

Public sector debt: end-March 2001

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The nominal value⁽¹⁾ of public sector net debt outstanding fell by 9.9% during the financial year to end-March 2001. At end-March 2001, the net debt represented 31.6% of GDP, the lowest figure since 1992 and 5 percentage points lower than at end-March 2000. This article analyses the financial liabilities of the public sector, and considers the implications of the current level and structure of UK government debt, including in the context of analysing the national balance sheet as part of the Bank's financial stability assessments.

Government debt is important to the sustainability of fiscal policy and has the potential to impinge on monetary conditions. It is a key part of the collateral used in financial markets, and as such plays an important role in the Bank's operations to implement monetary policy and maintain money market liquidity. In addition, the structure, size and liquidity of the government debt market may influence the liquidity and performance of other non-government securities markets.

The UK government follows a sustainable investment rule, which states that public sector net debt as a proportion of GDP will be held at a stable and prudent level over the economic cycle. Other things being equal, policy is for net debt to be maintained below 40% of GDP over the economic cycle. The government also has a second fiscal rule known as the golden rule, which states that, over the economic cycle, the government will borrow only to invest and not to fund current spending. Achieving targets for general government debt and deficits are among the criteria for entry to the European single currency specified in the Maastricht Treaty. Along with inflation, the exchange rate and bond yields, the fiscal position of individual governments is seen as being an important indication of a country's degree of economic convergence with other countries in the euro area.

Total stock of outstanding public sector debt

Public sector net debt⁽²⁾ (PSND) fell by almost £34 billion (9.9%) in the 2000/01 financial year, from

£340 billion to £306 billion at nominal value (see Table A). This is the largest fall since records began. As a percentage of GDP, it fell from 36.7% in March 2000 to 31.6%, the lowest ratio since 1992 (see

Table A
Public sector net debt

£ millions, nominal values (a); percentages or percentage points (pp) in italics

End-March	1999	2000	2001	Change 2000/01
Central government gross debt	392,379	387,688	376,795	-10,893
<i>as a percentage of GDP</i>	<i>44.7</i>	<i>41.9</i>	<i>39.0</i>	<i>-2.9pp</i>
Local government				
Total gross debt	52,742	51,402	52,312	910
<i>less holdings of other public sector debt:</i>				
Central government holdings of local government debt	45,273	46,791	48,020	1,229
Local government holdings of central government debt	273	77	31	-46
General government consolidated gross debt	399,473	392,222	381,056	-11,166
<i>as a percentage of GDP</i>	<i>45.5</i>	<i>42.4</i>	<i>39.4</i>	<i>-3.0pp</i>
Public corporations				
Total gross debt	26,775	26,812	27,740	928
<i>less holdings of other public sector debt:</i>				
Central government holdings of public corporation debt	26,440	26,453	27,181	728
Local government holdings of public corporation debt	4	123	124	1
Public corporation holdings of central government debt	6,528	6,301	6,363	62
Public corporation holdings of local government debt	780	121	106	-15
Public sector consolidated gross debt	392,496	386,036	375,022	-11,014
<i>as a percentage of GDP</i>	<i>44.7</i>	<i>41.7</i>	<i>38.8</i>	<i>-2.9pp</i>
Total public sector liquid assets	43,847	46,402	68,993	22,591
<i>as a percentage of GDP</i>	<i>5.0</i>	<i>5.0</i>	<i>7.1</i>	<i>2.1pp</i>
Public sector net debt	348,649	339,634	306,029	-33,605
<i>as a percentage of GDP</i>	<i>39.7</i>	<i>36.7</i>	<i>31.6</i>	<i>-5.1pp</i>

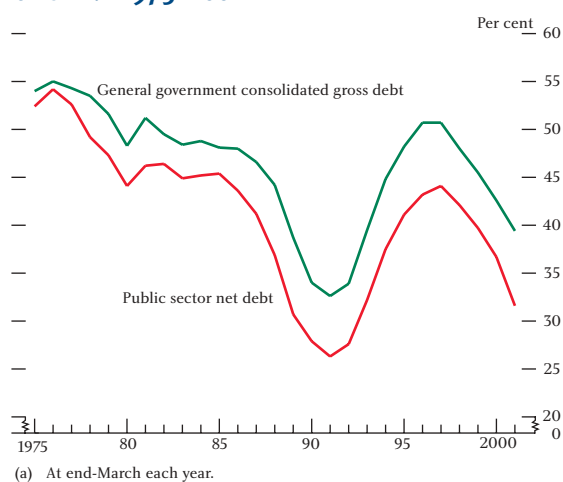
(a) Figures shown may not sum to totals because of rounding.

(1) For the purposes of measuring public sector debt, marketable debt instruments are conventionally valued at nominal (ie face) value. In this article all figures are given at nominal value except where valuation at current market value is otherwise stated.

(2) Defined as gross financial liabilities at nominal value less short-term financial assets.

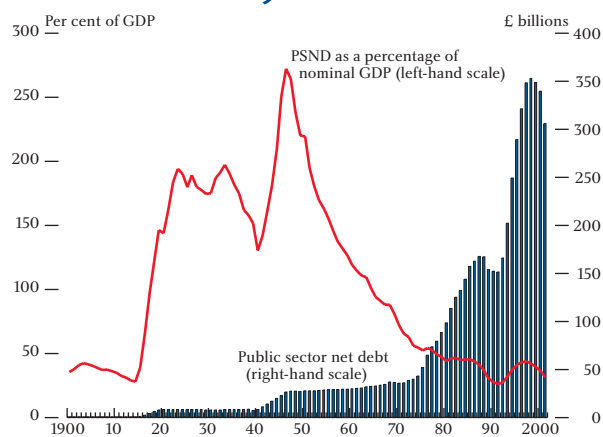
Chart 1). The fall mainly reflected payments for licences to use the spectrum for third-generation mobile phones by telecommunication companies (£22.5 billion). These cash receipts have generally been used to reduce net debt, including investment in short-term assets.

Chart 1
Measures of public sector debt as percentages of GDP: 1975–2001^(a)



Though in nominal terms public sector net debt is high, the current debt ratio (PSND to GDP) is low by historical standards (see Chart 2). This reflects the fact that nominal GDP has risen much faster than the level of debt on average since 1945. In the past two decades, the ratio has been closer to that in the years prior to 1914 than at any time in between, perhaps reflecting a drawn-out adjustment to the effects of the twentieth-century's two World Wars.⁽¹⁾

Chart 2
Public sector debt: 1900–2001



Source: HM Treasury.

Analysis of public sector debt components

Total public sector gross debt (ie PSND before short-term financial assets are deducted) consists almost entirely of central government gross debt (CGGD) (see Table A). This is despite significant levels of local government and public corporations' gross debt (£52 billion and £28 billion respectively at end-March 2001); the vast majority of this is borrowed from central government and is thus netted out when calculating the consolidated figure. Additionally, although more than £4 billion of local government debt is not held by central government, this is offset in the public sector debt figures by a similar level of central government debt held by public corporations, such as the Post Office.

British Government Stocks (gilts)

Gilts are the main component of the outstanding stock of government debt, accounting for 73% of CGGD at end-March 2001 (see Table B and Chart 3). This proportion was only slightly lower than in the previous year; the outstanding stock of gilts fell during the financial year by £10 billion to £275 billion.

Table B
Central government gross debt

£ millions, nominal values; *percentage of total in italics*

End-March	2000		2001	
British Government Stocks	284,427	<i>73.4</i>	274,609	<i>72.9</i>
of which: index-linked (a)	65,740	<i>17.0</i>	70,316	<i>18.7</i>
conventional	218,687	<i>56.4</i>	204,293	<i>54.2</i>
Sterling Treasury bills	4,453	<i>1.1</i>	3,521	<i>0.9</i>
National Savings	62,545	<i>16.1</i>	62,165	<i>16.5</i>
Certificates of tax deposits	535	<i>0.1</i>	491	<i>0.1</i>
Other sterling debt	26,774	<i>6.9</i>	28,308	<i>7.5</i>
Central government sterling gross debt	378,734	97.7	369,094	98.0
North American government loans	359	<i>0.1</i>	286	<i>0.1</i>
US\$ floating-rate notes	1,254	<i>0.3</i>	1,407	<i>0.4</i>
US\$ bonds	3,135	<i>0.8</i>	3,517	<i>0.9</i>
Euro 9 ¹ / ₈ % 2001 bonds	1,500	<i>0.4</i>	0	<i>0.0</i>
Euro Treasury notes	2,701	<i>0.7</i>	2,486	<i>0.7</i>
Debt assigned to the government	5	<i>0.0</i>	5	<i>0.0</i>
Central government foreign currency gross debt (a) (b)	8,954	2.3	7,701	2.0
Total central government gross debt	387,688	100.0	376,795	100.0

(a) The nominal value of index-linked gilts has been raised by the amount of accrued capital uplift.

(b) Sterling valuation rates:

31 March 2000: £1 = US\$ 1.5952, Can\$ 2.3146, €1.6662

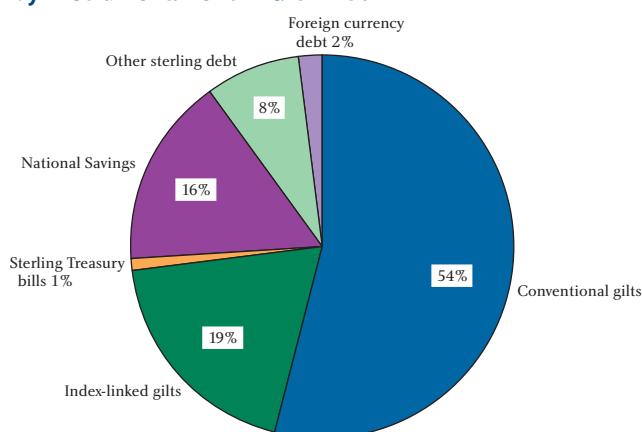
31 March 2001: £1 = US\$ 1.4217, Can\$ 2.2385, €1.6090

The stock of index-linked gilts continued to rise.

Including capital uplift (the accrued inflation-linked valuation adjustment), the total held outside central

(1) See 'Monetary policy and debt management in the United Kingdom: some historical viewpoints', by Goodhart, C, in *Government debt structure and monetary conditions*, a conference organised by the Bank of England on 18–19 June 1998.

Chart 3
Composition of central government gross debt
by instrument: end-March 2001



government rose by £4.6 billion during 2000/01 to £70.3 billion by end-March 2001, a 7% increase. This was more than offset by a fall of £14.4 billion in market holdings of conventional gilts.

The average remaining life⁽¹⁾ of market holdings of gilts at end-March 2001 was 10.4 years (see Table C). The rise from 9.9 years in 2000 reflects the Debt Management Office's issuance strategy towards long-dated stocks, which more than offset the shortening in maturity of outstanding stocks.

Table C
Average remaining life of dated stocks in market hands^(a)

Years to maturity at end-March	1995	1996	1997	1998	1999	2000	2001
Latest possible redemption							
All dated stocks (b)	10.4	10.1	10.1	10.2	10.0	9.9	10.4
Excluding index-linked stocks	9.1	8.8	8.8	9.0	8.9	8.9	10.1
Earliest possible redemption date							
All dated stocks	10.2	9.9	9.9	10.0	9.9	9.9	10.5
Excluding index-linked stocks	9.1	8.8	8.7	8.9	8.8	8.8	10.1
Modified duration							
All dated stocks	6.3	6.1	6.3	6.9	7.4	7.4	7.0
Excluding index-linked stocks	5.5	5.3	5.5	6.1	6.4	6.3	6.4

(a) These data are based on the nominal value of dated stocks held by the market at 31 March each year.

(b) Index-linked stocks are given a weight reflecting capital uplift accrued to 31 March.

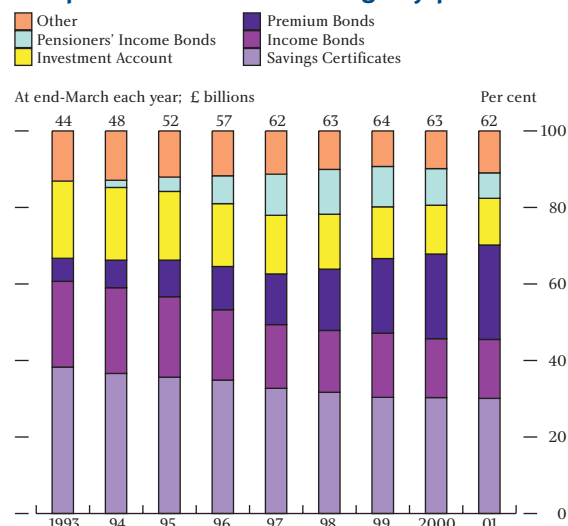
National Savings instruments

The outstanding balance of National Savings instruments at end-March 2001 was £62.2 billion, £0.4 billion lower than a year earlier. During 2001/02 the balance is forecast to fall by a further £0.7 billion as redemptions of Income Bonds, Pensioners' Guaranteed Income Bonds and savings certificates are expected to exceed gross sales (ie sales and deposits including accrued interest).

(1) Excludes undated stocks.

National Savings instruments accounted for 16.5% of central government gross debt at end-March 2001, in line with a year earlier. The proportion of National Savings held in Premium Bonds has now risen for nine consecutive years, to 25% in March 2001 from 6% in March 1993 (see Chart 4).

Chart 4
Composition of National Savings by product



Source: Department for National Savings.

Sterling Treasury bills

Sterling Treasury bills accounted for 0.9% of central government gross debt at end-March 2001. At £3.5 billion, this was £0.9 billion lower than a year earlier. The proceeds from the payments for licences to use the spectrum for third-generation mobile phones resulted in a reduction in planned issuance of Treasury bills by the Debt Management Office (DMO). The DMO announced in April 2001 that they were, however, planning to increase the stock of outstanding Treasury bills to £8.3 billion by the end of March 2002.

Foreign currency assets and liabilities

The sterling value of foreign currency denominated public sector debt outstanding at end-March 2001 was £7.7 billion, £1.3 billion lower than in 2000 (see Table B). This fall was almost entirely the result of the redemption of a single euro-denominated bond.

The government's foreign currency reserves are an important component of the liquid assets of the public sector (see Table D). At end-March 2001 reserves (at market value) totalled £30.4 billion, of which £9.7 billion was held in US dollars, £9.8 billion in

euro and £4.9 billion in yen. Holdings of gold within this totalled £2.5 billion.

Table D
Public sector liquid assets

£ millions, nominal values

End-March (a)	1999	2000	2001	Change 2000/01
Central government				
Official reserves	22,147	21,498	30,423	8,925
Other short-term assets	1,762	6,635	18,445	11,810
Total central government liquid assets	23,909	28,133	48,868	20,735
Local government				
Bank deposits	8,040	6,080	7,443	1,363
Building society deposits	4,235	4,141	4,071	-70
Other short-term assets	4,334	5,465	5,756	291
Total local government liquid assets	16,609	15,686	17,270	1,584
Public corporations				
Bank and building society deposits	2,029	1,455	1,643	188
Other short-term assets	1,300	1,128	1,212	84
Total public corporation liquid assets	3,329	2,583	2,855	272
Total public sector liquid assets	43,847	46,402	68,993	22,591

(a) Data from 1976–2001 are published in the *Bank of England Statistical Abstract 2001*, Part 1, Table 15.1.

Government balance sheet

The government's debt measured at nominal value closely reflects its financial liabilities, measured at current market value. (See Table E, which also shows the asset side of the government balance sheet.)⁽¹⁾ The government sector is a net borrower, with financial assets falling short of financial liabilities by some £318 billion at end-2000. However, with non-financial

Table E
General government balance sheet

£ billions

31 December	1998	1999	2000
Non-financial assets			
Tangible assets			
Residential buildings	2.0	1.6	1.4
Agricultural assets	1.9	2.0	2.1
Commercial, industrial and other buildings	110.4	113.3	116.8
Civil engineering works	182.4	182.9	191.1
Plant and machinery	34.2	36.0	38.1
Vehicles, including ships and aircraft	3.4	3.3	3.3
Stocks and work in progress	7.8	7.5	7.4
Total tangible assets	342.1	346.6	360.2
Total intangible assets	0.9	1.0	1.1
Total non-financial assets	343.0	347.6	361.3
Total financial assets	166.7	175.6	210.1
Total assets	509.7	523.2	571.4
Total liabilities	525.6	504.7	528.2
Net worth	-15.9	18.5	43.2

Source: ONS, *Blue Book*.

assets, including buildings and infrastructure, currently valued at £360 billion, the net 'worth' of the general government sector was valued at a positive £43 billion at end-2000. Short-term assets, which are taken into account in calculating nominal net debt, represent a relatively small proportion of the total general government assets figure of £571 billion. During 2000, the Office for National Statistics (ONS) reclassified local authority housing as an asset of public corporations, so that it is no longer included in general government assets. This means that general government residential buildings assets are recorded as being lower than published in previous years.

HM Treasury publishes a more comprehensive breakdown of assets in the annual National Asset Register (NAR).⁽²⁾ This is a list of assets owned by Government departments and their sponsored bodies. The NAR includes all tangible fixed assets (including military and heritage assets), intangible fixed assets (such as intellectual property rights) and fixed asset investments (such as share holdings) owned by departments. In deciding which assets to include, government departments have to follow normal accounting rules for the recognition of assets. It could also be argued that contingent assets and liabilities should be taken into account, eg commitments to pay out public sector pensions.

The public sector as part of national balance sheet monitoring

HM Treasury's initiative over the past few years in developing a set of public sector balance sheet accounts can be viewed as one important element of the emphasis which the international community has been placing on national balance sheet monitoring. The roots of that broader exercise lie in the various international financial crises, principally in emerging market economies, since the mid-1990s.⁽³⁾

In its financial stability work, the Bank of England has been assessing the *external* balance sheets of a range of potentially vulnerable economies.⁽⁴⁾ It has also developed its analysis of the United Kingdom's own external balance sheet, reported in '[The external balance sheet of the United Kingdom: implications for financial stability?](#)' on pages 388–405. One of the crucial caveats about that work is that information is lost through the

(1) More details are given in *Blue Book 2000*, Office for National Statistics, September 2001.

(2) Available at www.hmt.gov.uk/docs/2001/national_assetreg/index.html

(3) See 'Report on the working group on capital flows', Financial Stability Forum, 5 April 2000.

(4) See *Bank of England Financial Stability Review, June 2001*.

process of aggregation. It is, in particular, important to look also at sectoral balance sheets—key elements being the banking, corporate and household parts of the private sector, and of course the public sector. This article therefore applies some balance sheet analysis tools to the UK public sector (which is clearly in a very strong position).

For all countries, the challenge of public sector debt management is to ensure that a government's financing needs and payment obligations are met at the lowest possible cost over the long run. An important part of this process is to minimise any costs to the economy from financial crises resulting from or magnified by imprudent debt management policies, given the severe macroeconomic consequences of sovereign debt default and the magnitude of output losses that could ensue—points emphasised in recent work by the IMF collaborating with debt management and financial stability experts around the world.⁽¹⁾⁽²⁾

For all governments, prudent risk management includes avoiding debt structures and strategies that increase the risk of funding crises. Although the risks faced by industrial countries, such as the United Kingdom, that have deep and liquid markets for their government securities may differ in scale from the risks faced by countries with less developed domestic debt markets, the *types* of risks tend to be broadly similar.

For example, one concern is that maturing debt will be costly or impossible to renew, perhaps following a change in the government's credit rating. Market risks are also important. These include risks associated with the impact of changes in market prices, such as interest rates and exchange rates, on the cost of the government's debt servicing. Even if the capacity to pay is not in question, a payment shock, for example, from a sudden change in the exchange rate, can cause problems for planning future tax and spending.

In some circumstances there might be trade-offs between different types of risk. The most appropriate structure for public sector debt will vary according to the main shocks to which an economy is vulnerable. Also, the composition of the government debt stock can

be optimised with respect to variations in debt-servicing costs alone, or to government spending as whole. If the focus is on the latter, then the relationship between different economic variables and a government's annual deficit also needs to be considered.⁽³⁾

The following section outlines the main areas of risk associated with public sector debt and for each one discusses the UK position.

Roll-over risk

For a given debt stock, a very low average maturity of debt potentially entails greater financing risk, as it forces a government to roll over its debt on a more frequent basis. Similarly, any changes in government debt-servicing costs, perhaps because of a deterioration in a government's perceived credit risk or changes in short-term interest rates, will occur more quickly the shorter the average maturity of the debt stock.

By lengthening the average duration of debt and having an even debt redemption schedule, a government can reduce the variance of its expected future debt-servicing costs. Long-duration debt will also limit the effect of any supply-side shock on a government's fiscal position.

As highlighted earlier in this article, the average remaining life of market holdings of UK gilts was more than ten years at end-March 2001, having lengthened slightly in 2000/01. This is a high figure compared with the world's other major economies, and indicates low roll-over risk.

Foreign currency risk⁽⁴⁾

In particular, a sharp depreciation of the domestic currency may have a big enough effect on debt-servicing costs and perceived fiscal dynamics to raise the perceived risk of default, unless the government has ready access to foreign currency assets, as the UK government has.

The UK public sector has little foreign currency denominated debt, only £7.7 billion as at end-March 2001, which was fully hedged with foreign currency assets held in the reserves.

(1) See 'Guidelines for public debt management', prepared by the International Monetary Fund and the World Bank, available at www.worldbank.org/fps/guidelines/guidelines_text.htm

(2) See 'Costs of banking system instability: some empirical evidence', Hoggarth, G and Sapporta, V, *Financial Stability Review*, June 2001.

(3) See the DMO Annual Review 2000/01.

(4) For both foreign currency risk (and interest rate risk discussed below) it is important to take any financial derivatives positions into account, as these may significantly change the effective composition of debt.

External public sector debt risks

For the public sector, external debt risks are typically defined to include those associated with (a) foreign currency-denominated public sector debt (discussed above) and (b) overseas holdings of public sector debt (sterling or foreign currency).

A recent IMF paper⁽¹⁾ outlines various indicators of external debt vulnerability. These indicators deal with a range of national and sectoral balance sheet risks, including four that focus on the public sector.

The first looks at foreign currency-denominated debt. As discussed above, the UK public sector has a relatively low level (Table B). The second indicator looks at non-resident holdings of UK government debt. As Table F suggests, these are also relatively small. Two further indicators echo this. First, the ratio of external public sector debt service to exports relates the repayment capacity of a country to its external obligations. Chart 5 shows that UK external public

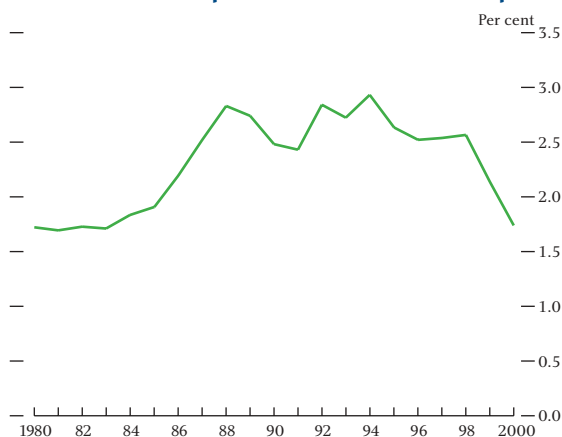
Table F
Holdings of central government sterling gross debt: summary

£ billions; percentage of total in italics

Amounts outstanding at end-March

	2000		2001		Change 2000/01
	£ billions	% of total	£ billions	% of total	
Public sector	3.6	<i>1.0</i>	5.8	<i>1.6</i>	2.2
Banks	29.2	<i>7.7</i>	30.9	<i>8.4</i>	1.7
Building societies	1.1	<i>0.4</i>	1.0	<i>0.3</i>	-0.1
Institutional investors	188.7	<i>49.8</i>	202.3	<i>54.8</i>	13.6
Individuals and private trusts	93.0	<i>24.6</i>	85.1	<i>22.5</i>	-9.9
Other UK residents	1.2	<i>0.3</i>	1.4	<i>0.4</i>	0.2
Non-residents	61.9	<i>16.3</i>	44.6	<i>12.1</i>	-17.3
Total	378.7	100.0	369.1	100.0	-9.6

Chart 5
Ratio of external public debt service to exports



Source: ONS.

sector debt service was around 1.7% of exports in 2000 and comfortably below its recent peak of just under 3% in 1994.

A final indicator looks at external public sector debt to GDP (or tax revenues). GDP or tax revenues give measures of the resource base of an economy, and indicate the potential capacity of an economy that could be shifted to the production of exports (though this does not indicate how easy it would be to shift production). Chart 6 shows that UK external public sector debt was equivalent to just under 7% of GDP in 2000, a low since 1991 (the ratio of PSND to GDP was 31.6%).

Chart 6
Ratio of external public sector debt to GDP



Source: ONS.

Fixed versus floating-rate debt (interest-rate risk)

For both domestic and foreign currency debt, sharp increases in short-term interest rates can have a significant impact on the cost of servicing debt. Although changes in interest rates will affect debt-servicing costs on new issues when fixed-rate debt is refinanced, the impact is likely to be greater with floating-rate debt, which will be affected as soon as rates are next reset. Any fixed-rate debt with a very short-term average maturity has to be regularly rolled over at the latest interest rates and so is similar in risk to floating-rate debt.

There are also some risks associated with long-term fixed-rate debt. In particular, countries with large amounts of long-term fixed-rate debt risk being locked in to inappropriately high debt-servicing payments if there is a persistent fall in the level of interest rates.

(1) See 'Debt and reserves-related indicators of external vulnerability', IMF, 23 March 2000. Available at www.imf.org/external/np/pdr/debtres/index.htm

The United Kingdom had only one floating-rate gilt remaining at end-March 2001, and it matured on 10 July 2001. Its nominal value was £3 billion.⁽¹⁾

Nominal versus index-linked debt

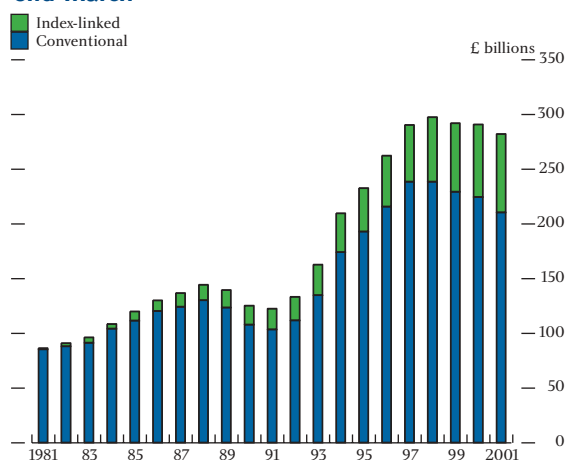
In a stable low-inflation environment there is little difference in the risks associated with nominal debt and index-linked debt of the same maturity and currency denomination. However, in periods of high inflation or deflation, and/or uncertainty about the monetary anchor, the extent to which debt is indexed can have an effect on debt management costs and risks.

Raising the costs to a government of surprise higher inflation is often argued to act as an extra discipline in favour of low inflation, by taking away the incentive for governments to inflate an economy to reduce the real value of debt. Hence issuing index-linked bonds may improve the credibility of a government's commitment to low inflation.⁽²⁾

And, to the extent that index-linked gilts have a distinct investor base, their issuance can broaden overall demand for a government's debt and so, at the margin, reduce refinancing risk.

The UK government has significant issues of index-linked gilts. As at end-March 2001, the nominal value of market holdings of index-linked gilts was £70.3 billion, 7% higher than a year earlier. Chart 7

Chart 7
Breakdown of UK government bonds as at end-March



(1) The United Kingdom also issues Treasury bills and some National Savings products which are floating rate.

(2) Index-linked debt may also play a useful role in the government debt portfolio because of its deficit-smoothing properties in certain circumstances. See 'Consultation paper on index-linked gilt redesign', DMO, September 2001.

(3) Though in the recent case of the gilt market, discussed below, illiquid demand for gilts seems to have contributed to lower long-term UK interest rates.

(4) Institutional investors hold more than half of all gilts. See Devile, B, '2000 gilt ownership survey', Bank of England Monetary and Financial Statistics, September 2001.

shows the proportion of index-linked gilts increasing since their introduction in 1981.

Liquidity risks

Some risks associated with public sector debt particularly affect participants in the debt markets. However, they also have implications for the public sector. For example, prices in illiquid debt markets tend to be more volatile and could discourage market participation. This could lead to a liquidity premium in the markets and higher debt-servicing costs for the government.⁽³⁾

Although in some circumstances sound management of government finances requires a reduction in the stock of public sector debt, a declining supply of government debt securities can impair secondary market liquidity. This can be a particular problem when the market for debt securities is dominated by a few participants with inelastic demand, as the supply of debt securities in the secondary market will not be perfectly elastic at the market price.

It is possible that the decline in gilt issuance observed in recent years combined with concentrated price-insensitive demand from institutional investors (principally pension funds and insurance companies)⁽⁴⁾ has put upward pressure on long gilt prices. The box on pages 414–15 looks in more detail at the changing shape of the sterling fixed-income markets and explores the other considerations that have also contributed to changes in liquidity conditions.

The estimated distribution of the central government sterling gross debt is shown in Table F. (These are provisional estimates, based on a range of data sources, and are subject to revision.) Institutional investors had the largest holdings of gilts, 54.8% in 2001, up from 49.8% in 2000. Individuals and private trusts held just under a quarter of the stock of gilts.

International comparison

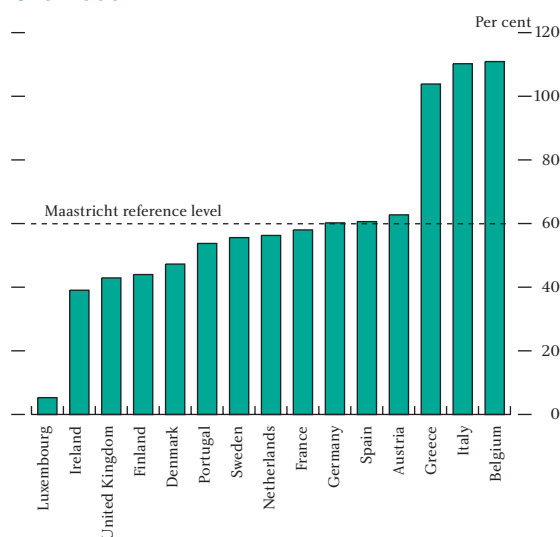
Along with other European Union (EU) countries, the United Kingdom is required under the terms of the Maastricht Treaty to report government finance statistics

to the European Commission for economic convergence reasons.

Government debt for this purpose is measured by general government consolidated gross debt (GGCGD), calculated as a percentage of nominal GDP.

The latest figures submitted to the Commission showed that UK gross government debt at end-December 2000 represented 42.9% of GDP. Apart from Luxembourg and Ireland, this was the lowest among EU countries (see Chart 8), and is comfortably below the Maastricht

Chart 8
General government consolidated gross debt: end-2000



Source: Eurostat.

reference level of 60%. Debt ratios reported by Belgium, Greece and Italy remained above 100% of GDP in 2000, though all countries have seen declines in their debt/GDP ratios in recent years.

Conclusion

The fall of net issuance of government securities (in industrial countries) has led to modifications of debt management policy in order to help maintain liquidity. At the same time, the market has seen increased issuance of non-government bonds, a supply driven shift in investment strategies, and an increasing use of swap based benchmarks to price debt.

The fall in UK public sector net debt during 2000/01 was the largest on record, at £34 billion. Even excluding the £22.5 billion payments for licences to use the spectrum for third-generation mobile phones, the fall was the largest since 1988/89.

The importance for financial stability of monitoring sectoral balance sheets, including that of the public sector, has become more evident in recent years. The relatively low level of public debt relative to GDP in the United Kingdom is one of the indications that the debt's size and structure do not warrant any significant concerns about financial fragility from this source at the moment. The average maturity of the debt, its small foreign currency component, and the limited extent of holdings outside the United Kingdom may also offer some reassurance on this front.

The changing shape of the sterling fixed-income markets

Relative supplies of government and non-government bonds have shifted materially in recent years as governments in several industrial countries (including the United Kingdom) have paid down their debt, and while bond issuance by corporations and other non-government borrowers has increased strongly. This box highlights some of the consequences of these changes in the sterling fixed-income markets, drawing on the findings of a study recently published by the Bank for International Settlements.⁽¹⁾

Uses of government bonds

Over the past two or three decades, financial market participants have come to use government securities for the following purposes:

- as an investment asset, free of default risk;
- as a benchmark for pricing and quoting yields on other securities;
- to speculate on future movements in interest rates;
- to hedge positions in other fixed-income securities;
- as collateral in securitised borrowing arrangements; and
- as a safe-haven asset in times of distressed market conditions.

In addition, the development of the infrastructure supporting government securities markets—the legal and regulatory framework, trade execution arrangements, clearing and settlement systems, repo and derivatives markets, and risk management procedures—are likely to have enhanced the development of non-government securities markets.

The declining supply of gilts (and other governments' bonds) in recent years has affected the ways in which these securities are used by market participants. Other developments, however, have also been influential. The introduction of the euro, the market disruption following the near collapse of Long Term Capital Management (LTCM) in September 1998, and changes in information technology have all had a significant impact on the way in which fixed-income markets function.

Fiscal positions

In 2000, the net issuance of government securities by industrial countries fell to its lowest level in decades. As noted elsewhere in this article, this development was particularly marked in the United Kingdom. Many governments, including the UK government, responded to these reductions in their financing requirements by modifying their debt management operations. Such modifications have generally been intended to improve the liquidity of government securities since this helps to lower borrowing costs.

To help forestall any deterioration in gilt liquidity, the UK government began in the mid to late 1990s to concentrate its borrowing in fewer and larger bond offerings. The number of original maturities and the frequency of auctions were reduced. In addition, regular use has been made of 'switch' auctions, which allow bondholders to convert their holdings of less liquid gilts into more liquid ones. In 2000, the United Kingdom (along with the United States and several other European governments) began buying back outstanding debt through reverse auctions. These operations also helped to concentrate liquidity in the remaining gilt issues.

Non-government bond markets

While the supply of gilts has declined in recent years, the outstanding stock of non-government sterling-denominated bonds has increased sharply, rising by almost threefold between 1995 and 2000, to £635 billion. In particular, triple-A rated supranational institutions have stepped in aggressively to provide substitutes for the declining supply of gilts.

The growth of the non-government segment of the market at a time when gilt issuance was declining raises questions about the extent to which the latter contributed to the former. This potential linkage is known as the crowding out hypothesis. Recent issuance patterns in the United Kingdom do not appear to suggest that non-government issuers have sought to step up their issuance in those maturity segments that the UK government has vacated. Among government and non-government issuers alike, long-dated bonds have accounted for the bulk of announced issues in recent years. This maturity distribution choice appears to have been driven principally by the inversion of the sterling yield curve. In addition, regulatory requirements are widely thought to have contributed to strong and relatively price-inelastic demand from pension funds and life assurance companies for long-dated sterling bonds.

The response of investors

Most classes of investor appear to have adjusted their investment strategies to at least some degree to accommodate these recent shifts in supply. The large number of performance indices introduced by the major investment banks over the past few years bears witness to institutional investors' willingness to move away from government bonds and towards more diversified portfolios of fixed-income assets.

In the United Kingdom, banks and securities firms have been net sellers of gilts since 1997, and insurance firms since 1998, purchasing instead debt securities issued by UK and foreign residents. In contrast, UK pension funds have continued to purchase gilts. As a result, an increasing proportion of UK gilts are now held by investors following relatively passive asset management strategies.

(1) See 'The changing shape of fixed income markets', *BIS working paper No. 104*, available at www.bis.org/publ/work104.htm

Arbitrage and hedging activity

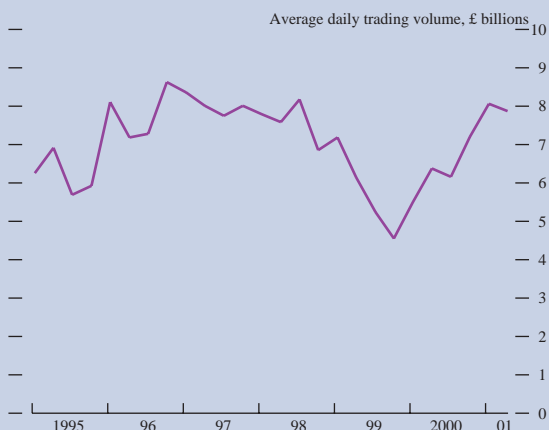
Unexpected reductions in the supplies of both gilts and US Treasuries have, at times, caused sudden increases in the spreads between government and private yields, thereby raising the volatility of credit spreads. This may have contributed to a shift away from the use of gilts for arbitrage and hedging trades. However, the most significant event to affect the volatility of credit spreads in recent years was the 1998 LTCM crisis. This prompted a large decline in arbitrage activity and led many sterling market participants to switch away from the near-exclusive use of gilts for hedging in favour of a wider array of instruments, including interest rate swaps and corporate bonds. Similar developments occurred in the dollar and euro-denominated markets.

Interest rate swaps have become especially popular for hedging purposes. The floating-rate leg of an interest rate swap is usually based on Libor. Since most of the banks in the Libor contributor panels are rated double-A, swap rates contain a premium for credit risk. As a result, swap rates tend to move closely with the prices of other credit products, including during periods of market turmoil, making them a more attractive hedging vehicle than government bonds. However, government securities have yet to be fully displaced. Owing in part to the existence of liquid repo and securities lending markets, transaction costs for hedging with government securities are frequently lower than the costs associated with other hedges. Consequently, market participants today tend to use a range of different instruments for different risk exposures and different expected holding periods.

Shifts in liquidity

The financial market turbulence in 1998, reductions in the supply of gilts and the increasing proportion of gilts held by pension funds with relatively passive trading strategies led to a deterioration in the liquidity of the gilts market. Although turnover can sometimes be a misleading indicator of liquidity, most market participants accept that longer-term trends in trading activity tend to be closely correlated with changes in liquidity. Trading volumes of gilts fell sharply in 1998 and 1999 (see Chart A). There

Chart A
Turnover in gilt securities



was, however, some recovery in market turnover in 2000. Similar changes in turnover were evident in the US Treasury market.

Limited data are available on liquidity conditions in the sterling non-government securities markets. Nevertheless, there are some signs of improved liquidity. Data from Euroclear indicate that trading in sterling-denominated bonds listed on the London Stock Exchange declined in 1999 but returned to 1998 levels in 2000. Furthermore, over-the-counter derivatives markets have experienced a significant improvement in liquidity in recent years. The sterling interest rate swap market expanded by 28% in notional terms between 1998 and 2000, to £2.5 trillion. The growing use of swaps for hedging and positioning has been responsible for much of this improvement in liquidity.

Price discovery

Many central banks and market participants construct government yield curves to derive estimates of the market's expectations of future short-term interest rates. This approach relies on the assumption that no factors other than expected future spot rates systematically affect government bond yields. Empirical studies of the government yield curve tend not to support this pure expectations theory, however. Rather, forward rates embedded in government yields appear to be affected, in addition to expected future short-term rates, by factors such as the supply of and demand for securities in specific maturity sectors.

A number of market participants have suggested that the recent reductions in gilt issuance, together with the relatively price-inelastic demand for gilts from pension funds noted earlier, have contributed to gilt yields falling below 'true' risk-free rates. As a result, many market participants, including the Bank of England, now fit yield curves to instruments that settle against Libor rates (such as interest rate futures and swaps) as well as analysing gilt yield curves.

Pricing risk

New issues in the non-government bond market are typically quoted (ie marketed to end-investors) against common benchmarks. Government securities were once widely used in this capacity. Here also there has been a gradual shift away from the use of gilts and in favour of swap-based benchmark comparisons. But this change largely preceded the recent period in which the size of the gilt market diminished and does not, therefore, appear to have been strongly influenced by it. Rather, it appears to have been related more to considerations about investors' asset and liability structures and the ease with which investors can make comparisons between fixed-income securities denominated in different currencies. For example, banks' liabilities are typically related to short-term interbank rates. Therefore, these institutions tend to be more interested in benchmarking bond prices against the swap curve, which embodies expectations of future Libor rates.

Annex

Notes and definitions

Central government gross debt

Comprises:

British Government Stocks (BGS): Sterling, marketable, interest-bearing securities issued by the UK government. The nominal value of index-linked gilt-edged stocks is increased by the amount of accrued capital uplift. The whole nominal value of all issued stocks is recorded, even where outstanding instalments are due from market holders (where this is the case, the outstanding instalments are recorded as holdings of liquid assets). This article uses the same definition of short and medium-dated gilts as the National Loans Fund (NLF) accounts (less than five years and five to ten years respectively).

Treasury bills: Short-term instruments generally issued with either a one-month or a three-month maturity. The bills, which can be traded on the secondary market, are sold at a discount and redeemed at par. The amount of discount depends on the price accepted by the issuer at the tender.

National Savings securities: Non-marketable debt comprising a variety of products available to the public.

Certificates of tax deposit: Non-marketable debt available to taxpayers generally, which may be used in payment of most taxes.

Other sterling debt: Includes *coin* in circulation, *Ways and Means advances* (the method by which government departments and the Bank of England Issue Department lend overnight to the NLF), National Investment and Loans Office stocks (non-marketable stocks, issued directly to the National Debt Commissioners, whose terms reflect those on existing BGS), the *temporary deposit facility* (deposits by central government bodies and public corporations with the NLF), deposits with the National Debt Commissioners of *funds lodged in courts*, market holdings of *Northern Ireland government debt* (principally Ulster Savings Certificates), *bank and building society lending*, *balances of certain public corporations with the Paymaster General*, *funds held on behalf of the*

European Commission, other third-party deposits (from the Insolvency Service), and the *net liabilities, guaranteed by government, of the Guaranteed Export Finance Company (GEFCO)*, following the reclassification of its transactions to central government in 1987.

Foreign currency debt: Converted to sterling at end-period middle-market closing rates of exchange and comprises *foreign currency bonds* (denominated in US dollars, Deutsche Marks and euro), *euro notes and bills*, *long-term post-war loans* from the governments of the United States and Canada and *assigned debt* (debt originally drawn under the Exchange Cover Scheme and transferred to the government following privatisations of public corporations).

Public sector consolidated gross debt

This includes *central government gross debt*, as well as all *local government and public corporation debt*. All holdings of each other's debt by these three parts of the public sector are netted off to produce a consolidated total.

The local government sector comprises all bodies required to make returns under the various local authorities acts. Public corporations are trading bodies (including nationalised industries), which have a substantial degree of independence from the public authority that created them, including the power to borrow and maintain reserves. For further details, see Chapter 4 of the *Financial Statistics Explanatory Handbook*, published by the Office for National Statistics.

Public sector net debt

Public sector net debt is derived from the consolidated debt of the public sector by deducting the public sectors' holdings of liquid (short-term) assets.

General government consolidated gross debt

Central government and local government gross debt, with holdings of each other's debt netted off to produce a consolidated total.