

PART III
Chapter 11

**Risk Management
of Government Debt in Finland***

by
John Rogers

* John Rogers, Senior Risk Manager, State Treasury, Finland.

I. Introduction and framework

The legal basis for debt management in Finland is derived from a parliamentary authorisation through which the Ministry of Finance submits a proposal to the Council of State authorising the State Treasury to carry out borrowing as an agent of the Ministry of Finance on behalf of the Republic of Finland.

Borrowing volume limits, in terms of the maximum allowable central government debt outstanding, are delegated through this same decision making process to the State Treasury. Likewise the Ministry of Finance is authorised to issue instructions and guidelines to the State Treasury related to budgetary debt management. The Ministry also monitors compliance.

Government debt management operations are carried out by the Finance Division of the State Treasury. In addition to debt management operations, the Finance Division is responsible for management of cash assets as well as administration of loans granted from central government funds, interest subsidy agreements and central government guarantees.

The State Treasury also carries out borrowing for extra-budgetary funds in cooperation with other authorities. The largest of these funds is the Housing Fund of Finland, for which the State Treasury gets separate borrowing instructions from the Ministry of Finance.

The overall objective for budgetary debt management as stated in the guidelines of the Ministry of Finance is the minimisation of the debt servicing costs, while keeping the relevant risks at acceptable levels. In this context, costs are defined as the long-term costs on an accrual basis. The State Treasury is responsible for cash management in addition to government borrowing and debt management, so risk management encompasses both debt and liquid asset positions. Risk management is based on a new debt management benchmark adopted at the beginning of 2005.

Risk indicators related to the budgetary debt are reported to the internal management and to the Ministry of Finance. The overall strategy for risk management is imbedded in the Ministry of Finance's guidelines for debt, cash and risk management. Tactical decisions on debt management are made in the ALCO committee of the State Treasury, which meets once a month. This committee is headed by the director of the Finance Division.

The Finance Division of the State Treasury is organised along the following six lines: the Front Office carries out funding and cash management; the Middle Office is responsible for risk control, risk reporting, upkeep of the debt management benchmark, and risk management policy; Business Support includes information services and the Back Office, which handles payments, settlements and bookkeeping; the IT unit is responsible for maintenance and development of the data systems; Legal Affairs is responsible for general legal matters; and the Lending unit is responsible for administering the government's lending and interest rate subsidies. There are currently two persons in the Finance Division's risk control team at the State Treasury. There are also two persons working full time on development of risk management policy. Other persons from the Middle Office, Front Office and Legal Affairs are also actively working on projects related to risk management.

Finland has taken a fairly straightforward approach to risk management and this is reflected in the instrument toolbox available to debt managers. The instruments that the State Treasury may use in its operations are stipulated in the guidelines of the Ministry of Finance. In the 1990s the State Treasury stuck primarily to use of plain vanilla instruments in debt management: benchmark bonds, Treasury bills, retail bonds, interest rate swaps, cross-currency swaps, and repos. On the asset side, the main instruments have been bank deposits and CDs. There are plans, however, subject to the approval of the Ministry of Finance, to broaden in the last couple of years the range of derivatives in the toolbox for debt management has been broadened to include FRAs, spreadlocks, bond futures and money market futures.

II. Overall risks and risk management

In general it has not been the goal of risk management to minimise risk per se, but rather to find a suitable balance between the risk/return trade-off, taking into account the risk bearing ability of the central government. The main risks faced are market risk, refinancing/liquidity risk, credit risk, operational risk and legal risk.

The term market risk is used in Finland to denote the potential of a negative impact on the cost of servicing the debt stemming from the debt repayment or interest expenses. The main market risk derives nowadays comes from interest rate risk as there is only a negligible amount of currency risk.

Liquidity risk is the danger that the State Treasury's liquidity sources are insufficient for covering outflows related to servicing the debt or other expenses or that these outflows have to be financed in an unfavourable situation owing *e.g.* to market disturbances. Refinancing risk can be

considered to be a subcategory of liquidity risk stemming from the need to roll over the debt. Liquidity risk is a broader concept since it entails also non-debt related expenditures. The time horizon for liquidity risk is internally defined to be less than one year, while the time horizon for refinancing is longer.

Credit risk is the threat of a loss stemming from the insolvency of a counterparty. Credit risk stems from investments of cash assets and use of derivatives.

Operational risk is the risk of a loss resulting from inadequacies or failures in processes due to technology, personnel, organisation or external factors. Operational risk has traditionally been managed in a decentralised fashion at the level of the relevant functions, but in the last couple of years there have been increased efforts to evaluate and control operational risk in a more systematic and analytical fashion.

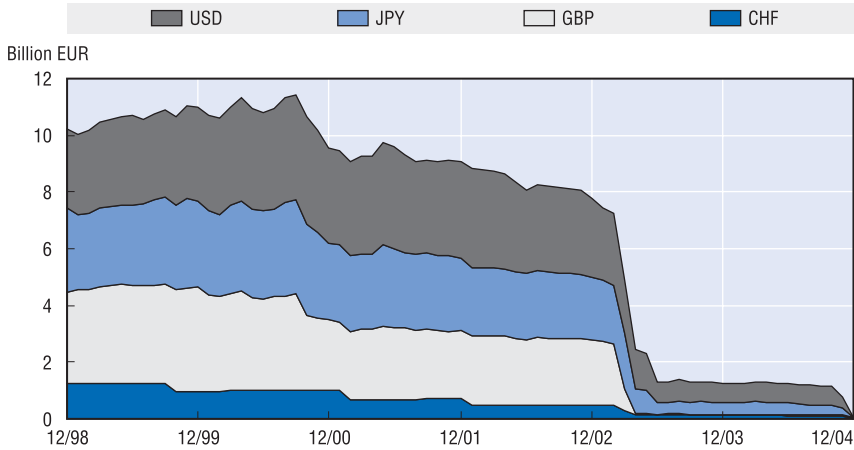
Finland has enjoyed a relatively strong fiscal position with regard to its budget balance, and this has not constituted a major constraint on debt management in recent years. The projections from the budget department of the Ministry of Finance are taken as given in debt planning. The State Treasury performs stress testing and scenario analysis but macroeconomic growth or its impact on tax revenues have not been incorporated into our simulation models.

III. Market risk

The main market risks faced in debt management are those stemming from currency risk and interest rate risk. In the 1990s risk management was focused primarily on currency risk. Finland was a heavy borrower on international markets in the early 1990s owing to the severe recession. Finland's currency risk was managed using a foreign currency benchmark based on bands for each individual foreign currency. Each foreign currency had a band within which its market value was allowed to fluctuate. New borrowing and cross-currency swaps were used to keep the component currencies within the bands.

After Finland entered the monetary union in 1998, the amount of foreign currency debt fell to some 14 per cent. The remaining foreign currency debt consisted of only four currencies and there was less active management of the remaining debt. The amount of foreign currency debt was allowed to decrease naturally in line with the redemption schedule.

The exposure to currency risk decreased substantially in 2003. The share of foreign currency debt fell in line with redemptions and hedging activities from 13 per cent to 2 per cent in the first half of 2003. The remaining foreign debt was hedged almost completely toward the end of 2004 when the share of foreign debt fell below 0.1 per cent.

Figure 11.1. **Currency risk: composition of foreign currency debt**

At the end of the 1990s attention became focused increasingly on interest rate risk. Before Finland was a member of EMU, the domestic market was too small for the government to use interest rate swaps in the domestic currency. There were some cross-currency swaps into floating rates, but there was no systematic target or benchmark for the overall interest rate risk exposure.

In the late 1990s the exposure to interest rate risk in terms of cost at risk was fairly low. It was therefore decided to increase the share of floating rate debt in order to get cost savings. In the year 2000, the guidelines of the Ministry of Finance included bands for the share of floating rate debt. In 2002 the method of calculating the floating rate debt was switched to a net debt basis by including cash assets.

In addition to the floating rate debt indicator, the exposure to interest rate risk has been monitored according to other indicators as well. The State Treasury has used duration, for example, as a way of deciding in which maturities interest rate swaps are done. Other indicators that are monitored include the average time to the next fixing and basis point risk as well as their respective bucket-based profiles.

The Ministry of Finance and the State Treasury decided to launch a project on development of a new debt management benchmark in 2001. In this connection, we have been working on simulation models that could be used to simulate interest rate risk in conjunction with this new benchmark. The simulation models allow use of a variety of interest rate models, for instance CIR (Cox, Ingersoll, Ross), Nelson Siegel, principal component analysis and BGM (Brace-Gatarek-Musiela).

Figure 11.2. **Interest rate risk: share of floating rate debt**

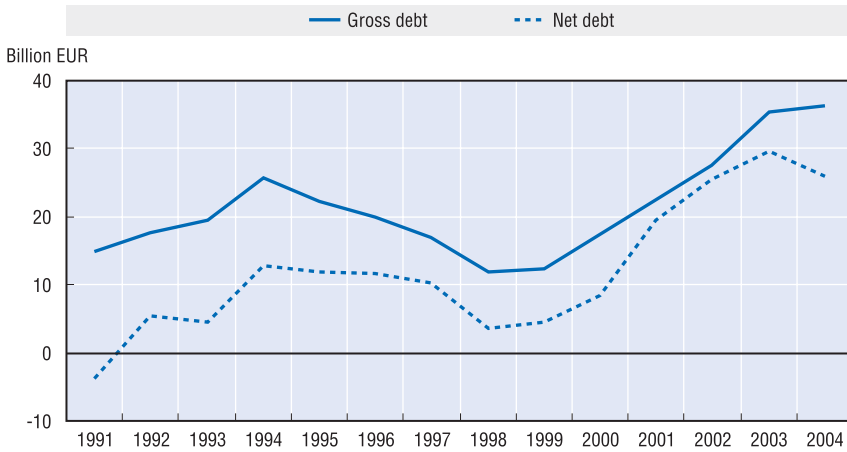
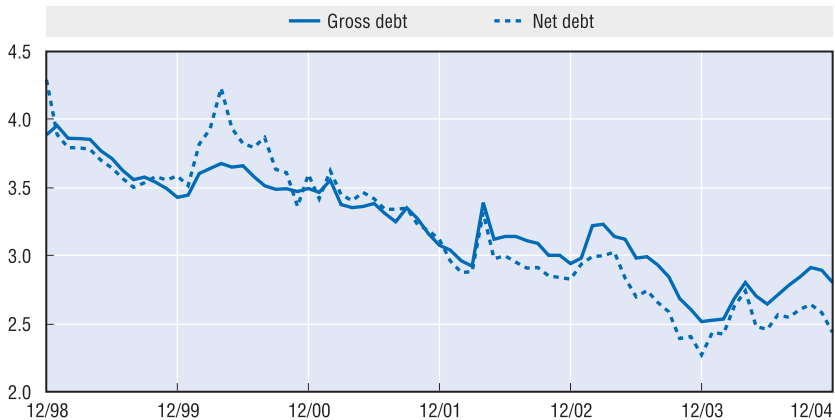


Figure 11.3. **Interest rate risk: modified duration**



These stochastic simulation models are not macroeconomic models as such, since the amount of the outstanding debt is determined exogenously. The amount of the debt is normally kept constant, with the horizon being 10 years or longer. The simulation models can be used to assess alternative funding strategies from a cost at risk perspective as well as to optimise the interest rate risk strategy within certain constraints.

The new debt management benchmark was adopted at the beginning of 2005. Broadly speaking, a reference portfolio for debt management defines a

more precise target for interest rate risk management compared to the previous approach based on the share of floating rate debt. It also enables increased quantifiability of the State Treasury operations as regards debt management.

The new target with regard to interest rate risk is defined by utilising the average fixing of the debt indicating the weighted time to repricing the debt. With regard to actual debt portfolio management, the State Treasury may within authorised limits deviate from the benchmark portfolio's interest rate risk exposure. The deviation is interpreted as the State Treasury's interest rate risk position. The difference between the costs of the actual debt portfolio and the benchmark portfolio is the result of the State Treasury's debt management. The performance of the realised transactions versus the benchmark is measured on a total return basis.

The pilot year for implementation of the new benchmark is still in progress so it is premature to go into much detail about the experiences gained so far. Nevertheless, the approach to managing interest rate risk has undergone some fundamental changes. According to the former approach, some of the debt was swapped into floating rate debt in line with the desired share of net floating rate debt. According to the new approach a certain portion of the debt is first swapped into floating rate debt, some of which is re-swapped back into fixed rates of interest. The aim of this strategy is to obtain the desired interest rate risk exposure as well as obtain a smooth fixing profile, thereby diversifying interest rate risk related to issues and buybacks of bonds.

For a small country like Finland with a comparatively small public debt, this type of debt management may be a more efficient way of separating the strategy of issuing benchmark bonds in the 5- and 10-year segments of the yield curve from the strategy of managing duration. This strategy would enable us to take advantage, for example, of lower interest rates at the short end of the yield curve in the 2-3 year sector without having to issue debt with such short maturities.

IV. Refinancing and liquidity risk

Liquidity risk has traditionally been the most important variable in the risk management process. The State Treasury is obliged to safeguard the liquidity of the central government under all circumstances.

Short-term liquidity is managed with the aid of a cash forecasting system maintained by the Ministry of Finance. This system includes forecasts from more than 100 government agencies for inflows and outflows of up to one year in the future. The forecasts are generally very reliable in the short-run (*e.g.* less than one month), but they lose precision the farther we go into the future. Government agencies are obliged to make the forecast of an expenditure one day prior to the due date at the very latest.

The State Treasury is not allowed to have a negative balance in its checking account at the Bank of Finland at the end of the day. The State Treasury has sought to invest its funds as lucratively as possible, but it has also typically matched sizable future cash outflows with investments of the same maturity.

The guidelines of the Ministry of Finance include stipulations on liquidity risk under a one-year horizon. Liquidity risk is assessed in terms of the government's net cash position, i.e. its own assets and liabilities as well as forecasted revenues and expenditures.

Refinancing risk was deemed one of the most important risks in the early 1990s, when tiny Finland was one of the world's heaviest borrowers on international markets. Even today the parliamentary resolution authorising borrowing activities includes a stipulation that the short-term debt cannot exceed EUR 10 billion. The short-term debt is defined as the debt with an original maturity of less than one year.

In addition to short-term liquidity risk, the guidelines of the Ministry of Finance include stipulations on refinancing risk for the redemption profile exceeding a one-year horizon. Refinancing risk over a medium- and long-term horizon is managed by keeping a smooth redemption profile. In practice this means benchmark bonds are issued so that they mature at certain intervals spread out over the future. Refinancing risk is typically managed by buybacks or switches of benchmark bonds prior to maturity. The largest benchmark bond is currently the one maturing on July 4th, 2006, with an outstanding amount of EUR 7.1 billion.

Figure 11.4. **Refinancing risk: redemptions within one year**

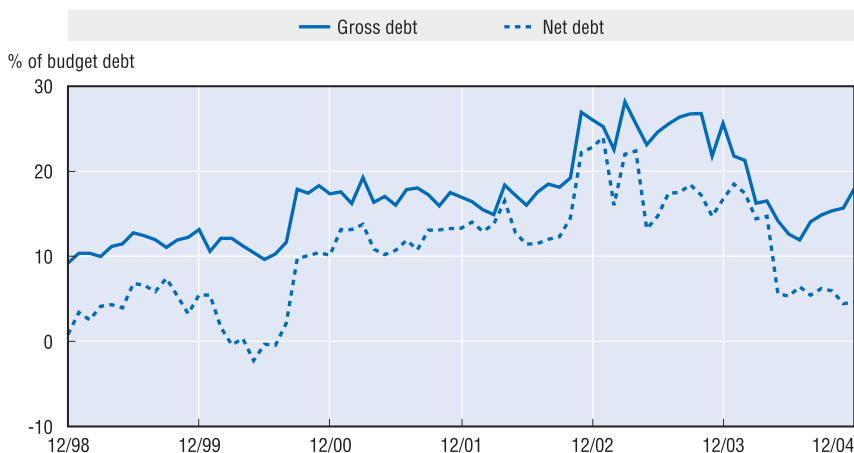
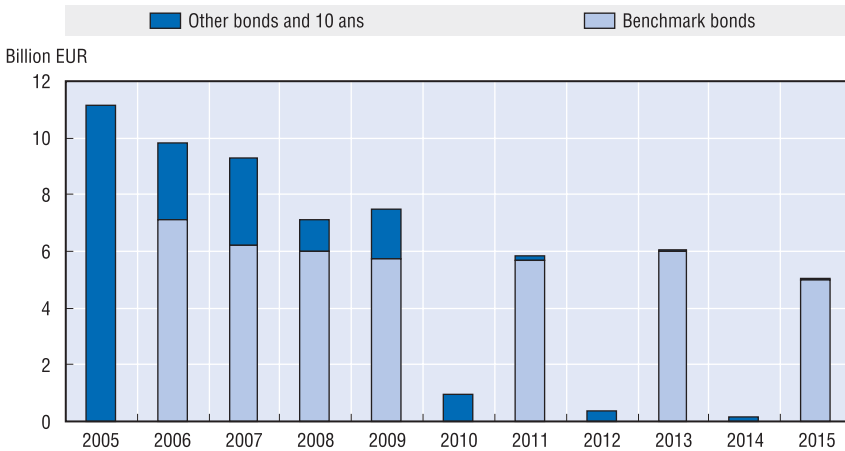


Figure 11.5. **Refinancing risk: redemption profile**

V. Credit risk

Credit risk has gained increasing attention in recent years as the banking industry has come under increasing stress and the ratings of counterparties have edged downwards. The State Treasury has therefore taken further steps to reduce and diversify its exposure to credit risk.

Credit risk is measured with regard to investments of cash funds as well as derivative positions. The exposure is divided into short-term risk (under one year) and long-term risk (over one year). The total exposure consists of the current market value, supplemented by the potential movement in the market value, i.e. the potential future risk. This potential future risk is measured in accordance with the corresponding BIS add-on factors.

The limits for counterparties can be allocated between short-term and long term exposures in accordance with the rating of the counterparty. For example, some counterparties are given only a short-term limit if they are used only for cash investments. The minimum requirement for long-term transactions is a rating of AA- while the minimum for short-term uncollateralised transactions (under one year) is A-.

Much of the work on reducing the exposure to credit risk has been focused on implementation of collateral agreements in the form of Credit Support Annexes. It is the goal of the State Treasury to have CSA agreements with all Primary Dealers and other major counterparties.

The CSA agreements are one-way agreements so that only the counterparties of the State Treasury pledge collateral. It has been the goal to

discourage use of cash collateral from the counterparties by negotiating pricing that favours the use of bonds. In practice however, the share of cash collateral has exceeded that of bonds because some counterparties have difficulties in pledging bonds.

In the future, efforts will be focused on reduction of credit risk exposure on the asset side as well. After Finland joined the monetary union, the number of counterparties that can be used to place funds has increased and diversified geographically significantly. Finland is no longer solely dependent upon domestic banks for its liquidity management. This means that it is no longer necessary to keep large amount of cash assets as a buffer against unforeseen expenditures. It is nowadays possible to borrow large amounts of funds on short notice, if necessary.

VI. Operational risk

In connection with the ongoing development of the risk management framework, several projects have been undertaken in recent years to establish a more systematic approach to management of operational risk. The main emphasis on reducing operational risk in practical terms has been focused on the implementation of a new Treasury IT system, Finance Kit from Trema. The new system allows straight through processing of trades, which significantly reduces the chance of potential errors from trade entry. Before adoption of the new system in January 2003, trades were ordinarily entered manually into three IT systems.

In conjunction with the adoption of the new Treasury IT system, a project was undertaken whereby all major processes and working instructions were re-documented, taking into account the changes in work flows. A review of work flow processes and related documentation is carried out nowadays on a semi-annual basis.

In addition to upgrading the Treasury IT system, there have been increased efforts to mitigate operational risk via internal controls. In this connection a new scheme for internal control was introduced in the Finance Division in 2003. Twice a year the Finance Division makes a comprehensive report on the most important targets of its internal control. For each control target the objective and control procedures are determined, and they are assigned a quality assessment based on a five-point scale.

In 2004 an operational risk committee was set up to monitor and make recommendations for mitigating operational risk related to the Treasury operations of the Finance Division. One of the tasks of the op-risk committee is to periodically review potential or realised operational risk events. The method of collecting information on operational risk and reporting to the Ministry of Finance has also been made more systematic.

VII. Future plans and open questions

Finland's entry into EMU at the beginning of 1999 brought with it fundamental changes in debt and risk management. Liquidity and refinancing risk as well as currency risk are now considered to pose less of a threat than before, and the focus of attention has shifted more toward interest rate risk and credit risk.

Major challenges for the future in the case of Finland revolve primarily around the new approach to interest rate risk management described above. The pilot year for implementing the new debt management benchmark in cooperation with the Ministry of Finance is still in progress, so it is too early to say how this will affect our borrowing activities precisely. Based on the work so far, however, it appears that there are clear advantages to be reaped from steering debt management via indicators such as average next fixing and duration instead of the share of floating rate debt.

One of the main operational changes related to the new debt management benchmark is a clearer separation of the borrowing strategy from the interest rate risk strategy via derivatives. The importance of credit risk management is growing as a consequence of this shift in strategy.

Table of Contents

Part I

Introductory Overview and Analytical Framework

Chapter 1.	Introduction to advances in risk management of government debt by Hans Blommestein	11
Annexe 1.A	Optimal Debt and Strategic Benchmark: the Risk Management Approach to Debt Sustainability	22
Chapter 2.	Overview of Risk Management Practices in OECD Countries by Hans Blommestein	27
Chapter 3.	Analytical Framework for Debt and Risk Management by Lars Risbjerg and Anders Holmlund	39
Annex 3.A.	Structure of Debt Simulation Model	54

Part II

Recent Developments in Managing Market Risk, Operational Risk and Contingent Liability Risk

Chapter 4.	Recent Developments in the Management of Market risk by Ove Sten Jensen and Lars Risbjerg	61
Chapter 5.	Management of Operational Risk by Sovereign Debt Management Agencies by Peter McCray	67
Annex 5.A.	Sovereign Debt Management Operational Risk Survey: Summary of Responses	72
Annex 5.B.	OECD Working Party on Government Debt Management Survey on Operational Risk 2002	80
Chapter 6.	Explicit Contingent Liabilities in Debt Management	89

Part III

Risk Management Practices in Selected OECD Debt Markets

Chapter 7.	Risk Management of Government Debt in Austria by Paul A. Kocher and Gerald Nebenführ	119
Chapter 8.	Risk Management of Government Debt in Belgium by Jean Deboutte and Bruno Debergh.....	129
Chapter 9.	Managing Risks in Canada’s Debt and Foreign Reserves by Pierre Gilbert, Zar Chi Tin and Mark Zelmer	139
Annex 9.A.	Investment and Credit Guidelines for the Exchange Fund Account	154
Chapter 10.	Risk Management of Government Debt in Denmark by Lars Risbjerg	157
Annex 10.A.	The Scenario and CaR Model	171
Annex 10.B.	Principles for Credit Risk Management.....	174
Chapter 11.	Risk Management of Government Debt in Finland by John Rogers	177
Chapter 12.	Risk Management of Government Debt in France by Bertrand de Mazieres and Benoit Coeure	189
Chapter 13.	Risk Management of Government Debt in Portugal by Rita Granger	199
Annex 13.A.	Benchmarking for Public Debt Management.....	210
Chapter 14.	Risk Management of Government Debt in Sweden by Per-Olof Jönsson	217
Chapter 15.	Risk Management of Government Debt in the United Kingdom by Toby Davies	231
Annex 15.A.	DMO Functional Structure.....	244
Chapter 16.	Risk Management of Government Debt in the Czech Republic by Petr Pavelek	245
Annex 16.A.	Government Debt Management Regulations	261
Chapter 17.	Risk Management of Government Debt in Poland by Arkadiusz Kaminski and Marek Szczerbak	263

List of boxes

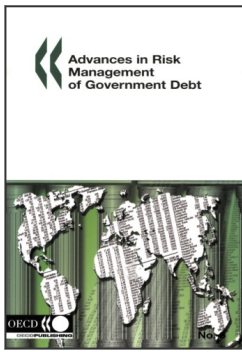
6.1.	Illustration of the risk of a loan guarantee	105
9.1.	Application of the model: finding a new balance	145

List of figures

3.A1.	Structure of government debt simulation model	54
6.1.	Probability distribution of net assets	105
7.1.	Currency value at risk	122
7.2.	Interest expense 2004-2011	123
7.3.	Value at Risk	124
7.4.	Current exposure in previous year	126
9.1.	Funds management governance framework	141
9.2.	Debt strategy framework	143
9.3.	Composition of EFA assets	149
9.4.	EFA assets by credit rating	149
9.5.	EFA funding composition	150
10.1.	Structure of Government Debt Management	161
10.A1.	Structure of simulation model	171
11.1.	Currency risk: composition of foreign currency debt	181
11.2.	Interest rate risk: share of floating rate debt	182
11.3.	Interest rate risk: modified duration	182
11.4.	Refinancing risk: redemptions within one year	184
11.5.	Refinancing risk: redemption profile	185
13.1.	IGCF organisational chart	200
13.2.	Refixing profile of the debt portfolio vs. the benchmark	203
13.A1.	DEM rate history	212
13.A2.	Strategies and scenario generators	213
13.A3.	Cost/Risk measure	214
14.1.	Central government debt, 1990-2003 (including derivatives)	219
16.1.	The Government Debt Management Unit at the MoF – Organisational structure in 2003	250
16.2.	Refinancing vs. redemptions and net issues, 1993-2003 (% of gross domestic product)	253
16.3.	Monthly refinancing vs. redemption profile of T-Bonds during 2002 and 2003 (CZK billion)	255
16.4.	State debt redemption profile vs. interest rate refixing profile (inc. swaps), September 30, 2003	256
17.1.	Maturity profile of State Treasury domestic debt, as of mid 2003	273
17.2.	Maturity profile of State Treasury foreign debt, as of mid 2003	274

List of tables

5.A1. Break-up of Staff involved with middle office functions	75
13.A1. Liability and asset management	211
16.1. Published strategic targets for 2003	248
16.2. Czech state debt portfolio in 2003	254
17.1. Average time to maturity and duration of PLN denominated marketable debt (in years)	270



From:
Advances in Risk Management of Government Debt

Access the complete publication at:
<https://doi.org/10.1787/9789264104433-en>

Please cite this chapter as:

Rogers, John (2006), "Risk Management of Government Debt in Finland", in OECD, *Advances in Risk Management of Government Debt*, OECD Publishing, Paris.

DOI: <https://doi.org/10.1787/9789264104433-12-en>

This work is published under the responsibility of the Secretary-General of the OECD. The opinions expressed and arguments employed herein do not necessarily reflect the official views of OECD member countries.

This document and any map included herein are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

You can copy, download or print OECD content for your own use, and you can include excerpts from OECD publications, databases and multimedia products in your own documents, presentations, blogs, websites and teaching materials, provided that suitable acknowledgment of OECD as source and copyright owner is given. All requests for public or commercial use and translation rights should be submitted to rights@oecd.org. Requests for permission to photocopy portions of this material for public or commercial use shall be addressed directly to the Copyright Clearance Center (CCC) at info@copyright.com or the Centre français d'exploitation du droit de copie (CFC) at contact@cfcopies.com.