Rapport till Finanspolitiska rådet

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Net wealth analysis and long term fiscal policymaking

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Finanspolitiska rådet är en myndighet som har till uppgift att göra en oberoende granskning av regeringens finanspolitik. Rådets uppgifter fullföljs framför allt genom publiceringen av rapporten **Svensk finanspolitik** som lämnas till regeringen en gång per år. Rapporten ska kunna användas som ett underlag bland annat för riksdagens granskning av regeringens politik. Som ett led i uppdraget anordnar rådet även konferenser och utger skrifter om olika aspekter på finanspolitiken. I serien **Studier i finanspolitik** publiceras fördjupade studier eller rapporter som härrör från externa uppdrag.

Abstract

Governments use national debt and the budget deficit as measures of fiscal position. But what should government policy aim to achieve with respect to these measures? Are these the right summary measures at which to be looking? This paper considers what the government should use as its fiscal targets to achieve policies that are consistent with long-term fiscal objectives. Among its findings are:

1. Setting long-term targets for fiscal policy should start with a specification of fundamental policy objectives. There are at least three important long-term objectives associated with concerns about debt and deficits: intergenerational equity, economic performance, and fiscal sustainability. These objectives may conflict and their relative importance depends on both social judgments and the economic environment.

2. If governments have incentives not to adhere to fiscal policy targets, then restrictions on fiscal policy actions may be desirable, even though such restrictions reduce the scope for varying policy in response to changes in economic conditions. An independent entity such as a fiscal policy council can serve as an alternative mechanism for ensuring compliance, although a certification of non-compliance, alone, may not impose a sufficient penalty.

3. A collection of forward-looking measures, presented in conjunction with an assessment of their dependence on particular assumptions, can provide far more information than short-term deficit targets alone, although care must be taken with respect to the method of presentation to ensure that the multiplicity of measures does not hinder the ability to provide a clear message regarding the desirability of particular fiscal policy paths.

Preface

The present report aims at taking a step towards filling a lacuna in Sweden's fiscal policy framework: the currently weak or absent link between long-term fiscal sustainability analysis and the short- to medium-term instruments – the expenditure ceiling and the surplus target. The basic idea is to formulate an overarching goal for fiscal policy in terms of net wealth of the public sector, and to derive from there a reference point for the medium-term policy. This idea is not new; similar thoughts have been discussed in general terms in the Swedish Ministry of Finance earlier.[1] A lot has happened in this area in recent years, however, and scanning the efforts made in this area by other countries and organisations has been an important basis for the present work.

The imposed frame of a 50-page report necessarily limits the presentation to a broad outline both of work done elsewhere and of the proposed developed framework for Sweden. A lot of work remains to be done before the sketch presented becomes operative. On the other hand, one conclusion from our survey is that several of the building-blocks required are already in place.

The author has benefited from input and comments from a number of experts in different areas. Special thanks go to Ingemar Härneskog, Margareta Söderhult and Lars Nordkvist at the Swedish National Financial Management Authority, Fredrik Bystedt and Ulla Robling at the National Institute of Economic Research, Johan Norberg and Dan Lundberg at Statistics Sweden, Tomas Nordström at the National Audit Office, Klas-Göran Larsson and Jonas Norlin at the Ministry of Finance, Gudrun Ensson and Danne Mikula at the Swedish Social Insurance Agency, and Erik Åsbrink of the Swedish Fiscal Policy Council; internationally, to Arthur Camilleri at the Australian Tresaury, Paul Rodway at the New Zealand Treasury, Kerstin Greb at the UK Treasury and Frank Eich formerly so, and finally to Bob Traa, Claudia Dziobek, Jay Surti, and Gösta Ljungman at the IMF.

Needless to say, I am solely responsible for whatever imperfections remain in the text.

Uppsala in April 2009

Per Molander

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[1] Finansdepartementet (2002).

Summary

Background

The question of sustainability of fiscal policy has been in focus of the economical-political debate for several decades now. Initially, this interest was triggered by more or less acute financial problems in many industrial countries, and the early attempts to define the concept reflected these immediate concerns. For a number of years now, there has been an increasing interest in longer-term outlooks, triggered by the public financial problems foreseen in most industrialised countries, mainly due to aging populations. The link between these projections and short- och medium-term budget documents have been rather weak, however. The present report discusses the possibility of developing a net wealth approach to the public sector in Sweden, starting from the various building-blocks that can be found in reports that are already published. The main aim is to fill a lacuna in the current framework of fiscal policy: the absence of a clear link between long-term sustainability analysis and the short- and medium-term instruments (the expenditure ceiling and the surplus target, respectively).

The term *net wealth* is used to design current net worth (assets minus liabilities) plus the discounted value of future revenue and expenditure suitably defined.

International outlook

There is currently a relatively intensive international discussion on medium- and long-term fiscal frameworks and analyses. Although there are differences in focus and approaches taken, there is also noticeable convergence. Countries that have advanced far in this area are Australia, New Zealand, and the United Kingdom. The European Commission has played an important role in developing a unified approach to the analysis of long-term stability of public finances within the union. This pertains not only to definitions of indicators of sustainability chosen but also to the analysis of important substantial phenomena such as aging populations and the development of tax bases.

The IMF has developed a net worth approach in its surveillance activities. Most applications are from middle income countries experiencing some public financial crisis, but there are also long-term forward-looking analyses of, e.g., Germany and Switzerland. The point of departure of the analysis is a conventional balance sheet for the state, but the Fund advances beyond that in its systematic, in-depth analysis of different risk factors in the medium and long term. Examples of such risk factors are: extra-budgetary long-term commitments such as pensions for public employees, implicit commitments vis-à-vis the financial system, and currency rate changes.

The International Federation of Accountants (IFAC) and the International Public Sector Accounting Standards Board (IPSASB) are currently involved in an attempt to standardise reporting on long-term fiscal sustainability. Even

within the fairly homogenous group of developed industrial nations involved in this effort, there are important differences in the way long-term fiscal problems are analysed. Differences appear in the fiscal framework, in the legal framework for reporting, and in boundaries and definitions of sustainability used.

Existing building-blocks in Sweden

An annual report for the state is presented to the Swedish parliament every year. The report takes the form of a communication from the government to parliament annexed to the spring bill, but most of the substance is presented in a background document produced by the National Financial Management Authority. The annual report is audited by the National Audit Office. The object of the report is the legal personality of the state. The annual report follows the standard format of an annual report, presenting an income statement, a balance sheet, a cash flow analysis, and a comprehensive set of accounting principles applied. Substantial efforts are made to consolidate the report by eliminating inter-agency flows of payment. Accounting is accrual based, as is the case for the reports from the agencies forming the basis of the consolidated report.

There are differences between the annual report and the state budget both concerning boundaries and accounting principles. The major difference in the former respect is that the annual report includes the public enterprises. Another difference is that fees and transfers – for instance revenue from sales – at the disposal of agencies appear in the annual report but are reflected in the budget only to the extent that they affect the borrowing requirement. Differences occur also because the budget is largely cash based whereas the annual report is accrual based, and because certain transfers are recorded at net value in the annual report but at gross value in the budget, as stipulated by the budget act. These differences affect the income statement more than the balance sheet, however.

More important are the differences between the annual report and the national accounts. The difference in net wealth amounts to 786 billion SEK (December 2006), which is enough to make the negative net wealth of the annual report positive in the national accounts. Sources of these differences have been analysed in detail by the National Financial Management Authority.

Long-term forecasts of public-sector revenues and expenditure are now produced by the Ministry of Finance on a regular basis both as part of Sweden's contribution to the convergence programme of the European Union and for the budget bills. The indicator of long-term sustainability used is now the S_2 indicator established by the EU as the leading indicator of sustainability. An analysis performed during 2008 shows that the S_2 indicator is negative, indicating that fiscal policy is sustainable. On the other hand, the sensitivity analysis performed shows that sustainability is precariously sensitive to changes in the basic assumptions.

Long-term projections for other parts of the public sector are produced for subnational governments by the Swedish Association of Local Authorities and Regions and, for the pension system, by the Swedish Social Security Agency.

These two aggregates maintain a mandatory balance and so represent less of a macro-fiscal problem as long as the rules are respected.

Methodological issues

A number of methodological issues have to be resolved before a unified approach to net wealth analyses can be put in place. As for *boundaries*, the whole of the public sector should be the object of analysis – central, regional, and local government, as well as the public pension system. Business-like *accounting principles* should be the norm, but market values should be estimated with some caution.

The basic norm of maintaining or restoring a positive net comprehensive value for the public sector calls for an *assessment of net current value* of the fiscal position. The standard annual report would be the starting point, but adjustments should be made in the direction of more market-like value assessments for marketable assets.

The *forecasting of expenditure* should be based on a family of models that are sufficiently sophisticated to capture the essence of the driving forces in each expenditure system, yet transparent enough for a reasonably large audience to judge on the quality of the analysis. At least on paper, state budget expenditure represents the dominant factor of uncertainty in the forecast. As for *revenue forecasting*, it is necessary to underline that if stock-market values are used in the assessment of current assets, these include expected future revenues.

Discounting represents a difficult problem with tangible political undertones. Normally, the risk free long-term interest rate is about 4 per cent. This has also been suggested as the appropriate rate of discount in socioeconomic cost-benefit analyses concerning long-term infrastructure investments. Nonetheless, there is reason to believe that there is strong support for a much lower, possibly variable discount rate. The choice of values must anyhow be subject to political scrutiny and decision.

Large uncertainties prevail in the assessment of demographic trends, macroeconomic parameters etc. This calls for a well developed and pedagogical treatment in reporting, for instance using uncertainty bands. *Guarantees* are already reported in the government's annual report to parliament. The sum total of guarantees and other liabilities is above 20 per cent of GDP. Recent commitments due to the current financial crisis have drastically increased the volume. The risk assessment is currently incomplete, and the government should strive at filling this lacuna.

General format

The main building blocks for a fiscal policy regime of the type sketched in the report would be a hierarchy of fiscal policy targets, supported by an annually updated net wealth computation.

The top layer of fiscal policy would be the requirement on long-term sustainability of fiscal policy against the backdrop of foreseen changes in the

revenue and expenditure landscapes. Because these forecasts are necessarily fraught with uncertainty, some sort of probabilistic treatment is necessary. An operative restriction could be for instance that comprehensive net wealth should be positive with 90 per cent probability.

Given a long-term trajectory satisfying the basic requirement of maintaining (or restoring) a positive net wealth position for the public sector, a set of surplus targets with a planning horizon of 50 to 100 years can be computed. Each target would normally be constrained to remain constant over a decade, but a mid-term review is justified. The surplus targets would be decided by parliament every ten years for the decade to follow. They would be reviewed perhaps every second year in the budget bill or the economic spring bill, but would not be subject to new decisions unless the situation changes dramatically enough for a new decision to be considered necessary. The transition from one period to the next requires particular care in order to avoid large swings in balance requirements.

Once the surplus target has been decided, it is in principle possible to compute the appropriate expenditure and tax levels. These choices would of course be affected by political priorities, and a wide spectrum of expenditure and tax ratios can be combined with one and the same surplus target. The current problem of deciding how to adjust the calculation to the business cycle would remain the same, but preferably the government should decide on one of the methods available and stick to that method.

Finally, annual budgets are developed subject to the expenditure ceiling already decided. Routines for this process are already in place.

The hierarchy sketched is summarised in the table below.

Component	Time span	Main characteristics
Long-term net wealth computation	50 – 100 years	Assessment of the net wealth of the public sector based on historically accumulated values and foreseen expenditure and revenue trajectories. Basic requirement: maintaining or restoring a positive net wealth position.
Surplus targets	10 years, with a mid-term review	Profile of surplus targets computed on the basis of sustainable long-term paths for the public sector under the condition of preservation of the wealth position. Assessed annually, subject to a more profound mid-term review after 5 years, but in principle held constant over a decade.
Expenditure ceilings	3 years	Rolling, nominal ceilings, computed on the basis of surplus targets, adjusted for the current business cycle using a pre-established format (such as moving average or structural deficit).
Annual budgets	1 year	Developed according to established rules and routines, subject to the restriction that the existing expenditure ceiling be respected.

Sammanfattning på svenska

Bakgrund

Frågan om finanspolitikens uthållighet har legat i fokus för den ekonomisk-politiska debatten i decennier nu. Ursprungligen föranleddes detta intresse av mer eller mindre akuta statsfinansiella problem i industriländerna, och de tidigaste försöken att definiera begreppet uthållighet återspeglar dessa närliggande problem. På senare år har intresset för mer långsiktiga frågor ökat, beroende på ett antal problem på längre sikt som har identifierats – framför allt åldrande befolkningar. Länken mellan de långsiktiga analyserna och de kort- och medelsiktiga budgetdokumenten har emellertid varit svag. I föreliggande rapport diskuteras möjligheterna att utveckla en nettoförmögenhetsanalys för den offentliga sektorn i Sverige, med utgångspunkt i de byggstenar som finns i redan publicerade rapporter. Huvudsyftet är att fylla luckan mellan långsiktiga hållbarhetsanalyser och de kort- och medelsiktiga finanspolitiska instrument som redan utnyttjas: utgiftstaket och överskottsmålet.

Termen *nettoförmögenhet* används för att beteckna det aktuella nettovärdet (tillgångar minus skulder) plus det diskonterade värdet av framtida inkomster och utgifter definierade på lämpligt sätt.

Internationell utblick

Det förs för närvarande en ganska intensiv internationell diskussion om medel- och långsiktiga ramverk för finanspolitiken. Fastän det finns skillnader i inriktning och ansatser, föreligger också många likheter. Australien, Nya Zeeland och Storbritannien är länder som har kommit långt på området. EU-kommissionen har spelat en betydelsefull roll för att utveckla en enhetlig metod för analysen av de offentliga finansernas långsiktiga stabilitet inom unionens medlemsländer. Detta gäller inte bara definitionen av stabilitetsindikatorer utan också den substantiella analysen av åldrande befolkningar och skattebasernas utveckling.

IMF har utvecklat en nettoförmögenhetsansats som ett instrument i sina löpande övervakningsaktiviteter. De flesta tillämpningarna gäller medel- och låginkomstländer, men långsiktiga analyser har också har genomförts också för exempelvis Schweiz och Tyskland. Utgångspunkten är en traditionell balansräkning för staten, men IMF har utvecklat denna till att inbegripa också systematiska analyser av riskfaktorer på medellång och lång sikt – extrabudgetära åtaganden som pensioner till offentliganställda, implicita åtaganden gentemot det finansiella systemet, valutakursförändringar med mera.

International Federation of Accountants (IFAC) och International Public Sector Accounting Standards Board (IPSASB) är för närvarande engagerade i ett försök att standardisera rapporteringen om långsiktiga finansiell hållbarhet. Även inom den relativt homogena grupp av utvecklade industriländer som deltar i arbetet föreligger viktiga skillnader i det sätt på vilket hållbarheten

analyseras. Skillnader finns till exempel i finansiella ramverket, i de lagstadgade kraven på rapportering och i de avgränsningar och hållbarhetsdefinitioner som utnyttjas.

Existerande byggstenar i Sverige

En årsredovisning för staten (ÅRS) presenteras för riksdagen varje år. Rapporten är tekniskt sett en skrivelse från regeringen till riksdagen i en bilaga till vårpropositionen, men huvuddelen av innehållet finns i ett underlagsdokument som sammanställs av Ekonomistyrningsverket (ESV). Rapporten granskas av Riksrevisionen. Föremålet för rapporteringen är den juridiska personen staten. Rapporten följer standarduppläggningen hos en årsredovisning med en resultaträkning, en balansräkning, en finansieringsanalys och en heltäckande beskrivning av de redovisningsprinciper som tillämpas. Betydande ansträngningar görs för att konsolidera betalningsflödena mellan myndigheter. Redovisningen görs enligt bokföringsmässiga principer, på samma sätt som för de myndigheter vilkas redovisning utgör grunden för rapporten.

Det finns skillnader mellan ÅRS och statsbudgeten vad gäller både avgränsningar och redovisningsprinciper. Huvudskillnaden i det första avseendet är att ÅRS inbegriper de statliga företagen. En annan skillnad är att avgifter och överföringar – exempelvis försäljningsintäkter – som står till myndigheternas förfogande är synliga i ÅRS men återfinns i budgeten bara i den utsträckning som de påverkar lånebehovet. Skillnader uppkommer också på grund av att budgeten i huvudsak är kassamässig, liksom därför att flöden redovisas netto i ÅRS men brutto på statsbudgeten såsom budgetlagen föreskriver. Sådana skillnader påverkar dock resultaträkningen mer än balansräkningen.

Mer betydande skillnader föreligger mellan ÅRS och nationalräkenskaperna (NR). Skillnaden i nettoförmögenhet uppgick i december 2006 till 786 miljarder kronor, vilket är tillräckligt för att den negativa balansen i ÅRS skall bli positiv i NR. Källorna till dessa skillnader har kartlagts och analyserats i detalj av ESV.

Långsiktiga analyser av den offentliga sektorns inkomster och utgifter produceras nu årligen av Finansdepartementet både som Sveriges bidrag till EU:s konvergensprogram och som ett inslag i budgetpropositionerna. Indikatorn på långsiktig hållbarhet är den S_2-indikator som har fastställts av EU som den viktigaste indikatorn för hållbarhet. Den senaste analysen visar att S_2-indikatorn är negativ, vilket tyder på att politiken är hållbar. Å andra sidan visar känslighetsanalyser att resultatet är känsligt för förändringar i grundantagandena.

Långsiktiga analyser för andra delar av den offentliga sektorn produceras för kommunsektorn av Sveriges Kommuner och Landsting och för pensionssystemet av Försäkringskassan (i framtiden Pensionsmyndigheten). Båda dessa aggregat har lagstadgade krav på sig att upprätthålla balans och utgör därför ett mindre makrofinansiellt problem så länge reglerna följs.

Metodfrågor

Ett antal metodologiska frågor måste lösas innan en enhetlig ansats för en nettonuvärdesanalys för den offentliga sektorn kan etableras. Vad gäller *avgränsningen* bör hela den offentliga sektorn ingå – staten, kommunsektorn och pensionssystemet. Redovisning bör ske enligt *bokföringsmässiga principer*, men värdering till marknadsvärde bör tillämpas med försiktighet.

Den grundläggande normen för den långsiktiga finanspolitiken – att upprätthålla eller återställa ett positivt nettonuvärde – kräver att ett sådant kan skattas från olika datakällor. Den nuvarande årsredovisningen för staten kan bilda utgångspunkt, men justeringar bör göras i riktning mot mer marknadsbetonade värden för de tillgångar för vilka det finns en marknad.

Utgiftsprognosen bör baseras på en grupp modeller som är tillräckligt sofistikerade för att fånga upp de viktigare utgiftsdrivande faktorerna i varje utgiftssystem, samtidigt som de är tillräckligt enkla för att externa bedömare skall kunna bilda sig en uppfattning om kvaliteten i analysen. I princip är statsbudgetens utveckling den dominerande osäkerhetskällan. Vad gäller *inkomstprognoserna* är det viktigt att notera att börsvärden som används i värderingen av tillgångarnas nuvärden inbegriper diskonterade framtida intäkter.

Diskonteringen utgör ett svårt problem med påtagliga politiska undertoner. Under normala omständigheter är statslåneräntan omkring 4 procent. Detta har också föreslagits som rimlig diskonteringsränta i samhällsekonomiska kostnads/intäktskalkyler för långsiktiga infrastrukturinvesteringar. Icke desto mindre finns det anledning att tro att det finns starkt stöd för en väsentligt lägre, möjligen variabel diskonteringsränta. Valet av räntesats måste hursomhelst bli föremål för politisk diskussion och beslut.

Stora *osäkerheter* föreligger i bedömningen av demografiska utvecklingstendenser, makroekonomiska parametrar och andra faktorer av betydelse för den långsiktiga balansen. Detta kräver en väl utvecklad pedagogisk behandling i rapporteringen, till exempel med utnyttjande av osäkerhetsintervall för utfallsvariablerna. *Garantier* är en stor osäkerhetskälla som redan rapporteras årligen i budgetdokumenten. Den totala garantisumman har tidigare uppgått till omkring 20 procent av BNP men har till följd av åtagandena i finanskrisens spår ökat med närmare halva BNP. Riskbedömningen är för närvarande ofullständig och behöver utvecklas.

Allmän uppläggning

Huvudbyggstenarna för en långsiktig analys av finanspolitiken av den typ som skisseras i rapporten är en hierarki av finanspolitiska mål, stödda av årliga beräkningar av den offentliga sektorns nettonuvärde.

Den övergripande budgetrestriktionen bör vara kravet på långsiktig hållbarhet mot bakgrund av förutsedd utveckling av inkomster och utgifter. Eftersom dessa projektioner är osäkra, krävs någon form av statistiskt ramverk. En användbar restriktioner skulle exempelvis kunna vara att nettonuvärdet skall vara positivt med 90 procents sannolikhet.

Om en sådan långsiktigt hållbar utvecklingsbana för den offentliga sektorn är given – innebärande ett krav på att politiken skall vidmakthålla eller återställa ett positivt nettonuvärde – kan en serie överskottsmål för en planeringshorisont på 50 till 100 år beräknas. Varje sådant överskottsmål bör som grundregel hållas konstant under ett decennium, men en halvtidsöversyn är motiverad. Överskottsmålen bör beslutas av riksdagen ett decennium framåt vart tionde år. Uppföljning bör ske årligen eller åtminstone vartannat år, men nya beslut bör inte tas annat om omgivningsförutsättningarna förändras drastiskt. Övergången från en period till nästa kräver särskild omsorg för att undvika alltför snabba förändringar i överskottsmålen.

När väl överskottsmålen har beslutats, kan utgiftstak och skattenivåer beräknas. Dessa val påverkas självfallet av politiska prioriteter, och ett brett spektrum av utgiftstak och skattenivåer kan kombineras med ett och samma överskottsmål. Nuvarande problem att beräkna utgiftstakets nivå utifrån överskottsmål skulle bestå, men regering och riksdag bör besluta om en viss metod för att hantera detta problem och hålla fast vid den beslutade metoden.

Slutligen bereds budgeten på vanligt sätt när väl utgiftstaket har beslutats. Rutiner för detta finns redan på plats.

Den föreslagna hierarkin sammanfattas i nedanstående tabell.

Komponent	Tidshorisont	Huvudkaraktäristika
Långsiktig beräkning av nettonuvärdet	50 – 100 år	Skattning av nettonuvärdet för offentliga sektorn baserad på historiska värden och förutsedda inkomst- och utgiftsutvecklingar. Grundkravet är att ett positivt nettonuvärde skall vidmakthållas eller återställas.
Överskottsmål	10 år, med utvärdering i halvtid	En sekvens av överskottsmål beräknade på basis av den offentliga sektorns långsiktiga utveckling. Uppföljning sker årligen med en grundligare analys efter 5 år. Som regel skall dock överskottsmålen hållas konstanta under ett decennium.
Utgiftstak	3 år	Rullande, nominella utgiftstak beräknade på basis av överskottsmålen, justerade för konjunkturläge enligt en i förväg överenskommen metod (glidande medelvärde, strukturellt underskott eller liknande).
Årliga budgetar	1 år	Utvecklade i enlighet med etablerade regler och rutiner under restriktionen att det gällande utgiftstaket skall respekteras.

1 Background

1.1 Sustainability of fiscal policy

The question of sustainability of fiscal policy has been in focus of the economical-political debate for several decades now. Initially, this interest was triggered by more or less acute financial problems in many industrial countries, and the early attempts to define the concept reflected these immediate concerns.[2] The Stability and Growth Pact of the European Union was created in order to ensure the sustainability of public finances in the member countries of an economic and monetary union at that time in the making. Sustainability was interpreted in the very direct and precise sense of controlled growth of the public debt. Successively, however, focus in the international discussion has been re-directed towards long-term problems such as aging populations and increased mobility of tax bases.[3]

Schick has distinguished four different aspects of the concept of sustainability:[4]

- *solvency*: the ability of the state to meet its financial obligations;

- *growth*: the desire to design a fiscal policy that promotes economic growth;

- *stability*: the possibility of meeting financial obligations at reasonably constant tax rate levels;

- *fairness*: a reasonable distribution of benefits and burdens between generations.

It is obvious that qualified decisions in this area call for decision support that goes beyond standard budget documents. Given that such budget documents deal mainly with the upcoming budget year, possibly supplemented by a multi-annual fiscal policy framework, focus is quite naturally on the short and medium term. Nonetheless, there is an increasing tendency to publish longer-term outlooks, either jointly with the standard budget documents or separately. But these analyses are normally not integrated into the overall policy framework, and so have a distinct *ad hoc* character.

1.2 Unambiguous information basis

In its report dated May 2008, the Swedish Fiscal Policy Council notes:

> Quite independently of the formulation of the budget constraint, there should be easily accessible information both on the savings of the public sector (incl. savings in real capital) and its total assets (incl. real capital) for anyone wishing to form a picture of the

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[2] Blanchard et al. (1990).
[3] See e.g. Andersen and Molander (2003).
[4] Schick (2005).

financial position of the public sector. It is noteworthy that no such information is presented in budget bills nor spring bills.[5]

What the Council demands is something much more basic than sophisticated long-term analyses of public-sector revenue and expenditure, namely an easily accessible and unambiguous statement of the fiscal position of the public sector. It is noted by the Council that the annual report on central government produced by the National Financial Management Authority[6] and commented on by the government in the economic spring bill is what comes closest to the information desired. Nonetheless, there are problems of compatibility between this report, the national accounts, and the budget. Even if such differences can be explained by differences in boundaries and definitions, they tend to muddle the discussion about the financial position of the state and what it implies for fiscal policymaking.

1.3 A unified approach

The IMF, in its report from the most recent Article IV consultation in Sweden,[7] has proposed a developed, annually produced balance sheet for the public sector, that aims at an estimate of the comprehensive net worth of the sector. Following a formal decision in 2002, the Fund has recurrently used a net worth approach in its surveillance activities, and has accumulated experience on the design of such an estimate. Most applications are from middle income countries experiencing some public financial crisis, but long-term forward-looking analyses for Germany and Switzerland have also been published.

1.4 Purpose of the study

The present report discusses the possibility of developing a net wealth approach to the public sector in Sweden, starting from the various building-blocks that can be found in reports that are already published. The main aim is to fill a lacuna in the current framework of fiscal policy: the absence of a clear link between long-term sustainability analysis and the short- and medium-term instruments (the expenditure ceiling and the surplus target, respectively). No attempt has been made to produce such a net wealth analysis within the time and resource bounds given; rather, the aim has been to identify methodological problems that must be solved for this approach to be meaningful, and to look for solution alternatives available in Sweden or abroad.

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[5] Finanspolitiska rådet (2008), p. 15.
[6] Ekonomistyrningsverket (2008).
[7] IMF (2008).

1.5 Outline of the report

After a brief account of the necessary definitions, the report starts by surveying some of the attempts that have been made internationally to analyse the fiscal stance of the public sector. In chapter 4, some of the useful building blocks already available in Sweden are identified. The following chapter discusses in more detail a number of methodological problems that must be addressed before a unified approach can be applied to the public sector as a whole. There are differences between the methods and conventions used both in Sweden and abroad, sometimes for good reasons, sometimes less so, and internal consistency is a prerequisite for creating a credible document on which to base a qualified fiscal policy discussion. The concluding chapter summarises the main observations and provides a simple illustration of how the framework outlined could be used in fiscal policy-making, as well as recommendations on how to pursue this endeavour further.

2. Basic concepts and definitions

A number of concepts are used in the analysis of fiscal policy. The abundance of concepts and definitions may seem bewildering, but different concepts are used for different purposes. The table below summarises some of the most frequent ones (table 2.1).

The four concepts appearing at the end under the heading of "Wealth and debt" will be particularly important in the discussion to follow. The main stock aggregates, assets and liabilities, comprise a number of categories with relatively precise definitions. These categories are listed in table 5.1.

With respect to net wealth and net worth, we will make the distinction that *net worth* refers to the current value of assets minus liabilities as classically defined, whereas *net wealth* will be used to design net worth plus the discounted value of future revenue and expenditure suitably defined. Whereas net worth is consequently historically defined, net wealth includes forward-looking components that enrich the discussion but at the same time create problems. The difference between classical accounting definitions and forward-looking are highlighted in the diagram below (figure 2.1).

There is an interesting clash of cultures when experts having different frames of reference – accountants, statisticians and economists – are required to unite on a common standard. Accountants and economists use economic data for different purposes. Accountants are normally involved with historical data, and tend to emphasize verifiability and precision in their work. Economists are often involved in forecasting, which requires approximation and pragmatism.

The assessment of future revenues is but one example of problems that would typically dealt with in different ways. If the norm is to assume a policy of "no change", a person with a background in law or accounting would perhaps find it natural to use only decisions formally taken by a competent body as the basis for analysis. Someone with a training in statistical estimation would find it equally natural to extrapolate from historical behaviour. Similar differences

obtain with respect to future liabilities. Whereas liabilities already incurred are relatively unproblematic – although projecting actual outcomes may represent a problem – estimating the future volume to be incurred is significantly more difficult.

Table 2.1 Analytical measures for fiscal policy

Core GFS balances

Net/gross operating balance	the net operating balance equals revenue minus expense. The gross operating balance equals revenue minus expense other than consumption of fixed capital
Net lending/borrowing	net operating balance minus the net acquisition of non-financial assets (or the gross operating balance minus the net acquisition of non-financial assets that also excludes consumption of fixed capital). Net lending/borrowing is also equal to the net acquisition of financial assets minus the net incurrence of liabilities
Cash surplus/deficit	net cash inflow from operating activities minus the net cash outflow from investments in non-financial assets

Other balances

Overall fiscal balance	net lending/borrowing adjusted through the rearrangement of transactions in assets and liabilities that are deemed to be for public policy purposes. Notably, all proceeds under privatization (including fixed asset sales) would be included as financial items; and subsidies given in the form of loans would be recognized as an expense
Adjusted overall fiscal balance	overall fiscal balance (or net lending/borrowing) adjusted to exclude some or all revenue grants, certain enclave activities such as the oil sector, and/or large and infrequent transactions that could distort the fiscal analysis
Overall primary balance	overall fiscal balance plus net interest expense
Primary operating balance	net operating balance plus net interest expense
Gross saving	gross operating balance minus net capital transfers receivable, including net capital grants and capital taxes (GFS codes 1133 and 1135)

Other macroeconomic variables

|	
Fiscal burden	tax revenue plus compulsory social security contributions (as a percent of GDP)
Total expenditure	expense plus the net acquisition of non-financial assets (excluding valuables, if possible)
Total expenditure composition	disaggregation of total expenditure through the functional classification (COFOG)
Government final consumption	expenditure approximated by compensation of employees, plus the use of goods and services, plus consumption of fixed capital, minus the sales of goods and services, plus purchases for direct transfer to households (mainly social benefits in kind)
Gross investment	acquisition less disposal of non-financial assets (excluding valuables, if possible

Wealth and Debt

|	
Net wealth position	net worth, which equals the total stock of assets minus liabilities
Net financial wealth position	total stock of financial assets minus liabilities
Gross debt position	stock of all liabilities except shares and other equity and financial derivatives
Contingent liabilities	stock of explicit government (public sector) guarantees plus the net present value of the obligations of social security schemes

Source: Government Finance Statistics Manual 2001, IMF.

Figure 2.1. Difference between classical accrual based assessment of the financial position and a comprehensive assessment including forward-looking analysis

Information provided in an accruals based statement of financial position
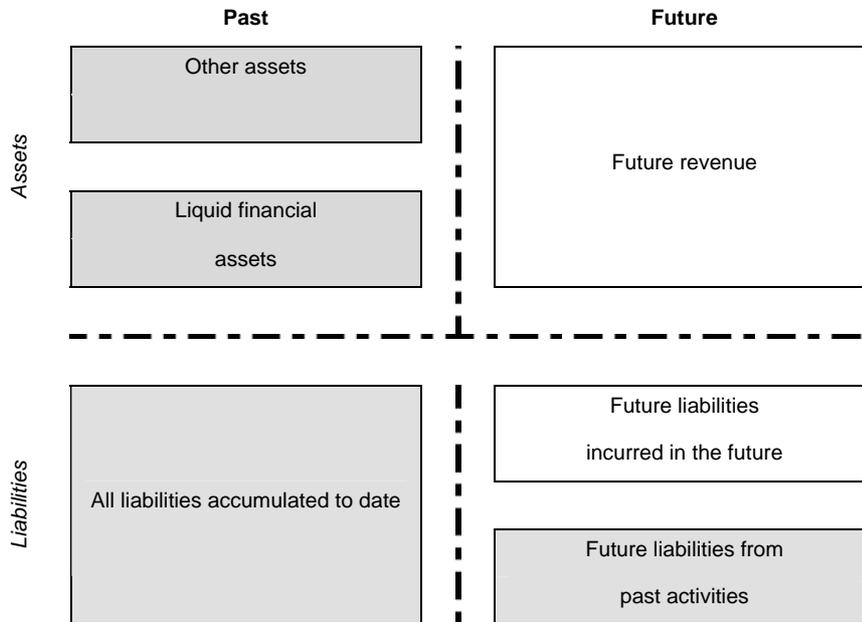
How prospective information can provide a more complete picture of financial condition
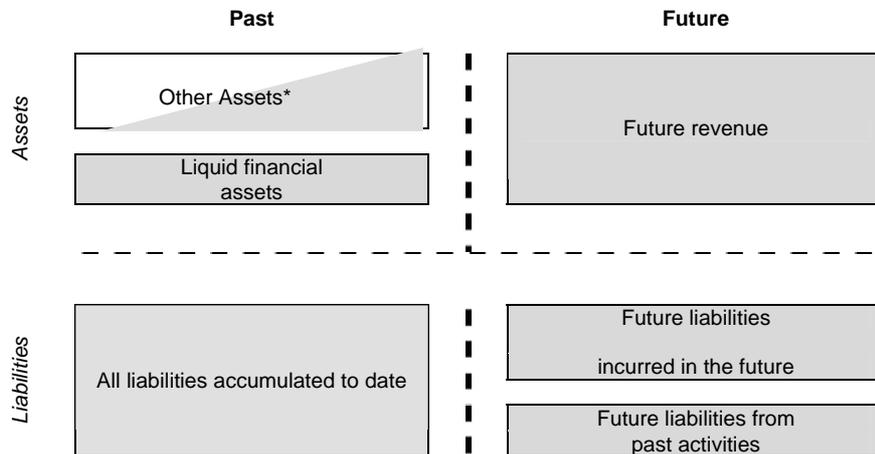
Note: Shaded areas indicate what is included. *Comprehensive projections usually only include financial assets.
Source: Copyright © 2009 by the International Federation of Accountants. All rights reserved. Used with permission.

3. International experience

There is currently a relatively intensive international discussion on medium- and long-term fiscal frameworks and analyses triggered by the public financial problems foreseen in most industrialised countries, mainly due to aging populations. Although there are differences in focus and approaches taken, there is also noticeable convergence. The countries referred to in the present overview all use variants of net wealth analyses in their fiscal policy planning, although the role assigned to such analyses varies in importance. The necessarily brief presentation below can be supplemented by numerous publications from the countries and institutions referred to.

3.1 Australia

The Australian government's fiscal and budgetary frameworks are regulated in the Charter of Budget Honesty Act of 1998. According to the act, the government is required to formulate fiscal policy in a medium-term framework and to publish its fiscal strategy in the annual budget. In each budget, the government also assesses the current fiscal outlook against this strategy. For the long-term perspective, the government is required to publish an intergenerational report (IGR) at intervals not exceeding five years, which contains fiscal projections under current policies over a forty-year period. The latest IGR was published in 2007.[8]

Australia exhibits the standard pattern of industrialised countries – an aging population, increased dependency ratio, increasing expenditure on health, aged care, and pensions, and an expected slow-down of economic growth. The assumptions behind projections of the major expenditure aggregate are presented in some detail. Forecasting of revenues concentrates on three crucial parameters driving economic growth, namely population growth, labour force participation, and productivity.

The report assesses fiscal sustainability using the following indicators:

- *Fiscal gap*, defined as the amount that government spending is projected to exceed revenue, expressed as a proportion of GDP and in terms of the 'primary balance', which excludes net interest payments and Future Fund earnings; and

- *Net debt*, which is defined as the sum of selected financial liabilities minus the sum of selected financial assets. Net debt does not include accrued employee superannuation liabilities, which are the largest liability on the Australian Government's balance sheet, as they will be funded separately from the Future Fund.

The 2007 IGR places emphasis on the net debt indicator. In 2008-09, the government changed the indicator of fiscal sustainability from net debt to net financial worth. This change is likely to be reflected in future IGR's. Net

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[8] Commonwealth of Australia (2007).

financial worth is defined as the government's net holding of financial assets. It is calculated as total financial assets minus total liabilities.

The main result from the 2007 IGR is that a fiscal deficit is expected to emerge from around 2025, and the net debt increases towards the end of the projection period (2047). The projected fiscal gap represents a slight improvement over the projection of the previous IGR, published in 2002. The 2007 IGR projection is illustrated in the diagram below.

Figure 3.1. Projection of Australia's net debt as a percentage of GDP.
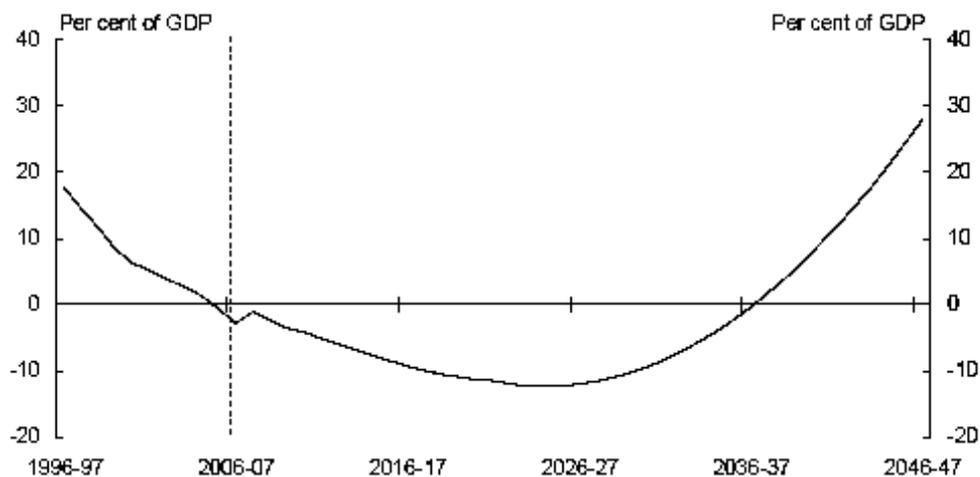
Source: Commonwealth of Australia (2007).

The IGR shows that, taken together, current policies are not fiscally sustainable over the long term under current parameter assumptions, suggesting that policy action may need to be taken. The report discusses various generally formulated policy options, but no direct policy conclusions are drawn from the study.

Australia has made the full transition to accruals in both budgeting and accounting. The IGR is based on the same accounting framework as budget documents, which in turn are broadly consistent with the Government Finance Statistics framework used by the Australian Bureau of Statistics.

3.2 New Zealand

The New Zealand Public Finance Act of 1989 (current version from 2004) specifies principles of responsible fiscal management and lays down reporting requirements on the Minister of Finance and on the Treasury.[9] Among the reporting requirements on the Minister are the Budget Policy Statement, which describes the priorities and the policy goals that will guide the government's budget decisions and the forthcoming Budget, and the Fiscal Strategy Report,

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[9] For a general overview of the PFA, see New Zealand Treasury (2005).

that sets out the long-term fiscal strategy and assesses this strategy in the light of principles of responsible fiscal management.[10]

The Treasury is required to publish, at least every four years, a statement on the long-term fiscal position at least 40 years ahead. The first Statement was presented to Parliament in June 2006.[11]

The fiscal strategy of the New Zealand government, confronted as other governments with problems arising from an aging population, aims at keeping taxes and expenditure around current levels. There is also a build-up of assets in the New Zealand Superannuation Fund, to help with future New Zealand superannuation payments. The operating surplus must be sufficient to meet contributions to the NZS and to fund necessary capital spending.

The long-term fiscal policy goal is to maintain total debt at a prudent level. This has so far been interpreted as 20 per cent of GDP for the gross debt, but is currently under consideration by the new government.[12] A balance requirement is to ensure that operating expenses do not exceed revenues on average over a reasonable amount of time so that the debt objective is met. Also financial net worth is used as a target variable, consistent with the balance objective.

The general message from the long-term study is similar to its Australian counterpart. Under a no-policy-change assumption, debt levels will rise significantly towards the end of the planning period, and will be higher in 2050 than in the early 1990's. Beyond that point in time, the debt would continue to rise.

The study uses both a top-down and a bottom-up approach. The bottom-up approach models the development of major expenditure aggregates using historical data, population projections and plausible macroeconomic assumptions. Revenue is assumed to grow at the rate of the GDP in the long term. The description of the health sector in particular is fairly detailed. The top-down approach asks the question what changes in spending or revenue would be necessary to meet the gross debt constraint. The approach is partial-equilibrium based, having no explicit feedback loops from the government balance back to the economy.[13] Uncertainty is modelled mainly using scenarios in the study, and is also presented explicitly in the report, in order to convey some feeling for the level of (im)precision of the results. An example is shown in the figure below, illustrating the development of the dependency ratio.

In an early technical paper from the Treasury, it was argued that comprehensive net wealth is the preferable measure of the fiscal position.[14] Net debt development nonetheless appears to be the measure preferred by the government.

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[10] For recent examples, see New Zealand Minister of Finance (2008), (2008 b).
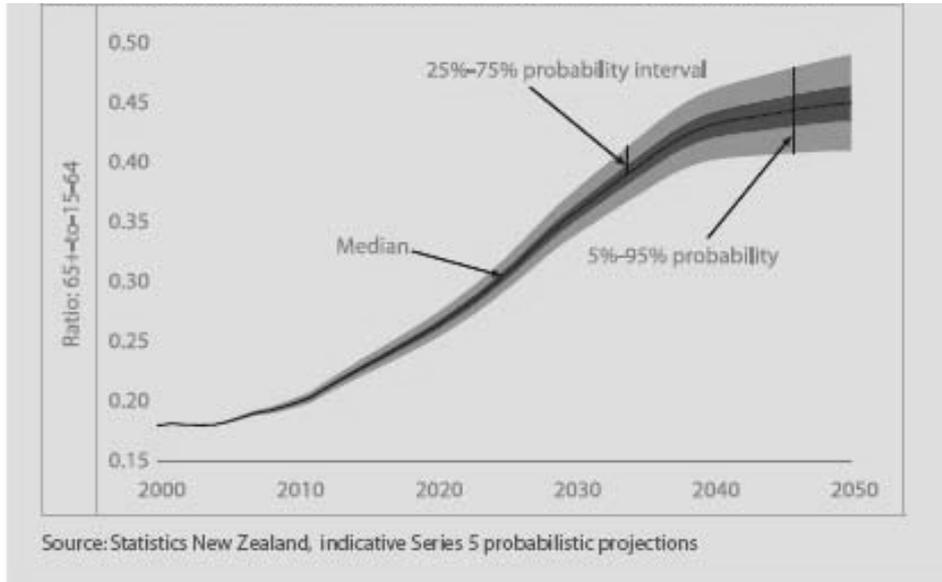[11] New Zealand Treasury (2006).
[12] Ibid., p. 6.
[13] For a more detailed account of the approach used, see Janssen (2002) and Rodway and Wilson (2006).
[14] Bradbury et al. (1999).

Figure 3.2 Probabilistic description of the development of the dependency ratio in New Zealand till 2050

Source: Statistics New Zealand, indicative Series 5 probabilistic projections

Source: New Zealand Treasury (2006).

3.3 United Kingdom

The fiscal framework of the UK Government is defined in the Code for Fiscal Stability, dating from 1998. The code sets out a number of key principles for good fiscal management similar to the goals cited in the introduction: transparency in objectives, implementation and the accounting, stability, responsibility in the management of the public finances, fairness (including between generations), and efficiency of fiscal policy in managing both sides of the public sector balance sheet.

In order to implement its fiscal policy objectives, the government has hitherto applied two fiscal rules at the macro level:

- *The golden rule:* over the economic cycle, the government will borrow only to invest and not to fund current spending; and

- *The sustainable investment rule:* public sector net debt as a proportion of GDP will be held over the economic cycle at a stable and prudent level, defined as below below 40 per cent of GDP over the economic cycle.

The UK economy has been hit particularly hard by the global credit shock. The level of uncertainty over the scale of the economic implications remains high. This economic shock has had a profound effect on the public finances. As a result, the government has concluded that targeting a current balance over this economic cycle (as required by the golden rule) would damage the economy.

The government's basic objectives for fiscal policy in the face of these shocks nonetheless remain unchanged. The government's immediate priority is to

continue to support the economy, while setting a path now for ensuring fiscal sustainability over the medium term. Accordingly, in line with the Code for Fiscal Stability, the government will depart temporarily from the previous fiscal rules and set a temporary operating rule:

> To set policies to improve the cyclically-adjusted current budget each year, once the economy emerges from the downturn, so it reaches balance and debt is falling as a proportion of GDP once the global shocks have worked their way through the economy in full.[15]

The projections set out in the latest Pre-Budget Report are consistent with returning to cyclically adjusted current balance and debt falling as percentage of GDP by 2015-16, when the global shocks are assumed to have worked through the economy in full. They imply, as the economy emerges from downturn, an adjustment in the cyclically adjusted current balance over 0,5 per cent of GDP a year from 2010-11.

Regular spending reviews are carried in order to ensure efficiency in various spending programs. These objectives are supported by a detailed, high-quality results report.[16]

The Code for Fiscal Stability also requires the government to publish long-term projections covering at least ten years. These have been published since 1998, and are now part of the long-term annual public finance report.[17] The study applies both a top-down and a bottom-up approach, and discusses both net debt in relation to GDP and net worth and indicative net liabilities as indicators of fiscal strength. Like its Australian and New Zealand counterparts, the UK study projects a widening fiscal gap during the planning period (the next 50 years). The baseline scenario is shown in the figure below.

Because of the long time perspective, substantial efforts are made to discuss the effect of uncertainties. Sensitivity analyses are carried out with respect to population projections, discount rates, and time horizons. Both fiscal gaps and intertemporal budget gaps are used as indicators of the fiscal stance.

Although there is no apparent direct link to short- and medium-term policy decisions in the report, the fact that the analysis is updated and published annually makes it a relevant background document also for such decisions.
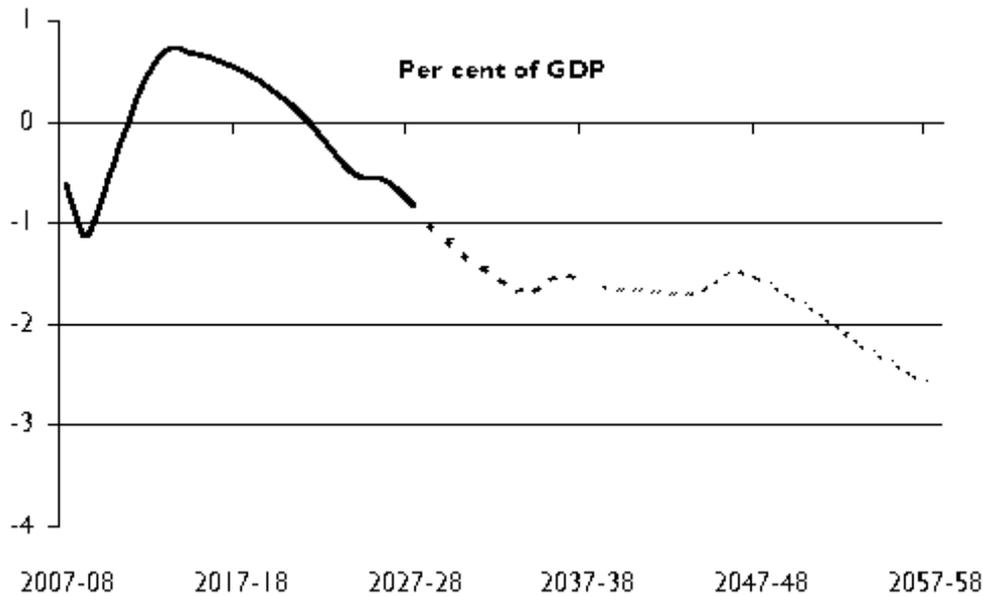
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[15] HM Treasury (2008 c).

[16] See HM Treasury (2008).

[17] For the latest report, see HM Treasury (2008 b).

Figure 3.3. Primary balance in the baseline scenario.

Source: HM Treasury (2008 b).

3.4 United States

There are several producers of long-term fiscal analyses at the federal level in the United States: the Government Accountability Office, the Treasury, the Congressional Budget Office, and the Board of Trustees of Social Security and Medicare. The annual report of the Treasury is a standard report with its main focus on the financial position of the federal government. The current net wealth is presented within an accruals based accounting framework.

There are also supplementary long-term fiscal analyses, however, as illustrated by the diagram below.

Current trends are obviously not sustainable. The diagram indicates that the main cost-driving components are the Medicare and Medicaid systems; social security and other government outlay are assumed to be relatively stable in relation to GDP development. There is, however, no discussion on the consequences for current and medium-term policies of this long-term perspective.

Also the Congressional Budget Office produces regular budget forecasts for different time horizons. A recent long-term analysis, dated in December 2007,[18] conveys the same message as the cited report from the Treasury.

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[18] Congressional Budget Office (2007).

Figure 3.4. Projected US Government receipts and spending (in relation to GDP).
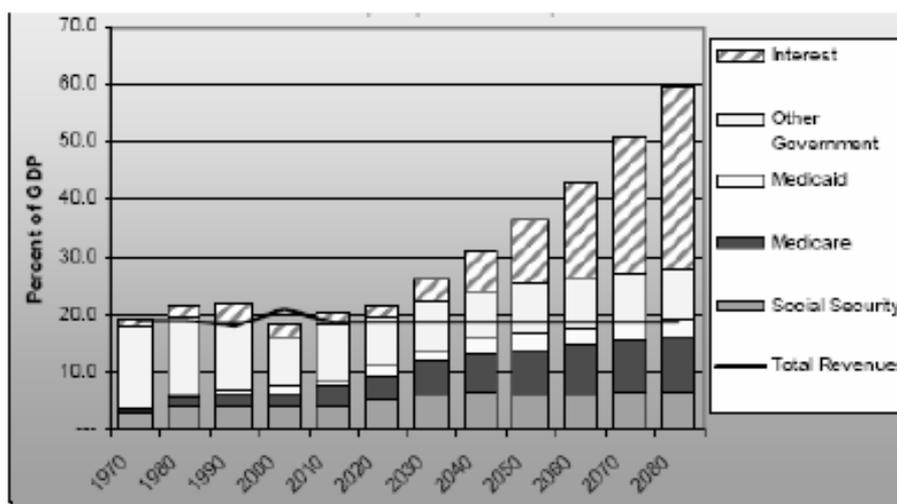
Source: U.S. Government (2008).

More detailed analyses are supplied by the Boards of Trustees of Social Security and Medicare. Both the Board of Trustees of the Federal Hospital Insurance and Federal Supplementary Medical Insurance Trust Funds and the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds publish long-term forecasts of the financial development of their respective domain of accountability. By way of example, the latter of these summarizes its findings in the following matter-of-fact tone:

> Annual cost will begin to exceed tax income in 2017 for the combined OASDI Trust Funds, which are projected to become exhausted and thus unable to pay scheduled benefits in full on a timely basis in 2041 under the long-range intermediate assumptions. For the trust funds to remain solvent throughout the 75-year projection period, the combined payroll tax rate could be increased during the period in a manner equivalent to an immediate and permanent increase of 1.70 percentage points, benefits could be reduced during the period in a manner equivalent to an immediate and permanent reduction of 11.5 percent, general revenue transfers equivalent to $4.3 trillion in present value could be made during the period, or some combination of approaches could be adopted. Significantly larger changes would be required to maintain solvency beyond 75 years.[19]

The Board also uses stochastic models to illustrate the effect of uncertainty on the result. As an example, the following diagram shows the span of the estimates for the year when the fund will be exhausted.

The main conclusions in the report from the Board of Trustees of the Federal Hospital Insurance and Federal Supplementary Medical Insurance Trust Funds are similar. Both reports are fairly detailed in their accounts of the methodology used.

The Federal Accounting Standards Advisory Board is currently leading a discussion on methodological issues in the field of long-term fiscal analysis, which may lead to the establishment of a professional norm for the United States.[20]

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[19] Board of Trustees Old-Age and Survivors (2008).
[20] FASAB (2008).

Figure 3.5 Annual fund ratios for the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds
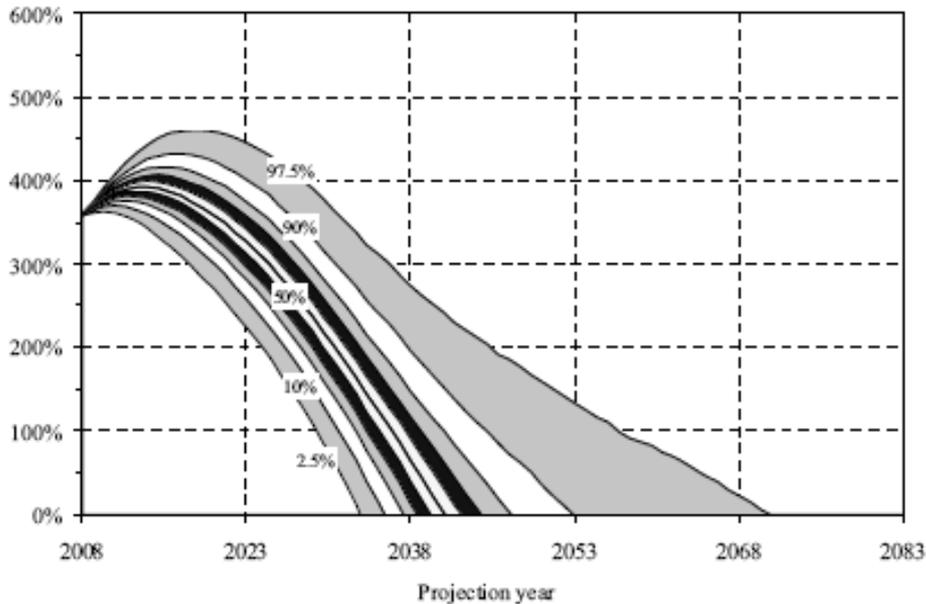
Source: Board of Trustees (2008).

3.5 European Union

Ever since the formation of the Stability and Growth Pact, the European Commission has played the role of watchdog over fiscal discipline within the member states. The Commission has also played an important role in developing a unified approach to the analysis of long-term stability of public finances within the union. This pertains not only to definitions of indicators of sustainability chosen but also to the analysis of important substantial phenomena such as aging populations and the development of tax bases. Reports on deficits and debt levels as well as an analysis of sustainability are submitted annually to the Commission by the member states according to a pre-specified format. Analyses of the material is published regularly by the Commission.[21]

Focus in the sustainability analysis is on the two indicators S_1 and S_2. The *sustainability gap indicator S_1* shows the permanent budgetary adjustment required to reach a debt ratio in 2050 of 60 % of GDP. The *sustainability gap indicator S_2* shows the permanent budgetary adjustment that guarantees the respect of the intertemporal budget constraint of the government. S_2 is estimated by assuming that the revenue and expenditure ratios do not change after 2050.

Formally, we can write the long-term budget constraint as follows:

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[21] Under the headings of "Public finances in EMU" and "The long-term sustainability of public finances in the European Union" in *European Economy*; see e.g. European Commission (2006), (2007).

$$D_{t_0} - \sum_{t=t_0+1}^{\infty} \frac{PB_t}{(1+r)^{t-t_0}} = 0 \quad .$$

Here, D_{t0} is the initial debt at time t_0, and PB_t are the primary balances pertaining to all consecutive years t, both in relation the GDP. The gross discount rate $(1+r)$ is defined as $(1+R)/(1+G)$, where R is the nominal interest rate and G is the growth rate.

In addition, the *required primary balance (RPB)* can be derived from the S_2 indicator. It measures the average primary balance over the first five years following the last year period covered by the stability and convergence programmes that results from a permanent budgetary adjustment carried out to comply fully with the S2 indicator.[22] The RPB is given by the following expression:

$$RPB_{t_0} = PB_{t_0} + S_2 = rD_{t_0} - r \sum_{t=t_0+1}^{\infty} \frac{\Delta PB_t}{(1+r)^{t-t_0}} \quad .$$

This entity is relatively stable, depending only on the initial debt, the projected budget balances over the long term, and the differential r between the nominal interest rate and the growth rate.[23] The primary balance will evolve in line with the impact of aging and other external factors on expenditure, but the RPB indicates a sufficient effort in the medium term that ensures sustainability of public finances under an assumption of no policy change.

As an example of the outcome of the analysis, the diagram below shows the overall risk assessment made by the Commission in its 2007 survey.

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[22] In the case of the 2006/07 updates of the SCP's, the five-year period is 2011–15.
[23] European Commission (2006), annex I.

Figure 3.6. Overall risk classification and the sustainability gap S_2 in the basic scenario.
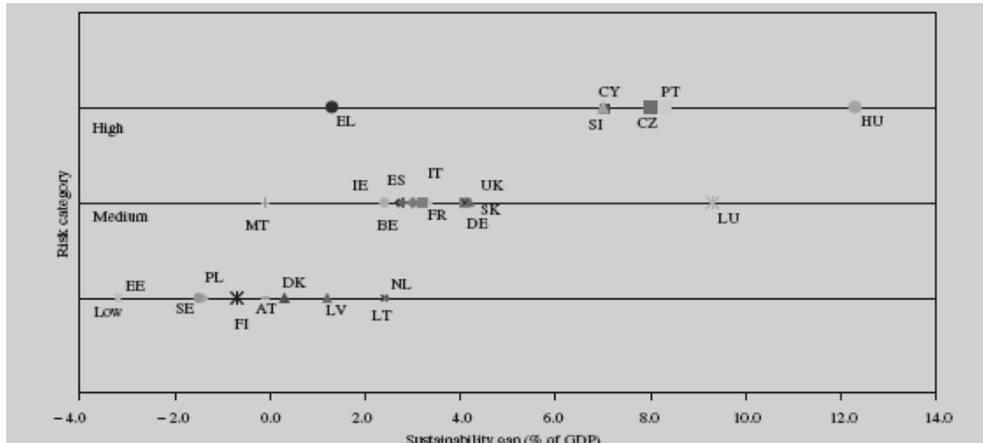
Source: European Commission (2007).

The risk classification is defined as follows. Low-risk countries have a relatively strong fiscal position at present and have further implemented reforms aimed at coping with the problems of aging, most notably pension reforms. In the medium-risk group we find countries with either a troubled current position or a satisfactory current position but problematic forecasts for the budget balance later during the 21st century. High-risk countries are those that combined a problematic current position with unfavourable forecasts for the budget balance.

Because of the large uncertainties associated with the long-term forecasts, sensitivity analyses are necessary. Some of the critical variables are life expectancy, labour productivity growth, labour supply, and the interest rate.[24]

Within the EU sustainability analysis framework, there has also been a discussion about accounting principles, for instance when it comes to assessing pension liabilities.[25]

3.6 International Monetary Fund

Following a formal decision in 2002, the IMF has recurrently used a net worth approach in its surveillance activities, and has accumulated experiences on the design of such an estimate.[26] Most applications are from middle income countries experiencing some public financial crisis,[27] but there are also long-term forward-looking analyses for Germany and Switzerland.[28]

The point of departure of the analysis is a conventional balance sheet for the state, but the Fund advances beyond that in its systematic, in-depth analysis of different risk factors in the medium and long term. Examples of such risk factors are:

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[24] Ibid., p. 36 f.

[25] European Commission (2007), p. 107 f. See further the discussion in section 5.3.

[26] For a general overview of the apporach, see Traa and Carare (2007). More elaborate reports are e.g. IMF (2003), DaCosta and Juan-Ramón (2006).

[27] See e.g. Barnhill and Kopits (2003).

[28] IMF (2006), IMF (2007).

- extra-budgetary long-term commitments such as pensions for public employees;

- implicit commitments vis-à-vis the financial system quite apart from visible guarantees;

- currency rate changes;

- the management of state-owned enterprises;

- resource depletion (in e.g. oil-producing countries) and environmental degradation (climate change effects, biodiversity losses).

The analyses rely on more or less sophisticated instruments for the risk analysis (Monte Carlo techniques, Brownian motion models etc.).[29]

As an example of an analysis carried out on an industrialised country, consider the balance sheet for Germany in the table below, taken from the Article IV consultation report of 2006.

Table 3.1 General government indicative balance sheet for Germany

General Government Indicative Balance Sheet 1/					
(In percent of GDP)					
	2003	2004	2005	2006	
Projected aging costs:				4.0%	2.7%
Financial net worth	-45	-49	-51	-53	-53
Gross debt	-63	-65	-66	-68	-68
Other	17	16	15	15	15
Nonfinancial net worth	55	55	55	54	54
Participations	5	5	5	5	5
Fixed capital stock	51	50	50	49	49
Current net worth	10	5	3	1	1
50-year projection of change in net worth (NPV) 1/	-191 a/	-150 b/	-114 c/	-30 d/	-7 e/
Comprehensive net worth=budget constraint	-181	-145	-111	-28	-5
Comprehensive financial net worth 2/	-227	-194	-162	-81	-58
Memorandum items:					
GDP (billions of euros)	2,163	2,207	2,241	2,306	2,306
Structural fiscal balance	-3.4	-3.4	-2.8	-2.4	-2.4

Source: Bundesbank; Ministry of Finance, and Fund staff calculations.
1/ Staff projections of fiscal scenarios for a rolling 50-year period:
 a/ End-2003, unchanged policy scenario; 3 percent fiscal deficit in 2010, aging costs at 6.5 percent of GDP;
 b/ End-2004, unchanged policy scenario; 3 percent fiscal deficit in 2010, aging costs at 4.0 percent of GDP (Agenda 2010);
 c/ End-2005, unchanged policy scenario; 2 percent fiscal deficit in 2010, aging costs at 4.0 percent of GDP (Coalition Agreement);
 d/ End-2006, normative scenario; assuming zero fiscal balance in 2010, aging costs at 4.0 percent of GDP (Staff);
 e/ End-2006, normative scenario; assuming zero fiscal balance in 2010, aging costs at 2.7 percent of GDP (Authorities).
2/ Excludes the nonfinancial net worth as many such assets may not be marketable. Therefore, they would not be available to alleviate the public sector liquidity constraint.

Source: IMF (2006).

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[29] Barnhill and Kopits (2003), Tanner and Samako (2006).

The current net worth of the Federal Republic is positive, taken into account historical values only. When expenditure and revenue projections for the next 50 years are included, the picture changes substantially, however. The comprehensive net worth becomes negative even if all assets – financial as well as non-financial – are included. When non-financial assets are excluded, given that a significant part of them are non-marketable, the figure naturally becomes even more negative.

The risk panorama will obviously depend on which country is under consideration – depletion of oil resources has a different dynamic than an aging population – and there is no manual for determining which risks are important enough to merit inclusion in a long-term analysis at the macro level.

3.7 IFAC and IPSASB

The International Federation of Accountants (IFAC) and the International Public Sector Accounting Standards Board (IPSASB) are currently involved in an attempt to standardise reporting on long-term fiscal sustainability.[30] A working group has been summoned from a number of countries and organisations with somewhat different political environments and administrative traditions, the objective being to investigate the possibility of establishing a common platform for reporting on fiscal sustainability.

Even within this fairly homogenous group of developed industrial nations, there are important differences in the way long-term fiscal problems are analysed. Differences appear in the fiscal framework, in the legal framework for reporting, and in boundaries and definitions of sustainability used. In all, this makes it difficult to conceive of a format that would be acceptable to all countries.

Another problem is that several of the parameters involved in a comprehensive analysis are political by nature, hence difficult to reduce to elements of a purely professional discourse. The discount rate is an example.[31] This makes it improbable that all countries irrespective of tradition and political environment would be prepared to accept a common standard. Nonetheless, the work done by IFAC and IPSASB represents an important effort to homogenise a currently somewhat diverse field of activity.

3.8 Summary

The above brief overview illustrates both important differences and similarities between the countries referred to. Most OECD countries now apply some sort of multi-annual fiscal framework, which means that one has already gone beyond the classical boundary of the budget year. But the demand for long-term analyses remains fairly weak; so far, there are few links to be found between the short- to medium framework and the very long run.

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[30] IFAC (2008).
[31] See further the discussion in section 5.5.

The legal framework for reporting varies. Some governments are required by law to deliver long-term analyses at prescribed intervals; in others, such analyses are produced more as a supplement to standard budget documents.

The definition of long-term fiscal sustainability also exhibits some variability, with indicators such as fiscal gap, net debt, net financial worth, tax gap and gross and net debt to GDP ratios used separately or in combination.

Concerning the boundaries of analyses, there are potentially important differences. Some of these are constitutional; a federal country differs from unitary one in the distribution of political authority, the right to tax etc. But similar problems arise in unitary countries when deciding how the local and regional level should be integrated into an overall analysis.

The choice of boundaries is also affected by the previously cited technical factors. In European countries, the boundary is generally determined by the statistical reporting framework (national accounts). In Australia, the main sustainability report has been largely in conformity with the GFS framework, but a harmonized framework is used in the most recent budget and would naturally be used for future fiscal sustainability reporting. New Zealand uses the same GAAP accrual-based boundary in long-term analyses as for the annual fiscal forecasts and financial statements. The United States at the federal level uses a budgetary basis.

Time horizons differ, at least from 40 up to 100 years. Arguments can be given for both choices.

There appears to be relative unanimity concerning the basic approach to the substance of the forward-looking analysis. The format for the basic assumptions on demographic, economic, and other fundamental trends are very similar, even if the figures *a fortiori* differ from country to country. The large uncertainties involved are also generally acknowledged, and even if the methods of modelling and analysing the effects of uncertainty vary substantially, all reports convey the message of an uncertain outcome, while at the same time stressing that prospects are highly problematic even in optimistic scenarios.

When presenting the results of the sustainability analysis, relatively few countries rely on net wealth. It is more common to present diagrams showing the development of the debt-to-GDP ratio, the primary deficit or similar indicators. The reason seems to be reluctance to condense a complex message into one number, even if this were to be done with the necessary caveats. There is of course always a risk that such a figure is seized upon and exploited for political purposes in other ways than intended, so a trade-off between salience and the risk of such abuse has to be met.

The work done by the IMF represents the most systematic and technically most advanced attempt to merge historical and prospective data into one estimate of comprehensive net wealth. The IMF example shows that historical and forward-looking analyses can be integrated in a meaningful way, and that the perception of the financial condition of the public sector of a country can also change as a result of such an integration.

4 Existing building blocks in Sweden

Estimates of both backward-looking and forward-looking components of public-sector net wealth are already produced within the Swedish public administration. The present chapter gives a brief overview of these analyses, starting with historical values (4.1) and forward-looking analyses (4.2) for central government, to proceed with local and regional government (4.3) and the pension system (4.4).

4.1 Annual report of the Swedish state and the state sector

An annual report for the state is presented to the Swedish parliament every year. The report takes the form of a communication from the government to parliament annexed to the spring bill,[32] but most of the substance is presented in a background document produced by the National Financial Management Authority.[33] The basic principles were established in 1994 and have remained largely the same.[34] The annual report is audited by the National Audit Office.[35] The object of the report is the legal personality of the state. There is also a supplementary short report devoted to the state sector, including also the pension funds, state-owned enterprises, the Bank of Sweden and the Swedish Inheritance Fund.[36]

The annual report follows the standard format of an annual report, presenting an income statement, a balance sheet, a cash flow analysis, and a comprehensive set of accounting principles applied. Substantial efforts are made to consolidate the report by eliminating inter-agency flows of payment. Accounting is accrual based, as is the case for the reports from the agencies forming the basis of the consolidated report.

By way of illustration, Table 4.1 shows the central government balance sheet as per 31 December 2007.

Some general remarks on the accounting principles applied are justified here. Liquid assets are valued according to the conservative principle of least value, that is, either procurement value or actual value in case the latter is lower. Fixed assets are rendered at their procurement value minus depreciation adapted to the estimated longevity; for instance, the longevity of roads and railroads is set to 40 years. Stock and interests in subsidiaries are valued conservatively at their share of nominal capital in the respective companies.

For comparison, the development over the latest five years of net worth and central government debt is shown in Figure 4.1.

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[32] Regeringens skrivelse 2007/08:101.
[33] Ekonomistyrningsverket (2008).
[34] Riksrevisionsverket (1994).
[35] Riksrevisionen (2008).
[36] Ekonomistyrningsverket (2008b). Notice that local and regional government is not included, not enterprises owned by such entities, so the object of the report is the state part of the public sector only. On local and regional government, see § 4.3.

Table 4.1. Central government balance sheet 2007 (million SEK). Net worth is negative and amounts to –500 BSEK[37], or 17 per cent in relation to GDP.

Assets	
Intangible assets	5 003
Property, plant and equipment	382 300
Financial assets	336 565
Loans	172 030
Inventories etc.	2 190
Receivables	50 215
Accruals and deferrals	46 851
Investments in securities etc.	19 276
Cash and bank balances	2 937
Total assets	*1 017 367*
Capital and liabilities	
Net worth	- 499 569
Reserves	59 033
Provisions for pensions etc.	187 064
Central government debt	1 114 894
- of which domestic	882 053
- of which foreign	232 841
Other liabilities	92 323
Accruals and deferrals	63 622
Total equity and liabilities	*1 017 367*
_____	_____
Guarantees and other contingent liabilities	668 714

Source: Ekonomistyrningsverket (2008).

There are differences between the annual report and the state budget both concerning boundaries and accounting principles. The major difference in the former respect is that the annual report includes the public enterprises (Swedish Civil Aviation Administration etc.). Another difference is that fees and transfers – for instance revenue from sales – at the disposal of agencies appear in the annual report but are reflected in the budget only to the extent that they affect the borrowing requirement. Differences occur also because the budget is largely cash based whereas the annual report is accrual based, and because certain transfers are recorded at net value in the annual report but at gross value in the budget, as stipulated by the budget act. These differences affect the income statement more than the balance sheet, however.

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[37] 1 BSEK = 1000 million SEK.

Figure 4.1. Development of net wealth and central government debt in Sweden 2003-7.
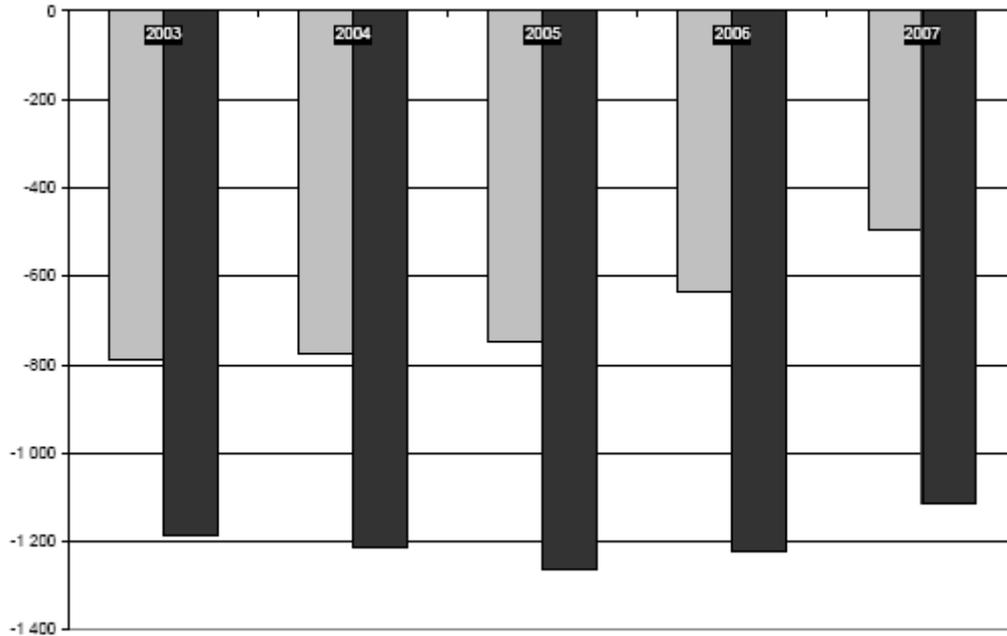
Source: Ekonomistyrningsverket (2008).

More important are the differences between the annual report (AR) and the national accounts (NA). As before, the national accounts do not include the public enterprises but refer them to the private sector. On the other hand, the national accounts do include a number of formally autonomous entities over which the government exerts a decisive influence. The difference in net wealth amounts to 786 billion SEK (December 2006), which is enough to make the negative net wealth of the annual report positive in the national accounts. Sources of these differences have been analysed by the National Financial Management Authority.[38] The main contributions to the differences are the following:

- Listed stock are recorded at their market value in the NA, according to the capital share method in the AR (135 BSEK).

- Valuation of fixed assets are higher in the NA (354 BSEK). Part of this difference (113 BSEK) stems from the inclusion of value-added tax in the NA.

- Military inventories are not included in the AR (- 92 BSEK).

- Bank of Sweden assets only represented by the core fund in the AR (62 BSEK).

- Net interagency payables and receivables, among which the pension debt to state employees, are higher in the NA (249 BSEK).

- Valuation of state debt etc. (77 BSEK).

When calculating the backward-looking part of the net wealth of the Swedish state, a choice will have to be made between these different alternatives

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[38] Memo by Lars Nordkvist, National Financial Management Authority (in preparation).

concerning boundaries and accounting principles. We will return to these issues in chapter 5.

4.2 Sustainability analyses

Long-term forecasts of public-sector revenues and expenditure are now produced on a regular basis both as part of Sweden's contribution to the convergence programme of the European Union and for the budget bills. The most recent updating of the convergence program[39] uses the development of the state debt in relation to GDP up to 2050 as indicator, the condition for sustainability being that the debt ratio in 2050 should not be higher than in the start year. This condition turns out to be satisfied, but the development after 2050 appears precarious.

Model family

There are four models used for the computation of long-term fiscal sustainability. The first is a labour market model aimed at forecasting labour force participation, average number of working hours etc. The second is a public consumption model partitioned into the various subsectors of the public sector – child care, education health care etc. Future demands are projected on the basis of demographic forecasts and current use patterns among different cohorts and sexes. The third model is a model of future pension expenditure, using a number of macroeconomic variables as inputs.[40] The results from these three models are fed into a main macroeconomic model, Fimo,[41] using seven sectors (the state, municipalities, county councils, the pension system, households, the business sector, and the international sector. The equations in the main model are aggregate descriptions of tax and transfer rules, which are related to the GDP, the CPI, or interest rates etc. The operative definition of a policy of no change is that these ratios are held constant (tax to GDP etc.). This yields a simple algorithm for computation but entails a risk, given that tax bases and the GDP for structural reasons may evolve at different rates

Recent development

In a report published in 2007, the National Audit Office criticised the sustainability analyses presented by the government for being defective in various respects.[42] Main points of criticism are that assumptions have been unclear and have been changed without stated reasons, that quantitative indicators have not been used systematically, that no sensitivity analysis were performed, and that the coupling between the long-term analysis and the medium- and short-term targets of fiscal policy is weak.

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[39] Finansdepartementet (2007).
[40] For a an account of this model, see www.sesim.org.
[41] A short description is given in Swedish Ministry of Finance (2002).
[42] Riksrevisionen (2007 b).

In its most recent sustainability report[43], the government has responded to some of these points of criticism. The indicator of long-term sustainability used is now the S_2 indicator established by the EU as the leading indicator of sustainability.

Present value calculations are implicit in the S_2-indicator. The discount rate is given by the difference between the growth and the interest rates. The long run nominal interest rate is assumed to be 5 per cent, whereas the average nominal GDP growth rate is roughly 4,2 per cent per year. Other macroeconomic assumptions are the real GDP growth, which is given by the supply of hours worked in combination with productivity growth (assumed to be 0 in the public sector and around 2,7 per cent in the business sector). The GDP deflator is calculated as a weighted average of the price indices for private and public consumption, investment and net imports.

An analysis performed during 2008 shows that the S_2 indicator is negative, indicating that fiscal policy is sustainable. On the other hand, the sensitivity analysis performed shows that sustainability is precariously sensitive to changes in the basic assumptions. This is illustrated in the table below.

As can be seen from the table, the demand for public services is the crucial parameter. Variations of other macroeconomic parameters affect the result only marginally.

Table 4.2. Sensitivity of the S_2 indicator (% GDP) to variations in basic assumptions.

Scenario	Value of S_2
Base scenario	- 0,1
Higher employment	- 0,3
Higher productivity	- 0,3
Increased demand for public services	4,6
Increased demand for public services and higher employment	4,3
Improved integration of immigrant work force	-0,4

Source: Proposition 2008/09:01, Annex 3.

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[43] Proposition 2008/09:01, chapter 8 and Annex 3.

4.3 Local and regional government

Swedish local and regional government enjoys a high degree of autonomy by international comparison. Each municipality and regional county council is a legal personality of its own, entitled to borrow money in the financial market or enter into other types of contracts. The tax base is defined by the state – income of physical persons resident in the municipality or county council – but the tax rate is set at the local and regional level independently.

Nonetheless, the size of the municipal sector makes it important both for fiscal policy and for the production of welfare services, and the national level circumscribes its freedom of action and supervises its activities and finances. General restrictions on financial management in the municipal sector are laid down in the law on the municipal sector.[44] Management should aim at efficiency, and a forward-looking strategy is encouraged. There is a mandatory requirement on a balanced budget, and in case the result is negative, the net worth of the entity in question should be restored within three years. The annual report is audited at the municipal level both professionally and by laymen, but the audit infrastructure at this level is considered to be relatively weak, in particular in small municipalities.[45]

Accounting data from all municipalities and county councils are collected and reported at the national level. Accrual accounting principles have been used since the 1980's. These reports contain all the standard components of a balance sheet – income statement, balance sheet, cash flow analysis, key indicators such as liquidity, solvency etc. – and are presented both separately for each entity and in consolidated form for the municipal sector as a whole.[46]

The government comments on the financial position and development of the municipal sector in budget bills and spring bills. These comments tends to concentrate on the aggregate level, however, and have been criticised by the National Audit Office of not acknowledging sufficiently the heterogeneity of the sector.[47] There are also some minor differences between the way the budget balance is defined in the law and in standard accounting principles.

In spite of these difficulties, it seems fair to say that the municipal sector is relatively well equipped as far as the backward-looking part of the analysis goes. The forward-looking part is more of a problem. Most municipalities do not have the capacity to go beyond a standard planning horizon of perhaps three years. In consequence, most of the qualified long-term economic analysis is performed by the Swedish Association of Local Authorities and Regions (SALAR). The most recent long-term report was published in 2002;[48] an updated analysis is currently underway.

Projections in the report are based on standard assumptions on demographic variables, GDP growth, labour supply and other critical variables. These are to some extent harmonised with assumptions made by other forecasting agencies,

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[44] Kommunallagen (SFS 1991:900).
[45] Cassel (2000).
[46] Statistiska Centralbyrån (2008).
[47] Riksrevisionen (2007).
[48] Svenska Kommunförbundet (2002).

but the SALAR is responsible for the choices made and in some cases also deviates from other forecasters. Historically, the general growth rate of expenditure has been above what can be explained by demographic variables, and the outcome of the analysis depends critically on whether this political factor will be active also in the future. Strictly speaking, a continuation of today's policies requires that one stick to the demographically defined trajectory. In order to manage the large uncertainties involved, the report describes three different scenarios: a base scenario, one with increased fertility, and one with increased general level of education. There is a considerable gap between demands and available resources beyond 2030 in all three scenarios, as is exemplified by the diagram below.

A companion report has been published for the health care sector (main responsibility of the regional county councils), but going up only until 2030.[49] The situation is similar to that for the municipal services. Historically, the expenditure level has increased by about 1,4 per cent, but the demographic factor explains only 0,6 per cent. A resource gap develops already during the period up to 2030. It is well known that demographic pressures on health care services will grow significantly beyond this horizon.

Figure 4.2. Demands and resources in the base scenario up to 2050
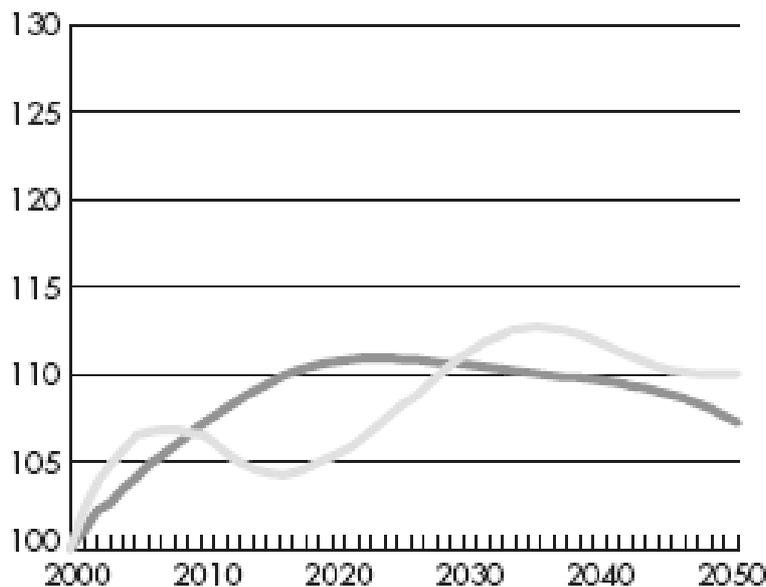
Note: Index 2000 = 100, light grey curve = demands, grey curve = resources.

Source: Svenska Kommunförbundet (2002).

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[49] Sveriges Kommuner och Landsting (2005).

4.4 The public pension system

Sweden's new pension system is a modified pay-as-you-go system that has been designed to be financially stable, independently of demographic or economic fluctuations. Both the contribution rate and the rules for calculating benefits are fixed. The financial stability of the system is ensured by permitting the value of pensions to vary over time according to asymmetrically designed adjustment rules. The pension systems liability is indexed on the growth in average income. If liabilities exceed assets, the basis for indexation is automatically switched to an approximation of the system's internal rate of return, thus automatically adjusting pension levels as well. The critical variable is the so-called balance ratio, the equivalent in the pay-as-you-go system of the consolidation ratio of a funded system. If the balance ratio falls below 1, the so-called brake mechanism is activated. The pension level is re-established as soon as this is possible without undermining the financial balance of the system.[50]

The assets and liabilities are described in the annual report of the public pension system, together with forward-looking scenarios.[51] A basic principle applied is that the report is based only on events or transactions occurring and recorded. Assets consist of contributions and funds. The balance ratio can be considered as a variable summarizing net contributions and fund strength. The basis for valuation of the contribution asset is the size of the pension liability that the contribution revenue for the accounting year could finance under the conditions prevailing. The relevant external factors are economic and demographic. The economic determinants are the sum of pension-qualifying incomes of each annual birth cohort and the average of these incomes. The demographic determinants relate to mortality at different ages.

The assets of the national pension funds are assessed at their so-called true value. This means that assets are valued preferably at their latest price paid, if any, on the last trading day of the year, otherwise at the latest price bid.

The pension liability to persons who have not yet begun to draw an old-age pension is valued as the sum of the pension balances of all insured persons. The pension liability to retirees is calculated through multiplication of pensions granted (annual amount) by the expected number of years for which the pension amount will be disbursed.

The annual report of the pension system is audited.

The report presents a few different scenarios pertaining to varying assumptions on external parameters. In essence, most of the parameters of the system are projected based on a naïve assumption of constancy. These assumptions are not critical, however, given the design of the pension system. What is unusual about this pension system is that the implicit risk associated with the different scenarios is borne by the pensioners, not by the system. In this respect, there is no threat to the overall balance of the public sector coming from the pension system as long as the rules of the system are respected. Due to the current

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[50] For a general introduction to the new pension system, see Settergren (2001) and Settergren and Mikula (2006).
[51] Försäkringskassan (2008).

financial crisis, the brake mechanism will be activated during 2009, resulting in pension reductions during 2010. The kind of drastic fall in assets experienced in 2008 was not foreseen when the brake mechanism was designed. Alternatives where both increases and reductions are smoothed out over several years alleviate this problem.

4.5 Summary

As is obvious from the above succinct survey, several of the main building-blocks necessary for a computation of comprehensive net wealth of the Swedish public sector already exist. The historical part of the analysis is produced by the relevant agencies and organisations – the Ministry of Finance, the National Financial Management Authority, Statistics Sweden, the Association for Local and Regional Authorities, and the National Social Insurance Board. What lacks in this part of the computation is consistency in the basic rules for defining boundaries and in accounting principles. At the same time, there is a burgeoning dialogue between accountants with a GAAP frame of reference and statisticians used to SNA/GFS definitions.

The forward-looking part of the net-wealth analysis is more of a problem. The most recent analysis published by the Ministry of Finance largely meets the standard requirements set by the EU. The picture is somewhat uneven, however, and there seems to be room for development by uniting the competences in the different agencies and organisations in a common effort. And one point of criticism in the cited report from the National Audit Office remains unanswered – the link between the long-term sustainability analysis and the short– and medium targets of fiscal policy is weak.

5. Methodological issues

The previous overview has shown that there is some variability in the approach taken to long-term fiscal issues. A number of methodological questions have to be sorted out before a coherent framework can be put in place. In general, there are several reasonable alternatives available, and good arguments can be put forward for each of them. The basic criterions by which to judge are the purpose and the audience.

The *purpose* of the effort is to assess the financial strength of the public sector and its variation over time, which implies among other things that only resources that are in some sense marketable should be included among the assets. Financial assets of course belong to this category; the question is to what extent non-financial should be included. Traditionally, the attitude to selling government property has been rather restrictive in countries like the Scandinavian ones. In recent decades, there has been a noticeable turn-around and an increased focus on the core tasks of government. Examples are abundant in infrastructure management, for instance, where separation between management of the central network (a government task) and commercial activities (wholly or partly privatised) is now standard. Even parts of the tax revenue service can be privatised. A problem for the analysis is

consequently that what is to be considered marketable is both time-dependent and to some extent politically determined.

A further requirement is that estimates of future revenue and expenditure should be realistic; realism is more important than legal conformity. On the other hand, the spectrum of realistic estimates is fairly wide.

As for the intended *audience*, it is best thought of as the generalised citizen of the country in question. More specifically, the parliament is an obvious recipient of the document, together with a variety of other users – journalists, private-sector analysts and international organisations. This defines high requirements on accessibility, both practical and intellectual, and strong pedagogical efforts are necessary.

5.1 Boundaries

When defining the boundaries of the entity to be assessed, there are several aspects to be taken into account. The first is constitutional. In a federal country, it is necessary to acknowledge the relative autonomy that may be enjoyed by subnational levels. Even in unitary countries like the Scandinavian ones, the high degree of autonomy enjoyed at the local level may create problems for the analysis. On the other hand, the division of labour between the different levels is seldom written in stone; rather it is guided by pragmatic arguments. Further, judging from the citizen's point of view, it is of less importance if her role as guarantor of public-sector liabilities arises in the context of local or central government. The natural choice from this perspective is therefore to include all levels of government.

The current System of National Accounts (SNA 93) uses the following definition of general government:

> The sector general government (s.13) includes all institutional units which are other non-market producers (see paragraph 3.26) whose output is intended for individual and collective consumption, and mainly financed by compulsory payments made by units belonging to other sectors, and/or all institutional units principally engaged in the redistribution of national income and wealth.[52]

Public enterprises such as the Swedish Civil Aviation Administration are formally part of the legal personality of the state, but would as producers for a market be included in the private sector. Such publicly owned property of course represents a value to the state.[53]

By contrast, the SNA taxonomy would classify autonomous funds that have been created by the state and which are controlled by the government as part of government, whereas a legally based definition would exclude them, being separate legal personalities. Differences between the two systems would consequently work in both directions. Referring to the criterion of marketability would in some cases resolve such conflicts of classification. If, for instance, the government has decided to manage the core of the electricity network as a public enterprise, the assets would technically belong to the state. If there is political unanimity about keeping this asset as state property, the

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[52] SNA 93, def. 2.68.
[53] The Swedish government currently considers a proposal for full privatization of the SCAA.

economical value is more virtual than real. Opinions in these matters have changed over time, however, so even this criterion is ambiguous.

There will consequently remain a set of entities where available classification schemes would not give a clear answer. What is important for the purpose of assessing the fiscal condition of the public sector and monitoring it over a number of years is that whatever definition is chosen is maintained over a reasonably long period of time, and that any change in definitions of boundaries is recorded and analysed retroactively with respect to its consequences.

5.2 Accounting principles

Also when it comes to accounting principles, there are noteworthy differences between the various professional traditions involved. Accountants tend to apply a precautionary principle when valuing assets, showing up under such headings as the principle of least value and the capital share method. Market-oriented analysts used to national accounts would rely on market values:

> All flows and stocks should be valued at the amounts for which goods, assets other than cash, services, labour, or the provision of capital are in fact exchanged or could be exchanged for cash.[54]

These differences may be large, as section 4.1 indicates. Again referring to the purpose of assessing the financial condition against the criterion of marketability, the most natural choice would be market values. But history shows that market values can be highly volatile, so a conservative version of the market valuation principle seems justified.

An illustrative example where different principles of accounting come into conflict is the valuation of the state debt. In the standard financial accounts, it is assigned a market value because of the necessity of consolidating with other sectors, where assets such as state bonds are valued at their market value. By contrast, the annual report of the state assigns the nominal value, given that the National Debt Office plans to keep the debt until the date of expiry. Possible deviations from the nominal value at the date of issue are resolved uniformly over their lifetime.[55]

5.3 Assets and liabilities

The Government Finance Statistics (GFS) system defines economic assets in the following way:

> All assets recorded in the GFS system are *economic assets*, which are entities over which ownership rights are enforced by institutional units, individually or collectively, and from which economic benefits may be derived by their owners by holding them or using them over a period of time.[56]

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[54] GFSM (2001), p. 31.
[55] Lars Nordkvist, pers. comm.
[56] GFSM (2001), p. 111.

Similarly, for liabilities,

> When a financial claim is created, a *liability* of equal value is simultaneously incurred by the debtor as the counterpart of the financial asset. That is, the payment or payments that the creditor has a contractual right to receive are also the payment or payments that the debtor is contractually obligated to provide. Thus, liabilities are obligations to provide economic benefits to the units holding the corresponding financial claims.

The standard balance sheet categorisation of assets and liabilities is illustrated in table 5.1 below.

Risk assessment

Risk assessment is an essential component of comprehensive net wealth analysis. The field to be covered is potentially very large, depending on the definition of risk applied. In a survey paper, Polackova Brixi and Mody divide risks along two different dimensions – direct versus contingent, and explicit versus implicit. This yields the matrix in table 5.2 for the fiscal risk spectrum.[57]

The relative importance of the above categories will obviously vary from country to country. The effects of population aging would be a mandatory item in every industrialised country. In countries with a large sector of state-owned enterprises, the management of these enterprises may imply a risk. In oil-producing countries, resource depletion represents a long-term risk to be managed. Environmental degradation from climate change effects or biodiversity losses can represent substantial risk in some countries. Climate change can imply high costs for the public sector.[58] Environmental degradation is difficult to evaluate, but methods of analysis in this area have developed in recent years and would permit at least an assessment of the relevant order of magnitude.[59] In some cases, the synergetic effects from different risks must be given special attention.[60]

It should be noted that obligations that are classified as implicit according to the scheme can certainly have a significant impact on the net wealth of a country. Future public pensions defined by law are indisputably part of the expenditure to be covered, even if a narrow legal definition is used.

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[57] Polackova Brixi and Mody (2002), p. 23.
[58] SOU 2007:60.
[59] Pearce et al. (2006).
[60] Rosenberg et al. (2005).

Table 5.1. Assets and liabilities in the standard balance sheet.

Nonfinancial assets
       Fixed assets
       Inventories
       Valuables
       Nonproduced assets

Financial assets
    Domestic
       Currency and deposits
       Securities other than shares
       Loans
       Shares and other equity
       Insurance technical reserves
       Financial derivatives
       Other accounts receivable
    Foreign
       Currency and deposits
       Securities other than shares
       Loans
       Shares and other equity
       Insurance technical reserves
       Financial derivatives
       Other accounts receivable
    Monetary gold and SDRs

Liabilities
    Domestic
       Currency and deposits
       Securities other than shares
       Loans
       Shares and other equity (public corporations only)
       Insurance technical reserves [GFS]
       Financial derivatives
       Other accounts payable
    Foreign
       Currency and deposits
       Securities other than shares
       Loans
       Shares and other equity (public corporations only)
       Insurance technical reserves [GFS]
       Financial derivatives
       Other accounts payable

Source: GFSM (2001), table 4.4.

Table 5.2. Framework for analysing obligations.

Sources of obligations	Direct liabilities (obligations in any event)	Contingent liabilities (obligation if a particular event occurs)
Explicit (government liability as recognized by law or contract	• Sovereign debt (loans contracted and securities issued by central government) • Expenditure composition (nondiscretionary spending) • Expenditure legally binding in the long term (civil service salaries and pensions)	• State guarantees for non-sovereign borrowing by and other obligations of subnational governments and public and private sector entities (development banks) • Umbrella state guarantees for various types of loans (mortgage loans, student loans, agriculture loans, small business loans) • Trade and exchange rate guarantees issued by the state. • State guarantees on private investments. • State insurance schemes (deposit insurance, income from private pension funds, crop insurance, flood insurance, war-risk insurance) • •
Implicit (a moral obligation of government that reflects public and interest group pressures)	• Future public pensions (as opposed to civil service pensions)[a] • Social security schemes • Future health care financing • Future recurrent costs of public investment projects	• Default of a subnational government or public/private entity on non-guaranteed debt/obligations • Banking failure (support beyond government insurance, if any) • Cleanup of liabilities of entities being privatized • Failure of a non-guaranteed pension fund, or social security fund (protection of small investors) • Possibly negative net worth and/or default of central bank on its obligations (foreign exchange contracts, currency defence, balance of payments) • Other calls for bailouts (for example, following a reversal in private capital flows) • Environmental recovery, disaster relief, military financing •

Note: In this framework, these services fall in the category of government direct implicit liabilities if their provision is not mandated by law. If mandated by law, then these services fall in the category of government direct explicit liabilities.

Source: Polackova Brixi and Mody (2002).

These should be considered as examples only, and the assessment must be made for each country specifically. There is no insurance against surprises; someone setting out on a long-term fiscal assessment at the turn of the century 1900 could not have been expected to foresee two world wars, a world-wide depression followed by a period of protectionism, and a period of unprecedented growth following the second world war. But such events should not serve as an excuse for not attempting to assess the current and future fiscal stance against the backdrop of a surprise-free scenario.

Pension liabilities

Accounting for pension-related liabilities has been a controversial issues discussed in the context of the review of the System of National Accounts (SNA), reflecting the above-mentioned ambiguity in the definition of obligations. One viewpoint has been that only government commitments in relation to pensions to be paid to civil servants should be recognised in the government accounts as liabilities. Pensions to be paid by social security to the population at large, by contrast, would not be recognised as liabilities. According to this viewpoint, pensions provided by employers are contractual by nature and correspond to deferred compensation of employees, whereas social security pensions do not have that nature. The strength of the commitment towards civil servants is stronger than towards the population at large. A different view is that such a distinction in the treatment of pensions to be paid to civil servants and pensions to be paid to the population at large is not warranted. In many EU countries, the pension schemes for civil servants and for the rest of the population are similar. If no distinction is admitted between pension liabilities towards civil servants and pension liabilities at large, either all pension liabilities should be included in the accounts, or none.

This is not an academic discussion. The inclusion of unfunded liabilities radically changes the net wealth of a country, and would alter the nature of national accounts by increasing the uncertainty of the figures presented. In practice, such an inclusion could have effects for instance on the application of the sanction mechanism within the Stability and Growth Pact.

A compromise has been reached between these two positions. The updated SNA will allow for the recording of certain pension entitlements in the core accounts, depending on the specificity and institutional arrangements. Pension liabilities in general for the whole population will be referred to a supplementary table. There is an ambition to keep also these supplementary tables harmonised and internationally comparable.

In Sweden, this is in principle not a problem, as indicated by the previous description of the so-called brake mechanism (see section 4.4). How the new brake mechanism will be designed is of utmost importance to both the future of the system and efforts to project the long-term development of the public sector.

Investments

The treatment of investments in relation to budget restrictions at various levels is an issue that has been discussed both in Sweden and abroad. There are some misunderstandings concerning this question that merit a comment.

First, there is a conception that accounting for investments by accruals rather than in cash terms creates room for other expenditure by reducing the borrowing requirement. This is simply false. Whether investments are recorded in an accrual or cash setting does not affect the borrowing requirement. It does affect the bookkeeping by reducing the costs of an individual investment, but this is immaterial to the real economy. What matters to the real economy is the fiscal impulse generated by a sudden increase of public investment, which is correctly recorded only in a cash setting.

Second, there is a common misunderstanding that spreading investment costs over the life-length of the investments creates extra room under self-assumed restrictions such as an expenditure ceiling. If the government finances a major investment by borrowing instead of financing via appropriations as the budget act stipulates (with some room for exceptions) and does so without changing the expenditure ceiling, there will of course be some extra room, but this is self-delusion. If one switches from financing via appropriations to financing via borrowing, the expenditure ceiling must of course be adjusted accordingly for the restriction to maintain its strength in real terms. This is actually what was done when Swedish agencies made their transition to accrual-based accounting during the first half of the 1990's. After a transition period of 5 years, budget limits were back to normal (modulo other changes, such as adjustment for inflation, expected productivity increases etc.).

This last point deserves underlining. In the steady state, if accrual-based budgeting and accounting is applied across the board, there will not be any difference between the two regimes as far as budget restrictions go. What may change is the possibility of sudden increases in the investment budget within the budgeting margin; whether this is desirable or not is an open question. There is of course a price to be paid for this increased room for manoeuvre, namely that future budgets will have to carry a heavier load.

Much of the discussion about what is an appropriate treatment of investments has centred on the so-called golden rule of fiscal policy, meaning that borrowing should be used to finance investments only and not current expenditure. Not financing current expenditure by borrowing can certainly be advisable, but it does not seem be a sufficient requirement for sound fiscal policy. In some versions, the idea has been to exclude investment expenditure altogether from overall budgetary restrictions. This is somewhat strange, given that the borrowing requirement is affected in the same way whether money is borrowed for consumption or investment. Further, private investments, when properly selected, generate new income for the firm, and if the payoff term is competitive, such an investment can be recommended. Public investments do not necessarily generate income for the state. They may do so, but they also entail costs for use and maintenance. They may generate welfare for the citizens, but in that respect they do not differ from other consumption items on the public budget. There is simply no reason to treat investments that generate consumption during 3 or 5 years, or in the case of infrastructure, 40 years, as radically different from other consumption. Whether there are growth effects from public investments is very much dependent on the quality of the investments. Given that public investments are often not subject to the same scrutiny as private investment, there is further reason for scepticism. There may be a regulatory framework encouraging the use of strict socioeconomic cost-benefit analysis to investment projects – this is the case in the transport sector – but experience shows that the outcome of such analysis far from always determines actual priorities.[61]

The question whether public investments are under-dimensioned or not must be treated separately from the discussion about the fiscal policy framework. Under steady-state conditions, these two issues are completely unrelated. Public investments must be justified in stand-alone analyses of their costs and

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[61] Nilsson (1991).

merits in relation to other public expenditure. This is not to say that a golden rule cannot have effects on the structure of public expenditure; the UK experience shows that it certainly can.

In summary, there seems to be no strong case for special treatment of public investment.[62] Incidentally, the current Swedish surplus target of 1 per cent of GDP on average over the business cycle is of course stronger than a golden rule restriction.

5.4 Expenditure and revenue projections

Expenditure

The forecasting of expenditure should follow the principle of a no-change policy. But as we have already observed, this formula is ambiguous. If legislation driving a certain expenditure system is time-limited, a strict application of the formula would call for a discontinuation when the current term comes to an end. But experience shows that even systems such as these may be more or less permanent, so a realistic forecast would rather be based on the assumption of unchanged rules.

Another important methodological choice has to do with the level of detail and complexity chosen when modelling expenditure system. This is to some extent a trade-off between realism and transparency, but more detailed models are not always more accurate in forecasting. In systems like the pension system, rules may be complex, but because they are fully known, and because actuarial data are also known with relatively high precision, expenditure can be computed with high reliability. The main weakness of forecasts in this area has been a systematic underestimate of increased longevity.[63]

The situation is very different for health care, another important expenditure system in the perspective of aging populations. Entitlements in this area are much less well defined, and even a simple application of a no-change formula runs into difficulties. The total demand for health care is a function of both the number of elderly in different age intervals and their state of health. For many years, the dominant rule of thumb in computing health care expenditure has been that the dominant part of the cost associated with a certain individual will accrue during the last years of his or her life.[64] This is now increasingly called into question, mainly because young and middle-aged persons today are no longer healthier than previous cohorts in the same age.[65] No matter what is correct in this debate, it is obvious that extrapolation of historical data in this area will be difficult, even using complex models.

The formula of no change is ambiguous also because of the Baumol effect. Given the tendency of public services to become relatively more expensive over time, an unchanged level of ambition would normally lead to increased expenditure.

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[62] For further critical analysis of the golden rule, see Balassone and Franco (2000).
[63] Batljan and Lagergren (2000).
[64] Zweifel et al. (2004).
[65] Klevmarken et al. (2008).

A natural reflex would to use simple rules of thumb, such as assuming that the expenditure level pertaining to a particular aggregate will grow proportionally to GDP. This is certainly simple, but there is a risk that the conclusions thus generated will be direct mathematical consequences of the assumption and have little to do the reality modelled. There is no simple answer to the question what is an appropriate level of detail. A prerequisite is in any case that persons that have deep knowledge about the different expenditure systems get involved in the analysis.

Revenue

Much of what has been said about expenditure is valid also for revenue flows. Tax rules may remain constant, but the development of tax bases may be difficult to model. Assuming constant levels in relation to GDP may look reasonable but risks reducing the whole effort to an uninteresting exercise. In case tax bases develop differently from the GDP, there is also the risk of bias in the projections. Taxable pensions are an important example of this.

5.5 Discounting

The operation of discounting future revenue and expenditure flows to their present value is one of the most critical of the whole calculation. Discounting has traditionally been considered a relatively simple and unproblematic component of economic analysis. An asset available a year from now will be considered as having a lower value than one that is available today, and the ratio between them defines a discount rate α:

$$V_{\text{next year}} = V_{\text{today}} / (1 + \alpha).$$

The discount rate can be inferred from market operations, and will reflect risk levels. It is further assumed that this evaluation is homogenous in time, so that the value of the asset in question two years from now will equal $V_{\text{today}} / (1 + \alpha)^2$. The reason for this assumption seems to have been mathematical simplicity rather than observed behaviour.

These standard assumptions have been questioned, in recent years with increasing intensity, both from an empirical and a normative point of view. A consequence of the above homogeneity in time is that if an alternative A is preferred over an alternative B at a particular point in time, it will be preferred at all other points in time, since the value of each alternative will be reduced or increased by the same factor. In other words: preference reversals are impossible. But preference reversals do occur in real life, so the standard model seems to be somehow inadequate.[66] This has led some economists and psychologists to assume a hyperbolic form for discounting rather than the above exponential form. If we denote by V_N the value of an asset N years ahead, hyperbolic discounting amounts to

$$V_N = V_{\text{today}} / N^{\beta},$$

for some positive ß. V_N will decrease much more slowly for large N than according to the exponential discounting rule. In a world of hyperbolic

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[66] For a general discussion of these problems, see Elster (2000).

discounting, preference reversals can possibly occur. But the question remains far from settled; it would be wrong to claim that hyperbolic discounting would fully harmonise theory with observations.[67]

The second line of argument is normative and consists in accusing the standard model of neglecting long-term effects of current decisions. Using discount rates typically occurring in financial markets will make short-term effects swamp anything that occurs a generation away. Further, it has been said, the standard model is relevant only when analysing the costs and benefits of one single decision-maker; if benefits accrue to one person or group and costs to another (perhaps unborn), the model is no longer valid.

An area where this debate has become particularly relevant is global warming. Because of the substantial time lags involved in the climate system, both the costs of global warming and the effects of investments for curbing it will be negligible compared to the benefits of a business-as-usual policy in the short to medium term. Many authors, including Cline and Stern, have therefore argued against mainstream economists that the discount rate should be much lower than in standard microeconomic analysis.[68]

Following Arrow et al.,[69] it is now customary to divide the rate of discount into two terms, where one has to do with pure time preference and the other with the fact that we value increases in consumption less the higher the current consumption level. Formally,

$$\alpha = \varrho + \eta \, dc/dt,$$

where α is the total rate of discount, ϱ is the pure rate of time preference, η is the marginal elasticity of consumption, and dc/dt is the growth rate of consumption. Stern argues that ϱ should be chosen much lower – perhaps zero – for large socioeconomic problems such as climate change, and that standard values are at best usable in connection with small projects such as road investments. The parameter η has been estimated to lie between 1 and 2, normally closer to 1, but even so it can be argued that a growth rate of 2,5 per cent annually would yield an unacceptably high discount rate from an intergenerational point of view.

The UK Treasury has taken a somewhat different approach and established a norm for the discount rate, which reflects the above concerns and has a falling rate for longer time perspectives, as follows:[70]

Period of years	0-30	31-75	76-125	126-200	201-300	301+
Real discount rate	3,5 %	3 %	2,5 %	2 %	1,5 %	1 %

This gradually declining discount rate can in fact be viewed as a way of reproducing a hyperbolic discount function.

There are, in summary, two main alternatives available for discounting future revenue and expenditure streams. One would be the classical view, that

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[67] See further Laibson (1997), Loewenstein et al. (2003).
[68] See Cline (1992) and Stern (2006, ch. 2), and for the classical view, Nordhaus (1994).
[69] Arrow et al. (1996).
[70] UK Treasury (2003), Annex 6.

discounting according to an exponential time preference function is appropriate. A reasonable discount rate would then be given by the interest rate on government long-term bonds. The alternative view would be that, given the long time horizons involved, an ad hoc variable discount rate as illustrated in the above excerpt from the UK Treasury green book is necessary. According to this latter view, even the figures in the table above would probably be considered too high.

5.6 Computing comprehensive net wealth

Comprehensive net worth is the sum of the current fiscal position and discounted future revenue and expenditure. It is reasonable to ask to what extent efforts to increase the detail in the modelling of these aggregates pays off in increased precision of forecast. This is difficult to answer in general terms and would in most cases by settled by the resources are assigned to the task. It is interesting in this context to ask also whether the two main aggregates – current stocks and discounted future flows – are of the same order of magnitude.

Typically, current net asset will amount to a fraction of GDP, in less fortunate cases to minus 1 GDP or even worse. Annual revenue and expenditure flows will be of the order of 30 to 50 per cent of GDP in industrialised countries. The difference between these two flows – the annual net income – will be much smaller, however, and typically amount to a few per cent of GDP (the limit defined by the Stability and Growth Pact being 3 per cent). The current position would thus typically equal the accumulated net income during perhaps 20 or 30 years (undiscounted), so the current position and discounted future net income will be of the same order of magnitude. In consequence, these two terms should be handled with equal care when computing the comprehensive net worth.

A computational problem is that net income is the difference between two large aggregates, revenue and expenditure. Even small changes in the assumptions about either of these two terms are therefore liable to produce large changes in the outcome.

5.7 Auditing

Some of those involved in the effort to standardise long-term fiscal sustainability may nurture a hope that this process will be carried long enough for a classical formal audit process to be possible. Even in the long run, there are reasons for doubt. There are so many open parameters in the forward-looking part of the analysis, many of which have a distinct political flavour, that it is hard to imagine the formation of a professional code free of such parameters. At least for the foreseeable future, a sufficient level of ambition is to maintain a critical and constructive discussion about the methodology to be pursued.[71]

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[71] The previously mentioned effort by the IFAC/IPSASB working party aims at reaching a conclusion on this issue.

6 Towards a coherent framework for fiscal policymaking

The present aims at a synthesis and a first step towards a more coherent framework for fiscal policymaking. The point of departure is the common observation on the Swedish policy framework that the expenditure ceiling has largely been respected during more than a decade. The link between the surplus target and the expenditure ceiling is somewhat weak, however, and the link between the long-term analysis and the surplus target is so far not well developed. A logical hierarchy related to the different time horizons involved would be desirable. With this target in mind, it becomes somewhat easier to choose between the various methodological alternatives available for assessing the current fiscal position of the public sector.

6.1 Creating a drag anchor for fiscal policy

The expenditure ceiling is a vehicle for the parliament and the government to maintain authority over expenditure development in the short to medium term. It is neutral with respect fiscal policy in the sense that the ceiling can be used both for restrictive and expansive policies. During its first years of operation, from 1997 and onwards, the ceiling was set *ad hoc*, based on targets formulated independently. For instance, the strongest restriction for the first three years, 1997-99, was to establish a zero balance for the state budget in 1998. The surplus target was set at 2 per cent of GDP when it was launched in the 2000, and has been kept at this level since.[72] Because of its phrasing – a certain surplus in the average over a business cycle – it has been difficult to evaluate, and generally speaking, it is not obvious how the level of the expenditure ceiling has been determined from the surplus target.[73] Moreover, the level of 2 per cent of GDP appears somewhat arbitrary. A long-term analysis carried out by Flodén indicates that the target is reasonable, perhaps somewhat too weak.[74]

The idea of the surplus target is that it should act as a reference point for the short- to medium-term policy making over a horizon of 3 to 4 years. It should consequently have greater inertia than the expenditure ceiling, acting as it were as a drag anchor for the short to medium term. A horizon of 10 years appears reasonable in this perspective, with a mid-term review after 5 years. The translation from the surplus target to the expenditure ceiling can be done in different ways. In fact, the government has used three different indicators to decide whether the surplus target is reached or not:

- average public-sector balance since the year 2000,

- a 7-year moving average of the public-sector balance, and

- structural saving.[75]

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[72] The current value is 1 per cent of GDP, because the premium pension system, albeit mandatory, has been re-classified as part of the private sector.
[73] Riksrevisionen (2008 b).
[74] Flodén (2003).
[75] Proposition 2007/08:100, p. 143.

These indicators may well yield different results, which adds to the confusion. Arguments can be put forward for and against any of the indicators, but it would be preferable, for the sake of transparency, to single out one of them as the indicator on which the evaluation is based. Such a choice would not make it possible to compute unequivocally the appropriate level of the expenditure ceiling, but it would at least facilitate adjustments *ex post*, much as municipalities are required to adjust their expenditure and revenue levels in case they do not live up to the local balance requirement.

Even if the link between the surplus target and the level of the expenditure ceiling can thus be strengthened, the question remains what is an appropriate level for the surplus target. This is where the long-term sustainability analysis comes naturally. The long-term requirement of sustainability, together with a set of restrictions on the medium-term surplus target, makes it possible to compute approximately reasonable levels for the surplus target. The restrictions on the surplus target can be determined from the general requirements on fiscal policy summarised in the introduction of this report and repeated here for convenience:

- *solvency*: the ability of the state to meet its financial obligations;

- *growth*: the desire to design a fiscal policy that promotes economic growth;

- *stability*: the possibility of meeting financial obligations at reasonably constant tax rate levels;

- *fairness*: a reasonable distribution of benefits and burdens between generations.

The requirement on *solvency* is at the very heart of the discussion of sustainability. Against the backdrop of sustainability analyses carried out in the EU context and elsewhere, the appropriate translation of the solvency requirement is that *the net wealth of the public sector should be positive*. By net wealth we understand the previously discussed sum of historically accumulated values and discounted future revenue and expenditure streams. A number of choices are necessary for this definition to become operative; we will return to these below.

The *growth* aspects seems more difficult to link directly to the discussion on expenditure levels and surplus targets. As the literature on the topic shows, there is no simple relationship between the size of the public sector and the growth rate; satisfactory growth rates are compatible with a fairly wide range of expenditure ratios. Some expenditure systems promote growth, others are harmful, and others still are neutral. What is done within the public sector appears more important than its size according to some simple yardstick.

Stability by contrast is directly related to fiscal policy regimes. What is required in this respect is predictability. Decision-making at the micro level in households and firms is facilitated by a stable environment, and volatility in tax rates or expenditure system is to be avoided. Stability is in this sense related to growth.

Intergenerational fairness is also a crucial restriction, although different observers may reach different conclusions on what is required. Most people would

endorse statements like "Each generation should carry the burden of its own commitments" or "No generation is entitled to pass over the burden of necessary adjustments of the public sector balance to future generations". But as long as the economic growth rate is positive, each generation will have more freedom of action than its predecessors, and the restriction on fairness between generations does not translate easily into any particular bound on for instance the public debt. The central parameter in any discussion of fairness is the discount rate. As shown in the previous chapter, representatives of the economic profession differ widely in their attitude to the question what is an appropriate figure for large-scale, long-term decision problems. Nonetheless, a large majority would seem to support a low figure for decision problems with a planning horizon of 50 to 100 years. No matter what a government chooses, it is essential to transparency that the discounting regime remain constant over long periods, so that there is no suspicion that parameters are adjusted in order to generate any particular outcome of the analysis.

An illustration

By means of a simple illustration in a generic setting, we will show how the design of a medium surplus target can be linked to a sustainability analysis while simultaneously respecting the above-mentioned requirements. The setting is consciously simplified in order to highlight the essential choices and trade-offs to be met.

We imagine a decision on surplus targets for the 21st century to be made just before the turn of the century. This is roughly the situation in which the first Swedish surplus target was decided, although of course no general sustainability framework was applied, nor was there any decision made on how long to cling to the target chosen. The dominant environmental factor is a major demographic shift that takes place around the year 2030. Without loss of generality, we set the additional expenditure level to 1 unit per decade, adding up to 7 expenditure units during the rest of the century. This shift will entail a major increase in public expenditure. The question is how this increase should be met on the revenue side of the public budget.

It is assumed that the long-term *solvency* requirement is satisfied at the outset, that is, the net wealth of the public sector is in the vicinity of zero. The solvency requirement is that it should remain there. Otherwise expressed, the additional revenue during the 21st century should match the additional expenditure incurred from 2030 onwards and consequently add up to 7 expenditure units.

Stability implies that tax rates should not vary too rapidly. In the absence of a stability requirement, one could imagine raising revenue levels by one unit in 2030 and keeping it there till the end of the century. Alternatively, the tax rate could be increased by 0,7 units in the year 2000 and remain constant henceforth. Neither of these alternatives are realistic. Stability will be formally ensured in two ways. First, each surplus target is to be held constant for at least ten years, unless extraordinary events justify a re-computation. Second, the difference between two consecutive surplus targets should not be too great. The mathematical expression of this in the analysis is that the sum over the entire century of the differences squared should be minimised. Further, it is

required that the additional revenue level in the last decade be the same as what is required in the long run, namely one unit higher than at the outset.

Intergenerational equity, finally, is expressed here by using a low discount rate. In fact, the discount rate has been set to zero for mathematical simplicity, but the outcome does not depend critically on this parameter as long as it remains in a neighbourhood of zero.

In summary, the problem of designing a series of surplus targets for the public sector is formulated as an optimisation problem. The sum of squares of the differences between consecutive surplus targets should be minimised subject to the restriction that the net wealth of the public sector remain the same as at the outset (zero). The tax level at the end of the century should be the equal to the increase in expenditure, that is, one unit of expenditure. We focus on primary balances, given that the difference between interest revenue and expenditure would be a second-order effect compared to the main aggregates of expenditure and revenue.

The solution is derived in an appendix. The result is shown in the diagram below.

Figure 6.1. Optimal fiscal response to a step increase in expenditure occurring in the year 2030.
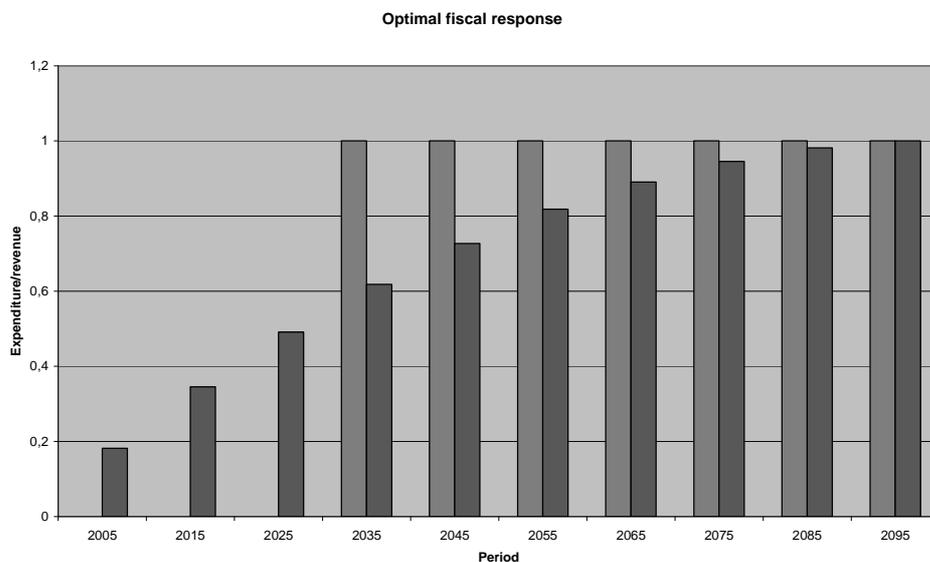
Note: Expenditure: light staples, revenue: dark staples.

Source: See the appendix for the derivation.

As can be expected from common sense, the additional burden is smoothed out over the whole century. The effect is in fact rather strong; in the last decade before the actual expenditure occurs, the additional revenue is already at one half of its steady-state value. The result is an example of tax smoothing, but in contrast to situations where unexpected events have already occurred,

for instance a war, the situation illustrated is one where smoothing starts before the event.[76]

The example shown is of course highly stylized, but nonetheless suggestive of how an analysis with more realistic assumptions could be carried out. The actual increase in expenditure level will of course be spread over a number of years, but it is still expected to be relatively rapid compared to historical changes in the demand for public services brought about by demographic change. Revenue levels could be required to match additional expenditure sooner than towards the end of the century, in which case the end point occurs earlier and adaptation will be swifter. Introducing a positive discount rate will work in the opposite direction.

In a given situation, the fiscal policy actually derived for the short and medium term may very well coincide with what would result from an application of for instance the EU rule on required primary balance. But we believe that the general conceptual background is important, not least from the political point of view.

6.2 Main building blocks

The main building blocks for a fiscal policy regime of the type sketched above would be a hierarchy of fiscal policy targets, supported by an annually updated net wealth computation.

The top layer of fiscal policy would be the requirement on long-term sustainability of fiscal policy against the backdrop of foreseen changes in the revenue and expenditure landscapes. Because these forecasts are necessarily fraught with uncertainty, some sort of probabilistic treatment is necessary. An operative restriction could be for instance that comprehensive net wealth should be positive with 90 per cent probability.

Given a long-term trajectory satisfying the basic requirement of maintaining (or restoring) a positive net wealth position for the public sector, a set of surplus targets with a planning horizon of 50 to 100 years can be computed. Each target would normally be constrained to remain constant over a decade, but a mid-term review in order to verify that the current target is reasonable is justified. The profile of targets would be computed as indicated in the previous section, but of course with a much more realistic description of the assumed expenditure profile and other restrictions entering. The surplus targets would be decided by parliament every ten years for the decade to follow. They would be reviewed perhaps every second year in the budget bill or the economic spring bill, but would not be subject to new decisions unless the situation changes dramatically enough for a new decision to be considered necessary. The transition from one period to the next requires particular care in order to avoid large swings in balance requirements.

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[76] The goal function used here – stability of the tax ratio – is different from the standard assumption used in the tax smoothing literature following Barro (1979), where governments are assumed to minimise tax distortions that are linear-quadratic in the tax ratio. Whether political decision-makers are sensitive to this sort of economic results is open to discussion. We believe that the inertia in tax rates created by the above criterion is realistic; *status quo* has an impact on the choice of tax rates that is not rendered by the criterion suggested by Barro. The optimal paths derived might nonetheless be similar to one another and difficult to distinguish statistically from one another.

Once the surplus target has been decided, it is in principle possible to compute the appropriate expenditure and tax levels. These choices would of course be affected by political priorities, and a wide spectrum of expenditure and tax ratios can be combined with one and the same surplus target. The current problem of deciding how to adjust the calculation to the business cycle would remain the same, but preferably the government should decide on one of the methods available and stick to that method.

Finally, the development of annual budgets takes place subject to the expenditure ceiling already decided. Routines for this process are already in place.

The hierarchy sketched is summarised in the table below.

Table. 6.1. Overview of the proposed hierarchy of fiscal policy instruments.

Component	Time span	Main characteristics
Long-term net wealth computation	50 – 100 years	Assessment of the net wealth of the public sector based on historically accumulated values and foreseen expenditure and revenue trajectories. Basic requirement: maintaining or restoring a positive net wealth position.
Surplus targets	10 years, with a mid-term review	Profile of surplus targets computed on the basis of sustainable long-term paths for the public sector under the condition of preservation of the wealth position. Assessed annually, subject to a more profound mid-term review after 5 years, but in principle held constant over a decade.
Expenditure ceilings	3 years	Rolling, nominal ceilings, computed on the basis of surplus targets, adjusted for the current business cycle using a pre-established format (such as moving average or structural deficit).
Annual budgets	1 year	Developed according to established rules and routines, subject to the restriction that the existing expenditure ceiling be respected.

6.3 Methodological choices

Boundaries

The whole of the public sector should be the object of analysis – central, regional, and local government, as well as the public pension system.

Accounting principles

Market values should be the norm, but such values should be estimated with a modicum of caution. It seems inappropriate, however, to build a substantial safety margin into the assumption of asset values; preferably, safety margins should be transparently displayed by means of uncertainty bands for the outcome.

Assessment of current position

The norm of maintaining or restoring a positive net comprehensive value calls for an assessment of net current value of the fiscal position. The standard annual report would be the starting point, but adjustments should be made in the direction of more market-like value assessments for marketable assets.

Expenditure forecasting

The forecasting of expenditure should be based on a family of models that are sufficiently sophisticated to capture the essence of the driving forces in each expenditure system, yet transparent enough for a reasonably large audience to judge on the quality of the analysis. It is essential that experts from the relevant areas – health care, care for the elderly etc. – be integrated in the working groups.

At least on paper, state budget expenditure represents the dominant factor of uncertainty in the forecast. The balance requirement on the local and regional governments, together with the balancing mechanism of the public pension system, would seem sufficient to guarantee in principle the long-term stability of these two subsystems. On the other hand, the bailout risk in local government cannot be ignored.[77] Further, the fact that a balancing mechanism has been developed that stabilises the public pension system does not automatically mean that this mechanism will stand the political test in a difficult situation. One consequence of the aging of populations is that the relative number of voters above 65 will also increase.

For the purpose of the present analysis, however, it is most reasonable to assume that both the balancing requirement on local government and the brake mechanism of the pension system will deliver what is expected from them.

Revenue forecasting

For non-tax revenues, it is necessary to underline that if stock-market values are used in the assessment of current assets, these include expected future revenues. Assuming revenues from these assets would amount to double-counting.

Discounting

Normally, the risk free long-term interest rate is about 4 per cent. Incidentally this is equal to what has been suggested as the appropriate rate of discount in socioeconomic cost-benefit analyses concerning long-term infrastructure investments.[78] Nonetheless, there is reason to believe that there is strong support for a much lower, possibly variable discount rate along the lines suggested in the cited UK Treasury green book. Even these values appear too high in the perspective of intergenerational equity. The choice of values must anyhow be subject to political scrutiny and decision.

Uncertainty and risk assessment

Large uncertainties prevail in the assessment of demographic trends, macroeconomic parameters etc. This calls for a well developed and pedagogical treatment in reporting, for instance using uncertainty bands. It is also important to work out the consequences of such uncertainties on policy variables.

The major risks relevant for the Swedish public sector are already on the agenda, and to some extent have also triggered major reforms. Climate change may be another candidate. The effects of climate change on Swedish society

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[77] Von Hagen and Dahlberg (2004).
[78] SIKA (2002).

have been investigated in depth by a public commission.[79] Pandemics could be yet another candidate for analysis.[80]

Guarantees are already reported in the government's annual report to parliament. The sum total of guarantees and other liabilities is above 20 per cent of GDP. In principle, the system is financed by fees from the beneficiaries. The risk assessment is currently incomplete, however, and the government should strive at filling this lacuna. Recent commitments due to the current financial crisis have drastically increased the volume.[81]

General guidelines for the assessment of guarantees and similar liabilities have been produced by the IMF.[82]

Frequency of reporting

A long-term fiscal sustainability report every 2 to 3 years would seem an appropriate frequency. On the other hand, cooperation within the EU requires annual sustainability reports, so the extra work of updating net wealth on an annual basis is limited. A new decision on the surplus target every ten years plus a mid-term review would create a natural basic cycle of 5 years. Annual computations would facilitate adaptation of the political discourse to changing conditions.

Auditing

There is at present no reason to plan for a formal audit of long-term fiscal sustainability reports. Certain components, such as annual reports of the state and of the pension system, are already audited, but these audits concern historical assessments only. As for the comprehensive net wealth analysis, it seems more appropriate to maintain an informal critical discourse between the relevant entities, such as the Ministry of Finance, the National Audit Office and the National Financial Management Authority.

6.4 Concluding comments

The general format for fiscal-policy instruments and long-term sustainability analysis sketched above is in many respects similar to what is currently produced. Many of the building blocks are already in place. What is required is coordination of current efforts in order to establish a regime that is both consistent and relevant to policy making. Some of the parameters are genuinely political by nature – the discount rate, the degree of risk aversion when setting a target for net wealth – which calls for close cooperation between experts and political decision-makers.

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[79] SOU 2007:60.
[80] Jonung and Roegel (2006).
[81] The maximal commitment of the stabilisation programme is currently set to 1 500 BSEK, almost one half of the GDP; see Proposition 2008/09:61.
[82] IMF (2005).

Appendix: Derivation of the optimal fiscal response to a step increase in expenditure

Consider the problem of matching an increase in public expenditure by raising the revenue level. The time span of the decision problem is the 21st century. The increase in expenditure is expected to occur in 2030 and amounts to 1 expenditure unit. The total additional expenditure volume to be matched consequently amounts to 7 expenditure units.

The revenue side of the budget is modelled by additional revenue u_i, i = 1, 2, …10, defining one surplus target for each decade of the 21st century. The problem is to derive an optimal sequence of u_i's.

The criterion of optimisation is the sum of squares of differences between consecutive u_i's, as follows:

$$F(u_i) = \Sigma_i \, (u_i - u_{i-1})^2,$$

where *i* ranges from 0 to 10 and we set u_0 equal to 0. It is further required that u_{10} be equal to 1.

The constraint on sustainability implies that the additional revenue collected match the additional expenditure incurred, formally:

$$\Sigma_i \, u_i = 7$$
$$(c)$$

The Lagrangian L pertaining to the problem is

$$L(u_i, \lambda) = \Sigma_i \, (u_i - u_{i-1})^2 + \lambda \, (\Sigma_i \, u_i - 7).$$

Differentiation with respect to u_i yields the following necessary conditions for optimality:

$$\bullet_i L \; = 2 \, (u_i - u_{i-1}) - (u_{i+1} - u_i) + \lambda = 0 \quad i = 1,2, …10 \;\; (e)$$

Equation (e) is a difference equation whose characteristic equation has two unit roots. The solution of the homogenous equation is consequently of the form A + B•i. A particular solution to the non-homogenous equation can be obtained by observing that the second differential, according to (e), is equal to a constant. The particular solution should therefore be parabola-shaped. The general form of the solution takes the form

$$u_i = A + B\bullet i + C\bullet(i - 10)^2.$$

The constants A, B, and C can be determined from the constraint (c) and the two boundary conditions $u_0 = 0$ and $u_{10} = 1$. The result for the example under consideration is

$$A = 100/110,$$

$$B = 1/110, \text{ and}$$

$$C = -\,1/110.$$

The resulting profile is illustrated in figure 6.1.■

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