PUBLIC DEBT IN A MEDIUM-TERM PERSPECTIVE

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INTRODUCTION

Concerns about increasing government indebtedness have been an important factor behind the widespread view[1] that the medium-term consequences of budget deficits limit the scope for using fiscal policy to support aggregate demand. The purpose of this article is to assess these concerns in a *medium-term* context. Three sets of issues are addressed which are discussed successively:

i) What is the appropriate concept of public debt? Should one take into account other components of a public sector balance sheet, such as government capital and future pension commitments, which are not part of the **financial** assets or liabilities of the government?

ii) How serious is the present public debt situation? Will present policies lead to a debt "explosion"? Does an examination of government non-financial assets and liabilities change the conclusion drawn from an analysis of debt alone? How sensitive is the debt outlook to changes affecting the economic situation, interest rates or the stance of fiscal policy?

iii) What are the possible consequences of high and/or rising levels of public debt. Do they reduce budget flexibility and put upward pressure on interest rates? Is there an optimal level for debt or is the stock of debt neutral in economic terms?

I. THE DIFFERENT CONCEPTS AND MEASURES OF PUBLIC DEBT

A. Definitions

Two major questions of definition, and a third somewhat less important one, arise when public debt is discussed. Should one look at gross or net debt? Is debt of the central government alone, the general government sector or the public sector as a whole, including public corporations, the most relevant concept? Finally, is there any reason to distinguish between foreign and domestic debt?

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The measure of public debt usually discussed is gross debt (i.e. the total financial liabilities of government), reflecting the fact that the corresponding data are more readily available and thus more widely publicised, and that there is a direct link between gross debt and the level of debt service payments – an important aspect of the concern about debt (see below). The net debt (i.e. the gross financial liabilities less the financial assets) of government, on the other hand, comes closer to reflecting the cumulative total of past budget deficits, which represent the net borrowing by government in each period. The distinction between the two concepts is best examined by considering the nature of government's financial assets – the wedge between gross and net debt. These fall into two main categories: the assets held by the government as a financial intermediary and the social security funds built up in anticipation of future liabilities.

As a financial intermediary the government borrows funds (which increase its gross financial liabilities) in order to make loans to both individuals (e.g. mortgages) and institutions (e.g. investment loans for regional development). The financial assets thus acquired typically yield interest income to the government and should represent a legitimate offset against its gross debt. However, there are three concerns about such assets, which in some countries and to varying degrees suggest that netting them out of the gross debt figures may be inappropriate. First, in some cases, the interest paid to the government by individuals or institutions does not offset the government's own borrowing costs. Second, if the quality of the financial assets held by the government is open to question, the true value of the assets may be less than their recorded value. This can be the case for loans to insolvent private sector corporations or to some public enterprises. Finally, the additional government borrowing undertaken to acquire such assets may create pressures on financial markets if it corresponds to an increase in overall private sector access to credit.

The other important category of government financial assets is associated with social insurance schemes. The funds involved can represent buffers for year-to-year fluctuations of premiums and expenditures for unemployment or medical insurance schemes, for example. However, a major component of these assets in several countries relates to public pension plans, which also involve substantial future liabilities. The gross debt will usually fail to account for the social security sector at all, an important drawback given the implications of ageing populations (see below). Net debt figures are also misleading, since they take account of only the assets side of the social security balance sheet. In some countries, notably Japan, such figures are in fact discounted by the authorities because they expect demographic changes to reduce the social security assets markedly in the near future. To sum up, the links between net debt and budget deficits, make it more appropriate to use net debt in

the calculation of prospective debt scenarios. However, the problems associated with the quality of financial assets, the existence of implicit liabilities and the attention paid to gross debt interest payments make it important to consider gross debt as well.

The second major question of definition of public debt concerns the level of government considered. In some countries much of the attention is focussed on central government debt, while in others the debate has centred on the liabilities of the general government or the public sector as a whole (including publicly-owned enterprises). The narrowest concept could be justified because of the greater availability of data, and because central government debt is more subject to "monetisation", as central banks do not generally buy or discount local government debt. However, there are difficulties in comparing central government debt data across countries, for instance in those with and without federal systems. Alternatively, the widest concept (the public sector) could be justified from a balance sheet framework, since the government usually owns shares in public corporations, which are not counted as financial assets (at least at their true as opposed to historical values). For instance, sales of such shares affect central or general government gross and net debt, but not the public sector's overall position. Estimates of the public sector deficit are also less affected by changes in the definition or extent of other "off-budget" transactions. In addition, public enterprises have often been used as instruments of government policy, particularly with respect to employment and price-setting. If the losses that result are met by government-guaranteed borrowing rather than operating subsidies, they will not show up, as they should do, in measures of general government deficits or indebtedness. However, measuring the public sector debt raises significant data and definition problems across countries and, in general, the activity of public sector enterprises is more like that of private firms than of government entities. On balance, therefore, the use of the intermediate (general government) concept, ensuring reasonable comparability across countries and consistency with the National Accounts, seems the most appropriate. Moreover, for most countries, the behaviour of central and general government gross debt in recent years has been quite similar.

Finally, a distinction between types of debt is relevant to policy debates in some countries, such as Denmark, Sweden, Ireland, New Zealand, Portugal and Turkey: how much of the public debt is held by foreigners and how much is denominated in foreign currencies?

Foreign loans allow countries to acquire the additional resources to invest more than they save with lower interest rates than otherwise. On the other hand, interest paid on foreign-owned debt is not an internal transfer (it enters the current account of the balance of payments and thus lowers GNP and national income) and hence the

ability to service the debt is of even greater importance than usual. Moreover: external financing can at times affect the competitiveness of the economy, notably if the capital inflows lead to an appreciation of the exchange rate. For a given total foreign debt, however, whether it is the government or the private sector that borrows abroad is (economically) largely irrelevant.

Foreign currency debt can pose a problem for governments if the domestic currency depreciates relative to those in which the debt has been contracted. While in the long run interest rate differentials would tend to offset exchange rate movements, in the short run the exchange risk can be fairly important. Recent fluctuations in the U.S. dollar value of many national currencies have produced significant changes in the debt/GNP ratio unrelated to budget deficits for countries with large external debts, although such adjustments are not always reflected in published data. The analysis below does not distinguish between foreign and domestic liabilities of the government sector.

B.   Recent trends in debt/GNP ratios in a historical context

Actual and projected figures for the gross and net debt/GNP ratios, on a book value basis, are presented in Tables 1 and 2 for the period 1972-1986[2]. The *gross* data show rapid increases in the ratios for most major countries in the years after 1981, particularly in Italy and Canada. The United Kingdom's relatively stable ratio is an exception but its level is comparatively high. Italy, Japan and Canada among the major countries and Belgium, Ireland, the Netherlands, Sweden and Denmark among the smaller economies have the highest gross debt ratios. All appear to have been above 65 per cent at the end of 1985. The lowest ratios are in France, Australia, Finland and Norway. However it is noteworthy that, for many countries, the 1970s were not characterized by rapid increases. The debt ratio often did not rise above the 1972 level until 1978 or later.

The net debt ratios have generally evolved in a fairly similar manner to gross debt ratios. However, their levels are substantially lower, particularly in Japan, Canada, the United States and the Nordic countries. Indeed, in the early years of the period several countries had negative net debt – financial assets exceeding financial liabilities. Except for a few countries (Japan, Germany, Australia, Denmark) the level of both gross and net debt ratios is expected to rise again, often significantly, in 1986. In the case of Japan, debt ratios seem to have stabilized, reflecting in part the 1986 increase in contribution rates for the pension system, which expanded the surplus of the social security sector. Without such an increase, the debt ratios would have probably risen further; moreover, it should be noted that the social security

Table 1. Gross public debt as a percentage of nominal GNP/GDP

	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984[a]	1985[a]	1986[b]
United States	44.1	40.9	40.1	43.3	43.3	41.8	39.9	37.8	38.0	37.1	40.9	43.5	44.4	46.6	48.4
Japan	17.5	17.0	17.9	22.4	28.0	33.4	41.9	47.0	52.0	57.1	61.1	66.9	67.4	67.2	66.8
Germany	18.8	18.6	19.6	25.0	27.0	28.5	29.9	30.7	32.5	36.3	39.4	41.0	41.8	41.9	41.5
France	26.4	25.1	24.7	25.8	24.7	25.2	26.3	26.2	25.0	25.9	28.3	29.8	31.8	33.4	34.9
United Kingdom	75.3	69.7	69.6	65.3	64.1	62.5	59.6	55.7	55.0	55.0	53.6	54.1	55.6	54.4	54.6
Italy	60.1	60.6	57.7	66.3	65.4	65.2	71.2	70.4	67.2	70.3	76.6	84.3	91.1	95.9	99.2
Canada	52.6	46.7	44.4	44.7	42.3	44.2	49.1	46.9	47.9	47.1	53.5	58.7	63.4	67.3	70.3
Total major seven countries	39.3	36.9	36.5	39.6	40.3	40.6	41.1	41.2	42.0	43.0	46.5	49.6	51.1	52.6	53.8
Total major seven less U.S	34.9	33.3	33.2	36.1	37.6	39.6	43.3	44.2	45.6	48.4	51.6	55.2	57.2	58.1	58.7
Australia	35.9	31.8	29.2	28.5	27.8	29.1	30.3	29.2	26.2	23.4	22.8	24.5	25.6	26.0	25.6
Austria	17.5	17.5	17.6	23.9	27.4	30.1	33.9	36.0	37.2	39.2	41.3	45.7	45.1	44.6	44.2
Belgium	71.4	69.5	64.8	65.8	64.8	68.5	71.9	77.1	82.8	97.2	106.2	116.7	120.7	124.6	128.0
Denmark	10.0	7.9	7.4	11.9	14.6	18.1	21.9	27.2	33.5	43.7	53.0	62.6	67.5	66.9	61.6
Finland	12.4	10.2	8.1	8.6	9.0	10.4	13.5	14.0	13.9	14.7	17.1	18.8	18.5	18.0	18.3
Greece	23.2	19.4	20.3	22.4	22.1	22.4	29.4	27.6	27.7	32.8	36.4	41.4	47.5	52.8	55.0
Ireland	60.8	57.9	65.1	72.3	78.8	76.4	80.0	84.9	87.7	94.1	103.9	109.7	112.9	120.1	122.2
Netherlands	46.6	43.4	41.5	41.3	40.2	39.7	40.9	42.7	45.9	50.3	55.6	62.3	67.0	70.2	75.9
Norway	50.3	48.8	45.9	48.2	50.3	57.0	64.0	66.3	55.9	50.4	45.8	42.5	36.6	31.3	33.3
Portugal		18.5	18.2	26.3	32.1	33.9	37.9	42.3	38.7	48.2	50.5	56.9	61.7	61.7	
Spain	14.9	13.2	12.6	12.9	12.6	13.7	13.9	15.7	17.7	21.3	26.5	32.0	38.4	42.2	44.5
Sweden	30.7	30.0	30.4	29.5	27.5	29.9	34.5	39.6	44.8	52.9	62.6	66.1	67.8	69.0	69.3
Switzerland	37.1	36.4	37.5	42.2	46.3	45.9	45.1	44.1	42.6	39.9	38.8	38.3	39.5		
Total smaller countries[c]	32.6	30.3	28.9	29.9	29.9	31.7	34.3	36.3	37.6	41.4	45.7	50.4	53.2	54.9	56.4
Total of above countries[c]	38.4	36.0	35.5	38.3	39.0	39.5	40.8	40.6	41.5	42.8	46.4	49.7	51.4	52.9	54.1
Total OECD less U.S.[c]	34.4	32.6	32.2	34.3	35.9	37.8	41.4	42.5	43.9	46.8	50.3	54.2	56.4	57.4	58.2

a) Partly estimated.
b) Forecasts.
c) Excluding Portugal and Switzerland
Source: OECD.

Table 2. Net public debt as a percentage of nominal GNP/GDP

	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984ᵃ	1985'	1986ᵇ
United States	25.7	22.9	22.2	24.8	24.7	23.8	21.6	19.8	19.6	19.1	22.1	24.6	26.0	28.1	30.0
Japan	-6.5	-6.1	-5.4	-2.1	1.9	5.4	11.2	14.8	17.2	20.6	23.1	25.8	26.4	26.2	25.8
Germany	-5.8	-6.7	-4.7	1.0	4.6	7.0	9.4	11.5	14.3	17.4	19.8'	21.8	23.0	23.1	22.6
France	9.1	8.3	8.8	11.1	10.9	10.2	10.2	9.8	9.1	9.9	11.3	13.3	15.1	16.6	18.2
United Kingdom	64.8	57.5	54.9	57.6	57.0	55.9	53.5	48.7	48.2	47.3	46.5	47.4	49.0	47.8	48.0
Italy	50.0	52.1	49.2	59.9	60.9	60.7	64.5	65.5	60.0	66.1	70.8	84.1	91.0	95.7	99.0
Canada	4.3	2.7	1.0	4.3	5.2	7.1	11.6	12.3	13.3	11.6	18.8	23.9	30.0	33.9	37.0
Total major seven countries	19.1	17.2	16.8	20.3	21.3	21.6	22.0	21.6	21.9	22.8	25.5	28.5	30.3	31.8	33.0
Total major seven less U.S.	13.2	12.0	11.9	16.2	18.2	19.6	22.3	23.3	23.9	26.1	28.5	32.0	34.2	35.1	35.7
Australia	35.9	31.8	29.2	28.5	27.8	29.1	30.3	29.2	26.2	23.4	22.8	24.5	25.6	26.0	25.6
Austria	17.5	17.5	17.6	23.9	27.4	30.1	33.9	36.0	37.2	39.2	41.3	45.7	45.1	44.6	44.2
Belgium	59.8	56.7	53.7	54.1	54.2	58.0	60.9	65.5	69.7	82.1	90.4	101.4	105.3	109.3	112.6
Denmark	-9.1	-12.3	-13.6	-10.1	-7.7	-5.0	-2.2	1.9	7.2	16.6	26.3	34.1	37.5	36.2	30.9
Finland	-8.1	-10.7	-10.6	-9.5	-10.5	-10.0	-8.3	-6.8	-6.1	-4.7	-1.9	-0.2	-0.5	-1.0	-0.7
Greece	23.2	19.4	20.3	22.4	22.1	22.4	29.4	27.6	27.7	32.8	36.4	41.4	47.5	52.8	55.0
Ireland	32.7	31.9	36.9	45.2	51.6	50.3	56.0	63.1	68.4	73.4	81.8	87.6	90.9	98.1	100.1
Netherlands	24.6	21.0	19.1	19.8	20.4	19.3	20.1	21.8	25.0	27.4	31.3	36.8	41.4	44.7	50.3
Norway	0.6	-1.4	-1.8	0.7	3.5	9.5	14.0	16.9	6.9	3.2	1.2	-2.2	-8.1	-13.4	-11.4
Portugal		18.3	18.0	26.2	32.0	33.8	37.1	41.6	38.3	48.2	50.5	56.9	61.6	61.7	
Spain	2.1	1.7	1.3	1.3	0.7	2.0	3.0	5.0	7.1	10.3	13.8	18.2	22.6	26.4	28.7
Sweden	-29.6	-31.1	-30.1	-28.8	-29.7	-28.9	-25.3	-19.8	-13.6	-5.3	4.5	10.6	12.7	13.9	14.2
Switzerland	15.2	15.9	16.7	19.8	20.9	21.2	20.2	20.7	19.2	18.1	17.3	17.4	16.7		
Total smaller countriesᶜ	14.1	11.7	10.8	12.0	12.4	13.8	16.1	18.2	19.6	22.9	26.8	31.3	33.7	35.4	36.8
Total of above countriesᶜ	18.5	16.5	16.0	19.2	20.2	20.6	21.2	21.2	21.6	22.8	25.7	28.9	30.7	32.2	33.5
Total OECD less U.S.ᶜ	13.4	12.0	11.7	15.3	16.9	18.3	21.0	22.2	23.0	25.4	28.1	31.9	34.1	35.1	35.9

a) Partly estimated.
b) Forecasts.
c) Excluding Portugal and Switzerland.
Source: OECD.

surplus has been traditionally invested in the public sector through the Fiscal Investment and Loan Programs (FILP).

Since debt ratios normally change only slowly over time, it is necessary to consider their evolution in a longer perspective to assess the importance of recent growth in government indebtedness. To this end historical data on debt/GNP ratios have been collected for 15 countries (see Chart A in Annex) in order to provide the longest possible series. Although not fully comparable across countries, these data are roughly consistent over time for each country; in most cases they correspond to central government gross debt[3]. It is, of course, important to stress that, over periods as long as shown in the chart, the nature of government has changed significantly. A much larger share of output is now devoted to public consumption and investment and the increase in total government spending (including transfers) has been even greater. The growth in the size of government has, however, by and large been accompanied by increased revenues without any clear trend in levels of debt over the same long time periods.

What do these data show? One general fact that holds for nearly all countries is that current levels of debt/GNP ratios are still well within the range of historical experience. However, it is important to note the direction in which the ratios are moving. In interpreting such movements one can distinguish between changes in the stock of debt (which reflect budget imbalances and, occasionally, debt repudiation) and nominal GNP growth (both real output growth and inflation). The relative importance of these for movements in debt ratios has varied over time. By far the most significant factor behind historic rises in the debt/GNP ratios has been increases in debt because of the need to finance wars. A secondary factor has been the tendency for budget deficits to be large during economic slowdowns. Recessions have at times led to falling prices as well as lower real growth, increasing the burden of a given nominal value of the debt. The increase in the debt ratios (primarily because of budget deficits) in the period of recession and slow growth since the late **1970s** has been significant, in some cases as important as in the Depression of the **1930s,** notwithstanding declining nominal output at that time.

Declines in the size of the debt relative to GNP have usually occurred as a result of rising nominal GNP. Strong real growth was an important factor in most countries from the end of the second world war to the early **1970s,** particularly in Japan. Real growth also played a role in the long decline of the United Kingdom debt ratio during the nineteenth century. However, the most marked declines in debt/GNP ratios are due to strong inflation. Among the major countries, France and Germany in several periods and post-war Japan have been particularly notable examples in this respect. The effect of inflation has been less marked in the United States and, to some

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extent, in the United Kingdom, although domestic prices have nevertheless increased twelvefold and thirtyfold respectively in these two countries since the beginning of the century — compared with approximate stability over the nineteenth century. Reductions in the stock of debt as a result of budget surpluses have been comparatively rare, although the United States reduced its outstanding debt by about two-thirds during the thirty years after the Civil War and the United Kingdom repaid some of the debt built up during the Napoleonic Wars over the following century and ran surpluses again in the 1920s. The stock of debt has also been reduced on occasion by repudiation, as was the case in Germany at the end of the war. Repudiation is, however, almost always associated with significant changes of political regime.

C.   Debt analysis in a government balance sheet framework

The debt data that have been discussed so far are based on financial concepts, using the financial liabilities and (for net figures) the financial assets of the government sector. Reference has already been made to loans and loan guarantees by the government for public sector enterprises, to government asset sales and to the implicit liabilities of public pension plans. All of these (as well as the government capital stock) have implications for what could be called the public sector's net worth that are different from their consequences for the governments' financial position as measured by either gross or net debt.

The use of such a "net worth" concept has been suggested as a better indicator for assessing the medium-term consequences of fiscal policy (Buiter, 1985; Odling-Smee and Riley, 1985). Since asset accumulation or decumulation would be clearly observable if government accounts were presented in a balance sheet format, this would be a natural vehicle for examining the implications of government capital formation, asset sales, resource depletion and social security. For example, as noted above, when the government sells non-financial assets, such as public corporations, the proceeds reduce its net financial debt but there is no equivalent improvement in its net worth[4]. In some circumstances this may increase budgetary flexibility, but such an assessment requires knowledge of the government's overall balance sheet and not just its purely financial component.

There are two ways in which the government net worth concept can be defined. The broader definition would include not only financial and non-financial assets and liabilities, but also the net present value of future tax receipts less transfers and the net present cost of future consumption expenditures[5], as well as the net present value of future seignorage. This definition of net worth is not

particularly satisfactory from an operational viewpoint and raises severe measurement problems. It leads to a discussion of whether a government can be insolvent (i.e. have negative net worth), but this simply implies that the present values of taxes and expenditure must adjust, and therefore that policies cannot remain the same, without giving any information about when the change should take place.

A second and more straightforward definition is to take net worth as the net financial **and** non-financial assets of the general government sector. This would include the assets that are ignored in the calculation of net debt (stock of government fixed capital, publicly-owned business enterprises, publicly-owned natural resources), as well as explicit and implicit commitments that are not generally included in the financial liabilities of the state. Two important examples of such commitments are public sector pensions and contingent liabilities. Pensions are particularly significant both because the magnitudes are very large and because they may affect private saving behaviour and hence lead to a shortage of loanable funds, which could reduce private investment. Contingent liabilities take the form of government guarantees of loans to corporations or individuals seen as poor commercial risks – at least at prevailing interest rates. Such loans in normal circumstances present a relatively constant probability of default and so they are not likely to change assessments of net worth over the next few years[6]. Governments may also make promises to compensate victims of natural catastrophies, wars, resettlements, etc. that may only affect the balance sheet as claims are made and satisfied over a period of many years.

The foregoing discussion gives some idea of the variety of government assets and liabilities to be taken into account in the calculation of net worth. In practice, it is of course difficult to evaluate the non-financial components of the government balance sheet (Annex II of Chouraqui, Jones and Montador, 1986), *so* that, in the context of this paper, it has not been possible to develop systematic cross-country comparisons of current *levels* of overall government net worth. In fact, this is not a fundamental problem since, in focussing on net worth, the intention is not to show that the public sector may be a creditor rather than a debtor. The important aspect of the balance sheet approach as used here is rather to compare *trends* in net worth with those in debt, in order to assess *i)* to what extent recent increases in debt have been offset by movements in other components on the asset side of the balance sheet, and *ii)* how the outlook for net worth compares with that for public debt.

The most visible example of the government's non-financial assets is the stock of fixed capital (highways, schools, hospitals, etc.). This is typically large and, unlike debt incurred for public consumption, its growth has traditionally been considered a valid justification of government borrowing, provided the rate of return on investment is sufficient. In other words, if recent increases in government debt

Table 3. General government net worth[a]

As a percentage of nominal GNP/GDP

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985[b]	1986[b]
United States	34.2	34.2	35.5	41.7	46.7	43.7	40.4	40.4	42.2	45.5	47.7	45.1	41.0	36.6	30.2	26.8	24.3
Japan	36.6	39.4	41.7	46.6	48.9	46.1	43.7	41.4	38.0	39.2	40.1	38.4	37.1	35.8	31.1	41.8	44.2
Germany	70.9	70.8	69.1	69.7	70.3	65.8	61.1	60.3	60.0	62.9	63.7	61.2	57.6	55.2	52.8	50.4	48.5
France	17.5	17.7	19.6	21.4	21.3	20.1	19.6	21.0	21.0	22.1	23.9	24.5	22.7	20.8	19.3	17.2	15.7
United Kingdom	−12.3	−6.0	4.8	21.2	29.4	24.3	21.0	17.7	19.5	28.4	30.9	28.6	22.7	18.1	18.7	20.5	20.4
Italy	0.8	−3.6	−9.7	−13.4	−11.2	−19.4	−21.6	−21.3	−25.5	26.2	−19.6	−23.1	−24.6	−34.8	−36.0	−39.6	−42.1
Canada	42.2	45.2	45.1	45.0	49.3	48.0	45.1	44.2	39.7	38.3	37.5	39.8	34.9	27.7	23.6	18.3	15.3

a) Government fixed capital stock less net financial liabilities. The capital stock figures are generally estimated from public investment data, by the perpetual inventory method. and revalued at current prices
b) Forecasts.
Note: For definitions and methodology see Annex II of Chouraqui et al. (1986).
Source: OECD

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relative to output reflected expansion of public sector capital, there could be less reason for concern[7]. Estimates of the government sector capital stock, obtained from various national sources, have been combined here with net financial debt to provide narrow measures of general government net worth for the major OECD countries (see Table **3).** These measures correspond to the restrictive definition of net worth sometimes presented in the system of national accounts. They show that, for most countries, government net worth has fallen in recent years, suggesting that capital formation does not explain the rapid growth in public debt. The only major exception is Japan where the rise in capital stock has offset the growth in debt over most of the period under review. Consideration of the stock of public capital even aggravates for some countries the problem of a worsening government financial position suggested by the debt data. However, since the ratio of capital stock to GNP should remain broadly unchanged in the next few years (if present public investment behaviour is sustained)[8], this factor should have little influence on the future evolution of government net worth. The next part of the paper extends this discussion with an analysis of the expected evolution of *some* of the major non-financial balance sheet items.

II.   THE PROJECTED EVOLUTION OF PUBLIC DEBT

A.   The risk of "debt explosion"

Since the late 1970s interest rates have been particularly high in most Member countries, generally exceeding economic growth rates. Given the large budget deficits, this has led to a rapid increase in government debt service payments and raised concern that the compounding effects of such a situation would imply continuously growing deficits and an "explosion" of debt as a proportion of GNP. As an illustration of the seriousness of the problem, Table 4 shows, for most OECD countries, the evolution of budget balances net of debt interest payments in recent years and as forecast for **1986.** The last column represents the "threshold" or required budget surplus under the admittedly arbitrary assumption that the interest rate continues to exceed the growth rate by two percentage points[9]. This provides a rough indication of the extent of fiscal adjustment required to stabilize the existing debt/GNP ratio. It can be seen that, although only some countries are now in a "stable" position by this criterion, most governments have nevertheless been moving quickly to improve their net-of-interest budget balances. Italy, Greece, the

Table 4. Actual budget balances net of debt interest payments

As a percentage of nominal GNP/GDP

	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985[a]	1986[a]	Threshold
United States	0.7	1.7	0.8	−2.9	−0.9	0.2	1.1	1.6	0.0	0.7	−1.7	−1.9	4 . 6	−1.1	−0.9	0.6
Japan	−0.4	0.2	0.1	−2.8	−3.5	−3.5	−4.9	−3.9	−3.3	−2.6	−2.2	−2.0	−0.4	0.4	1.1	0.5
Germany	−0.8	0.8	−1.6	−5.6	−3.2	−2.0	−1.9	−1.9	−2.0	−2.6	−1.9	4.9	−0.3	0.6	0.8	0.5
France	1.1	1.2	1.0	−1.7	0.1	−0.3	−1.3	−0.1	0.8	−1.0	−1.9	−1.9	−1.6	−1.1	−1.0	0.4
United Kingdom	1.2	−0.3	−0.4	−1.2	−1.1	0.6	−0.4	0.5	0.6	1.5	2.0	0.4	0.4	1.3	1.1	1.0
Italy	−7.4	−6.4	−5.7	−8.1	−4.8	−3.4	−4.4	−4.1	−2.5	−5.1	−4.8	−2.7	−3.4	−4.7	−3.6	2.0
Canada	0.4	1.2	2.0	−2.1	−1.2	−1.7	−2.0	−0.4	−1.2	0.0	−2.4	−3.3	−2.6	−1.8	−0.4	0.7
Total major seven countries	0 0	0 7	0 1	− 3 2	− 1 7	− 0 9	− 0 9	− 0 3	−0.8	− 0 6	− 1 7	− 1 8	4 8	− 0 7	− 0 4	0 7
Total major seven less U S	− 0 7	− 0 2	− 0 6	− 3 4	− 2 5	− 1 9	− 2 8	− 2 0	− 1 6	− 1 8	− 1 8	− 1 6	− 0 9	− 0 4	0 1	0 7
Australia	4.6	2.0	4.6	1.5	−0.8	1.9	0.7	−0.1	0.8	1.7	2.1	−1.2	−0.6	0.5	1.5	0.5
Austria	3.0	2.3	2.3	−1.2	−2.1	−0.5	−0.5	−0.1	0.8	1.0	−0.1	−0.8	0.9	1.2	1.6	0.9
Belgium	−1.3	−0.8	0.3	−2.3	−2.0	−2.2	−2.1	−3.3	−7.5	−4.6	−4.2	−1.6	−0.6	0.4	2.3
Denmark	2.7	3.3	0.9	−2.4	−1.0	−1.1	−0.6	−1.5	−2.4	−4.9	−6.1	−2.9	1.0	3.9	7.4	0.6
Finland	3.3	4.9	3.7	1.9	4.1	2.4	0.9	0.0	0.1	1.0	−0.5	−1.5	0.3	0.4	−0.3	0.0
Greece	0.6	−0.4	−0.9	−2.1	−1.0	−1.7	−1.3	−0.2	−0.3	−8.7	−4.7	−6.0	−6.0	−8.1	−4.2	1.1
Ireland	−1.4	−1.9	−4.9	−8.5	−4.2	−3.3	4.8	−6.0	4.5	−6.8	−6.8	−4.6	−2.2	−2.4	−1.7	2.0
Netherlands	1.2	2.3	1.3	−1.2	−1.0	−0.3	−1.2	−2.1	−2.0	−3.1	−4.1	−3.1	−2.5	−0.9	−2.5	1.0
Norway	4.6	5.7	4.6	3.9	3.3	2.1	1.4	4.3	6.2	5.0	4.5	3.6	5.3	3.6	−4.2	−0.2
Spain	0.3	1.2	0.2	0.1	−0.3	−0.5	−1.6	−1.4	−1.8	−2.6	−5.3	−4.6	−3.7	−3.9	−3.0	0.6
Sweden	2.5	2.1	−0.1	0.6	2.2	−0.8	−2.4	−4.5	−5.0	−5.4	−5.8	−3.8	−0.9	−0.6	0.4	0.3
Total small countries	2.0	2.0	1.6	−0.1	−0.2	−0.1	−0.9	−1.2	−1.2	−2.2	−2.7	−2.7	−1.2	−0.8	−0.5	0.7
Total of above countries	0.3	0.9	0.3	−2.8	−1.5	−0.8	−0.9	−0.4	−0.9	−0.8	−1.8	−1.9	−0.9	−0.7	−0.4	0.7
Total OECD less U.S.	−0.1	0.3	−0.1	−2.7	−2.0	−1.5	−2.4	−1.8	−1.5	−1.9	−2.0	−1.9	−1.0	−0.5	−0.1	0.7

a) Forecasts.

Source: OECD

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Netherlands and Spain still have very large net of interest deficits. On the basis of **1986** projections, the United States, France, Canada, Belgium and Ireland also require further improvement to stabilize their debt positions.

If the non-interest budget balance of the OECD countries not yet in a "stable" position does not improve and if interest rates remain above growth rates'[0], then government debt will tend to increase more rapidly than GNP. The first two curves in Chart B (see Annex) show the projected evolution of net debt/GNP ratios for the countries included in Table 4, under the following alternative assumptions:

    i) the non-interest budget balance remains at the forecast **1986** ratio to GNP, except in the United Kingdom where projected changes in 'oil revenues are taken into account, while the economy grows at its trend rate'[1]; and

    ii) the economy returns to its mid-cycle position over the three years **1987-89. As** a result, the non-interest budget balance is affected by the automatic stabilizers during that period, after which it remains constant at its new ratio to GNP while output grows in line with its trend rate.

The projected debt figures suggest that the situation varies widely among the different countries considered. In thirteen of these, including the United States, France, Italy and Canada, the present position can be characterized as "unstable" in the sense that their public debt/GNP ratio would continue to rise if the non-interest budget balance does not improve. Italy, Belgium, Ireland and the Netherlands would have debt/GNP ratios of **160** per cent or more by the end of the century, while in Canada it would be close to **95** per cent. Only in Japan, Austria and Denmark would the debt ratio fall to any extent. Under the alternative assumption, with economic activity returning to a mid-cycle level, automatic stabilizers improve or worsen the non-interest budget balance according to whether the economy **is** projected to be below or above its mid-cycle position in **1986.** For several of the countries whose activity is currently *below* trend, the additional growth significantly improves the debt outlook. Germany, France and Sweden would see their debt reduced as a proportion of GNP, while in the United Kingdom and in Belgium the increase in the debt ratio would slow markedly. On the other hand, in most other countries the debt ratio would continue to increase, albeit at a reduced rate, even if their growth rate returned to its mid cycle trend level. In those countries (Australia, Finland and Norway) where economic activity currently appears to be *above* estimated mid-cycle positions, debt/GNP ratios would be less favourable under this assumption. However, the relatively low initial debt levels in these countries relative to GNP should presumably make any policy adjustments less pressing.

On the whole, in both scenarios, debt ratios will continue to rise rapidly in a number of countries. The need to improve the public finances therefore remains of

primary importance. This is especially true for the United States, Italy, Canada, and the Netherlands, where debt ratios will rise quickly without changes in the non-interest budget balances, even under the more favourable assumptions about economic growth. For countries whose budgets are such that debt ratios are likely to fall (particularly Japan, Germany, Austria and Denmark), Chart B suggests that there may be a choice as to the speed with which the relative size of the debt is reduced. Relatively small additional efforts to improve non-interest budget balances could put countries projected to have relatively stable debt ratios in a similar position, if the return to mid-cycle activity levels materialises.

These debt projections are, of course, particularly sensitive to the assumptions about trend output and about interest rates. They may well be too pessimistic if the trend level of output is underestimated, which may be the case in some countries because of excessive weight placed on the recent period of slow growth. Moreover, maintaining interest rates above growth rates may also be pessimistic. Although this situation has existed for several years in most countries considered, it had not previously been experienced for any considerable length of time, at least since World War II. Because no universally accepted explanation for the persistence of high real interest rates has been provided (Atkinson and Chouraqui, 1985), and given that in any event there is little monetary policy can do to affect real interest rates in the long run, it is difficult to predict whether the present interest rate/growth rate pattern will continue or be reversed. As a result, no specific assumption is made here about monetary policy stance but real interest rates are held constant over the period. Under this hypothesis, any changes in inflation would be fully reflected in nominal interest rates and the outlook for the debt/GNP ratio would not therefore be affected, except for delays in rolling over old debt (which will tend to raise the ratio if inflation falls and lower it if inflation increases). Finally, the assumption that non-interest expenditures and revenues stay constant as a share of output (except for the effect of automatic stabilizers) would imply that fiscal drag (due to either inflation or real growth) was offset by the authorities. This hypothesis is consistent with the view that present levels of taxation are already too high; to reduce both deficits and the growth of the debt over the medium term by allowing fiscal drag to operate would not therefore represent a neutral policy.

B.   A wider perspective: the outlook for government net worth

The discussion of government balance sheets in Part I suggested that movements in public debt should not be considered in isolation from those of overall government net worth. For instance, a declining debt/GNP ratio will not generally

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reflect an improving government financial position if this decline is due to the sale of public sector corporations, the rapid depletion of publicly-owned resources, the reduction of government fixed capital or a temporary surplus of the social security system. Future asset sales are not included in the medium-term projections described above, since the budget deficits used as a starting point are those calculated on a National Accounts basis for the general government, rather than public sector borrowing requirements[12]. On the other hand, changing rates of exploitation of natural resources can affect significantly projections of government debt and net worth. Several OECD countries (notably the United States, the United Kingdom, Canada, Australia, the Netherlands and Norway) draw important revenues from the exploitation of non-renewable resources, particularly oil and gas. A country's total reserves of resources can be viewed as a capital asset yielding a permanent annual return. Where this return is exceeded by the current revenues from the resources, the actual budget deficit will be smaller than would be sustainable on the basis of current tax and spending policies, making the debt projections based on current deficits unduly optimistic. The figures for the United Kingdom incorporate an estimate of the sums involved. These are very significant: the projection for **1985-86** is for a difference of some **3** per cent of GDP between actual and "permanent" revenues[13].

There is also a type of government liability, not included in gross or net debt, that has significant implications for the medium-term projections: the (future) liabilities of social security systems or public pension plans. These pose two problems: one related to the pay-as-you-go nature of public pension schemes in most countries, the other to the demographic changes foreseen for the next **15-20** years. The first arises because present pensions are paid by taxing those currently working, so there is no invested fund to provide for the benefit entitlements of future retirees. These entitlements can be thought of as a government liability, similar in nature if not in contractual terms to government debt. To the extent that future beneficiaries consider them as **wealth**[14] there will be less saving (in the absence of full debt neutrality as discussed in Part III below), and thus a lower capital stock for the economy as a whole. This aspect of the pension problem is related to concerns about levels of public debt, rather than about growth in debt, the main focus of the discussion here. The second and possibly greater concern is the likely effect of demographic trends on social security liabilities in the future. The present age structure of the population in many countries is significantly more favourable (in the sense of fewer retired people per worker) than it appears likely to be in any eventual equilibrium situation. Moreover, the presence of "baby boom" bulges in the demographic profiles of many countries means that not only will the dependency ratio (the number of those above retirement age divided by the labour force) rise in

the long run, it will even "overshoot" the equilibrium level for some period in the next 25-40 years[15].

In order to assess how these changing population patterns could affect governments' financial outlook, it is necessary to consider their budgetary consequences'[6]. To facilitate international comparisons it is assumed in the first instance that pension benefits as a share of GNP will in the future vary directly with the dependency ratio, starting from the most recent observation. This would be consistent with, for example, the hypothesis that government payments to the elderly after retirement will follow the growth in real wages[17], while the participation rate and the wage share of GNP remain constant. On the basis of these assumptions, Table 5 shows how income support for the elderly as a share of GNP would evolve and how the dependency ratio will change (with a participation rate constant for those between 20 and retirement).

The differences among the countries considered are quite noticeable. Over the next quarter-century[18] the cost of pensions as a per cent of GNP would increase rapidly in Japan, Germany, France and Italy and relatively modestly in the United States and Canada[19]. On the other hand it would fall slightly in the United Kingdom. However, pension costs over the next few years will be significantly greater than suggested by the dependency ratio alone for some countries, notably Japan and the United Kingdom, as a result of maturing social security systems. This represents the policy dilemma facing governments: increased pension payments because of the ageing population can be considered the result of existing policy, and although in some cases there are specific formulae to raise taxes or social security contributions to meet such extra payments, concern about the size of the tax burden makes such increases unattractive. Social security contributions (OF the general taxes used to finance pensions in some countries) are therefore assumed here to be a constant fraction of GNP.

What are the implications of such projections for public debt? Strictly interpreted, the unchanged policy assumption described above would imply that all the increases in benefit payments projected in Table 5 will be debt-financed – an extreme case but consistent with the concern about tax burdens. The third curve in Chart **B** shows how the debt/GNP ratios would evolve under this assumption. For Japan and the United Kingdom more detailed estimates of the increases in pension costs have been used, in order to capture the effect of the maturing of the social security system in those countries[20]. It appears that consideration of pension benefits and their projected expansion does not qualitatively change the outlook for the major countries whose debt is already "exploding" (Italy, Canada and the United States). However, the countries whose debt ratios are projected to fall or grow only slowly (specifically Japan, Germany, France and the United Kingdom) face a much

Table 5. Evolution of payments to the elderly as a percentage of GNP[a, b]

	1985	1990	1995	2000	2005	2010	2015	2020	2025	2030
United States	6.9 (24.0)	6.8	6.7	6.6 (23.2)	6.7	7.3 (25.6)	8.4	9.8	11.2	11.9 (41.5)
Japan	5.1 (18.3)	5.9	6.8	7.8 (30.4)	9.0	10.3 (40.1)	11.2	11.1	10.8	11.0 142.7)
Germany	12.0 (29.0)	12.2	13.1	15.1 (34.8)	16.8	17.7 (40.8)	18.8	20.7	24.1	27.6 (63.6)
France	12.7 (31.0)	13.2	13.5	13.5 (34.2)	13.9	15.5 (39.5)	17.2	18.6	20.1	21.5 (54.6)
United Kingdom	6.3 (30.3)	6.1	5.9	5.7 (26.8)	5.7	6.0 128.1)	6.3	6.6	7.4	8.1 (37.6)
Italy	12.8 (27.1)	13.2	13.6	14.2 (29.4)	15.3	16.2 (33.6)	173	18.3	20.2	22.5 (46.5)
Canada	4.0 (16.0)	4.3	4.7	4.9 120.0)	5.0	5.5 (22.6)	6.3	7.4	85	9.6 · (39.4)

a) OECD Secretariat projections based on national demographic forecasts.

b) Figures in parentheses for 1985. 2000, 2010 and 2030 represent the ratio of those over retirement age to the labour force (defined as the men and one half of the women between 20 and retirement age).

Source: OECD.

less comfortable situation when their budgetary position is examined in this wider context: the previously projected decline or slowdown in debt ratios is eliminated and after some time the debt burden eventually expands.

Therefore, unless governments are prepared to tolerate continued increases in public debt, it is likely that, in most countries, some future increases in taxes or contribution rates would be inevitable if current or projected benefit levels were to continue. In general, the sooner rates are raised (to create a social security fund or to expand an existing one) the smaller the required increase and the less the variability of tax rates[21]. However, given that the problems described above are expected to develop over a long period, there would presumably be room for flexibility in the timing of rate increases, consistent with cyclical considerations. The alternative, lower pension benefits, higher retirement age, or reductions in other budget spending, would probably be more difficult to implement, although such changes have been made or planned in a few countries (e.g. Japan). A reduction in future pension commitments (i.e. future liabilities) could in some sense be considered similar in nature to a reduction in the debt burden by either repudiation or its equivalent, unexpected inflation.

C. The sensitivity of the debt outlook to changes in economic conditions and in the fiscal stance

One of the critical determinants of the debt projections discussed above is the trend output path to which the economy is assumed to return. A faster rate of trend growth would mean that the debt/GNP ratio would not grow as quickly. However, the impact on the projections is limited by the hypothesis that unchanged fiscal policy freezes the non-interest budget deficit as a share of GNP. More important is the assumption concerning the size of the gap between 1986 output and the trend GNP path. If this gap is larger than assumed, the return to mid-cycle production levels will reduce the non-interest deficit more and the debt profile will be lower. Table 6 shows how the debt/GNP level at the end of the century is affected by a change in either the rate of growth of trend output (1 per cent per year faster) or in the level of the trend output path (1 per cent higher in all years, implying a one percentage point bigger gap in 1986). The assumption of a larger output gap, and thus of a bigger cyclical improvement in budget balances as economies return to their long-run trend levels of activity, improves the debt outlook. The debt/GNP ratio is generally 10 to 15 percentage points lower by the end of the century. However, for most countries this would not affect the nature of the projections. Under the other alternative, a faster trend growth rate, the improvement is typically somewhat

Table 6. Sensitivity of the debt projections to the assumptions about trend output

| | Net debt/GNP ratio in the year 2000 | | |
	As shown in Chart B[a]	Larger output gap[b]	Faster trend growth[c]
United States	48.5	39.6	42.6
Japan	13.4	4.8	10.2
Germany	14.1	5.9	11.0
France	15.7	3.8	12.7
United Kingdom[d]	48.6	35.0	43.6
Italy	157.0	134.2	138.3
Canada	81.3	68.2	71.4
Australia	55.5	46.0	49.4
Austria	43.7	36.3	37.0
Belgium	130.9	118.9	110.6
Denmark	−52.8	−64.6	−53.5
Finland	12.5	6.4	11.8
Greece	63.6	54.5	56.9
Ireland	92.1	81.8	77.6
Netherlands	134.3	124.6	118.0
Norway	88.5	79.4	84.9
Spain	52.8	46.3	47.7
Sweden	7.3	−2.2	5.1

a) Corresponds to a return to mid-cycle output position over **1987-89.**
b) As in a) but with mid-cycle output position one percentage point higher.
c) As in a) but with the assumed trend growth rate one percentage point higher.
d) For the United Kingdom, the figures do not correspond to those in Chart B because no allowance is made for North Sea oil revenues.
Source: OECD

less. The impact is felt more through the smaller interest rate/growth rate differential than via the bigger level of output, given the assumption that the non-interest budget deficit remains constant relative to GNP.

The second important hypothesis about the underlying economic environment concerns the levels of interest rates. The projections in Chart B assume that these will remain above growth rates, although the difference narrows to 2 percentage points in those countries (e.g. the United Kingdom, Canada) where it is projected to be more than that on average in 1986. Although, as noted earlier, the present interest rate/growth rate configuration is unusual, concern about growing debt is

linked to the fact that this situation has persisted for some time, so it would be overly optimistic to assume away part of the problem in a baseline projection. However, it is possible to consider how lower interest rates would affect the debt scenarios described earlier for the seven major OECD countries. This is illustrated by Chart C in which the solid line corresponds to the scenario of a return to the mid-cycle growth path, including the expected evolution of pension costs, while the dashed line corresponds to the same scenario but with interest rates falling to the level of the growth rate by **1990.** While this assumption would improve the debt/GNP profile, it would not change the basic outlook for any country. However, it would postpone the demographic induced deterioration in the French debt ratio until after the year 2000 and moderate significantly the projected growth in the ratio for the United States.

Alternative fiscal policies will also affect future debt profiles. In this respect, on the basis of the present and projected debt outlook, the major OECD countries can be divided into three groups. The United States, **Italy** and Canada, under any reasonable assumptions, face rapid increases in debt/GNP ratios in the absence of changes in taxes or expenditures, so restrictive policies still appear as the only viable options for these countries. In other words, their policy choices are mainly related to the degree of restraint and the speed with which it is applied. For France and the United Kingdom the debt ratios would decline slightly and remain roughly stable, respectively, if the economies return to mid-cycle trend output levels (and allowing for oil revenue effects in the latter country). In both cases, the outlook is critically dependent on the assumed level of trend output. In addition, demographic considerations reverse the falling debt profile for France while the maturing of the present pension system worsens the debt picture for the United Kingdom. In these circumstances either slightly less or slightly more restrictive fiscal policies could be envisaged in these two countries. Japan and Germany would have declining or stable debt ratios and fairly small general government budget deficits on the basis of their **1986** fiscal position. **A** move to trend output level over **1987-89** would ensure that their debt ratios fall continuously. However, as indicated above, this optimistic assessment is offset over the medium to longer term by the expected substantial increases in pension benefits, so that higher taxes or cutbacks in other categories of spending would eventually be needed to prevent debt ratios from increasing rapidly. Nevertheless, since the debt ratio in these two countries, when the ageing population is taken into account, will only start to increase in the first half of the **1990s,** the debt situation may not be regarded as sufficiently pressing to eliminate *a priori* the possibility of short-run fiscal relaxation.

As an illustration of this range of possible policy alternatives, the following options (as shown in Chart **C)** have been examined:

i) For the United States, Italy and Canada, *a)* to reduce the non-interest budget deficit (as projected in the base case scenario) by **1** per cent of GNP in **1987** and again in **1988,** with the non-interest deficit held at its new level from **1989,** and *b)* the same policy change but taking effect in the **1989-90** period. (The difference between this and the first option can be viewed as representing the costs of a delay in taking action.)

ii) For France and the United Kingdom, *a)* to raise the non interest deficit by ½ per cent as a share of GNP relative to the "base case" levels, and *b)* to reduce the non interest deficit from **1987** by ½ per cent of GNP.

iii) For Japan and Germany, *a)* to increase temporarily the non-interest deficit as a share of GNP by **1** per cent in **1987** and **1988,** this being followed by a return to the base case scenario values of the non-interest deficit, and *b)* to raise permanently the non-interest deficit from **1987,** by the equivalent of **1** per cent of GNP.

It must be stressed that such fiscal policy options are considered *solely* in terms of their medium-term consequences for the stock of debt. Thus possible short-run demand and interest rate effects of budgetary changes are ignored in the simulations described below. However, as discussed subsequently, this does not significantly affect the projected profile of the debt/GNP ratios. It is also important to recognize that these options represent stylised budgetary changes. In particular *temporary* measures of fiscal expansion may be difficult to achieve in practice, as it is often difficult to ensure that such stimulative budgetary changes are reversed. This is particularly the case for measures affecting government consumption, transfers and taxes, which, as recent experience suggests, can only be reversed at some social and political cost. Although new public investment is in principle less subject to this constraint, it tends to be difficult to identify and implement worthwhile projects at the appropriate time from a cyclical viewpoint.

For the *United States* the first option, in which fiscal restriction is applied starting in **1987,** would stop the growth in the government debt/GNP ratio and allow a gradual reduction in the ratio from **1989.** This option is similar in magnitude to the deficit cuts implied by the August **1985** Congressional Budget Resolution and the effects on the debt/GNP ratio should also be comparable[22]. The more recent legislation to eliminate the deficit by **1991** (the "Gramm-Rudman-Hollings Amendment") would have an even greater impact. The second option, which delays the deficit reduction by two years, would also lead to a declining debt ratio but it remains at or above current levels until **1992.** In the case of *Italy,* the debt/GNP ratio would grow much less quickly after the reduction in the non-interest budget deficit under the first option. The ratio would nevertheless still be rising slowly and would, in fact,

be over 135 per cent by the end of the century and nearly 140 per cent if the measures were delayed for two years as suggested by the second option. Although either is a significant improvement relative to the base case scenario, the stabilization of the debt would require some further action, while an even greater effort would be necessary to reduce the debt ratio to any extent. In **Canada,** the budget tightening considered under the first option would also be insufficient to stabilize the debt/GNP ratio. By the end of the century the total general government net debt would be 58 per cent of GNP, while delaying the deficit reduction measures (the second option) would leave the debt ratio just below 65 per cent by then. However the measures announced by the federal government in the last two budgets, which will affect spending and revenues in the years after 1986, would stabilize the debt ratio by 1990.

For **France** the first of the fiscal policy options considered, i.e. expanding the non-interest budget deficit by ½ per cent of GNP starting in 1987, would eliminate the approximate stability in the debt/GNP ratio projected in the base case scenario. Instead the ratio would continue to rise steadily. At the end of the century the debt ratio would be over 30 per cent compared with 22 in the base case. If fiscal policy were contractionary — reducing the non-interest deficit by ½ per cent of GNP from 1987 on — the debt ratio would decline slowly until the end of the century, by which time it would be below 15 per cent of GNP. In the United Kingdom, increasing the non-interest deficit by ½ per cent of GNP from 1987 would lead the debt ratio to grow even more rapidly, to nearly 90 per cent at the end of the century. If, instead, the non-interest deficit were reduced by ½ per cent of GNP from 1987, the debt ratio would remain fairly stable until the middle of the next decade, after which it would grow rapidly as the state-earnings related pension scheme (SERPs) matures (in the absence of pension reform).

In **Germany** and **Japan** the consequences of the first fiscal option — a temporary increase in the non-interest budget deficit — are very similar. With such a stimulus the pattern of steadily rising debt (apparent only after several years in the base case scenario as a result of the ageing populations) would begin almost immediately. The net debt/GNP ratio at the end of the century would be over 50 per cent in Japan and almost 40 per cent in Germany. The second policy option, a permanent increase in the non-interest deficit, would compound this effect. The debt ratio would grow rapidly, reaching about 50 per cent in Germany and 70 per cent in Japan by the end of the century.

The above simulations assume that the growth of nominal income will be essentially unchanged, which would be consistent with relatively steady growth in the money supply and the hypothesis that fiscal policy changes do not affect long-run levels of activity. The debt projections considered thus represent a very

mechanical view of the budget deficit-public debt process, neglecting all possible influences of an increased or decreased deficit on real output, interest rates or prices. Does this assumption significantly affect the long-run profile of debt/GNP ratios as shown in the simulations? Would fiscal stimulus in fact increase nominal output sufficiently to offset the worsening of the debt/GNP ratio that the increased budget deficit would otherwise cause? In principle this could occur even if fiscal policy does not affect real activity in the long run, so it is important to see if such short-run effects could be significant. Moreover, much of the debt problem may be related to expectations about future movements in the debt/GNP ratio, and temporary deviations from the paths projected, especially where they reinforced pre-existing trends, could influence expectations perversely.

One way to take these short-term effects of budgetary changes into account is to look at the results of simulations with the OECD Secretariat's INTERLINK model[23]. These are not fully comparable with the mechanical ones described above, but they give a fair idea of how output and interest rate changes might affect the projected evolution of debt/GNP ratios shown in Chart C. To this end, Table 7 presents the effects on the debt/GNP ratio after six years of a permanent increase of 1 per cent of GNP in government non-wage expenditure in each of the major seven economies, as calculated using INTERLINK simulations, assuming non-accomodating monetary policy and floating exchange rates. The table also shows the effect of a 1 per cent increase of GNP in the non-interest budget deficit as derived from the mechanical projections. One can see that the differences between the two sets of

Table 7. Change in the public debt/GNP ratio after six years in response to a fiscal stimulus[a]

	INTERLINK simulation[b]	Mechanical simulation[c]
United States	7.6	7.1
Japan	7.3	6.3
Germany	7.9	6.3
France	8.8	6.7
United Kingdom	3.5	7.0
Italy	2.9	6.8
Canada	8.9	7.1

a) In percentage points.
b) One per cent of GNP permanent increase in government non-wage spending, with floating exchange rate and non-accommodating monetary policy.
c) One per cent of GNP permanent increase in non-interest budget deficit.
Source: OECD.

results are not large (except for the United Kingdom and Italy), which suggests that the debt profiles obtained mechanically are rather robust. The INTERLINK results reflect, in particular, the interest rate effects of a non-accomodated fiscal shock, which affect interest payments with a lag (longer for the United Kingdom and Italy than for the other major countries, thus explaining their smaller increase in debt in the INTERLINK simulation). A simulation of the same fiscal shock accommodated by monetary policy would lead to "improved" debt profiles because of higher prices and fiscal drag, but of course neither inflationary pressure nor a bigger tax burden are very desirable.

III. THE CONSEQUENCES OF HIGH AND GROWING LEVELS OF PUBLIC DEBT

A. Budget inflexibility, interest rate pressures and potential crowding-out

Although, as indicated in Part I, the present level of public debt is not historically unprecedented in most countries, it is unusual to register long periods of rising government indebtedness during phases of economic recovery. What are the likely economic consequences of large amounts of public debt? This section examines briefly the possible effects of stocks of debt, as distinct from those of government deficit flows (the source of rising public sector financial liabilities). The implications of sustained public sector deficits have been much discussed (see, in particular, Chouraqui and Price, 1984). Indeed, concerns about the effects of large deficits on interest rates, particularly during periods of expanding private demand, have been an important motivation for the policies of fiscal consolidation pursued in most Member countries since 1979. The question addressed here is to what extent does the level of debt – and/or the expectation of further increases in it – create problems over and above those related to high deficits (i.e. to what extent is there an incremental "stock effect" of debt in addition to the crowding-out arising from deficit flows). The two most important difficulties associated with high stocks of debt appear to be the budget inflexibility, resulting from the increased burden of debt service, and the risk of upward pressure on interest rates, leading to lower private investment, a smaller capital stock and reduced growth potential for the economy.

The higher the level of debt, the bigger will be the burden of interest payments (at given interest rates) and hence the greater the squeeze on other components of

Table 8. Structural budget balances net of debt interest payments

As a percentage of nominal potential GNP/GDP

	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985'	1986[a]
United States	1.0	0.9	1.8	0.3	1.5	1.7	1.8	2.2	1.6	2.6	2.2	1.7	1.7	1.5	1.5
Japan	-0.1	0.1	0.7	-1.8	-2.5	-2.5	**-4.0**	-3.1	-2.5	-1.8	-1.5	-0.8	0.6	1.3	2.1
Germany	-0.7	0.7	-0.8	-3.5	-2.3	-1.3	-1.5	-1.9	-1.6	-1.2	0.5	1.8	1.9	2.5	2.3
France	1.1	1.0	1.4	0.5	1.2	0.7	-0.8	0.2	1.8	0.8	0.4	0.6	1.5	2.4	2.1
United Kingdom	1.6	-1.1	-0.2	0.6	1.1	2.4	0.7	1.0	3.3	6.6	7.4	5.2	4.7	4.6	3.8
Italy	-6.6	-6.2	-5.7	6.7	-4.3	-2.8	-3.9	-4.2	-2.9	-5.3	4.3	-1.7	-2.4	-3.8	-3.0
Canada	0.2	0.4	1.3	-2.0	-1.7	-1.5	-1.8	-0.2	-0.4	0.5	0.9	-0.4	-0.4	-0.5	0.3
Total major seven countries	0.3	0.2	0.7	-0.9	-0.1	0.3	-0.2	0.2	0.4	1.1	1.3	1.2	1.4	1.5	1.6
Total major seven less U.S.	-0.4	-0.4	-0.2	-1.9	-1.5	-1.0	-2.1	-1.6	-0.7	-0.2	0.4	0.7	1.2	1.5	1.7
Australia	4.2	0.8	4.1	1.4	-0.9	3.0	1.9	0.8	1.8	2.2	3.2	0.4	-1.0	-1.0	-0.5
Austria	2.6	2.3	2.8	-0.2	-1.5	**-0.6**	0.4	-0.2	0.4	1.4	0.9	-0.1	1.3	1.2	1.4
Belgium	-1.9	-2.6	-1.8	-1.4	-2.8	-0.8	-0.7	-0.3	-2.8	-4.8	-1.9	-0.4	2.3	3.6	4.3
Denmark	1.9	2.0	1.9	0.7	-0.5	-0.1	1.2	-0.6	0.2	0.0	-2.2	0.8	3.4	5.4	8.5
Finland	4.3	4.8	3.7	2.5	5.7	5.2	3.6	0.6	-0.6	0.7	-0.9	-2.0	-0.3	-0.2	-0.3
Greece	1.2	-0.4	1.2	-0.1	0.6	0.3	0.3	1.3	1.4	-5.9	-1.2	-2.0	-2.1	4.0	0.5
Ireland	0.3	-0.4	-3.3	-6.8	-1.5	-2.4	-5.3	-6.0	-6.3	6.1	-3.4	1.2	3.4	4.6	4.6
Netherlands	1.5	1.6	0.6	0.7	0.0	1.3	1.2	0.3	0.6	0.5	0.9	1.9	1.9	2.8	0.9
Norway	4.8	6.3	5.2	4.8	3.5	3.0	2.5	4.3	5.7	5.1	5.5	3.4	3.4	0.4	-8.8
Spain	0.1	0.5	0.5	0.0	-0.2	-0.7	-1.6	-0.8	-0.9	-1.1	-3.1	-2.3	-1.3	-1.4	-0.8
Sweden	3.2	1.9	-0.9	-0.4	1.9	1.4	0.1	-3.1	-3.4	-2.4	-2.1	-0.4	1.5	1.5	2.5
Total smaller countries	2.0	1.3	1.2	0.5	0.1	1.0	0.5	-0.2	-0.1	-0.4	-0.2	-0.1	0.7	0.8	0.7
Total of above countries	0.5	0.3	0.8	-0.7	0.0	0.4	-0.1	0.2	0.4	0.9	1.1	1.0	1.3	1.4	1.5
Total OECD less U.S.	0.1	0.0	0.1	-1.4	-1.1	-0.6	-1.5	-1.3	-0.5	**-0.3**	0.3	0.6	1.1	1.3	1.5

a) Forecasts,
Source: OECD.

public expenditure for a given degree of fiscal restraint. In many countries, budget deficits and public debt have continued to increase as a result of the recession and rising interest payments, notwithstanding rigorous fiscal consolidation. For instance, an examination of structural budget balances, net of interest payments (see Table 8), shows that the combination of tax increases and discretionary expenditure cuts has been very important in recent years, particularly in Japan, Germany, Belgium, Denmark, Ireland and Sweden. These measures have often been unpopular; further budget restraint, if needed, will be increasingly hard to achieve.

Problems of debt service payments may well be compounded in several countries if the relative importance of present sources of inexpensive government finance (such as post office savings and "captive" investment funds) diminishes as a result of increased financial market deregulation and the resulting competition for funds. Moreover, the rising share of debt service payments in total government expenditure (see Table 9) tends to make fiscal policy less flexible. In particular, this makes it harder to achieve a lower level of taxation and, consequently, to reduce the distortions of the tax system affecting consumption and investment patterns as well as labour-leisure and consumption-saving decisions. Such distortions are increasingly recognised as a source of significant welfare losses[24] and a potential source of short-term structural rigidities. This is indeed one of the motivations behind the desire expressed in recent years by many governments to contain the growth of public debt over the medium term.

Concern about the effect of government debt accumulation on interest rates is particularly relevant in present circumstances because of the high level of real credit costs that has prevailed in recent years in most OECD countries. The potential "crowding-out" arising from a combination of large budget deficits and non-accommodating monetary policy is well known: interest rates rise and investment falls – or, in the case of an open economy, the exchange rate appreciates as a result of capital inflows, and the trade balance deteriorates. However, there is less agreement about the extent to which, at a world level, budget deficits are responsible for the present high interest rates, especially in view of the increasing international integration of financial markets and (in recent years) the partly offsetting movements in deficits in the United States and the rest of the OECD area[25]. Attention has thus also been paid to possible links between stocks of debt and interest rates. These could arise through one of two possible channels:

i)   The first is a "portfolio effect" – higher interest rates may be required in order to induce the private sector to hold increased shares of government debt in asset portfolios. Most empirical evidence suggests that such an

Table 9. Gross interest paid on public debt as a percentage of total government expenditure

	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985[a]	1986[a]
United States[b]	3.3	3.6	3.4	3.3	3.8	3.8	3.8	3.7	3.9	5.0	5.1	5.5	6.6	7.0	7.1
Japan	3.6	4.1	4.0	4.5	5.7	6.8	7.5	8.5	9.8	10.8	11.6	12.7	13.8	14.4	14.8
Germany	2.5	2.7	2.8	2.8	3.3	3.6	3.6	3.7	4.0	4.7	5.7	6.3	6.3	6.5	6.5
France	2.3	2.2	2.4	2.9	2.8	3.1	3.2	3.4	3.4	4.3	4.2	5.0	5.2	5.6	5.9
United Kingdom	9.4	9.5	10.0	8.9	9.7	10.5	10.4	11.0	11.0	11.3	11.3	10.4	10.7	11.2	11.3
Italy	5.5	6.2	7.3	9.3	10.6	11.6	12.7	12.8	13.6	14.0	15.4	15.8	16.7	16.0	16.1
Canada	10.8	11.0	10.1	9.9	11.0	11.1	12.4	13.4	13.9	15.5	15.9	15.6	16.7	17.9	18.7
Total major seven countries	4.1	4.4	4.3	4.5	5.1	5.4	5.7	6.0	6.4	7.3	7.7	8.1	9.0	9.3	9.5
Total major seven less U.S.	4.8	5.1	5.2	5.5	6.3	7.0	7.4	8.0	8.6	9.4	10.0	10.5	11.1	11.5	11.7
Australia	9.3	8.2	7.7	6.6	7.0	7.9	8.5	6.6	6.6	6.5	6.7	6.9	7.9	9.3	10.0
Austria	2.5	2.4	2.5	2.9	3.6	4.0	4.5	4.8	5.2	5.6	6.2	6.0	6.7	6.9	7.5
Belgium	8.3	8.3	8.7	7.9	8.1	8.7	9.3	10.2	11.8	13.7	16.0	16.5	17.9	19.5	20.9
Denmark	3.1	3.0	2.7	2.5	2.8	3.8	4.4	6.6	7.0	8.8	9.8	13.1	15.9	16.6	15.7
Finland	2.7	2.5	2.1	1.8	1.8	2.1	2.2	2.7	2.9	3.0	3.3	3.9	4.2	4.5	4.3
Greece	3.5	3.8	4.4	4.5	4.9	1.0	1.1	6.5	7.3	7.8	6.5	8.0	9.8	11.1	13.1
Ireland	8.8	9.0	8.7	9.1	10.8	11.7	12.1	12.6	12.6	14.1	16.2	16.8	17.7	19.4	18.5
Netherlands	7.6	7.6	7.9	7.2	7.0	6.9	7.3	6.1	6.7	7.7	8.7	9.5	10.3	11.1	11.5
Norway	4.4	4.6	4.7	4.6	5.2	5.8	6.4	7.5	8.6	8.1	7.9	8.0	8.3	12.0	13.9
Spain	2.5	2.8	2.2	1.9	1.8	1.9	1.9	2.1	2.5	2.3	2.6	3.8	5.8	8.8	9.0
Sweden	4.1	4.1	4.2	4.4	4.0	4.3	4.5	5.2	6.9	8.5	10.7	11.2	12.3	13.1	12.7
Total smaller countries	5.4	5.2	5.1	4.7	4.9	5.1	5.5	5.6	6.3	6.9	7.6	8.4	9.6	11.1	11.6
Total of above countries	4.3	4.5	4.4	4.5	5.1	5.4	5.7	5.9	6.3	7.2	7.7	8.1	9.0	9.6	9.8
Total OECD less U.S.	5.0	5.2	5.2	5.4	6.0	6.6	7.0	7.5	8.1	8.9	9.5	10.0	10.8	11.4	11.7

a) Forecasts.
b) Net interest paid on public debt.
Source: OECD.

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impact would not be large (Buiter, 1985, pp. 47-48), particularly since in many countries market values of equities and of real estate have risen significantly in recent years, *so* that the share of government bonds in portfolios has not increased as much as the figures for debt might suggest (Blanchard and Summers, 1984, p. 312);

ii) The second and probably stronger argument for an effect of high levels of public debt on interest rates is linked to expectations of future inflation. If government debt is high, savers will fear that the authorities will be tempted to reduce the debt burden on the public sector by inflation through increased "monetisation". As was noted in Part II, this has historically been an important explanation of reductions in the debt/GNP ratio − although inflation has typically been the unintended result of policies that were not specifically directed at reducing the debt burden. The fear of high inflation will be reflected in greater risk premia in interest rates[26]. As a result, real and nominal interest rates will tend to rise, which could affect private investment[27].

In discussing the effects of increased stocks of public debt on interest rates and, ultimately, on capital formation it is, however, important to distinguish between cyclical and longer-lasting increases in the debt/GNP ratio. To the extent that debt accumulation is perceived as cyclical (and as such susceptible to being reversed over the rest of the cycle) "crowding-out" of private investors may be a lesser problem. On the other hand, a permanent increase in government debt, associated with a higher structural budget deficit (because of higher debt service costs), can be expected to raise interest rates if the government maintains a non-accommodating monetary policy[28]. In this regard, the above projections of rising debt/GNP ratios, when the economy is on average at its trend level, clearly represent lasting increases in debt.

B. Optimal debt versus debt neutrality

The higher the level of public debt, the greater will be the distortions created by taxes levied to service the debt and the greater the risk of crowding-out private investment. By itself this could imply that the optimal debt level should ideally be zero. However, such a conclusion does not hold in practice for two main reasons. First, as the above discussion on net worth suggested, the existence of public investment projects yielding social returns greater than the costs of borrowing may justify the existence of some debt[29]. Second, the optimal debt level is in any event endogenous, depending on the prevailing economic circumstances as well as on the

transition costs of achieving it, which will vary across countries and over time[30]. This is particularly the case to the extent that the role of government includes the buffering of public and private consumption in the face of economic shocks.

Although a non-zero level of debt may perhaps be justified on these grounds, it would appear that, as the examination of historical experience indicated, there is no simple way of determining what the optimal level of debt should be. In the past, high and low debt ratios have each been associated with periods of both prosperity and recession. Movements in the debt/GNP ratio are likely to be negatively correlated with growth in economic activity. However, this primarily reflects the fact that a growing economy reduces the relative importance of public debt, rather than that a falling debt ratio increases output. Nevertheless, it would appear desirable a *priori* for the debt/GNP ratio to decline during periods of economic expansion, since this would leave governments in a better financial position to cope with sudden economic shocks. This seems particularly true when, as is currently the case in many countries, the recent growth in public debt has significantly reduced budget flexibility.

Not all economists share these concerns, and some have even argued that government debt has little or no effect. This view was restated by Barro (Barro, **1974)** using what is sometimes called the "Ricardian Equivalence Theorem". The essence of the argument is that rational consumers who cared about their heirs would not consider government debt as wealth, and would therefore act in a way that left aggregate (public and private) saving, investment and labour supply decisions unchanged. They would recognize the future tax liability (including a possible inflation tax) associated with any new government borrowing and adjust their saving in consequence, so that increased private saving would just offset greater public dissaving; interest rates (and investment) would thus be unaffected. This conclusion, that individuals could and would *completely* offset any effort by governments to redistribute consumption over time, requires very severe restrictions on both individual behaviour and the organisation of the economy, including, in particular, the requirement that individuals are not income constrained. However, Barro's proposition appears plausible within a neo-classical economic framework, to the extent that inter-generational transfers, and bequests in particular, are an important factor. Some recent discussion has indeed suggested that inheritance may be a very important factor in explaining wealth accumulation (Kotlikoff and Summers, **198**1).

There have been numerous efforts to test Barro's proposition empirically. Despite the restrictive assumptions required, Blinder and Deaton have recently suggested that these investigations "have found it surprisingly difficult to reject the [debt neutrality] hypothesis" (Blinder and Deaton, **1985,** p. **468).** In fact, the

evidence appears mixed, suggesting that, although some government debt may be offset by a recognition of future tax liabilities, such an effect is not complete[31]. Its importance may be greater in a period with a growing and widely publicised public debt[32]. It seems clear, however, that the debt neutrality proposition does not hold in its strongest presentation; the possible negative consequences from public debt, described earlier, remain valid reasons for policy makers to be concerned about projected further growth in government liabilities. In particular, the concerns about budget flexibility and tax-induced distortions discussed above would, in any event, mean that the size of the public debt has economic consequences given the fact that taxation is not lump-sum.

CONCLUSIONS

Public debt — either gross or net — has increased rapidly as a proportion of GNP in most OECD countries over the last ten years. While present debt/GNP ratios are generally within the range of historical experience, the current pattern of continued increases in these ratios during a period of economic expansion is unusual.

If the stance of fiscal policies and the levels of real interest rates projected for **1986** remained the same in the future, and assuming that output grew at its potential rate from **1986** projected levels, the debt ratios would rise rapidly in most OECD countries. Notable exceptions would be Japan and Germany, where debt ratios would decline. However, since in many countries output is now well below its estimated mid-cycle level of potential, debt projections should be made on the more reasonable basis that output will, on average, be at trend levels over the medium term. In such a case the non-interest budget deficits projected for **1986** could be expected to improve, and, consequently, debt ratios would grow less rapidly or fall more quickly. However recognition of (future) social security or pension liabilities — which are not usually taken into account in the definition of gross or net debt — would tend to increase projected government deficits relative to output as the population ages and as social security plans mature, unless policy is changed to raise taxes or to reduce benefits. Considering this factor substantially changes the outlook for debt ratios in a number of countries. In particular, debt ratios in Japan and Germany, instead of declining, would at first stabilize and then, after ten years, begin to rise rapidly.

Alternative fiscal policy options would clearly affect these debt projections based on a stylised interpretation of unchanged policies. The scenarios considered in Part III for the major seven countries lead to the following main observations:

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i) For the United States, Italy and Canada a substantial reduction in the non-interest budget deficit would be required to stabilize or to reduce their debt/GNP ratios. In the case of the United States and Canada there appears to be some prospect that these adjustments will take place.

ii) For Japan and Germany, any fiscal measures to expand demand in the short run would likely eliminate or shorten substantially the period of relatively stable debt ratios that would otherwise be expected before rising pension costs lead to a marked deterioration of the situation. For France and the United Kingdom any measures to ease the degree of fiscal restrictiveness would lead to similar results.

The high and, in most cases, still growing levels of public debt raise two main concerns. First the consequent higher debt interest payments would reduce budget flexibility: to keep deficits unchanged would require greater cuts in non-interest public spending or even higher taxation (thus reducing the scope for lowering the tax burden). Second, high stocks of debt could raise interest rates (over and above any pressures from budget deficit flows) either as a result of an increased share of government debt in private portfolios or, more importantly, because of fears of debt monetisation, which would result in an acceleration of inflation. Against these concerns, the argument is sometimes made that debt financing is equivalent to tax financing, since future tax liabilities would be fully anticipated, and would not necessarily lead to "crowding-out" effects. However, this "debt neutrality" proposition, at least in its strongest form, does not *so* far appear to have much empirical support.

While it is difficult to define an "optimal" level of the public debt/GNP ratio on purely economic grounds, a risk-averse strategy would seem to be to reduce the ratio when economic conditions are favourable in order to increase government flexibility in the face of future shocks. Although reductions in debt could be obtained by running down or selling off government non-financial assets (such as natural resources or public enterprises), this would generally not improve the government's overall net worth. Of course, the speed at which the debt should be reduced will depend on the particular economic circumstances in each country. When the debt ratio is not expected to increase for several years there may be scope for less restrictive policies in the short run. However, in considering any easing of fiscal policy, it is important to bear in mind that, given the large debt accumulation that has already occurred in most countries, the room for budgetary stimulus would be much less than it was in the 1970s. Moreover, any short-run demand benefits would need to be weighed against the medium-term consequences for debt, particularly in view of the expected rapid increase in pension costs in the future. This would imply the need to reverse such a stimulus, which, as past experience suggests, can sometimes prove quite difficult.

NOTES

1. See Chouraqui and Price **(1984)** as well as the references cited therein, Price and Muller **(1984),** and the German Federal Ministry of Finance **(1985).** The growing burden of debt interest payments was discussed in OECD **(1984)** and movements in the debt/GNP ratio were described in OECD **(1985a).**

2. Ideally these data should be at market values to reflect the changes in' the value of outstanding bonds as a result of interest rate movements. However, except for the United States, Germany and the United Kingdom, such figures are not available. The decline in inflation and nominal interest rates in recent years suggests that the "true" debt/GNP ratios will have risen by more than those which are presented in Tables 1 and 2. For Australia, Austria and Greece net debt figures are the same as the gross debt. The Australian data exclude municipal debt, while for Greece and Ireland data represent central government liabilities only. Australian data do not include the government-guaranteed debt of government enterprises, which has been rising rapidly in recent years - see Economic Planning Advisory Council **(1986).**

3. Internationally comparable gross and net debt data for the general government sector are only available for the period since 1970. In some countries data can be extended back to World War II but to get longer series it is usually necessary to refer to central government gross debt figures. The nature and source of the data used are described in the notes to Chart A.

4. It is possible that a public corporation may be worth more if sold to the private sector — particularly if better management is not offset by a loss of any monopoly power that the company may have had. If the asset sale captures all or part of this increase in value for the government, then there will be an improvement in the government's overall position, although not by as much as the change in net debt may suggest.

5. See Buiter **(19851.** The treatment of education (and to a lesser extent health) expenditures in this context is arbitrary. These can be considered as investment or as consumption goods. If they are investment goods however, their financial worth to the government is presumably captured via the higher future income and thus tax revenue that the greater human capital will generate.

6. There is, however, another contingent liability — the insurance on deposits — that could pose greater problems. In many countries such insurance is provided from a fund that is generally small relative to total deposits. Even without considering the possibility that there are implicit public guarantees of the deposits in excess of formal insurance limits, there could be major claims against the government if any of the oft-cited risks to the world financial sector were to be realized. This problem is not small even without major defaults. Experience in the

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United States (Continental Illinois) and Canada (a series of trust companies) suggests that there is a great deal of pressure to guarantee deposits, and even bonds, of financial institutions well beyond the ceilings that were in principle imposed on the insurance. If the guarantee is provided directly by the central bank rather than the government itself, this would merely insure that the increased liabilities were immediately monetized.

7. It is important to bear in mind the quality of public investment. There are those who would suggest that in the period when the public sector was expanding rapidly, public investment was undertaken, for which the cost of borrowing was greater than the social rate of return. The true value of the resulting government capital would therefore be less than the investment flows would suggest. By the same token, cutbacks in investment that reflected a more careful application of this "profitability" criterion would imply an improvement in the net worth despite a decline in the size of the government's fixed capital.

8. Capital stock projections are of course tentative because of uncertainty about the average life of government capital and hence the depreciation rate. Relatively small changes in public investment would substantially modify such projections over long time horizons.

9. Details about these calculations can be found in Annex III of Chouraqui et a/. (1986). See also OECD (19856) and Bispham (1986). It must be noted that it is the deficit net of net interest payments that is the critical variable. However, data for government interest revenues are not generally available. The figures for net interest payments have been obtained by multiplying gross debt service charges by the ratio of net to gross financial liabilities. This assumes that governments receive the same average return that they pay – which may be optimistic. The estimates used do not take account of central bank profits received by governments. The U.S., French and Norwegian data are net interest payments from official national sources.

10. The interest paid on new debt is taken as a weighted average of the short and long-term interest rates projected for 1986 or a figure 2 per cent above the nominal growth rate obtained by compounding the projected 1986 inflation rate and the assumed potential real growth rate. In several countries this overestimates the effective rate of interest paid on the gross debt because of the presence of significant sources of inexpensive finance (postal savings, local authorities balances, etc.). However these sources are either offset by the fact that they are assets of other levels of government or that, with increasing financial deregulation and competition, they will represent a progressively smaller source of debt finance.

11. The calculations are based on the projections in OECD (1986). For some countries this assumption of constant non-interest deficits may not be an exact measure of unchanged fiscal policies. For example, in the United States, the proposed 1987 Budget would lower the non-interest deficit of the Federal government further in the years after 1986, while in Japan, the announced intention of the government is to eliminate the central government borrowing requirement except for the purposes of public investment by 1990. However, the assumption is made here mainly in order to allow cross-country comparisons. The trend growth rates assumed for each country are those used in calculating the Secretariat's structural budget indicators. The rates of inflation (GNP deflator) are assumed to remain at their 1986 level. Details of the simulation method are provided in Annex III of Chouraqui et al. (1986).

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12. For the United Kingdom, a rough calculation suggests that the total value of sales of public sector corporations over the last six years is about $1\frac{1}{2}$ per cent of GDP.

13. See Annex to Odling-Smee and Riley (1985). The calculations were made before the recent fall in oil prices. If this proves permanent and production plans do not change the gap would be somewhat less.

14. This assumes, of course, that they continue to have faith in governments' willingness to fulfil their promises. Recent American and Canadian efforts to change pension indexing rules suggest that the political ability to change these promises is in fact limited.

15. Dependency ratio is used to refer to old people relative to workers. Children are excluded primarily because their costs tend to be borne by the private rather than the public sector. The statement that this ratio will "overshoot" assumes that the long-run fertility rate will be closer to (at least) zero population growth than is presently the case in most countries. Such projections have been made by the OECD on the basis of hypotheses established by Member countries.

16. Considerable effort has been made in the United States and elsewhere to measure "social security wealth" – the excess of future benefits over future contributions. However such measures include the value to individuals of the sustainable part of future benefits – i.e. that could be financed at **existing** contribution rates on a pay-as-you-go basis as well as that which would require additional funding (from taxes or borrowing) because of changing population patterns. It is this latter portion on which attention is focussed here. It is clear that health care costs would show an analagous if less marked increase as well. The consequences for the budget as a whole would then be reinforced.

17. This assumption can be considered unduly pessimistic for pension costs (relative to price indexation) given the pressures governments will face in the future. However the intent here is to quantify the problems rather than to anticipate the solutions.

18. Demographic projections are at risk the further out they go. In terms of the ratios used here, however, the results for the period to 2005 can be considered as quite reliable – except for migration.

19. With the most recent changes, the United States social security trust funds will grow significantly for the next few decades reaching nearly 27 per cent of GNP by 2020 – see Munnel (1985). However, this development is recognised in the projections shown for the net public debt since the present level of social security taxes, which are sufficient to generate such funds, are included in the fixed non-interest budget deficit.

20. The charts incorporate OECD estimates of the increases in benefits per retired person that will take place in Japan, as the pension system matures, despite the reform measures adopted in 1985. The United Kingdom projection is based on the assumption that the State-Earnings-Related Pension scheme (SERPs) remains in place and the estimates are based on figures published in the 1985 Green Paper, Volume I. The hypothesis adopted is that the basic pension is uprated in line with prices reflecting current U.K. practice. If SERPs is reformed as indicated in the December 1985 White Paper, the pension cost increases will be reduced but the savings will not be significant until after 2005 so the picture in Chart B will be little changed. The Canadian earnings-related pension scheme is also immature, but the growth in its benefits should be largely offset by reductions in the means-tested component of the non-participatory pension scheme.

21. A discussion of this question for Japan can be found in Fukao and Inouchi (1985).

22. The Congressional Budget Office (1985) has estimated that as a result of the measures in the Resolution the Federal debt/GNP ratio would fall gradually after 1987.

23. The projections reported here are based on the Autumn 1985 version of the model.

24. For a survey of issues connected with the measurement of welfare losses from taxation, see Shoven and Whalley (1984).

25. This issue is discussed in Atkinson and Chouraqui (1985). See also U.S. Treasury Department (1984).

26. Expected inflation would, of course, normally be reflected in the inflation premia in interest rates. Thus, only unexpected inflation can reduce the debt/GNP ratio, except to the extent that fiscal drag operates (an increase in taxation that is usually considered politically unacceptable). If this expectations factor has become important, inflationary policy may no longer be a "solution" to the debt problem.

27. Although, strictly speaking, expected real interest rates would not change in such circumstances, investors are likely to react negatively to the greater uncertainty about the true cost of borrowing, as well as to the short-term effects on cash flow.

28. See the discussion in Foley and Sidrauski (1971), especially Chapters 5 and 11.

29. See also Annex II of Chouraqui *et al.* (1986). This point is extended further in Drazen (1978).

30. .A model showing optimal debt moving over time along the economy's transition path is described in Foley and Sidrauski (1971). Moreover, the long-run optimal public debt will depend on the level of "structural" excess supply of or demand for savings. However, this model is primarily concerned with closed economies.

31. Brunner (1985) reaches the same conclusion after a survey of the literature. Negative views can be found in Feldstein (1976), Buiter and Tobin (1979), Boskin and Kotlikoff (1985) and Koskela and Viren (1983). However, other authors, for example Kormendi (1983), Aschauer (1985) and Seater and Mariano (1985), find support for Barro's argument.

32. Debt neutrality may be more likely if the government is expected to raise taxes fairly quickly. This is the case in Japan where the government is known to adjust social security contribution rates every five years and in a manner both predictable and widely discussed. Under such conditions the transitory movements in government deficits and debt over the cycle may well be largely discounted.

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ANNEX

CHARTS

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NOTE TO CHART A

The *debt* definitions used in this chart are the following (further details and sources for both debt and GNP data are available from the Secretariat):

UNITED STATES
    i)   Gross federal debt held by the public 1940-85
    ii)   Public debt of the Federal government 1870-1940

JAPAN
    Central government gross debt (Government bonds including short-term bills) 1880-1985 (Break in series in 1946)

GERMANY
    i)   General government gross debt 1950-85 (change of definition in 1960)
    ii)   General government gross debt, pre-war boundaries 1928-1938

FRANCE
    General government gross debt 1938-1985 (change of definition in 1976 and only one pre-war observation)

UNITED KINGDOM
    National debt 1855-1985 (corresponds broadly to central government gross debt)

ITALY
    General government gross debt 1960-1985

CANADA
    i)   Federal government gross debt 1972-1983
    ii)   Federal government direct debt (excluding annuity accounts and sinking fund debt) 1867-1971

BELGIUM
    Central government gross debt 1924-1984 (Break in series 1960 related to debt of the Congo)

DENMARK
    Gross debt of central and local government (1949-1984) (Break in series 1958)

FINLAND
    Central government gross debt (total State debt) 1926-1983 (Break in series 1938, 1960)

NETHERLANDS
    General government net debt 1900-1984 (Break in series 1939)

NORWAY
    Central government gross debt 1865-1983 (Break in series 1965)

SPAIN
    General government gross debt 1901-1984

SWEDEN
    Central government gross debt 1938-1984

SWITZERLAND
    Central government gross debt 1925-1984 (Break in series in 1950)

HISTORICAL EVOLUTION OF DEBT/GNP RATIOS

Germany

United Kingdom
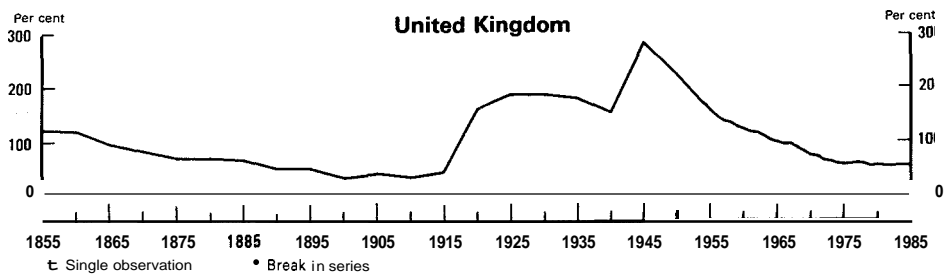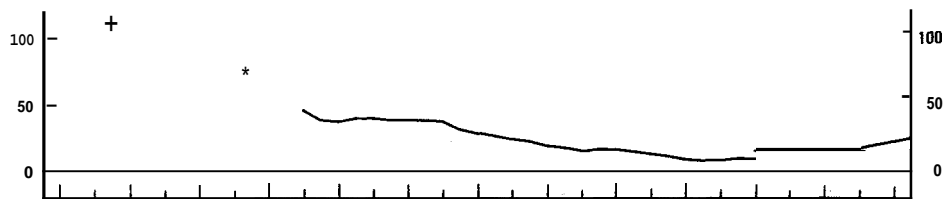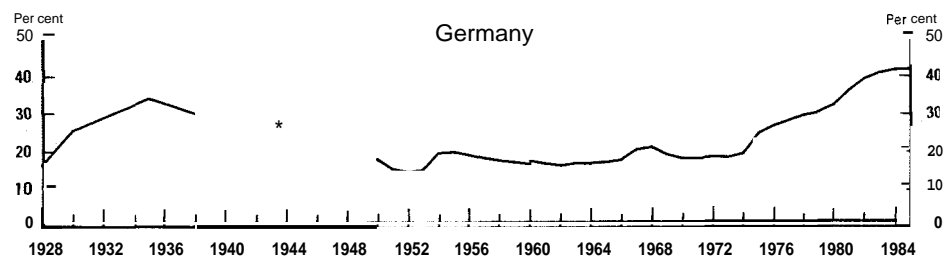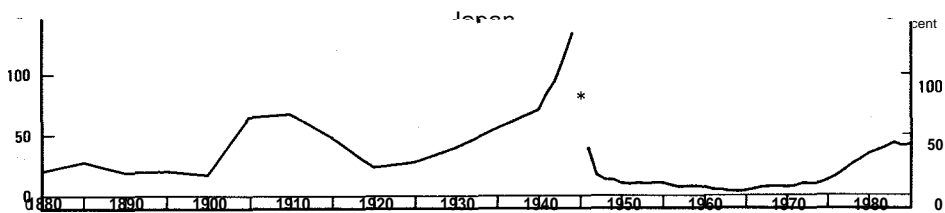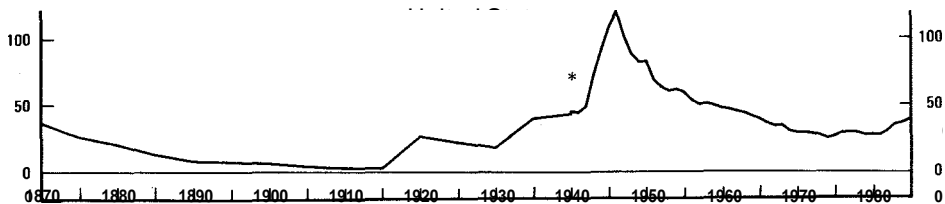
t Single observation   • Break in series

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HISTORICAL EVOLUTION OF DEBT/GNP RATIOS

Italy

Per cent | Per cent

Canada

Per cent | Per cent

Belgium

Per cent | Per cent

Denmark

Per cent | Per cent

Finland

Per cent | Per cent

* Break in series.

HISTORICAL EVOLUTION OF DEBT/GNP RATIOS

Per cent

Netherlands

Per cent

Per cent

Norway

Per cent

Per cent

Spain

Per cent

Per cent

Sweden

Per cent

Per cent

Switzerland

Per cent

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PROJECTED EVOLUTION OF NET DEBT/GNP RATIOS

France

Per cent

United Kingdom

Per cent

Italy

Per cent

Canada

Per cent

PROJECTED EVOLUTION OF NET DEBT/GNP RATIOS

Per cent **Australia** Per cent

Per cent **Belgium** Per cent

Per cent **Denmark** Per cent

Per cent **Finland** Per cent

PROJECTED EVOLUTION OF NET DEBT/GNP RATIOS

Netherlands

Sweden

Austria

Greece

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PROJECTED EVOLUTION OF NET DEBT/GNP RATIOS

Ireland

Per cent

Norway

Per cent

Spain

Per cent

NOTE TO CHART C

The two bottom lines in the Chart illustrate the effects on the public debt/GNP profile of alternative fiscal shocks, the nature of which varies from country to country:

i) United States:

The first shock is a permanent reduction of 1 per cent of GNP in the non-interest budget deficit in 1987 followed by an additional permanent reduction of 1 per cent of GNP in 1988; the second shock is the same as the first but with the reductions occurring in 1989 and 1990.

ii) Japan:

The first shock is a temporary increase in the non-interest budget deficit of one per cent of GNP for the years 1987 and 1988; the second shock is a permanent increase in the non-interest deficit of one per cent of GNP from 1987.

iii) Germany:

As for Japan.

iv) France:

The first shock is a permanent ½ per cent of GNP reduction in the non-interest budget deficit from 1987; the second shock is a permanent ½ per cent of GNP increase in the non-interest deficit from 1987.

v) United Kingdom:

As for France.

vi) Italy:

As for the United States.

vii) Canada:

As for the United States.

CHART C

THE SENSITIVITY OF THE DEBT PROJECTIONS
TO CHANGES IN INTEREST RATES AND IN FISCAL POLICY

Debt projections assuming :

———— 1) A ratio of non-interest budget balance to GNP moving towards its value at mid cycle output level by 1989, with projected changes in pension payments.

—— —— 2) As in 1) but with interest rates falling to nominal growth rates by 1990.

•••••••••• 3) As in 1) but with first fiscal shock *(see note)*.

— ——— 4) As in 1) but with second fiscal shock *(see note)*.
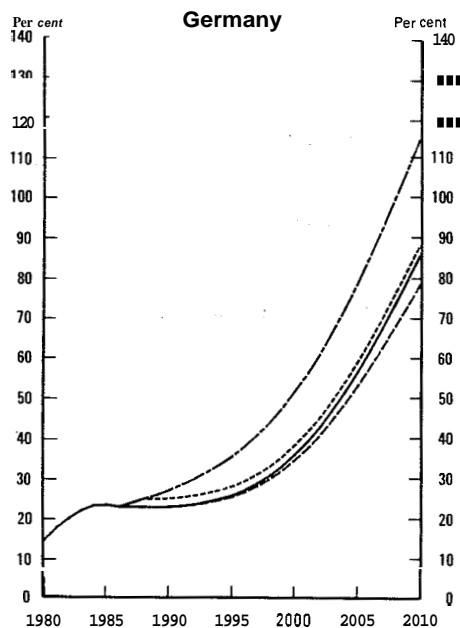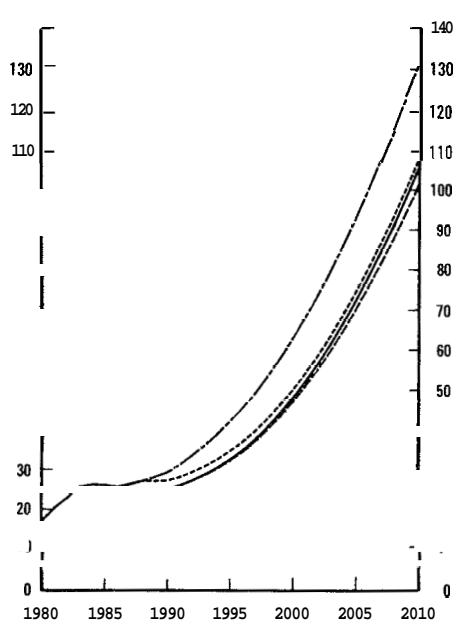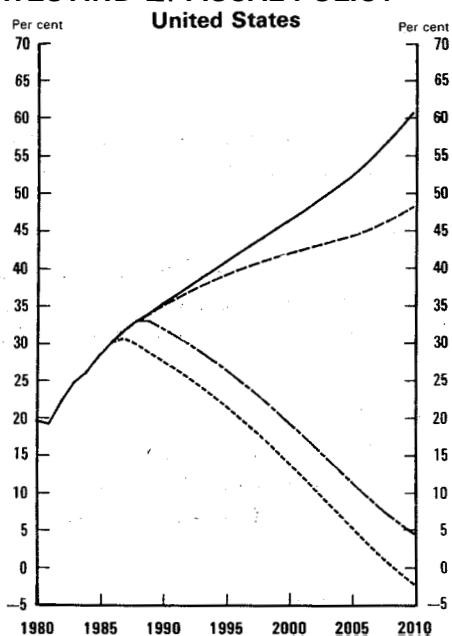
United States

Germany

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CHART C (continued)

THE SENSITIVITY OF THE DEBT PROJECTIONS
TO CHANGES IN INTEREST RATES AND IN FISCAL POLICY

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