premiums on government borrowing); and (iv) an implicit sovereign default (via high inflation eroding the real value of outstanding debt or forced bond sales to banks).
[178] For example, Reinhart and Rogoff (2009) distinguished between two categories of countries: on one hand countries that rarely default and that can therefore sustain high debt levels (typically advanced economies), and on the other hand "serial defaulters" suffering from "debt intolerance" and therefore tending to default at rather low debt levels (typically emerging economies, but also Greece). The role of various institutional factors has been examined by e.g. Qian (2012), Elgin and Uras (2013), Eyraud et al. (2018), and Fournier and Bétin (2018).

small.[179] Hence, it is problematic to try to generalise about individual countries' debt limits from experiences elsewhere.

A prudent way to evaluate the riskiness of a debt path is to try to identify a debt limit and then choose a lower debt level, allowing a reasonable safety margin to the limit, that should not be exceeded. But the discussion above suggests that the determination of such a "safe" debt level will be rather ad hoc. This holds all the more since recent research has emphasised the key role played in fiscal crises by the build-up of macro-financial imbalances resulting in *hidden* government debt which is turned into *explicit* debt when various state guarantees are called in or the government has to assume the responsibility for bank liabilities in order to stem a financial crisis: Ireland and Spain during the recent euro crisis are clear examples. Sudden rises in government debt due to such developments have usually been more important for the emergence of sovereign debt crises than irresponsible fiscal policy per se.

Despite the difficulties, institutions like the IMF and the European Commission work with defined debt limits. For example, the latter regards a government debt ratio above 90% of GDP as high risk and one in the 60–90% interval as medium risk.[180]

The S1 indicator

Another frequently used sustainability indicator is the so-called *S1 indicator*, which was also developed by the European Commission. It measures the permanent annual improvement in the primary balance as a percentage of GDP needed to reach a specific debt ratio in a given future year. The European Commission usually sets the debt ratio to 60% of GDP, which is the debt ceiling according to the stability pact. The time horizon is usually 10–15 years, but can, of course, be longer. In the Commissions's last published sustainability report (European Commission 2019), the horizon is 2021–2033, so the analysis is then medium- rather than long-term. Like the S2 indicator, the S1 one can be decomposed into several components. The following decomposition has been used by the European Commission:

[179] For example, according to European Commission (2019), the median debt ratio of EU countries having experienced fiscal stress 1970–2015 is 62% (ahead of a crisis). This is only around ten percentage points higher than the median debt ratio in EU countries not having experienced such a situation.
[180] European Commission (2019).

S1 indicator = Required permanent improvement in the primary fiscal balance as a share of GDP in order to stabilise the debt ratio at its current level without any ageing costs + Required additional permanent improvement in the primary fiscal balance as a share of GDP in order to reach the future debt target without any ageing costs + Required additional permanent improvement in the primary fiscal balance as a share of GDP in order to cover future ageing costs.[181]

An S1 indicator can be computed for any debt target chosen. The main problem with the indicator is the more or less arbitrary choice of this target.

The new art of debt sustainability analysis (DSA)
The recent sovereign debt crises in the euro area in particular and the failures to predict them have led to the development of new analytical tools to judge the risks associated with government debt. These methods are often labelled *debt sustainability analysis (DSA)* to be distinguished from the more traditional *fiscal sustainability analysis* discussed above.[182] DSA analyses are now routinely performed by both the IMF and the European Commission. The latter uses it as a complement to fiscal-sustainability analysis. The general idea behind DSA is to use a very wide information set to evaluate the risks of unsustainable debt.

The typical approach is to combine deterministic and stochastic debt scenarios. The European Commission's (2019) DSA can be taken as an example. A number of *deterministic* scenarios are computed over a ten-year horizon. The baseline scenario implies an unchanged fiscal policy. It is complemented with four alternative scenarios: one where the structural primary balance (before ageing costs) reverts to its historical average and three shock scenarios (a positive interest rate shock, a negative shock to GDP growth and a negative shock to the structural primary balance). Fiscal-balance and government-debt developments in the various scenarios are then compared with various thresholds and a risk assessment is made depending on this.

[181] "Permanent" here refers to the time interval up to the target year for the debt ratio. European Commission (2019, 2020) assumes a gradual phasing-in of the permanent annual fiscal adjustment rather than an immediate change. Therefore, a fourth component, reflecting the cost of delay, is added to the equation.
[182] Summaries of the methods used are available in e.g Bouabdallah et al. (2017), European Commission (2019, 2020), Alcidi and Gros (2018), Corsetti (2018), and Debrun et al. (2018).

The *stochastic* projections simulate the effects on the debt path of a very large number of shocks to the baseline deterministic scenario. The shocks are calibrated to reflect past observed volatility for the country in question, taking earlier correlations between shocks into account. The result is a probability distribution for debt outcomes. It is usually presented in the form of a *fan chart* showing a cone of debt paths over time inside which they are estimated to lie with a certain probability (80% in this case). Sustainability risks are then evaluated on the basis of whether the probability of unfavourable debt paths according to some criterion exceeds a pre-defined critical limit and how large the dispersion is between the minimum and maximum debt levels.

The various risk assessments in the DSA are then weighted together into an overall DSA *medium-term* risk assessment. It is then combined with the S2 indicator to obtain an overall *long-term* sustainability evaluation.

An advantage with DSA is that it uses a very rich information set. The criteria for risk evaluation are chosen on the basis of the experiences from a large number of countries so as to maximise the ability to predict debt crises. But, as discussed above, a drawback of the method is that the circumstances triggering fiscal distress appear very country-specific. Another problem with DSA analysis is that the mass of information makes the risk assessment non-transparent. It is usually presented in the form of a *heat map*, which is a table where the evaluations of individual aspects are indicated by different colours (red for high risk, yellow for medium risk and green for low risk). Still, this does not, of course, solve the problem of communicating which criteria have been used in the evaluation of various aspects and how they have been weighted together. The relevance of the exercise depends on how well these criteria are designed.

DSA assessments made have had quite short time horizons: 5–10 years. This is a problem when one wants to analyse sustainability in the longer perspective over which rising ageing costs will be playing out and which has been the traditional focus of fiscal-sustainability analysis.[183] The limited time horizon makes DSA in its present form more useful for countries which in the short or medium-term might face debt sustainability problems than for countries where

[183] See Corsetti (2018).

such risks are more distant in time. It remains to be seen whether similar methods can be developed for more long-term analysis. In particular, long-term stochastic projections are probably not very meaningful as data on earlier short-term volatility does not inform about long-term trends. Allowing for such stochastic trends would be highly subjective and result in projections all over the place. One possibility might, however, be to combine deterministic long-term scenarios with analyses of short-term volatility, implying deviations from the deterministic trajectories, to illustrate the risks that future temporary shocks could bring debt to dangerous levels.

6.4 The interest-growth differential and debt dynamics

As discussed in Sections 6.1–6.3, a crucial assumption in analyses of fiscal sustainability and debt dynamics is that the growth-adjusted interest rate, i.e. the interest-growth differential, is positive in the long run. This assumption has recently been discussed by Blanchard (2019) in a way that has provoked much discussion.

Currently, the interest rate at which governments can borrow is lower than the growth rate in most advanced economies. Blanchard claims that this is a quite normal situation. He shows that the average ten-year interest rate on government bonds in the US has been lower than the nominal GDP growth rate since 1950. During this period, the interest rate has been lower than the growth rate in four out of seven decades. Blanchard also reminds us that the current negative interest-growth differential is projected to persist for the foreseeable future according to many judgements. These usually build on analyses of the balance between savings and investment in the world economy.[184]

A negative interest-growth differential has profound implications for debt dynamics. This is clear from the equation for the change in the debt-to-GDP ratio given in Section 6.2, according to which the change equals the product of the interest-growth differential and last year's debt ratio minus the primary fiscal surplus (see also equation 9 in Box 3). It follows that if the interest-growth differential is negative, higher debt does not have to be paid for in the future through a larger primary surplus, i.e. higher taxes or lower government expenditure. Instead, government debt will "pay for itself". With a balanced primary budget, the debt ratio will be decreasing.

[184] See, for example, Summers (2015) and Rachel and Smith (2015).

Alternatively, the debt ratio can be held constant also if there is a (not too large) primary deficit.[185] Put another way, if there were to be a permanent negative interest-growth differential, the intertemporal budget constraint according to which current debt must be matched by future primary surpluses (which fiscal sustainability analyses start out from) vanishes.[186]

Blanchard's analysis has been questioned on both empirical and theoretical grounds. Checherita-Westphal (2019) claims that the average interest-growth differential during 1966–2010 has been positive for both advanced economies and G7 economies. Wyplosz (2019) reports that years with a positive interest-growth differential make up 50% of the observations in panel data for OECD countries in 1961–2007 (the period ending just before the international financial crisis). The average differential is 0.1 percentage points, but with a very large standard deviation.

A main theoretical concern, also raised by Blanchard himself, is the possibility of *multiple equilibria*. If investors believe debt to be safe, interest rates will stay low, and debt will indeed stay safe so that debt can pay for itself. But if investors instead believe debt to be risky, they will ask for a risk premium: then debt will indeed be risky and the Blanchard argument will no longer hold because expectations become self-fulfilling.[187] Also, a large empirical literature has found that over a certain threshold the market interest rate on government debt rises with the debt ratio.[188] Alcidi and Gros (2019) has shown that trajectories of the debt ratio are very dependent on the assumptions regarding the sensitivity of the interest rate to the debt level and on the initial debt level.

[185] The reasoning is, of course, different if one instead looks at net financial wealth in a country where this is positive (as is currently the case in Denmark, Finland, Norway and Sweden). Then a negative interest-growth differential tends to reduce net financial wealth as a share of GDP. This must be compensated by a primary surplus if the ratio between net financial wealth and GDP is to remain constant. With a positive interest-growth differential, it is possible to run a fiscal deficit and at the same time hold net wealth constant relative to GDP.
[186] See Sections 6.1 and 6.2 as well as Boxes 1 and 2.
[187] See also Section 6.3.
[188] See, for example, Engen and Hubbard (2004), Ardagna et al. (2007) and Laubach (2009).

7 Fiscal sustainability analyses in the Nordic countries

Fiscal sustainability analyses have been performed regularly by the Ministries of Finance in all the Nordic countries except Iceland. Such calculations are made also by other domestic institutions. In addition, the European Commission publishes sustainability analyses every third year for all the EU member states, including Denmark, Finland and Sweden. This review focuses mainly on the sustainability calculations for the Nordics produced by the Ministries of Finance and other domestic institutions.

The fiscal projections in the Nordic countries all broadly follow the general principles summarised in Section 6.1. Even though the basic principles are the same, there are also important differences. This concerns some of the assumptions discussed above. It also concerns which scenarios are treated as baseline ones and which as alternative ones. This may be crucial for how sustainability issues are perceived by both policymakers and the general public – and thus for policy choices. There are also differences regarding the emphasis on summary indicators such as the S1 and S2 ones relative to more detailed analyses of the exact fiscal-balance and government-debt paths. Moreover, the sustainability analyses appear to have played different operational roles for actual policy in the different Nordic countries. Efforts at providing pedagogical explanations of the calculations also differ between the countries.

Most of the sustainability calculations in the Nordics are based on the rather mechanic extrapolation method discussed in Section 6.1, but there are also some attempts at using more general-equilibrium overlapping-generations-modelling approaches.

Section 7.1 summarises the projected demographic developments in the Nordics that form the basis for the national fiscal sustainability analyses. These are then reviewed in Sections 7.2–7.6. The three EU members, i.e. Denmark, Finland and Sweden, are discussed first, as the methodological similarities are largest between these countries. Then Norway, where the fiscal projections are reported in a different way designed to fit the fiscal rule regarding the use of oil revenues, is treated. Iceland, where sustainability calculations have not been done, but are now being developed, is discussed very briefly.

For each country, the sustainability analyses of the Ministry of Finance are discussed first. They are then compared with the work by other institutions. The exposition focuses on aspects where the analyses stand out in comparison with others. The focus is on the most recent analyses, but some earlier ones are also discussed. Finally, Section 7.7 summarises my conclusions.

7.1 Demographic projections

As is clear from Section 6.1, demographic developments are a key factor in fiscal sustainability analyses. Most such analyses in the Nordic countries build on the demographic projections made by the respective national statistical offices. Box 4 contains an overview of some of the main characteristics of these projections.

Basic methodology

The standard practice for doing population projections is the so-called *cohort-component* method. The *components* of population change – fertility, mortality, and migration – are applied to the *cohorts* or the age-sex structure of the population. Assumptions are made about likely future patterns of mortality, fertility, and migration based on recent past trends and what demographic theory indicates about probable futures.

Mortality projections are the least uncertain because most of those who will likely die over the next few decades are already born. However, the corona pandemics raging at the time of writing is a reminder that also mortality rates can vary in unanticipated ways. When doing projections, demographers use information on the age-specific mortality rates and apply these to the current populations. Life expectancy is usually projected to rise asymptotically to some maximum threshold.

Projections of fertility are more uncertain because of the variability of fertility behaviour. Also, the number of women who will start giving birth a generation in the future is not yet known since they are just now being born.

The component of population change with the least certainty is international migration because of its volatility due to factors exogenous to the age-sex structure of a country's population. Migration is subject to a variety of unforeseen factors such as wars, structural

economic change altering the demand for labour migrants, technological breakthroughs, variations in government migration policy, and environmental factors. The age structures of migration varies depending on the push and pull factors and how they impact different cohorts.

The assumptions underlying population projections tend to be rather conservative and to not well incorporate large swings in demographic behaviour. There is an inherent assumption of regression to the mean. If fertility falls to low levels, it is assumed that it will increase soon. If there is a dip in life expectancy, it is assumed that the latter will soon continue to increase. If there is a period of very high immigration, as was the case in the Nordics in 2015–2016, there is an assumption that migration will slow and trend towards historical levels.

Increasing life expectancy

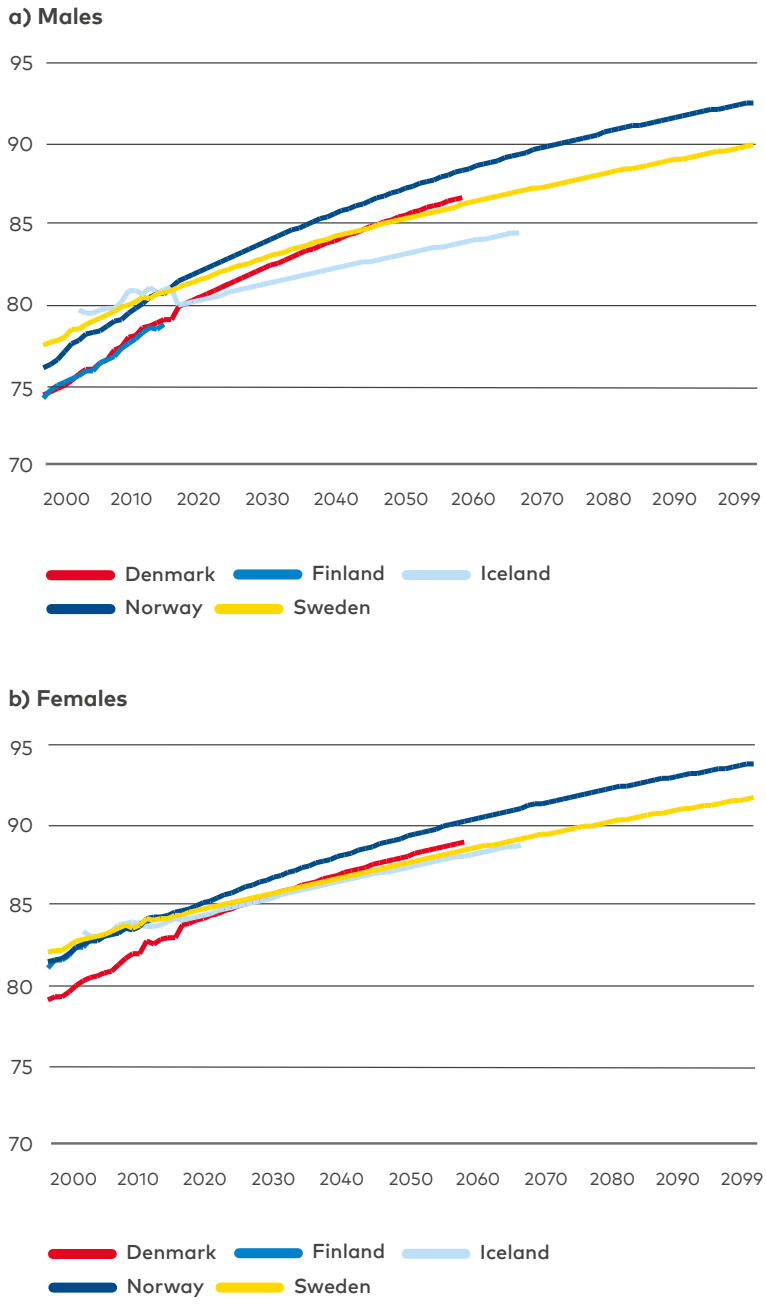
Life expectancy at birth in the Nordic countries and the rest of Europe has been slowly rising for both males and females (Figure 9). In 2017, life expectancy for males in Iceland, Norway, and Sweden was over 80 years, and for Denmark and Finland about 79 years. For females, life expectancy was about 84 years in all Nordic countries except Denmark, where it was 83 years. Life expectancy for both sexes was above the EU average. The male-female gap was narrower in the Nordic countries, except in Finland, than the EU average. Life expectancy is projected to rise for both sexes to close to or over 90 years, depending on the length of the projection period. The male-female gap is expected to narrow slightly.

Old-age dependency ratio

Rising life expectancy will cause the old-age dependency ratio to increase strongly in all the Nordic countries. This is illustrated in Figure 10, which shows the ratio between the number of persons above 65 years of age and the number of persons 20–64 years.

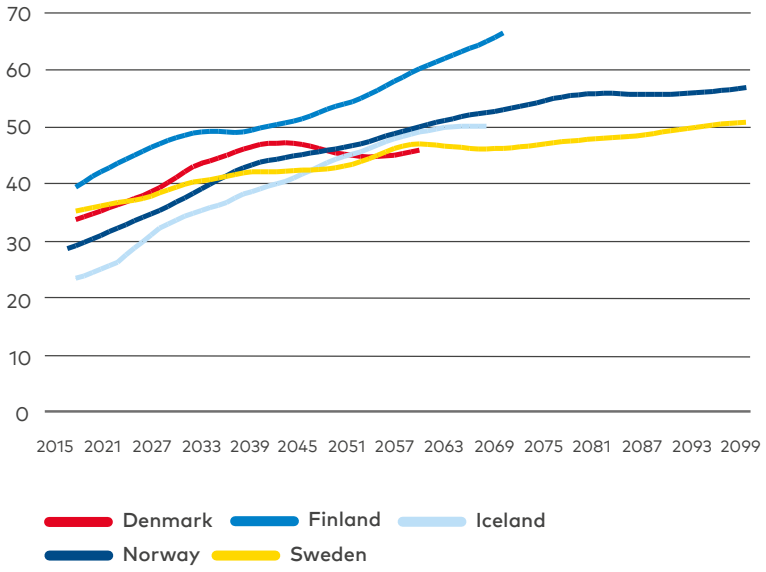
There are important differences between the countries. Finland is projected to have by far the largest increase in the old-age dependency ratio. It is assumed to rise to as much as 67% in 2070. The projected rises in Denmark and Sweden are much smaller: only to 46% in 2060 in Denmark and to 46% in 2070 in Sweden. Iceland and Norway occupy intermediate positions.

Figure 9 Life expectancy at birth, years



Sources: Nordic national statistical offices, Eurostat.

Figure 10 Old-age dependency ratio (65+ as a share of 20–64 years), percent



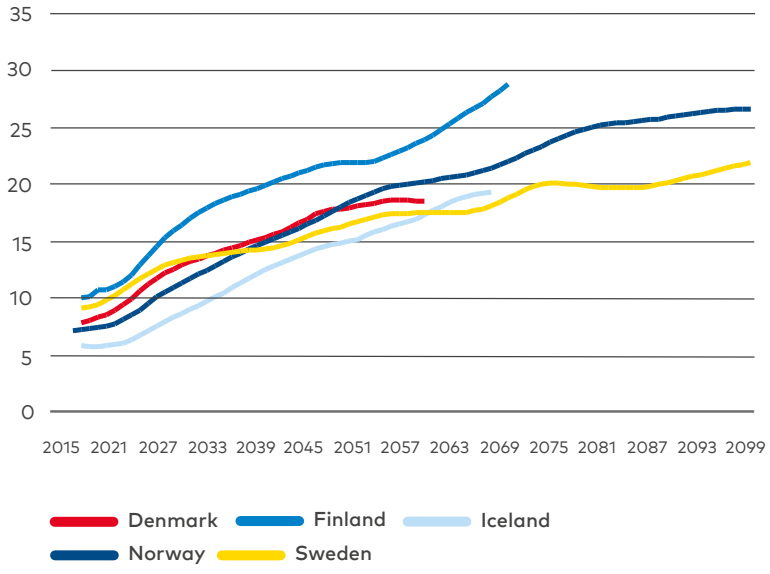
Sources: Nordic national statistical offices.

As it is the oldest age groups who are in most need of health care and other forms of costly assistance, it is of particular interest to look at the share of those 80 years of age and older as a share of the population 20–64 years. This is done in Figure 11. In 2019, this "oldest-age" dependency ratio ranged from 6% in Iceland to 10% in Finland. It will increase dramatically in all the Nordic countries. In 2060, the projection is 17% in Iceland and Sweden, 19% in Denmark, 20% in Norway, and as high as 24% in Finland. Finland's ratio will continue to rise sharply to 28% in 2070. The ratio in the other countries will continue to rise, too, though less sharply than in Finland and to lower levels. So here again Finland stands out with a much worse ageing problem than the other Nordic countries.

Fertility

The total fertility rate calculates the number of children a woman would hypothetically have if she passed through her childbearing years at the current age-specific fertility rates. A rate of 2.1 children per woman over the course of her reproductive years is considered replacement-level fertility, i.e. the level at which a population would

Figure 11 "Oldest-age" dependency ratio (80+ as share of persons 20–64 years), percent



Source: Nordic national statistical offices.

just replace itself. The Nordic countries have fertility rates at or below replacement level. This works in the direction of decreasing the population. Like when making projections for mortality, information on the age-specific fertility rates are used.

Over the past decade or so, there has been a decline in fertility in all Nordic countries, with quite steep declines in some. The fertility rates in Norway and Finland are now below the EU average. In Iceland, Norway and Finland, the current rates are the lowest ever recorded. The recent fertility decline is a puzzle for demographers, especially given the most generous support for fertility and families of any region in the world.

Box 4 More on Nordic population projections

The population projections by the statistical offices in the Nordics differ in methodology, how often the projections are updated, number of scenarios, length of projection period, and underlying assumptions. Table 3 shows the population-projection parameters for the Nordic countries. Most use some form of the cohort-component method. The number of projection scenarios varies from one for Sweden, Finland, and Denmark to up to nine for Norway. The scenarios contain different alternatives of the components of population change. For example, Norway has alternatives for low, high, and zero net migration. The end year of the projections range from 2060 for Denmark to 2120 for Sweden. Projections of life expectancy and fertility are done for all countries (except Finland in the latter case). All do projections by gender. All do projections by single year of age to 100 or older.

Denmark, Norway, and Sweden make projections by some classification of origin. These projections are derived from projections of immigration and emigration, and of the demographic behaviour of immigrants.

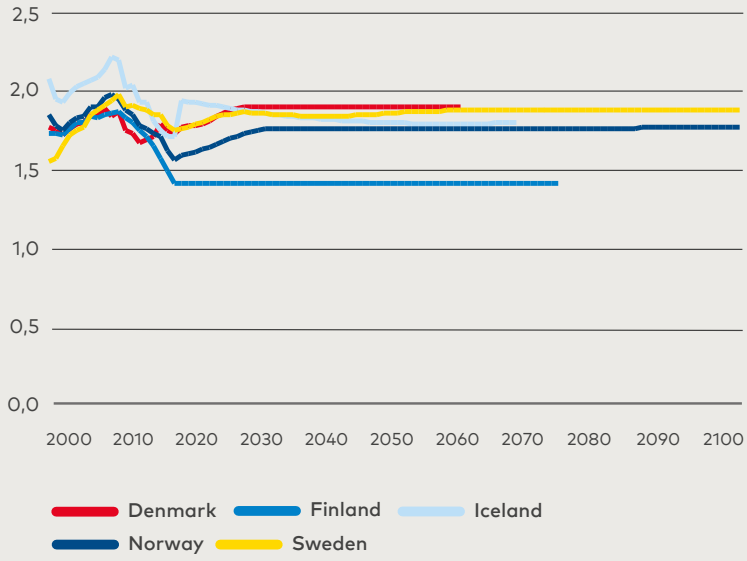
Figure 12 shows the past and projected total fertility rates for the Nordic countries.[189] In no case, the fertility rate is projected to rise to above replacement level in the future. The projected fertility rates are between 1.35 and 1.90 children per woman at the end of the projection periods. The former number is for Finland, which is projected to have by far the lowest fertility rate of the Nordic countries. It is to be noted that the projected levels are already below the actual experience in Denmark, Finland, Iceland, and Sweden.

Total dependency rate

Figure 13 shows the projected *total* dependency ratio in the various Nordic countries. It is here defined as the sum of persons 0–19 years and persons above 65 years divided by the number of persons 20–64 years. In 2019, Iceland had the lowest dependency ratio: 65%. Sweden and Finland had the highest, about 76%. Norway and Denmark lie between these values. The ratios are projected to rise for all countries and to be remarkably similar in 2060 (the latest year for which data for all countries are available) at about 88%. For the countries which project beyond this, the ratios are projected to continue

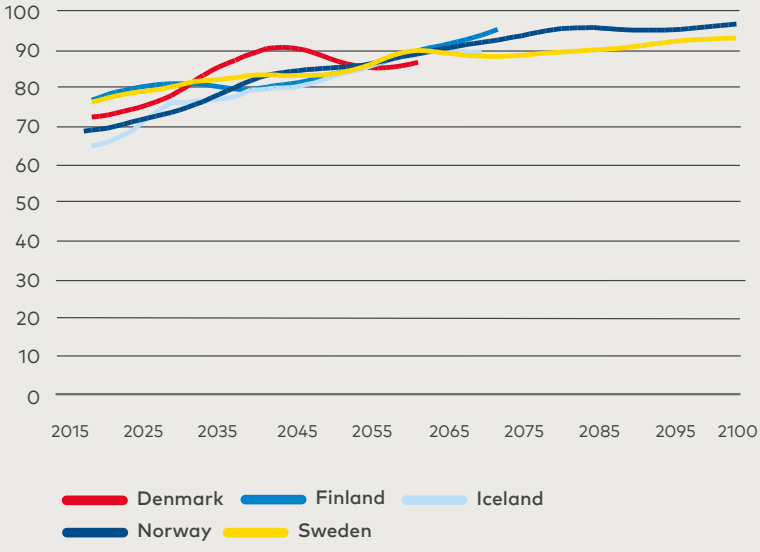
[189] Denmark projects the total fertility rate separately for each of the five regions of origin and then by those with and without citizenship. For comparison, the rate shown is for the largest group, women of Danish origin with Danish citizenship. Fertility for this group of women is projected to rise to 1.90 children per woman by the 2060. The lowest projected fertility is for non-western immigrant women with Danish citizenship for whom the fertility rate is projected to decline to 1.65 children per woman in 2060. For all other groups, the fertility rates are projected to lie between these two.

Figure 12 Total fertility rate, number of children per woman



Source: Nordic national statistical offices.

Figure 13 Total dependency ratio, persons 0–19 and 65+ as share of persons 20–64, percent



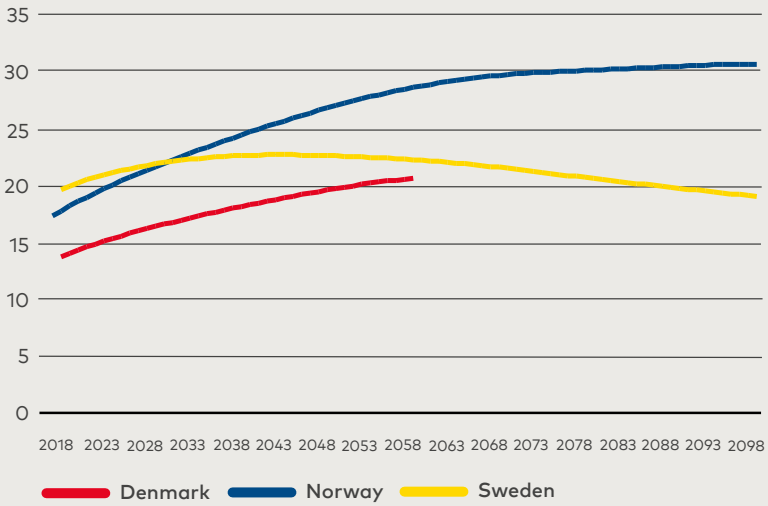
Sources: Nordic national statistical offices.

Table 3 Population-projection parameters for the Nordic countries

Country	Methodology	Number of scenarios	Base year	Last projection year	Components of population change
Denmark	Not available	One	2019	2060	Yes
Finland	So-called demographic trend calculations	One	2019	2070	Yes
Iceland	Not available	Three: low, medium, high.	2018	2067	Yes
Norway	Cohort-component	Nine	2018	2100	Yes
Sweden	Cohort-component	One	2019	2120	Yes

Total fertility rate	Life expectancy	By sex	Age detail	Nativity	Responsible agency, sources, and notes.
Yes, broken down into the five categories of origin and with and without Danish citizenship, ten total categories.	Yes	Yes	Single-year to age 105	Yes, into five categories (persons of Danish origin, immigrants from western countries, immigrants from non-western countries, descendants from western countries, and descendants from non-western countries).	Statistics Denmark (https://www.dst.dk/en accessed 19 November 2019).
No	Yes (only for years ending in 5 or 0).	Yes	Single-year to age 100	No	Statistics Finland, Population projection (http://www.stat.fi/meta/til/vaenn_en.html accessed 22 August 2018). Projections are updated every three years.
Yes	Yes	Yes	Single-year to age 110	No	Statistics Iceland, Statistical database, population projections (https://www.statice.is/ accessed 18 November 2019). Medium scenario is used for all data and indicators.
Yes	Yes	Yes	Single-year to age 105	Yes, by immigration category (immigrants; Norwegian-born to immigrant parents; and the rest of the population) and country background (Africa, Asia, Latin America and Eastern Europe. outside EU; Western Europe, USA, Canada, Australia and New Zealand; and Eastern European EU members).	Statistics Norway (https://www.ssb.no/en/statbank/list/folkfram accessed 18 November 2019).
Yes	Yes	Yes	Single-year to age 105	By foreign and native-born with foreign born divided into seven regions of birth.	Statistics Sweden (https://www.scb.se/en/ accessed 19 November 2019).

Figure 14 Share of immigrants in population, percent



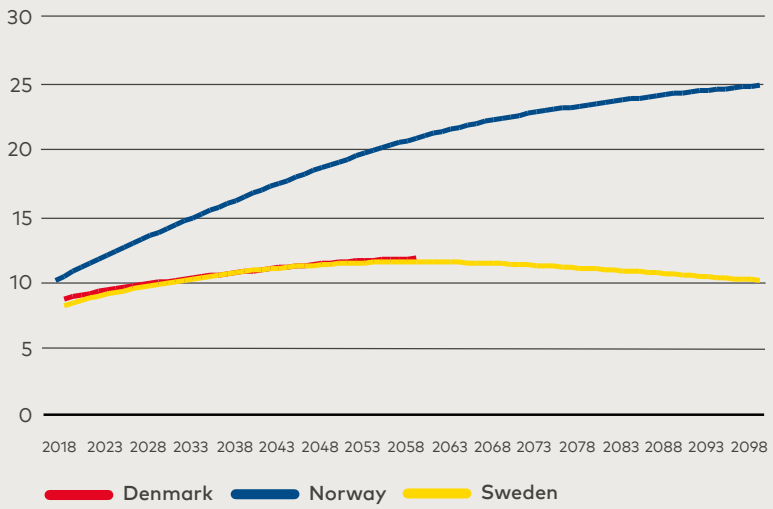
Note: Data for Denmark are the sum of immigrants and Danish-born with at least one immigrant parent. Data for Norway are the sum of immigrants and Norwegian-born with at least one immigrant parent. Data for Sweden are foreign-born.
Sources: National statistical offices of Denmark, Norway and Sweden.

to slowly increase. In contrast to the picture for the old-age dependency ratio (see Figures 10 and 11), Finland no longer stands out with a much higher ratio. This is because a low ratio of young dependents (because of projected low fertility) offsets the rise in old dependents in terms of the total dependency ratio. However, this does not mean that the public-finance effects are offset, as the costs of welfare services (and income transfers) are much higher for old persons than for children (see Section 7.3).

Immigration

Data on projections of the foreign-origin populations are shown in Figure 14. The definitions of foreign origin differ but what is shown is broadly comparable. In Denmark, immigrants and Danish-born with at least one immigrant parent from these countries is currently 13.7% of the population. This share is projected to rise to 20.6% in 2060. Immigrants and Norwegian-born with at least one immigrant parent are today 17.3% of the population of Norway. This share is projected to steadily increase to 30.6% in 2100. The share of foreign-born in the population in Sweden is currently 19.6% and is projected to increase to a peak of 22.7% in 2043 and then decline slightly

Figure 15 Share of non-western immigrants in population, percent



Note: Data for Denmark are the sum of immigrants from non-western countries and Danish-born with at least one immigrant parent from these countries. All 28 EU countries, Andorra, Australia, Canada, Iceland, Liechtenstein, Monaco, New Zealand, Norway, San Marino, Switzerland, USA, and Vatican State are defined as western. Data for Norway are the sum of immigrants from Asia, Africa, Latin America, and Eastern Europe outside the EU and Norwegian-born with at least one immigrant parent from these areas. Data for Sweden are the sum of those born in medium-HDI countries and low-HDI countries outside Europe.
Sources: National statistical offices of Denmark, Norway and Sweden.

to 19.0% by 2100. Iceland and Finland do not produce projections by any disaggregation of foreign origin.

Immigrants from non-Western countries can also be projected (Figure 15). In Denmark, the share of immigrants from non-western countries and Danish-born with at least one immigrant parent from these countries is currently 8.7%. The share is projected to rise to 11.8% by the end of the projection period in 2060. In Norway, the share of immigrants from non-Western countries and Norwegian-born with at least one immigrant parent from these countries is currently 10.1% of the population. This share is projected to rise to 25% in 2100. In Sweden, the share of the population born in medium-HDI and low-HDI countries outside of Europe is 8.2%.[190] This share is projected to rise to a peak in 2060 before declining slightly by the end of the century.

[190] The Human Development Index (HDI) measures a country's overall achievement in social and economic dimensions. These refer to health, education attainment and standard of living. Countries are divided into four groups: very high human development, high human development, medium human development, and low human development.

7.2 Denmark

The Ministry of Finance produces annual fiscal sustainability calculations which are also updated during the year. They are published in the convergence programmes that, according to the EU's stability pact, must be submitted each year by member states that have not adopted the euro so that the European Commission and the Ecofin Council can assess their fiscal plans.[191] Sustainability analyses are also made annually by the Economic Council and intermittently by DREAM, an independent institution doing various types of quantitative modelling and analysis with some financing from ministries.

Ministry-of-Finance analyses

The latest full Ministry-of-Finance sustainability analysis was published in the 2019 convergence programme (Danish Ministry of Finance 2019). The medium-term forecast encompasses the period till 2025, which is the starting year for the sustainability projections. In this year, structural budget balance is assumed (this is the key medium-term fiscal target.[192]

The convergence programme summarises the main assumptions behind the sustainability calculations briefly but clearly. Most assumptions are standard (see Section 7.1). There are, however, some particular assumptions to be noted. The projections take the effects of adopted reforms to increase labour supply into account. These include both discretionary decisions on rises in both the age limit of early retirement and the old-age retirement age as well as automatic indexation of these variables to life expectancy from 2030. The number of users of public services evolves in line with changing demographics but with a correction for healthy ageing. A specific circumstance is that revenue stemming from North Sea oil and gas production is declining (from approximately 0.3% of GDP in 2025 to zero beyond 2045). A gradual normalisation of interest rates is assumed with the ten-year nominal yield on government bonds rising to 2.7% in 2025 and 4.5% in 2040 (and remaining unchanged thereafter).[193]

[191] Member states that have adopted the euro instead submit so-called stability programmes.
[192] See the discussion of Denmark in Section 4.1.
[193] In the ministry's October projection, the assumed interest rate in 2025 was lowered to 1.6%.

The 2019 convergence programme shows projected time paths for the structural budget balance, general government net debt and Maastricht debt till 2060. The discussion stresses a so-called *hammock challenge* according to which the structural fiscal balance in the baseline scenario will deteriorate to around -1 per cent of GDP in the 2025–40 period and improve first after that. The deterioration reflects primarily a decreasing share of the population in employment during this period. This is due to two factors: (i) the generations entering the labour force will be smaller than the generations leaving it; and (ii) the generations retiring in the next few years will have longer retirement periods than both past and future generations. The latter circumstance is a consequence of a larger increase in life expectancy than anticipated when earlier discretionary decisions on rises in the retirement age were taken and of the fact that automatic indexation of it to life expectancy comes into effect first later. During the 2025–50 period, a small rise in government net debt from zero to about 5% of GDP is projected.

In addition, the 2019 Convergence Programme reports S2 calculations. The term used is "the sustainability indicator" (*holdbarhedsindikatorn, HBI*, in Danish*)*. It is actually defined as the negative value of the S2 indicator. However, for reasons of comparability I shall continue to use the term S2 indicator below and define it in the conventional way with positive values implying non-sustainability and negative ones (over)sustainability. According to the 2019 convergence programme, the value of the S2 indicator in the baseline scenario is -1, implying that a deterioration of the structural primary balance by 1% of GDP would be consistent with fiscal sustainability.

The 2019 convergence programme reports only one alternative scenario. To illustrate the importance of the indexation of the retirement age to life expectancy, projections in a hypothetical scenario where the retirement age is held constant at the already legislated level of 68 years in 2030 are presented. Under this assumption, the S2 indicator rises by 2.75 percentage points to 1.75, thus signalling the need for an improvement of the primary fiscal balance. This highlights how important a gradual rise in the retirement age is for meeting the challenges to public finances from ageing.

There is only a small change in the S2 indicator between the 2018 and 2019 convergence programmes (from -1.2 to -1). There is a clear

decomposition in the 2019 programme of how various factors have contributed to the (very small) change in the indicator value.

The 2018 convergence programme (Danish Ministry of Finance 2018) discusses more alternative scenarios than the 2019 programme. It is, for example, concluded that public finances are not very sensitive to changes in long-run productivity and life-expectancy trends. Higher productivity growth raises wage growth and thus the growth of tax revenues at the same time as wages in the public sector and income transfers to households (which are linked to wages) rise faster. As a consequence, the effects on the S2 indicator are minor. This also holds for unexpected changes in life expectancy as they affect the retirement age via the automatic indexation mechanism. S2 calculations are also presented for four alternative scenarios, all implying different starting values in 2025 for the subsequent projections. However, these scenarios represent only minor variations in the baseline scenario's assumptions, resulting in small changes in the S2 indicator, and are therefore not of great interest.[194]

As discussed in Section 6.2, different government debt trajectories can be sustainable (and give the same S2-indicator value) but yet have very different implications for intergenerational distribution. Usually, fiscal sustainability analyses do not pay attention to this. But analyses of the Danish Ministry of Finance are an exception. Attempts have been made to calculate a supplementary *generation-neutral* S2 indicator (Finansministeriet 2017a and Danish Ministry of Finance 2018). The basic idea is that the present value of different generations' net contributions to the public finances should be the same, so that no generation benefits at the expense of others.

The main difference to the standard S2 indicator discussed above is that the number of years in retirement in the alternative calculation is assumed to be constant after 2025 instead of declining. This does not happen in the baseline scenarios discussed above, which assume indexation of the retirement age to life expectancy after 2030 and thus a faster rise in the retirement age than in longevity until around mid-century. However, this means fewer retirement years for gen-

[194] The sensitivity analysis examines the impact of minor changes in the oil price, the propensity to consume out of disposable income, structural employment and average working hours.

erations retiring after 2050 than for generations retiring in the next few decades.

By allowing more years in retirement for the generations retiring after 2050 in the generation-neutral calculation than in the baseline one, fiscal sustainability is weakened. In Finansministeriet (2017a) the S2 indicator rises from -0.9 to 0.2 and in Danish Ministry of Finance (2018) from -1.2 to 0. So, imposing the assumptions designed to capture intergenerational equity eliminates the room for deteriorations of the primary fiscal balance in the ministry's sustainability calculations. However, the assumptions made have been criticised for being inadequate, so one should be cautious when drawing policy conclusions from them (see the discussion of the Economic Council's reports in the next section). But what is interesting is the serious attempt to introduce intergenerational distribution issues in a transparent way into deliberations of fiscal sustainability. This seems to reflect a higher level of ambition in this respect than in the other Nordic countries.

Economic-Council analyses

Annual fiscal sustainability analyses are also performed by the chairmanship of the Economic Council.[195] In the reports, methodology and assumptions are described clearly. They are similar to those of the Ministry of Finance, but there are also differences. For most of the time, fiscal-balance and government-debt projections as well as S2-calculations have been close to those of the ministry. To the extent that there have been differences, these have been well explained. This is also the case with differences between the council's own calculations in different years. A feature of the council's sustainability analyses is that they usually contain an in-depth analysis of some specific issue.

The council's most recent sustainability analysis was published in the autumn of 2019 (De Økonomiske Råd Formandskabet 2019). Unlike in earlier reports, the results here deviate substantially from those of the ministry. No fiscal deficits emerge during the "hammock period" 2025–2040: both the overall and the primary fiscal balance show small surpluses. From an initial position of around zero, there is an accumulation of net financial wealth over time: it reaches 10% of GDP around 2050 and as high as 80% in 2075. In that year, the

[195] See Section 5.1 regarding the Economic Council.

primary fiscal surplus amounts to 2.5% and the overall surplus to 6% of GDP. These developments are reflected in a strongly negative S2 indicator of -1.8, which should be compared with the Ministry of Finance's (2019) value of -1 (and the indicator value of -0.9 in the council's previous sustainability analysis; see De Økonomiske Råd Formandskabet 2018). The main explanations for the difference is another medium-term forecast (for the development until the starting year for the projections 2025)[196] and an assumption of more healthy ageing.

The healthy-ageing projections in the Economic Council's 2019 analysis are based on a refined analysis of the association between ageing and costs for health and old-age care. The analysis focuses on the importance for these costs of not only age per se but also *time to death*. When life expectancy increases, the average time to death among old people of a given age also increases. As there is a strong negative relationship between costs for health/old-age care and time to death, the increase in the latter counteracts the rising costs due to longer life expectancy. According to the council's analysis, the ministry underestimates this counteracting effect: whereas the ministry's projections of how costs are affected by healthy ageing only consider the impact during the last three years before death, the council´s projections take the effect during the last ten years before death into account. Doing this lowers the S2 indicator by 0.4 percentage points.

The council's 2019 report does not include much sensitivity analysis. The only alternative scenario examined is one were the interest rate in all years is set one percentage point lower than in the baseline scenario. This raises the S2 indicator only marginally, by 0.2 percentage points.[197] Sensitivity analyses have also been sparse in the council's preceding two reports with sustainability calculations. Like Finansministeriet (2017a) and the 2018 Convergence Programme, the council's 2018 report (De Økonomiske Råd Formandskabet 2018) compared a baseline scenario where the retirement age after 2030

[196] According to the council, the difference does not concern the primary balance in 2025 but the composition of output and households' real disposable income. It is not, however, explained how these factors can have such a large impact.
[197] The assumption in the baseline scenario is that the nominal interest rate on government debt rises gradually from 1.5% in 2025 to 4.75% in 2035. The experiment with a one percentage point lower interest rate is not quite clear, as the report does not state whether this lowers the interest-growth differential by as much (see the discussions on this differential in various parts of Section 6).

is indexed to life expectancy with an alternative scenario where the retirement age increases more slowly after this year. Other alternative scenarios were not reported.

Also, the Economic Council's 2017 sustainability evaluation contained a very limited sensitivity analysis (De Økonomiske Råd Formandskabet 2016). In contrast, the sustainability evaluation in 2016 contained an extensive such analysis (De Økonomiske Råd Formandskabet 2016). Here, a large number of alternative scenarios are analysed. They involve changes in the assumptions regarding, for example, growth, interest rates, fertility, longevity, immigration, the savings rate, working time, labour force participation, transfers to households and pension rules that are regarded as potentially realistic. The largest effects arise from variations in the assumptions on working time (20% reduction till 2040), labour force participation (no effect of increasing retirement age), pension rules (constant fraction of life in retirement) and transfers (0.2 percentage points lower annual increase than for wages). The impact on the S2 indicator from these variations in assumptions is in the range of 1–3% of GDP (2.8 and 1.8 for the reductions in working time and labour force participation respectively). In the other alternative scenarios, the impacts on the indicator do not exceed 0.5 per cent of GDP.

A main contribution of the Economic Council's reports is the in-depth analyses of various aspects of fiscal sustainability. The analysis of healthy ageing in the 2019 report has already been mentioned. The council has also provided worthwhile analyses of how the fiscal-balance and government-debt paths may differ fundamentally depending on institutional set-ups but yet be equally consistent with long-run fiscal sustainability. The last three sustainability analyses all discuss housing-policy and tax reforms that will raise both government financial assets and gross debt substantially (the order of magnitude is slightly below 15 per cent of GDP in the long term), but without changing the government's net debt position.[198] The reforms will thus increase the difference between consolidated general government gross debt and net debt in the future. Gross debt then comes closer to the EU stability-pact gross debt ceiling of 60 per cent of GDP, which *might* be a problem in the future in case of

[198] According to the housing-policy reform, the government will buy government-guaranteed mortgage bonds to fund social housing. The housing-taxation reform means that homeowners can postpone property-tax increases until they sell their homes.

unexpected adverse developments or if one, because of the current "oversustainability" of fiscal policy, would want to weaken the primary fiscal balance.

The 2017 and 2018 council reports also provide interesting analyses of how equally sustainable fiscal policies may result in very different fiscal-balance and government-debt paths. The discussion focuses on the deferred taxes on private pension wealth. Most private pension contributions are tax-deductible whereas private pension incomes are taxed. A large fraction of private pension wealth is thus an implicit asset for the government. A reform involving a change to immediate taxation (*straksbeskatning* in Danish) of private pension wealth would have large effects on both the fiscal balance and explicit government net financial wealth. The council analyses both a reform which changes the tax rules only for new pension contributions and one which involves immediate taxation of all existing pension wealth. In both cases, the tax rules are changed in such a way that fiscal sustainability is not affected (the value of the S2 indicator is held constant).[199] According to the calculations, the reforms imply that fiscal deficits in the worst "hammock years" (see above) are turned into surpluses of around 2% of GDP (implicitly assuming that the surpluses do not entice the government to spend more before the hammock years are reached). There is a large increase in explicit government net financial wealth in the long run in both cases.

The analysis described illustrates how the timing of taxation can have large effects on the fiscal balance and the government's net financial position without affecting fiscal sustainability. This shows that fiscal-balance and government-debt outcomes do not give a full picture of the "real" fiscal situation. The discussion also highlights the importance of how these variables are measured.[200]

In its 2017 and 2018 reports, the Economic Council commented on the generation-neutral sustainability calculations by the Ministry of Finance (see above). The council criticises the ministry's generational analysis for being incomplete and neglecting many items that determine the net contributions of various generations to public

[199] Although the value of the S2 indicator is unchanged, the contributions of the primary fiscal balances in different time periods to its value changes very much (see Section 6.2).
[200] If deferred tax payments were added to government net financial wealth in 2019, it would increase by 70% of GDP. Adding interest on the deferred tax payments to the fiscal balance would improve it by 2–3% of GDP (De Økonomiske Råd Formandskabet 2019).

finances.[201] A main critique is that the ministry's calculation is only forward-looking, but does not take the whole life cycle into account. More precisely, it is argued that the oldest generations (those born before the mid-1980s) are net contributors to public finances over their whole life cycle because they received lower transfers as young than later generations before the welfare state was then less well-developed. According to the council this is more important for the net contribution to the public finances than the fact that the older generation will get more years in retirement than later generations. The upshot is that generational equity rather speaks in favour of redistributions in favour of older generations than the reverse as in the ministry's analysis.

The Economic Council's most recent three sustainability analyses all stress that an S2 value indicating a room for weakening the primary fiscal balance may not be desirable: it implies that fiscal policy is "oversustainable" in the sense that the government appears to be taxing citizens more than is necessary in order to finance government expenditure. If such a policy results in continuously increasing government net financial wealth, tax cuts or expenditure rises will at some point in the future be carried through. But, as emphasised by the council, such developments imply a redistribution from current to future generations (De Økonomiske Råd Formandskabet 2019).[202] Such a discussion is unusual – but highly relevant – as sustainability analyses tend to have an asymmetric bias, focusing mainly on indications of a need to strengthen the fiscal balance but seldom on the possibilities to weaken them.

DREAM analyses

DREAM, an independent institution specialising in various types of quantitative analyses, sometimes with financing from government institutions, also does fiscal sustainability calculations of its own

[201] Examples given are that rising private pension wealth implies savings on state pensions, that healthy ageing reduces costs for health and old-age care and that more highly educated persons in the future imply higher tax revenues. On the other hand, the rising share of first- and second-generation immigrants means lower net contributions from future generations.

[202] A counterargument is, however, that public finances are "oversustainable" because the retirement age will gradually rise relative to longevity, reducing the number of years in retirement. One might consider it "fair" that future generations should be allowed to decide themselves if they want to stick with such a rising retirement age or lower taxes/increase spending. A decomposition of the S2 indicator, along the lines discussed in Section 6.2, shows that the "oversustainability" derives from projected primary surpluses in the far future. The greater uncertainty associated with these than with more near-term projections could be seen as an argument for not adjusting fiscal policy in the short and medium term to eliminate "oversustainability".

in addition to providing important inputs into both the Ministry of Finance's and the Economic Council's work.[203] DREAM's own analyses are only done intermittently. The last one was published in 2016 and contains both fiscal trajectories and S2 calculations (DREAM 2016). The basic assumptions are similar to those of the Ministry of Finance and the Economic Council. DREAM does not use the extrapolation method but instead a general-equilibrium overlapping-generations model of a small open economy (see Section 6.1) where variables such as working time, wages, the composition of consumption and savings are endogenously determined by households under an assumption of perfect foresight.

The general-equilibrium structure of the DREAM modelling makes it necessary to specify how changes in the primary fiscal balance would come about when the S2 indicator is calculated. To get comparability with the other institutions' calculations, it is assumed that the immediate and permanent fiscal change measured by the indicator takes the form of a(n unspecified) lump-sum income transfer from abroad to the public sector (or from the public sector to the rest of the world). With this assumption, there are no behavioural labour-supply or demand responses to changes in taxes or transfers to take into account.

Conclusions on Denmark

Overall, fiscal sustainability analyses in Denmark are of a high standard. The Economic Council's work represents a high-quality complement to that of the Ministry of Finance. The assumptions behind the calculations appear reasonable and are reported in a transparent way. The analyses put weight on both the S2 indicator and the time paths of the fiscal balance and government debt. Differences in the calculations from year to year are well explained. So are the differences between the projections by the Economic Council and the Ministry of Finance in the council's (but not in the ministry's) analyses. Usually, the differences in outcomes between the two institutions' baseline scenarios have been small (although not in 2019). There has been a larger differ-

[203] For the Ministry of Finance, the input from DREAM (and Statistics Denmark) consists mainly of the population projection. Moreover, DREAM provides a projection of educational attainment. The Economic Council also uses the DREAM general-equilibrium model, whereas the Ministry of Finance employs more of an extrapolation method. It does not appear though as these modelling differences make much difference for the projections: labour-supply developments turn out to be very similar, but there are some differences with respect to the development of private consumption and savings.

Table 4 S2 indicator in baseline scenarios in various sustainability analyses for Denmark

	2015	2016	2017	2018	2019
Ministry of Finance	-0.2	-0.5	-0.9	-1.2	-1.0
Economic Council	-0.3	-0.5	-1.0	-0.9	-1.8
DREAM	-0.3	-0.7			
European Commission	1.2	0.9	0.9	-0.5	0.4

ence to the European Commission's S2 calculations, which – in contrast to the ones performed domestically – before 2018 indicated non-sustainability (see Table 4). Surprisingly enough, neither the ministry nor the council usually comments on how their projections relate to those of the Commission.[204]

However, now there is a consensus that public finances are (over) sustainable: since 2018 all calculations, also those by the Commission, indicate a room for the weakening of the primary fiscal balance over time.

Compared to most other countries, the discussion around the sustainability analyses in Denmark is quite sophisticated. There is more discussion than elsewhere on intergenerational equity.

Although there are explicit discussions of the trajectories for the public finances over time, there has been a strong focus on the S2 summary indicator in the fiscal sustainability analyses. This probably reflects that this measure has played a more important *operational* role for policy than in most other countries. Policy leading to "at least fiscal sustainability" has been formulated as an explicit objective. The implication is that "the so-called sustainability indicator (the S2 indicator, my comment) should always at least be zero".[205] As discussed in Section 6.2 (and by the Economic Council; see, for example De Økonomiske Råd Formandskabet 2017) a policy fulfilling this cri-

[204] The Commission's analysis appears cruder, for example because it does not adjust the structural fiscal balance in the starting year for the projections for swings in some highly fluctuating revenues such as those from taxation on pension yields.
[205] Finansministeriet (2014), p 313.

terion may not be optimal as there may be strong (equity) reasons for letting future generations pay for the utility gains accruing to them due to increased longevity and increases in the standard of welfare services. Another problem with having a target for the S2 indicator is that changes in the underlying assumptions risk leading to policy overreactions.

7.3 Finland

The Ministry of Finance publishes fiscal sustainability analyses regularly. The Economic Policy Council, which has the government's remit to provide independent evaluation of economic policiy, comments routinely on the ministry´s analyses and sometimes also makes supplementary calculations. In addition, the Bank of Finland (the central bank) and ETLA (the Research Institute of the Finnish Economy, a private non-profit organisation which receives some basic funding from business organisations) produce sustainability analyses. The Bank of Finland does so annually. Sustainability analyses are also made by the European Commission.

Ministry-of-Finance analyses

The sustainability analyses of the Ministry of Finance are published twice every year in its economic surveys. These analyses are also discussed at some length in reports prepared by officials in the ministry in the middle or at the end of a parliamentary term. The starting year for the projections is four years ahead. For the years up till then the ministry's medium-term forecast is used. The European Commission's methodology is followed more closely than is done by the ministries of finance in Denmark and Sweden.

The adherence to the Commission's methodology means, for example, that age-related expenditures relative to GDP are currently projected on the basis of the demographic forecast only up to 2070.[206] After that year, the ratio of age-related expenditure to GDP is assumed constant. An increase in life expectancy for persons above 50 years of age is assumed to delay the need for health and old-age care by half this increase: for example, a two-year increase in life expectancy means that the service needs of a 61-year old will be the same as those of a 60-year old in the past.

[206] This is the case in the sustainability calculations in Finnish Ministry of Finance (2018b, 2019b). Before that, the ratio between age-related expenditure and GDP was held constant from 2060 (see, for example, Finnish Ministry of Finance 2018a).

There are, however, also some differences between the assumptions made by the Ministry of Finance and the European Commission.[207] The most important difference is probably that the ministry uses the population projections of Statistics Finland, which assume a much lower fertility rate in the long term than the Eurostat projections used by the Commssion.[208] In the ministry's economic surveys, the main focus in the sustainability analyses is on the S2 indicator, the *sustainability gap* in the terminology used. The autumn 2019 economic survey (Finnish Ministry of Finance 2019c) reports an indicator of 4.5 in the baseline scenario (up from 4 in Finnish Ministry of Finance 2019b). A list of main assumptions is provided.[209] A sensitivity analysis is also provided in a table showing how the S2 indicator is affected by various changes in the assumptions. The results of twelve alternative scenarios are shown.[210] The presentations of the preceding sustainability analyses (Finnish Ministry of Finance 2018a,b; 2019b) are similar. The changes in the S2 indicator that have taken place (see Table 2) have been explained in the reports, although quite briefly.

The focus on the S2 indicator in the Ministry of Finance's sustainability analyses can be explained by the importance that has been attached to it in the economic-policy discussion since 2010 when two reports by officials in the ministry emphasised this metric.[211] Like in Denmark, the indicator has played an operational role in policymaking. In 2015, Juha Sipilä's new government, in its strategic plan, explicitly committed to take the savings and structural-reform decisions necessary to close the sustainability gap during its term of office.[212] This pledge was later repeated in the general government

[207] See Finnish Ministry of Finance (2018c).
[208] Another difference is that, whereas the Commission assumes a 3% real return on government bonds, the assumption in the Finnish Ministry of Finance (2018b, 2019b) is 2%. This is motivated by the downward trend in real bond yields over the last decades. Yet another difference concerns the assumptions on the government's so-called property income, that is income from financial assets (interest on bonds, and return – dividends and increases in market value – on shares). In the Commission's sustainability analyses, the nominal value of the government's stock of bonds is assumed to remain unchanged, which will cause property income gradually to fall as a share of GDP. The Ministry of Finance instead assumes that the assets of the earnings-related pension funds (including bonds), and therefore their incomes, remain constant shares of GDP. The underlying assumption is that part of interest income is reinvested in the capital market.
[209] These refer to labour productivity growth, real GDP growth, labour force participation, unemployment, old-age dependency ratio, inflation, real interest rate and real return on pension assets.
[210] These include changes in productivity growth (in the whole economy and in welfare services), the employment rate, the structural primary balance in the starting year of the projections, life expectancy, the amount of healthy ageing and the real interest rate).
[211] Valtiovarainministeriö (2010a,b).
[212] Strategic Programme of Prime Minister Juha Sipilä´s Government (2015).

fiscal plan for 2017–2020.[213] The government, which took office in 2019 also committed to reducing the sustainability gap, but appears to put less weight on the S2 indicator, as it also emphasised the indicator's "considerable uncertainty as it is difficult to anticipate economic and demographic developments".[214]

There is a striking contrast between the importance that has been attached to fiscal sustainability in general and the S2 sustainability indicator in particular in economic policymaking and the very shorthand presentation of the sustainability analyses in the Ministry of Finance's economic surveys. The presentations have been expanded after criticism from both the Economic Policy Council and the National Audit Office.[215] But the text is still not more than 4–5 pages. As discussed above, there is a lot of information in tables and diagrams. These show, for example, the projected development (till 2070 in the autumn 2019 economic survey) of various age-related expenditures (with the largest increases coming from increased costs for old-age and health care), net lending (-14.2% of GDP in 2070) , general government debt (253.2% of GDP in 2070) and general government net financial wealth (119.8% of GDP in 2070). However, there are few comments to the tables and diagrams. Neither are there much of comments to the table summarising alternative scenarios. A reader does not get any help in judging which of the alternative scenarios are the most realistic ones and which policy changes have the largest potential to improve fiscal sustainability.[216]

Another problem with the Ministry of Finance's presentation of its sustainability analyses in the economic surveys is the almost non-existent discussion of the underlying assumptions and methods. Neither is there any fundamental explanation of the S2 indicator, nor a discussion of the indicator's strengths and weaknesses (see Section

[213] Finnish Ministry of Finance (2016).
[214] Programme of Prime Minister Anti Rinne's Government (2019), Section 2.
[215] See, for example, Economic Policy Council (2014) and National Audit Office (2018).
[216] Such discussions are, however, included in other reports by officials in the Ministry of Finance. An example is Finnish Ministry of Finance (2019a). It concludes that "raising the employment rate and boosting the productivity of public services are the most effective tools to narrow the sustainability gap" (p 59). The conclusion is based on two alternative scenarios. In one, the employment rate is assumed to be 1 percentage point higher than in the baseline scenario. This reduces the S2 indicator by 0.4 percentage points. In another alternative scenario, the productivity growth in public health and social services is 0.5 percentage points higher than in the baseline scenario. As a consequence, the sustainability indicator falls by 1.8 percentage points. In contrast, a rise in the overall productivity growth in the economy has only a small effect. The reason is that, although such a change would increase tax revenues, it would also cause wages in the public sector to rise faster.

6.2 above).[217] Instead, one can find a methodological background description on the ministry's website (Finnish Ministry of Finance 2018c). It is, however, rather technical and probably difficult for most non-economists to follow. So, there is a lack of easily available non-technical presentations of the ministry's sustainability analyses. This is in contrast to both Denmark and Sweden, where the ministries of finance make larger efforts in their recurring publications to provide pedagogical explanations. The Ministry of Finance in Norway also presents its somewhat different sustainability analyses in a way that is more accessible to non-specialists.[218]

Economic-Policy-Council analyses

The Economic Policy Council does not produce fiscal sustainability analyses of its own.[219] But it evaluates and comments on the ministry's calculations, and sometimes also performs additional analyses. The council's exposition is more pedagogical and accessible to a broader audience. There is more discussion of the realism of various assumptions and of the advantages and disadvantages of using the S2 indicator. The council's analyses therefore to some extent make up for the very short-hand presentations of the Ministry of Finance's sustainability analyses. The council's demands for better communication of the ministry's analyses seem also to have had some impact on the ministry's economic surveys.[220] But more importantly, the council's suggestions and analyses have probably inspired the ministry to develop its analyses.

The following are examples of the contributions to the fiscal sustainability discussion in the Economic Policy Council's reports:

- Economic Policy Council (2016) included a sensitivity analysis of the S2 indicator, examining the implications of changes in

[217] In fact, the explanation of the S2 indicator in, for example, Finnish Ministry of Finance (2019c) is misleading. It is maintained that "the sustainability gap shows how much general government finances should be consolidated by the year 2023 so that the general government debt ratio develops sustainably in the long term" and that this requires an improvement in the structural primary fiscal balance by 4.5% of GDP till this year. As discussed in Section 6.2 this is not a correct interpretation of the S2 indicator. The existence of a sustainability gap says nothing about whether the best way to close it is through fiscal consolidation in the short run or through structural reforms that strengthen the primary balance in the long run. More pedagogical explanations of the sustainability analyses have, however, been given in earlier reports from the Ministry of Finance (Valtiovarainministeriö 2010a,b; 2013).
[218] See Section 7.5.
[219] The Economic Policy Council is discussed in Section 5.3.
[220] The council's 2014 report sees the reporting of the sustainability analyses in the Swedish spring fiscal bills as an example to be followed (Economic Policy Council 2014).

assumptions on interest rates, employment and growth. This was important as the Ministry of Finance's economic surveys at the time did not regularly report such sensitivity analyses. Regular such reporting was adopted from the 2017 spring economic survey (Finnish Ministry of Finance 2017), probably inspired by the council's analysis. The Council especially pointed out that lower interest rates would in the Finnish case increase, not decrease, the sustainability gap because general-government net financial wealth is positives.[221]

- Economic Policy Council (2017) contained an analysis of trajectories for both the structural balance and general government debt under various adjustment scenarios in line with the increased emphasis put on such analyses in the other Nordic countries. The report also highlighted the importance of the assumptions on the amount of healthy ageing. It was demonstrated that the S2 indicator would differ by almost two percentage points between the extreme assumptions of no healthy ageing at all (per-capita cost of care depends on age only without any effect from increased life expectancy) and fully healthy ageing (the rise in the per-capita cost of care with age is shifted forward by the whole increase in life expectancy). Economic Policy Council (2017) also analysed the impact of the planned social and health-care reform (which has not yet been carried through) on the sustainability gap under various assumptions: in a scenario with lasting cost savings, it was found to reduce the S2 indicator by as much as three percentage points.[222]
- Economic Council (2017, 2018, 2019) all contained debt-sustainability analyses (DSA) of the type described in Section 6.3. Probability distributions for various fiscal outcomes over the next three years were derived from a vector autoregressive (VAR) model based on earlier estimated relationships. Conclusions were drawn regarding the probability that that gross debt will

[221] A similar sensitivity analysis was, however, performed in 2011 by the ministry (Finnish Ministry of Finance 2011).
[222] The main parts of the planned reform were (i) moving the responsibility for publicly funded health care from individual municipalities (or federations of municipalities) to 18 newly formed regions and (ii) increasing the role of private providers of publicly funded social and health care, and expanding customers' freedom of choice of provider. An important target was to achieve a substantial reduction in health-care costs. Juha Sipilä's government failed to get parliamentary support for the reform, which led to its resignation in March 2019. It appears likely that some reform along the earlier planned lines will be made in the future.

be below the EU ceiling (60% of GDP). Even though this analysis is very short-term, it is clearly relevant as Finland is close to the EU debt ceiling.

- Economic Council (2019) reported various sensitivity analyses of the Ministry of Finance's sustainability calculations. The most interesting analyses concern a reduction in the fertility rate and a lengthening of the projection period (the period during which changes in the population structure are allowed to affect revenues and expenditures; after the end of the projection period various revenues and expenditures are taken to increase at the same rate as GDP). With the same projection period as the Ministry of Finance (till 2070), a fall in the fertility rate from the current 1.45 to 1.20 raises the S2 indicator by 0.3, i.e. by quite a small amount. A lengthening of the projection period by 15 years to 2085 increases the indicator by as much as 1.2. The explanation is that the continued increase in the old-age dependency rate in 2070–2085 is now taken into account. With this longer projection period, the impact of a lower fertility rate is approximately doubled. These sensitivity analyses thus highlight the importance of having a sufficiently long projection period.[223]
- Economic Council (2019) also contained S1 calculations, showing the strengthening of the primary balance required to reach targets for Maastricht debt of 60% and 50% of GDP, respectively, in 2035. The numbers are 2% and 2.8% of GDP, respectively. They are considerably smaller than the S2 values: the reason is, of course, that much of the ageing effects on public finances come first after 2035.

Bank-of-Finland analyses

The Bank of Finland also does sustainability analyses. An S2 indicator has been reported annually. Earlier, only the indicator value was reported, but without comments on assumptions, methodology, fiscal-balance and debt projections or alternative scenarios (see, for example, Bank of Finland Bulletin 2016, 2017). However, in 2018 a more extensive analysis was published (Kivistö 2018). In the baseline scenario, the S2 indicator is calculated to 3. The interpretation of the

[223] The council's analysis is, however, incomplete. It can be criticised for not having extended the time horizon long enough. By extending the horizon by 15 years, the full effect on labour supply is captured, but not the later reduction in the number of pensioners when those born in the 2020s retire. In the very long run, when a fall in the fertility rate has eaten itself through the whole age distribution, the effect on the dependency rate, and thus on the sustainability gap, is likely close to zero (see the discussion of Bjertnaes et al. 2019 in Section 7.5).

indicator, methodology and basic assumptions are discussed briefly. The implications for the indicator of changes in some assumptions – higher interest rates, both higher interest rates and higher returns on pension-fund investments, and a higher employment rate – are reported. The results are in line with the Ministry of Finance's sensitivity analyses.

It is not possible, however, to understand from Kivistö's presentation exactly how assumptions and methodology relate to those of the Ministry of Finance. There appear, for example, to be differences in the time horizon over which age-related expenditure is examined (2065 versus 2070 in the ministry's most recent analysis, how forecasts/projections are made, and in interest rate assumptions (here a real interest rate on public debt of 3% per cent in the long run is assumed versus 2% in Finnish Ministry of Finance (2018b, 2019b,c). It would have been helpful for readers if these differences had been spelled out more clearly and the exact implications for the S2 indicator had been reported (as done in Denmark by the Economic Council; see Section 7.2 above).

ETLA's analyses

Also ETLA publishes sustainability calculations, though not annually. In recent years, sustainability analyses have been made when a new government has taken office, when a new population projection has been published (every third year), and when there has been a major policy reform (such as the pension reform in 2017).[224] The most recent analysis was published in January 2019. The estimate of the S2 indicator was 3.1.

A major methodological difference between ETLA's analyses and the other ones described above is that the former are based on an overlapping-generations general-equilibrium model (the others are based on the extrapolation method; see Section 6.1).

In general, ETLA's estimates of the sustainability gap has been somewhat lower than those of the other institutions. The main reason appears to be different assumptions regarding health and

[224] As ETLA's sustainability analyses are published only in Finnish, the above descriptions are based on email conversations with Vesa Vihriälä (former head of ETLA) and Tarmo Valkonen (responsible for the analyses) and on the account of Lassila and Valkonen (2018).

old-age care costs. ETLA assumes that a large part of these costs is not related to age but to the proximity of death.[225] The consequence is a smaller rise in total age-related costs when life expectancy increases.[226]

Conclusions on Finland

It appears clear that Finland has a serious fiscal sustainability problem. As can be seen from Table 5, the baseline scenarios in all recent sustainability analyses end up with an S2 indicator of the order of magnitude of 3–5% of GDP. The main contributing factor is a projected larger increase in age-related costs associated with a larger rise in the old-age dependency ratio than in the other Nordic countries.[227]

The sustainability gap has played an important role in the Finnish economic-policy debate and been a major factor motivating fiscal consolidation measures and structural reforms (both an achieved pension reform in 2017 and a social and health-care reform that has not yet been carried through). Hence, it is not surprising that sustainability analyses are made by several institutions. They are done according to internationally established practices. There is, however, a surprising contrast between the importance attached to the S2 sustainability indicator in policy formulation and the very brief discussions of assumptions, methodology, interpretation and alternative scenarios in the policy documents from the Ministry of Finance (and the Bank of Finland). This likely makes it difficult for readers without technical economic competence to judge the sustainability analyses.

The Economic Policy Council has played an important role by complementing the Ministry of Finance's calculations with more extensive discussions of them and analyses of alternative scenarios. This seems to have inspired the ministry to develop its analyses and presentations. Still, further improvements of in particular the presentations would seem worthwhile.

[225] See also the discussion of the 2019 report by the Danish Economic Council (De Økonomiske Råd Formandskabet 2019) in Section 7.2.
[226] According to Lassila and Valkonen (2018), the share of costs that are related to proximity of death, and not to age per se, is 29% for health care and 51% for old-age care. A difference to the other calculations is also that ETLA has a longer time span (100 years as opposed to 40–50 years) for the projections. ETLA also illustrates the consequences of demographic uncertainty by simulating the effects of a very large number of realisations of a stochastic population projection and this way generating probabilistic projections for the S2 indicator.
[227] See also Section 7.1.

Table 5 S2 indicator in baseline scenarios in various sustainability analyses for Finland

	2015	2016	2017	2018	2019
Ministry of Finance	5.0 | 3.5	3.0 | 3.0	3.0 | 3.0	2.5 | 3.8	4.0 | 4.5
Bank of Finland		3.0	3.0	3.0	
ETLA		3.0	2.5-3.0		3.1
European Commission	3.9	3.2	2.8	2.7	3.6

Reading the various institutions' analyses, it is sometimes difficult to understand exactly how assumptions differ and the impact of these differences on the calculations. There is probably much to be gained from more transparent comparisons between various analyses. The comparisons made by the Economic Council in Denmark between its projections and those of the Ministry of Finance are a good example to follow.[228] Also in Sweden, more attention is paid to comparisons between various analyses.[229]

Compared to both Denmark and Sweden, the sustainability analyses are more focused on the S2 sustainability indicator and less on the trajectories for government debt (net financial wealth) and the fiscal balance. Given that consolidated general government debt is close to the EU ceiling of 60% of GDP, this is somewhat surprising. One could have expected more analyses of the requirements to reach specific debt targets – for example, so that a safety margin to the EU debt ceiling is created.[230] It would be helpful if the Ministry of Finance – and other institutions – regularly published S1 indicators showing the changes in fiscal policy required to reach such debt targets in a given future year.[231]

[228] See Section 7.2.
[229] See Section 7.4.
[230] Such an analysis was made in Valtiovarainministeriö (2015), where a reduction of the debt-to-GDP ratio to 55% was recommended.
[231] See also the discussion about the S1 indicator in Section 6.3.

7.4 Sweden

The Ministry of Finance publishes a sustainability analysis in its annual spring fiscal policy bill. An update is presented in the budget bill in the autumn. An annual sustainability analysis is also done in the beginning of each year by the National Institute of Economic Research, the government's forecasting agency. Like for other EU countries, the European Commission also makes such analyses. The Fiscal Policy Council does not produce sustainability analyses of its own but comments on those made by others.[232] This is in contrast to Denmark (where the corresponding institution, the Economic Council, provides such analyses), but in conformity with Finland where the Economic Policy Council mainly reviews the Ministry of Finance's sustainability calculations.

Ministry-of-Finance analyses

According to the Budget Act, the government is obliged to provide an assessment of long-run fiscal sustainability in the spring fiscal policy bill. The government has summarised the main principles for this assessment in a communication regarding the fiscal framework to the parliament.[233] The communication mentions explicitly the S2 indicator, but also concludes that the metric is uncertain and must be interpreted with caution. The importance of analysing alternative scenarios is emphasised. According to the text, a small indicator value should not cause any change of policy. A higher value should be taken more seriously and motivate a thorough analysis of its determinants. It is stressed that fiscal developments could be problematic also when the S2 indicator signals sustainability, as the government debt ratio may in such a situation still stabilise at a very high level entailing large risks in the event of unforeseen circumstances.[234] For this reason, the government also bases its assessment of fiscal sustainability on other criteria, such as the distance to the EU debt ceiling of 60% of GDP and its own debt anchor (target) of 35% of GDP.[235]

The government's communication on the fiscal framework signals that less (operational) importance is attached to the S2 indicator in Sweden than in Denmark and Finland. This conclusion is borne out

[232] Finanspolitiska rådet (2008) was, however, an exception. See Section 5.2 regarding the council.
[233] Regeringen (2018b).
[234] See Sections 6.2 and 6.3.
[235] Both debt targets refer to the Maastricht debt. Section 4.2 discusses the debt anchor.

by the sustainability analyses in the spring fiscal policy bill. For example, the 2019 bill (Regeringen 2019a) puts more emphasis on the trajectories of the (overall and primary) fiscal balance, net financial wealth and gross debt than on the S2 indicator. These trajectories (till 2060) are discussed first. Only after that, the S1 and S2 indicators are analysed. The bill discusses the fiscal-sustainability concept. The main assumptions behind the projections are reported.[236] Alternative scenarios are well explained. There is also a valuable discussion of changes in the results relative to the previous spring fiscal policy bill and differences to the analyses by the National Institute of Economic Research and the European Commission.

The sustainability analysis in the 2019 spring fiscal policy bill starts out from the ministry's medium-term forecast. The starting year for the projections is 2022 and the final year is 2110. The methodology and underlying assumptions are mostly standard. There are, however, a few points to note regarding the baseline scenario:

- The savings rate of households is assumed to stay more or less constant over the projection period despite the ageing of the population, which according to the life-cycle hypothesis on consumption would have been expected to cause a fall (since the savings rate depends positively on the share of the population in working age, who saves for retirement).[237]
- The volume of public consumption is assumed to increase in line with population.
- The return on the government's financial assets is assumed to be the same as the interest on government debt. Since a large share of assets consists of shares, it might be more realistic to assume that the return on assets is higher than the interest on debt. Such assumptions are made by both the Finnish and Norwegian ministries of finance.[238]

[236] A more technical presentation is to be found on the ministry's website (Finansdepartementet 2019a). However, whereas the presentation in the spring fiscal policy bill is in most respects admirably informative for non-specialists, the technical presentation leaves out much information that would be helpful for specialists. For example, it is not clear how interest rates are assumed to converge from the current level to the long-run level indicated (0.5 percentage points higher than the GDP growth rate). Another deficiency is that the assumptions regarding healthy ageing (or not) are not explicitly reported.
[237] Admittedly, there are, however, a number of factors influencing the savings rate, so it is difficult to evaluate the savings-rate assumption in the sustainability analysis without using a fully developed overlapping-generations model.
[238] See Sections 7.3 and 7.5, respectively.

- The exit age from the labour market is assumed to stay constant despite a political agreement to gradually raise various age limits affecting the retirement age.[239]
- The most important difference to other sustainability analyses concerns the assumptions on expenditure per user (in the various socioeconomic groups) on welfare services. The usual assumption is that, in the absence of a change in the demographic structure, expenditure on welfare services would remain a constant share of GDP over time. However, this would not happen in the Swedish Ministry of Finance's baseline scenario. The basic assumption there is that labour input to welfare services remains constant per user (in each socioeconomic group). But output of these services also depends on the inputs of capital and intermediate goods, the prices of which are assumed to increase more slowly than wages (which rise at the same rate as GDP per capita). The ministry's assumption is that, despite this, the volumes of capital and intermediary goods inputs per user remain constant. Hence, there is no increase over time in the volume of welfare services per user (the "standard of welfare services"). This seems an unrealistic assumption, as substantial such increases have occurred earlier and are probable also in the future.[240] The ministry's assumptions imply that the cost shares of capital and intermediate inputs are falling over time. As a consequence, with constant demography the expenditures on welfare services would be falling over time relative to GDP.

In the 2019 spring fiscal policy bill's baseline scenario, there are primary surpluses of 0.4–1.2% of GDP in the 2022–2060 period. General government net financial wealth rises from 25% of GDP in 2018 to around 65% in 2060. Maastricht debt falls from 39% of GDP to zero. The overall fiscal surplus gradually improves and reaches around 3% of GDP in 2060.[241] The S2 indicator is calculated to -1.5 (-1.3 in the updated calculation in the 2019 budget bill).[242]

[239] These age limits refer to the lowest age for receiving an old-age pension in the ordinary income-related pension system, the age limit for a state guarantee pension (for those who are not eligible for an income-related pension or only a very low one) and the age when employment protection legislation ceases to apply.
[240] See, for example, Konjunkturinstitutet (2017) for a more extensive discussion. In the 2000–2018 period, the volume of welfare services increased annually by 0.5 percentage points more than motivated by changing demographics (Långtidsutredningen 2019b).
[241] The improvement is stronger in the overall than in the primary fiscal balance because of the reduction in government debt, and hence, in interest expenditure.
[242] Regeringen (2019b).

The 2019 spring fiscal policy bill reports three alternative scenarios. The first assumes that the exit age from the labour market rises with longevity: by 2/3 year per year of increased life expectancy at 65. This has a large impact on the S2 indicator, which falls by as much as 2.3 percentage points compared to the baseline scenario. In the second scenario, faster labour market integration of foreign-born persons is assumed: the employment gap to natives is halved till 2035. This causes a reduction in the S2 indicator relative to the baseline by 0.7 points. The third scenario assumes an annual reduction in average working time by 0.1% and an annual increase in the volume of welfare services of 0.4 percentage points in excess of what is demographically motivated (a standard increase in the terminology used above). The effect is huge: the S2 indicator rises to 11.7.[243]

The Ministry of Finance's choice of baseline scenario is surprising as it appears both unrealistic and differs from common practice. The scenario does not take increases in the standard of welfare services, reductions in working time, healthy ageing, and a rising exit age from the labour market into account. Neglecting the first two factors tends to give a too optimistic picture of fiscal sustainability, neglecting the last two ones tends to give a too pessimistic picture. The likely net effect is a too optimistic assessment.[244]

The spring fiscal policy bills also report an S1 indicator.[245] It is calculated as the immediate and permanent strengthening of the primary fiscal balance that would be required to reach the EU ceiling for Maastricht debt of 60% of GDP in 2033. This indicator is not so interesting for Sweden as current debt (36% of GDP at the end of 2019) is far below the ceiling. The metric shows, of course, a large room for fiscal loosening: in the baseline scenario, the S1 indicator is -3.1% of GDP. As Sweden has adopted a debt anchor (target) of 35% of GDP, it would be more relevant to calculate an S1 indicator

[243] The same alternative scenarios are analysed in the 2018 spring fiscal policy bill (Regeringen 2018a). The 2017 spring fiscal policy bill (Regeringen 2017b) examines more scenarios: increased exit age from the labour market, faster labour-market integration of immigrants, (more) healthy ageing, higher public-sector productivity, adherence to a fiscal surplus target of 1/3% of GDP, shorter working time, increase in the standard of welfare services and worsened primary fiscal surplus at the start of the projections.
[244] This is clear from the 2017 spring fiscal policy bill (Regeringen 2017b). There, the by far largest difference in the S2 indicator to the baseline scenario occurs in the alternative scenario with an increase in the standard of welfare services. It appears less appropriate to aggregate increases in the standard of welfare services and reductions in average working time into one alternative scenario, as is done in the 2018 and 2019 spring fiscal policy bills (Regeringen 2018a, 2019b), as this does not show the importance of each factor separately.
[245] See Section 6.3.

showing the fiscal adjustment required to reach this target in a given future year.[246]

National-Institute-of-Economic-Research analyses
The National Institute of Economic Research publishes an annual fiscal sustainability report. It contains a thorough and pedagogical discussion of criteria for sustainability, methodology and assumptions. The discussion is much more extensive than the one in the government's spring fiscal policy bills.

The assumptions in the baseline scenario differ in several fundamental respects from those made by the Ministry of Finance. For example, in the 2020 report (Konjunkturinstitutet 2020) it is assumed that:[247]

- The ageing of the population results in a falling savings rate, as could be expected from the life-cycle hypothesis on consumption.
- Increased life expectancy implies more healthy years.
- In line with the healthy-ageing assumption, the exit age from the labour market increases. The ratio between years in work and years in retirement stays approximately constant.
- The pension system's assets tend to rise relative to pension commitments. This results in a disbursement of the accumulated surplus in the form of raised pension levels (even though there are no formal stipulations regarding this). This means that pensions rise faster than wages.
- The real rate of interest rises gradually to 2.2% in 2050. During the 2020–2050 period, the average interest-growth differential is negative: -0.6%. After 2050, it is on average positive: 0.2%.
- Like in the Ministry of Finance's baseline scenario, the labour input to welfare services per user (in each socioeconomic group) remains constant. But a difference is that the cost shares of various inputs in the production of welfare services remain constant over time. The implication is that the use of capital and intermediate goods is expanded when their prices fall over time relative to wages. This results in an increase in the standard of welfare services, i.e. an increase in the volume of welfare ser-

[246] Such an indicator was reported in the 2017 spring fiscal policy bill (Regeringen 2017b) before the debt anchor was adopted, but after it had been proposed by a government commission (Överskottsmålskommittén 2016). However, later bills have not repeated such calculations. Regarding the debt anchor, see Section 4.2.
[247] Similar assumptions are made in earlier reports (Konjunkturinstitutet 2017, 2018a,2019).

vices per user, with 0.5% per year, which is in line with earlier developments. Unlike in the Ministry of Finance's analysis, the per-user cost of welfare services increases at the same rate as wages.

The last item above is the most important difference to the assumptions by the Ministry of Finance. In general, the assumptions in the National Institute's baseline scenario seem more adequate than the those by the ministry.[248]

The National Institute's main focus is on the paths of the overall and primary fiscal balances, net government financial wealth and Maastricht debt. Most of the analysis in the 2020 report concerns the period till 2050. In the baseline scenario, there is an annual primary fiscal deficit of 1–1.5% of GDP for most of the period. The overall deficit rises to almost 2% of GDP around 2050. Net financial wealth falls continuously, but it remains slightly positive in that year. Maastricht debt exceeds 50% in that year. During the 2050–2100 period, the annual fiscal deficit exceeds 2% of GDP. Net financial wealth continues to fall and reaches 34% in 2100. Maastricht debt rises to 86% of GDP, i.e. far above the EU debt ceiling, in that year. On the basis of this analysis, fiscal policy is judged not to be sustainable in the baseline scenario. This is a much more pessimistic assessment than in the 2019 sustainability report.

The National Institute's 2020 report analyses five alternative scenarios. These are (i) no or slower increase in the standard of welfare services (0.25% annual increase in the latter case instead of 0.5%); (ii) an annual relative-wage increase of 0.3% in welfare services (to recruit the labour required); (iii) no healthy ageing and no rise of the exit age from the labour market; (iv) no disbursement of surpluses in the pension system; and (v) a fiscal surplus of 1/3% of GDP (i.e. compliance with the current surplus target as discussed in Section 4.1) in 2021–2026 and balance

[248] However, like the Ministry of Finance, the National Institute makes the questionable assumption that the return on shares is the same as the interest rate.

from 2027 and onwards.[249] The alternative scenarios (ii) and (iii) result in even more unsustainable developments of net financial wealth and Maastricht debt than the baseline scenario, whereas both no and a slower increase in the standard of welfare services result in huge increases in net financial wealth (and huge reductions in Maastricht debt).[250] Alternative (v) implies only a small fall in net financial wealth as a share of GDP over time and a stabilisation of Maastricht debt around the current debt anchor of 35% of GDP.[251] It would require a strengthening of the fiscal balance by on average 0.6% of GDP.

The S2 indicator has gradually over time received less focus in the National Institute's sustainability analyses. In the 2020 report, the indicator is reported only in an appendix. In the baseline scenario, it is calculated to 0.14, i.e. it indicates almost long-run sustainability.[252] It is a higher value than in the Ministry of Finance's analysis (Regeringen 2019a). No S2 values are given in the alternative scenarios.[253] Overall, the National Institute's assessments of fiscal sustainability have been less optimistic than the ministry's: this applies in particular to the development in the 2020–2050 period. The main reason for the differences is that the institute assumes an increasing standard of welfare services, whereas the ministry does not.

In the National Institute's most recent two sustainability reports (Konjunkturinstitutet 2019, 2020) a general-equilibrium overlapping-generations model is used to analyse how large fiscal adjustments are needed to achieve fiscal goals when behavioural responses are taken into account. In a static computation, neglecting such responses, a strengthening of the fiscal balance with 0.6% of GDP (see above) requires a rise in the tax rate for labour income of 1.4 percentage points. In a dynamic computation, considering

[249] Similar alternative scenarios are analysed in the 2019 report (Konjunkturinstitutet 2019). The 2018 report (Konjunkturinstitutet 2018a) analyses three alternative scenarios: no standard increase in welfare services, higher equilibrium unemployment and lower equilibrium unemployment. The alternative scenarios in the 2017 report (Konjunkturinstitutet 2017) are no healthy ageing and unchanged exit age from the labour market, and lower labour input per user of welfare services.
[250] According to tables in the report, Maastricht debt (general government consolidated gross debt) eventually even turns massively negative. This is not, however, possible. It cannot fall below zero.
[251] See Section 4.2.
[252] The S2 value close to zero – almost long-run sustainability – is consistent with the projections of large deteriorations of financial net wealth and Maastricht debt because their levels almost stabilise in the very long run.
[253] However, both the 2017 and 2018 reports (Konjunkturinstitutet 2017, 2018a,b) provide S2 indicators in the alternative scenarios.

also behavioural effects (mainly on labour supply) the required increase in the tax rate is 2.5 percentage points, i.e. it is almost 80% larger. If the adjustment is instead done through lower transfers, a reduction of 8% is required according to a static calculation but only a 6% one according to a dynamic calculation.[254]

Konjunkturinstitutet (2020) also provides an in-depth analysis of the public finances of local governments. As they are responsible for health care (regions) and old-age care (municipalities), increasing ageing costs will primarily fall on them. It is concluded that sustainable local-government finances (defined as annual net borrowing of 0.3% of GDP) requires a rise of central-government grants to them of 1.4% of GDP until 2050. If the grants were instead to be held constant in nominal terms (which they will not be), the local-government tax rate on labour income and transfers would have to rise by nine percentage points. If the central-government grants make up a constant fraction of local-government consumption expenditure, the required rise in the local-government tax rate is around 2.5 percentage points. These projections illustrate clearly the future challenges facing the local government sector.

Fiscal-Policy-Council viewpoints

Unlike the Economic Council in Denmark, the Swedish Fiscal Policy Council does not provide fiscal sustainability calculations of its own (see, for example, Fiscal Policy Council 2017, 2018, 2019). Like the Finnish Economic Policy Council, it mainly comments on the sustainability analyses made by the Ministry of Finance (and others). The level of ambition is, however, much lower than in Finland. The discussion is brief and mainly confined to describing the analyses of the Ministry of Finance and the National

[254] When raising the tax rate, there is a dominating substitution effect reducing labour supply. When lowering transfers, there is only an income effect raising labour supply. In the 2019 report, similar calculations were made for labour tax increases. However, the differences between the dynamic and static effects were much smaller there: the required increase in the tax rate to achieve a given fiscal strengthening was only 35% larger in the former case. Although this analysis is well explained in the 2020 report, it remains unclear why the difference between the two types of calculations are larger there than in the earlier report. In addition to the S2 indicator, the 2017 and 2018 reports calculated an S2+ indicator, which took some dynamic effects into account. The supplementary indicator considered that closing of the sustainability gap for the primary fiscal balance would affect the households' financial wealth and thus tax revenues from capital-income taxation. For example, the S2 indicator was calculated to -0.6 and the S2+ indicator to -1.0 in the 2018 report (Konjunkturinstitutet 2018a).

Institute of Economic Research, comparing them and making some very general judgements.

The Fiscal Policy Council's 2017 report contains a somewhat more extensive discussion than other reports. It includes the calculation of S1 indicators for three different scenarios based on a requirement that Maastricht debt should amount to 35% of GDP (the debt anchor) in 2030.

The Fiscal Policy Council's low level of ambition is likely explained by the fact that the National Institute of Economic Research publishes a thorough fiscal sustainability analysis which supplements that of the Ministry of Finance. Still, it would probably be valuable if the council could provide more in-depth assessments of these analyses as it to some extent did earlier.[255]

Conclusions on Sweden

Like for other EU countries, the European Commission analyses fiscal sustainability in Sweden. Domestically, both the Ministry of Finance and the National Institute of Economic Research provide high-quality analyses. They are presented clearly with easily accessible discussions of the interpretation of the sustainability concept, assumptions and methodology. Each analysis also contains explanations of changes to preceding analyses and to the calculations by the other institutions. The National Institute's sustainability analyses are the most extensive ones. The Fiscal Policy Council reviews existing analyses but has usually not provided much value-added.

The analyses in Sweden put substantially less weight on the S2 indicator than the ones in Denmark and Finland. This likely reflects less operational significance for the indicator in policy formulation because of a more sceptical attitude towards such a summary indicator. Instead, there is more emphasis on fiscal-balance and government financial-wealth (debt) paths.

Table 6 compares different institutions' S2-indicator values in their baseline scenarios. There is more variation among the various institutions than in Denmark and Finland. The European Commission

[255] See, for example, Finanspolitiska rådet (2008, 2011).

Table 6 S2 indicator in baseline scenarios in various sustainability analyses for Sweden

	2015	2016	2017	2018	2019	2020
Ministry of Finance	-1.1 | -1.0	-1.1 | -1.0	-1.8 | -1.8	-0.7 | -0.4	-1.5 | -1.3	
National Institute of Economic Research	3.3	0.7	0.0	-0.6	0	0.1
European Commission	2.3	1.0	0.5	1.1	1.2	

finds a positive S2 value, the National Institute of Economic Research (in recent years) a value close to zero, and the Ministry of Finance a negative S2 value.

It is a problem that the various institutions make so different assumptions that their baseline scenarios are hard to compare. This is mainly due to the Ministry of Finance's unusual assumptions regarding no increase in the standard of welfare services, no increase in the exit age from the labour market and no healthy ageing. The ministry's inclusion of alternative scenarios only helps to a limited extent as they are not chosen so that they match the other institutions' baseline scenarios. It would be helpful if the Ministry of Finance chose its baseline scenario to better match those of the National Institute and the European Commission.[256]

It is somewhat surprising that the sustainability analyses for Sweden do not focus on two factors which have been much stressed in the Swedish economic-policy debate. The first factor is a likely rise in defence expenditure as a share of GDP (there appears to be a political consensus to increase the share from the current 1% of GDP to at least 1.5% in 2025). The second factor is that the increasing public-sector employment share (mainly the employment share of

[256] The Commission assumes that per-user costs of welfare services increase in line with GDP per capita. The Commission also assumes healthy ageing.

welfare services) associated with increasing ageing costs is likely to require relative-wage increases there.[257]

The government's communication to the parliament on the fiscal framework (Regeringen 2018b) stresses the need to complement the fiscal-sustainability analyses with analyses of intergenerational distribution. But, unlike in Denmark, explicit such analyses have not been attempted. The Ministry of Finance does, however, emphasise in its analyses that it would be unfair to current generations if a higher standard in welfare services or more leisure by future generations were to be paid for by higher fiscal surpluses today (pre-funding). According to the ministry, the costs for this should instead be paid for by the generations that enjoy the benefits of these changes.[258]

7.5 Norway

Fiscal sustainability analyses are made in Norway as well. But there are important differences to those in Denmark, Finland and Sweden. One is that the Ministry of Finance is the only regular provider, another that the analyses are made less frequently than in the three other countries. Every fourth year, a sustainability analysis is published in a report to the parliament with a longer time perspective (a *perspektivmelding* in Norwegian). Usually, there is also an update two years later in a report to the Parliament (a so-called *nasjonalbudsjett*) accompanying the government's annual budget bill. S2 calculations are not regularly reported. One reason for the differences to Denmark, Finland and Sweden is that Norway is not an EU member and hence not bound by EU regulations regarding sustainability analyses.[259] Another reason is that the Norwegian analyses are designed to fit into the country's fiscal framework with particular stipulations regarding petroleum revenues (see Section 4.1 and below). In addition to the Ministry of Finance, Statistics Norway

[257] See, for example, Calmfors (2018) and Calmfors et al. (2019). Regeringen (2018a, 2019b) raises the problem of how to achieve a larger re-allocation of labour in favour of the public sector than in the past but draws no conclusions regarding relative-wage developments. However, Långtidsutredningen (2019a,b) examines a case where the relative wage in local-government welfare services increases annually by 0.5% and finds that this raises the cost of welfare services by 0.7% of GDP till 2035 as compared to a case without relative-wage changes. Also, as discussed above, Konjunkturinstitutet (2020) examines an alternative scenario where wages rise annually by 0.3 percentage points more in welfare services than in the private sector. The outcome is a deterioration of the general-government net financial position in 2010 by 14 percentage points as compared to the baseline scenario.
[258] See, for example, Regeringen (2018a,b). See also Section 3.2 above.
[259] This also means that the European Commission does not publish fiscal sustainability analyses for Norway. However, projections of age-related costs are made in the Commission's ageing reports (see, for example, European Commission 2018b).

occasionally publishes fiscal sustainability analyses to highlight particular issues.

Ministry-of-Finance analyses

To understand the Ministry of Finance's sustainability calculations, it is helpful to start out from the Norwegian fiscal framework. The state's revenues from petroleum production do not go directly into the government budget. Instead, they are accumulated in a wealth fund, the *Government Pension Fund Global*, which invests only in foreign assets.[260] The government runs a non-oil fiscal deficit which is covered by withdrawal from the fund so that there is overall budget balance. The key fiscal rule (*handlingsregelen* in Norwegian) is that withdrawals should over time equal the expected real return on the wealth fund (this rate of return is since 2017 set at 3%). This will guarantee that the real value of the fund is held constant once petroleum revenues stop flowing into it.

The most recent fiscal sustainability analysis was made in Finansdepartementet (2017). A more detailed account of the calculations as well as of the underlying assumptions is given in a background paper from the ministry (Dyvi 2017). The basic methodology is similar to the methodologies used in Denmark, Finland and Sweden. The following assumptions in the baseline scenario should be noted:

- Healthy ageing is assumed by associating each year of increased life expectancy with an upward shift of age profiles for average per-user resource inputs in health and long-term care in different groups by 0.6 years.
- The pension reform in 2009 introduced life-expectancy adjustment of old-age pension benefit levels. This is assumed to raise the exit age from the labour market.[261]
- The standard of health care is taken to be increasing over time. More specifically, the assumption is that the resource input in the hospital sector (which makes up around ¾ of employment in health care) is assumed to rise by 0.5% per year.[262]

[260] See also Section 3.2.
[261] Such a rise is not assumed for Norway in the EU ageing reports (see, for example, European Commission (2018b).
[262] In principle, a fixed-proportions production function is assumed. This would mean equiproportional rises in labour, intermediate goods and capital inputs. As the prices of intermediate inputs and capital are assumed to fall relative to wages, the assumption of fixed proportions between inputs implies falling cost shares for intermediate goods and capital. To prevent this fall from becoming too large in the projections, a certain upward adjustment in the use of the non-labour inputs is imposed.

The dependence of public finances on petroleum income and the return on assets in the wealth fund means that the assumptions regarding them are crucial. Oil and gas production is assumed to gradually fall. Output in 2060 is expected to be only around ¼ of the level in 2015. Together with the assumptions made regarding oil prices, mainland GDP and the rate of return on the wealth fund (3%), the implication is that withdrawal from the wealth fund will fall from around 8% of mainland GDP in 2017 to around 6% in 2060 and 3% in 2100.

Finansdepartementet (2017) does not report any S2 indicator. Instead, the path of the *fiscal gap* (*inndekningsbehovet* in Norwegian) over time is calculated. The gap in a specific year is defined as the improvement in the structural central-government non-oil fiscal balance in per cent of mainland GDP (relative to 2017) needed for maintaining a balanced overall budget given the projected government-expenditure rises. The fiscal gap thus gives the improvement of the annual structural non-oil fiscal deficit required for the latter to equal the annual withdrawal from the petroleum wealth fund of 3% of its value. In the baseline scenario, the fiscal gap is 5.3% of mainland GDP in 2060 and 9.5% in 2100. The projected change in the composition of the population (mainly due to ageing but also to immigration) is a major factor behind the sustainability problems as elsewhere. But in addition, decreasing withdrawals from the wealth fund as a *share of (mainland) GDP* is important. This decrease is a consequence of the rule that these withdrawals should amount to the expected real return on the fund assets. This must imply a fall relative to GDP when the real fund value first grows more slowly and finally stops growing at all as petroleum revenues peter off. The impact of this on fiscal sustainability is analogous to the impact of a fall in the ratio of tax revenues to GDP.

The fiscal-gap and S2 calculations are not directly comparable. As explained in Section 6.2, the S2 indicator is a single time-independent summary metric showing the *immediate and permanent* strengthening of the primary fiscal balance required to fulfil the government's intertemporal budget constraint, i.e. ensuring that net debt (net financial wealth) as a share of GDP stabilises at some value in the long run. The fiscal gap is instead a time-dependent measure: it gives the strengthening of the fiscal balance needed to maintain overall budget balance at a *specific future point of time*. With increasing

ageing costs and decreasing withdrawals from the wealth fund relative to GDP, this means an increasing path for the fiscal gap. If the fiscal gap is calculated for a long future period, it will be below the S2 indicator in the beginning and above it in the long run.

The relationship between the fiscal gap and the S2 indicator is discussed in Finansdepartementet (2013). In the baseline scenario, a fiscal gap of 6.1% of GDP in 2060 is calculated. The S2 indicator is 3.4% of GDP.[263]

The Ministry of Finance's sustainability analyses examine several alternative scenarios. In Finansdepartementet (2017), one such scenario is a pure "population scenario" without healthy ageing, increasing standards in health care and rising employment among elderly persons. The fiscal gap is larger in this scenario than in the baseline one: 6.0% in 2060 and 11.3% in 2100. The fiscal gaps in nine other alternative scenarios are also examined. These include higher and lower oil and gas prices, higher and lower real return on the wealth fund's assets, higher and lower productivity growth in the private sector, higher employment, higher public-sector productivity growth and larger rises in the standard of welfare services.[264] Finansdepartementet (2013) examines as many as 15 alternative scenarios. Like in the Swedish Ministry of Finance's sustainability calculations, changes in the assumptions regarding developments in working time and the standard of welfare services have the largest impact.[265]

The Norwegian Ministry of Finance discusses various policy options to close the sustainability gap in a more transparent way than the ministries of finance in Denmark, Finland and Sweden. Finansdepartementet (2017) analyses explicitly how large changes in various respects are required if they alone are to cover the fiscal gaps and the possibilities to achieve them. Increases in hours worked per person in the population, higher productivity growth in welfare services, higher user charges and higher taxes are discussed. It is argued that eliminating the sustainability gap through only *one* such alternative is not likely to be possible as this would require very large changes. For

[263] In this calculation, the expected real return on the wealth fund's assets was set at 4%. It was reduced to 3% in Finansdepartementet (2017).
[264] See also Dyvi (2017),
[265] In Finansdepartementet (2017), changes in the assumptions regarding rises in the standard of welfare services have the largest effects. The impact of changes in the assumptions on working time developments is not studied. See also Section 7.4 above.

example, eliminating the projected gap in 2060 through increases in direct taxes on households only would mean a rise in the tax rate of 7–8 percentage points. Relying instead only on increased user charges would imply more than a doubling of them (from about 4% of mainland GDP to about 9% in 2060). The alternatives that are judged most favourably are increased hours of work per person in the population (a 13% rise till 2060 would be required) and higher efficiency in the production of welfare services. It is not specified, however, how these changes would come about.

Analyses by Statistics Norway

Statistics Norway occasionally publish fiscal sustainability analyses regarding specific issues. Two recent examples are Holmøy and Strøm (2017) and Bjertnaes et al. (2019). A third example is an analysis made for a government commission on productivity (Produktivitetskommisjonen 2016).[266]

The analyses by Statistics Norway are of high quality. Assumptions and methodology are reported in a transparent manner. They are, however, in places so detailed that they may be difficult to follow for a broader audience.[267] A drawback is that explicit comparisons are not made with the analyses by the Ministry of Finance.

The analysis in Produktivitetskommisjonen (2016) focuses on the impact on public finances till 2060 of changes in productivity growth. The effects are expressed as required changes in the average tax rate on household incomes if the fiscal rule of a structural non-oil deficit equal to the expected real return on the wealth fund's assets is to be followed.[268] The main conclusions are the expected ones. The impact of a rise in private-sector productivity growth, and thus in wage growth there, is small (because the increases in tax revenues from this are offset by increases in government expenditures when public-sector wages and transfer payments follow suit). In contrast, the impact of higher public-sector productivity growth is large (because the same services can be delivered with a smaller labour input, and thus at lower costs, at the same time as tax revenues increase when labour can be reallocated to the private sector).

[266] See Chapter 4.
[267] This applies to Holmøy and Strøm (2017), and Bjertnaes et al. (2019), whereas the exposition in Produktivitetskommisjonen (2016) is more accessible.
[268] The model does not, however, take endogenous labour-supply responses into account.

Holmøy and Strøm (2017) analyse the fiscal consequences of immigration. They compare two scenarios: one without future immigration and one where there is annual immigration of 26 000 persons, leading to a doubling of Norway's population in 2100 compared to the first scenario and to a population share of residents with a background in non-western countries of 29% in that year. The effect on public finances is expressed in terms of the same fiscal gap as in the Ministry-of-Finance analyses. Immigration of the magnitude studied would increase the fiscal gap above that resulting from ageing. According to the calculations, the gap would be 4% of mainland GDP in 2060, of which 2.4 percentage points can be attributed to migration.[269] The impact arises mainly because the return on the petroleum wealth fund's assets are shared with the immigrants, at the same time as they have the same right to cash transfers and welfare services as natives. The contribution of immigration to the fiscal gap remains more or less constant over time, whereas the contribution of ageing increases: in 2100, the overall gap is calculated to as much as 11% of GDP.[270]

Bjertnaes et al. (2019) focus on the fiscal impact of a permanent increase in fertility. They find a substantial adverse effect on the fiscal gap during the first 65 years. This is because the dependency rate (the ratio between those not in working age and those in working age) falls over this time span. After 65 years, the effect of increased fertility is negligible as the relative increases in employment and population will be approximately equal over such a long time horizon.[271]

Conclusions on Norway

The sustainability analyses in Norway differ from those in Denmark, Finland and Sweden. The analyses are very much tied to the fiscal framework according to which the structural central-government non-oil fiscal deficit should over the business cycle equal the expected return of the petroleum wealth fund. In line with this, a

[269] A drawback of the analysis is that because of differences in the basic assumptions, these numbers cannot be directly compared with the scenarios in Finansdepartementet (2017).
[270] Holmøy and Strøm also report useful computations of the lifetime contributions of individuals in various socioeconomic groups to the fiscal gap. It is found that western immigrant men (from Western Europe, Australia, Canada, New Zealand and the U.S) and immigrant men from Eastern European EU countries help reduce these gaps, whereas immigrant men from Africa, Asia and Latin America increase them as do newborn native men (!), although to a much smaller degree. Women in general contribute to the gaps, the largest contributions coming from immigrant women from Africa, Asia and Latin America, and from new-born native women (!).
[271] See also the discussion of the Finnish Economic Policy Council's 2019 report in Section 7.3.

path for the required strengthening of the non-oil fiscal balance – the fiscal gap – at different points in time is calculated. This gives the sustainability analyses operational significance for the government's long-term fiscal strategy.

The Ministry of Finance's analyses indicates a fiscal sustainability problem of similar magnitude as in Finland. The Norwegian problem is not only due to an ageing population. Another cause is a financial contribution from the wealth fund to the state budget that will over time fall relative to GDP: the growth in the real fund value will first fall as petroleum revenue tapers off and finally stop, at the same time as GDP keeps rising. The sustainability problems arising from this are similar to those that would arise from falling tax rates (but without the positive tax base effects that lower tax rates would imply).

In contrast to the other three large Nordic countries, S2 calculations are not done regularly. This is probably explained by the desire to relate the sustainability calculations to the fiscal framework. But the absence of S2 calculations makes it difficult to compare the sustainability analyses in Norway with those in other countries. Considerations of international comparability would seem to be a strong argument for regularly including such calculations in the Ministry of Finance's analyses.

Since petroleum production started in Norway, intertemporal concerns of how to allocate the revenues from it across generations have been at the forefront of the economic-policy discussion.[272] Against this background, it is surprising that the Ministry of Finance does not make sustainability analyses more often: more extensive analyses are made only every fourth year. This is in contrast to Denmark, Finland and Sweden where such analyses are made annually (and usually are updated during the year). It is also surprising that no attempts at explicit analyses of intergenerational distribution complement recent sustainability analyses.[273]

[272] This goes back as far as Tempoutvalget (1983) and Steigumutvalget (1988). For more recent analyses, see Thøgersenutvalget (2015) and Morkutvalget (2016).
[273] As is clear from Sections 7.2–7.4 there is not much of such analyses in the other Nordic countries either, although some attempts have been made in Denmark. But given the focus on a "fair" intergenerational distribution of petroleum revenues in Norway, one could have expected such analyses to be made regularly there. This was the case earlier.

The Ministry of Finance is the only regular producer of fiscal sustainability analyses in Norway. This is also a difference to Denmark, Finland and Sweden where there are several domestic providers. This likely stimulates discussion and methodological developments. It would probably be beneficial if Statistics Norway or Norges Bank also could provide sustainability analyses regularly. An independent expert council (economic-policy watchdog) could also contribute to fiscal sustainability analysis through monitoring and critical discussion of the government's calculations. As discussed in Section 7.3, such interaction with the Economic Policy Council has influenced the Ministry of Finance's analyses in Finland. The Fiscal Policy Council earlier had a similar impact in Sweden.[274] As was discussed above, Norway has no such independent economic-policy watchdog.[275]

7.6 Iceland

Fiscal sustainability analyses have not been made earlier in Iceland. However, the Public Finance Act adopted in 2015 stipulates that "at least every three years the Minister (of Finance, my comment) shall submit to the Althingi (the parliament, my comment) a report containing an assessment of the likely development of social, employment, environmental and regional factors and demographic variables for the next decades and their impact on the fiscal performance, such as fiscal balances, financial position and commitments of public entities".[276] A first such sustainability analysis is now being developed by the Ministry of Finance and will be published in 2020. The ministry is not aware of any plans by the Central Bank of Iceland or the newly established Fiscal Council to conduct similar analyses.

7.7 Comparisons, lessons and recommendations on fiscal sustainability analyses in the Nordics

Fiscal sustainability analyses have been made since the early 2000s in Denmark, Finland, Norway and Sweden. Such analyses have not been made in Iceland earlier, but the Ministry of Finance there is now starting with such calculations. There are both similarities and

[274] Finanspolitiska rådet (2008, 2011) included various suggestions on how the Ministry of Finance could develop its sustainability analyses.
[275] See Section 5.5. There exists, however, an advisory expert committee for model and methodological issues (Modell- og metodeutvalget) with outside experts in the Ministry of Finance. On the government's website, one can find powerpoint slides from a seminar on long-term projections and fiscal-sustainability analyses with participants from Denmark, Norway and Sweden held in November 2018. See https://www.regjeringen.no/no/aktuelt/seminar-om-finanspolitisk-barekraft--bruk-av-langsiktige-framskrivinger/id2615525/.
[276] Public Finance Act (2015), Article 9.

differences between the four large Nordic countries in the way the analyses are made, by which institutions they are produced, in what manner they are communicated and how they are used. However, the basic methodology and assumptions are the same.

In Denmark, Finland and Sweden fiscal sustainability analyses are published twice a year. Summary S2 indicators are always reported. They have played an operational role for economic policy in Denmark and Finland, but not in Sweden. In Norway, the Ministry of Finance publishes full-blown sustainability analyses only every fourth year (but usually with updates two years later). The focus is on the time path of the fiscal gap – the fiscal strengthening required for the non-oil fiscal balance to continuously equal the expected return of the petroleum wealth fund. An S2 indicator is usually not computed. This is explained by the special conditions associated with the country's petroleum wealth and the fiscal framework adopted to spread the gains from it over time and across generations. Still, for reasons of international comparability, it would be worthwhile if also S2 calculations were produced regularly.

In Finnish sustainability analyses, the main emphasis has been on the S2 indicator, whereas less stress has been put on analysis of the exact long-term fiscal-balance and government-debt paths. This is surprising in view of the fact that government gross debt is close to the EU ceiling. In contrast, Swedish analyses – especially in recent years – have focused more on the fiscal-balance, net financial wealth and debt trajectories and less on the S2 indicator. Sustainability analyses in Denmark treat the S2 indicator and the paths for the fiscal balance, net financial wealth and debt more equally.

The sustainability analyses by the ministries of finance in all the four large Nordic countries are of high quality. In principle, one should expect the existence of also other providers to help raise quality. Therefore, it is of great value that there are also other domestic providers in the three Nordic EU member states (in addition to the European Commission which makes sustainability analyses for all member states): the Economic Council and occasionally DREAM in Denmark, Bank of Finland and occasionally ETLA as well the Economic Policy Council in Finland, and the National Institute of Economic Research in Sweden. In this respect Norway stands out, as the Ministry of Finance is the only regular provider. However, high-quality supplementary analyses of specific issues are occasionally made by

Statistics Norway. But a drawback is that these analyses are hard to compare with those of the ministry. The country would probably benefit from having also other regular providers of sustainability analyses.

The sustainability analyses by the ministries of finance are, broadly speaking, based on the extrapolation method rather than on dynamic overlapping-generations general-equilibrium models (see Section 6.1). Such more elaborate models have been used by some of the additional providers: DREAM in Denmark, ETLA in Finland and the National Institute of Economic Research in Sweden (in the latter case only to a small extent). The differences in methodology do not, however, usually seem to change the results much relative to the analyses made by the ministries of finance.[277]

As to the frequency with which sustainability analyses are made, it is not obvious what is best: to do it annually (or even more often) as in Denmark, Finland and Sweden or more infrequently as in Norway. It may, of course, be helpful for policy to have continuous access to updated sustainability assessments. However, changes between subsequent years have usually been small in Denmark, Finland and Sweden. Very frequent analyses also run the risk of becoming mechanical and repetitive. This is clearly the case with the analyses made by the ministries of finance in Finland and Sweden where similar reasoning and formulations are often repeated from year to year.

There are important differences between the countries in the way the analyses are communicated. In Denmark and Sweden, presentations are extensive and pedagogical. In contrast, the sustainability analyses in Finland are presented and explained very briefly, which likely make them less accessible to a wider audience. This is contradictory in view of the large policy importance which has been attributed to the S2 sustainability indicator in that country. The Norwegian Ministry of Finance's sustainability analyses are clearly communicated, even though the expositions are less extensive than in Denmark and Sweden.

Both Denmark and Sweden are good examples of how analytical differences between providers can be reported. The Economic Coun-

[277] Andersen (2013) draws the same conclusion.

cil in Denmark and the Ministry of Finance in Sweden (and to some extent the National Institute of Economic Research) in Sweden provide good explanations of such differences.

The baseline fiscal projections by the Swedish Ministry of Finance differ in one important respect from most other calculations: unchanged standards of welfare services as well as unchanged exit ages from the labour market and no healthy ageing are assumed. These assumptions are unfortunate. The net effect is likely to overstate fiscal sustainability. Although also alternative scenarios are presented, these are not matched to the scenarios presented by the National Institute of Economic Research and the European Commission in such a way that the results can be easily compared. More realistic assumptions in the baseline scenario on the part of the Swedish Ministry of Finance would be desirable.

The sustainability analyses in the Nordic countries all include alternative scenarios. A particularly pedagogical device for the policy discussion – that could serve as a model also for others – is the analysis by the Norwegian Ministry of Finance of how large a change in a specific "policy" variable (for example, average tax rate on labour income, user charges, productivity growth in welfare services or employment) would be required if sustainability gaps are to be closed by adjustment in that variable only.

When it comes to assessing fiscal sustainability problems in the different countries, it is clear from the published analyses that Finland and Norway have the largest problems. Considerable sustainability gaps have been found in both countries. In Finland this is mainly related to ageing, in Norway to both ageing and future falls in the contribution to the state budget from the petroleum wealth fund as a share of GDP. Denmark does not seem to have any sustainability problems: rather it has been discussed whether fiscal policy there is "oversustainable", i.e. if tax revenues are too high and/or public expenditure too low in a long-term perspective.[278] It is noteworthy that the various sustainability analyses for Denmark and for Finland reach broadly similar conclusions, whereas there is more variability in

[278] It should, however, be kept in mind that the sustainability calculations for Denmark rest on the assumption that the rules regarding the indexation of the retirement age to life expectancy are actually followed. Although there is a mechanical indexation rule embedded in legislation, the concrete changes have to be formally decided by the parliament every five years.

the analyses for Sweden: for this country, the European Commission has found a positive S2 indicator, the National Institute of Economic Research an indicator close to zero, and the Ministry of Finance a negative indicator"

The exact assumptions behind the sustainability calculations can always be discussed. Two circumstances should be noticed in particular:

- There is reason to expect defence expenditure to increase relative to GDP in all the four large Nordic countries. Denmark and Norway are members of NATO where rises to 2% of GDP by 2024 have been agreed. In Sweden, there appears to be a political consensus on a rise from the current very low level of 1% of GDP to at least 1.5% in 2025. Still, none of the sustainability calculations take this into account (not even in alternative scenarios).
- A usual assumption is that wage increases will be the same across the whole economy. This is probably not consistent with the projections that age-related welfare services will expand and employ an increasing share of the labour force. For example in Sweden, recent labour shortages for nurses and teachers have caused relative wages to increase for these groups. It might be realistic to assume future relative-wage rises for employees in welfare services in all the Nordic countries.[279]

Consideration of both the above factors would weaken the assessments of public finances in the future.

The interest-growth differential is crucial for fiscal sustainability analyses. As discussed in Section 6, a positive such differential, in the long run, is a fundamental assumption underlying the model setups used. At present interest rates are, however, lower than growth rates. It is a common judgement that this situation will persist in the foreseeable future. This is taken into account in the projections by assuming that there will be a gradual convergence to a positive interest-growth differential. Given the importance of the difference

[279] See Calmfors (2018) and Calmfors et al. (2019).

between the interest rate and GDP growth, more sensitivity analyses of different paths for this difference and of how it depends on the level of debt (see Section 6.4) would seem to be warranted.

Denmark, Finland and Sweden are all encompassed by the EU ceiling for government gross debt of 60% of GDP. Sweden has an explicit lower national debt target (anchor) of 35% of GDP. And Finland likely has a lower implicit debt target than the 60% ceiling. In view of this, it is surprising that more calculations regarding the requirements to reach such alternative targets in specific years are not made.

A common deficiency in the sustainability analyses in Denmark, Finland and Sweden is that differences between the paths of general-government net financial wealth and Maastricht debt (general-government consolidated gross debt) are not well explained. There are usually no transparent accounts of the differences between these two stock concepts and of which exact assumptions have been made regarding the future developments of various types of government assets and debts. This makes it particularly difficult for readers of the analyses to judge the projected changes in Maastricht debt and whether other paths for it could be chosen through sales or purchases of assets (which do not change net financial wealth).

A final observation concerns explicit analyses of intergenerational distribution. Although such aspects are discussed in all four large Nordic countries, this is usually done only in an informal way: the only exception is Denmark where more formalised analyses have been tried (but are still at a very preliminary stage). If one takes the intergenerational aspects seriously, explicit analyses of them ought to be made.

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