Chapter VI

BUDGET DEFICITS AND CROWDING-OUT

An important feature of developments in the public finances, particularly in the period since the first oil shock, has been the tendency in most countries for governments to resort increasingly to borrowing to finance continued expenditure growth. As indicated in Chapter II, with few exceptions general government financial balances turned into deficit in the mid-1970s and have persisted in negative balance since then. With money growth generally being held at moderate rates, deficits have largely been financed by issuing bonds to the non-bank private sector. The direct implications of this trend for the ratio of public debt to GDP, interest rates and government interest payments on outstanding debt have already been detailed in Chapter II. In addition, however, there are a number of economic consequences of deficit-financing of government expenditures which have to be considered in any overall assessment of the longer-run impact of government activity.

The present chapter does not examine the whole range of possible consequences arising from public sector net borrowing positions but focuses on crowding-out effects which have received particular attention in the economic literature and the political debate[1]. While the possibilities for crowding-out have long been acknowledged in conventional macroeconomic analysis, concerns over the resulting impacts on the economy have grown. This reflects not only the persistent distortions of governments' financial positions, but also more sophisticated analysis of the channels through which budget deficits may be translated into a deterioration in economic performance. The following discussion briefly reviews these various channels through which crowding-out effects operate and then provides some evidence from macroeconomic models pertaining to the crowding-out debate[2].

In general terms, the phenomenon of crowding-out refers to the displacement of private by public economic activity, the analysis normally focusing on the effects of increments to government expenditures which are bond-financed through higher public borrowing. Although the degree of crowding-out will vary according to the form which the increments to public spending take, such compositional considerations are generally of secondary importance for the crowding-out issue itself. This

is not to deny that recent concerns over the effects of budget deficits have been particularly acute where they have been associated with increasing levels of public consumption and transfer payments.

In examining the crowding-out consequences of public sector deficits and accumulation of public debt it is useful to distinguish between short-run and long-run effects as well as between direct and indirect effects (See Buiter, 1977). Analysis of long-run crowding-out permits those variables – notably asset stocks and the state of expectations – which are normally assumed exogenous in short-run analysis, to be endogenised. The effects of government policy changes can then be assessed once these variables have adjusted to their steady-state values. Central to this type of crowding-out analysis is the degree to which government bonds, issued to finance higher budget deficits, are regarded by private sector portfolio holders as additions to their net wealth (See Barro, 1974). Direct crowding-out occurs when expansionary government actions are *pari passu* offset, partially or wholly, by reductions in private sector spending. The most obvious case in point is where additional public expenditure at full employment leads, of necessity, to a full offset as resources are diverted from private sector activities. Of more interest for policy purposes however, is the possibility of direct crowding-out even when resources are less than fully employed. Various forms of "ultrarationality" on the part of individuals may lead to direct crowding-out: For example, if individuals regard government consumption as a substitute for private consumption, or if social security contributions are seen as substitutes for private saving for old age, reduced public saving (or increased dissaving) will be partly (or wholly) offset by increased savings of the private sector.

While each of these channels may play a role in the overall degree of crowding-out, most attention has focused on indirect or financial crowding-out. Financial crowding-out occurs in response to induced changes in interest rates arising as a result of the increased transactions demand for money required to support a higher level of aggregate economic activity. As interest rates rise, private investment demand and other interest-sensitive expenditure components are crowded-out by the initiating increase in government borrowing. Given unchanged monetary targets, the effects on aggregate demand of increased public spending financed by borrowing will depend, among other things, on the extent to which money holders are induced by higher interest rates to exchange cash for government bonds while maintaining their spending. The resulting increase in the velocity of circulation will permit a given money stock to finance a higher level of transactions and activity can then rise, even though the increase in interest rates may cause some reduction in private expenditure components. In this case, the net increase in output will be accompanied by a shift towards public expenditure as private borrowers are crowded-out of financial markets. If money and government bonds have a low degree of substitutability, money holders can only be induced to economise on their money balances by substantial increases in interest rates. This would in turn entail

substantial crowding-out effects if private sector demand is interest elastic. It should be noted however that in the case of partial crowding-out there remains a net expansionary effect of additional government spending. This may in turn lead to crowding-in effects via the accelerator which might outweigh interest-induced crowding-out effects.

A possible way of circumventing these effects might be through external financing of the deficit, particularly in the case of smaller open economies. If foreign capital is highly interest sensitive, it may require only a slight increase in domestic interest rates to fund the budget deficit so that crowding-out of domestic expenditure in the case of non-accommodating monetary policy might also be minimised. However, the resulting capital inflow would cause a currency appreciation which would ultimately produce detrimental effects in the export and importing-competing sectors due to the loss of international competitiveness, a phenomenon referred to as exchange-rate crowding-out (See Price and Chouraqui, 1983, p. 29). In this context however, it should be noted that beneficial terms-of-trade effects and temporary reductions in inflation may largely offset the effects of an exchange rate appreciation operating directly via the trade sector.

The portfolio behaviour of savers also has an essential bearing on the extent of crowding-out. If savers can be persuaded to hold additional government bonds only by reducing their holdings of alternative capital assets (including equities), crowding-out will result as investment is displaced. However, if households do not view bonds as perfect substitutes for company securities, they may retain at least part of their equity portfolio even if the return is below that on government bonds. The cost of capital to companies will then rise by less than the interest rate on government debt and crowding-out will be tempered as a result. Added to this is the possibility that any increase in activity may raise the demand for financial assets as private savings rise. The increased supply of credit will reduce upward pressure on interest rates; indeed, it is theoretically possible that this effect could dominate the conventional substitution effect discussed above, so that the rate of interest on capital falls. In this case, there might actually be some crowding-in of private investment and other interest sensitive expenditures[3].

A further aspect of the consequences of budget deficits relates to their inflationary impacts. Although the link between budget deficits and inflation will be strongest when monetary financing occurs, bond-financed deficits may also affect prices. The more direct effects of any fiscal stimulus on inflation will be determined by demand and cost conditions in the economy and will depend upon the precise composition of budgetary changes. In addition, an important indirect link may operate if budget deficits – particularly where they are perceived to be persistent – are reflected in the formation of inflation expectations. This latter possibility may be particularly acute when sustained deficits give rise to fears over future monetisation of public debt. Finally, the inflation generated by any fiscal stimulus will cause real money balances to decline and impose real capital losses on existing holders of

government bonds. The effects of this "inflation tax" on wealth holdings will induce a rise in private saving as wealth holders attempt to restore wealth-income ratios, thereby reducing the initial impact of the fiscal stimulus.

The above discussion of alternative mechanisms through which crowding-out effects operate primarily has a short-run focus, reflecting the fact that much of the debate has been conducted in terms of the effectiveness of fiscal policy for demand management purposes. However, it is also important to consider the effects of persistent budget deficits and their impact on market expectations in a medium-term context. Persistent deficits may raise the stock of government debt relative to other assets and thus cause increasing "portfolio problems". Moreover, the prospective increase in public indebtedness may cause current interest rates to rise because bond purchasers need to insure against future falls in bond prices (See Chouraqui and Price 1984, pp. 24-26). The impact of sustained budget deficits on public debt interest payments also needs to be taken into account. As noted in a recent study: "since government borrowing is being widely used to finance public *consumption,* the growth of public sector calls for credit is seen in many countries ... as not only threatening entrepreneurial confidence, capital investment and longer-run growth, but as leading to potentially cumulative problems of debt servicing. Where economic growth remains below the real rate of interest, borrowing to finance interest payments on public sector debt would tend to add to pressure on interest rates. The alternative would be tax increases. In either case, the fiscal impact may then represent not a lasting increase in demand but a substitution of current for future consumption, which would be paid for in lower spending at a later date" (Price and Chouraqui, 1983, p. 32; emphasis in the original).

In addition to the more conventional concerns over the crowding-out effects of budget deficits, there are those effects which arise from the feedback effects of persistent budget deficits on the structure of public spending. An important consideration in this context is the repercussion on the composition of future government expenditure, notably on public debt interest payments. Interest payments will increase not only in direct proportion to the ratio of public debt to GDP, but more so if those factors leading to increased public debt also put upward pressure on nominal (and real) interest rates. Furthermore, if interest payments constitute a significant proportion of the budget deficit, the effective demand impact of the deficit will be lower due to the low marginal propensity to consume out of interest income. Aside from this, serious problems of sustainability in a medium-term context arise if the real rate of interest exceeds the rate of growth of real GDP, as already emphasised[4]. At the current juncture, many goverments are faced with large and increasing interest payment burdens as a result of past deficits, and these are severely limiting the ability to control the growth of public expenditure, to adjust the overall composition of expenditure, and to use fiscal policy for demand management purposes.

In assessing the potential crowding-out effects of budget deficts, some insight may be gained by abstracting from the impact of cyclical factors and inflation. The structural or cyclically-adjusted deficit attempts to eliminate the impact of automatic stabilisers which cause the actual deficit to rise when output is below its trend. Although it is actual budget deficits which, in the end, have to be financed and which add to the stock of outstanding debt, governments may find it easier to borrow to finance "built-in stabilisers" since they should, by definition, disappear as output returns to its trend growth path. In contrast, the structural budget deficit will persist even when the economy is operated at its full capacity level so that it provides a measure of the extent to which government and private savings may clash at the cyclical peak, causing financial crowding-out. Although the distinction between actual and structural budget deficits may be important for the analysis of crowding-out, the practical and conceptual difficulties of measuring the structural budget deficit are considerable. In particular, it requires estimation of the trend level of output which entails difficult judgements about sustainable, non-inflationary recovery potential (See OECD, *Economic Outlook* 34, December 1983, pp. 38-43; Muller and Price, 1984). Finally, to the extent that actual budget deficits (even if predominantly cyclical in nature) persist for some considerable time, the ratio of public debt to GDP will rise and along with it the burden of government interest payments in relation to GDP. The evolution of this process will thus see some transformation of cyclical into structural budget deficits. This shift from cyclical to structural deficit in the event of prolonged recession will be reinforced by a natural tendency of potential output to adjust to actual output levels.

Adjustment of the budget deficit for inflation reflects attempts to net out two counteracting influences. First, inflation will raise the level of nominal interest rates and thus entail higher government debt service payments. At the same time, inflation reduces the value of outstanding government debt relative to GDP. These two influences would be fully offsetting if all government debt was issued at a variable rate, since then higher interest payments would be exactly matched by the fall in the real value of outstanding liabilities. In this case the ratio of government debt to GDP would remain unchanged, even though the deficit to GDP ratio would rise. However, since this increase in the deficit to GDP ratio does not raise the real value of government debt relative to private income and wealth it may cause fewer financing problems and hence less crowding-out of private borrowers. (See OECD, *Economic Outlook* 34, p. 41). It may thus be desirable to adjust the deficit for the effects of inflation in order to better assess possible crowding-out effects operating through financial markets, although such adjustment also raises serious practical difficulties[5]. Table 60 illustrates the potential importance of cyclical and inflation-related adjustments to government budget balances at a broad level of aggregation. However, considerable caution is required in interpreting the relevance of these adjusted data to the crowding-out debate. First, because of the considerable measurement difficulties already alluded to and second, because the arguments that

Table 60. General government structural budget trends
Percentage of GDP/GNP

Year	Weighted average for the major OECD countries[a]			Weighted average for the smaller OECD countries[a]		
	Actual	Structural *b*	Inflation adjustment	Actual	Structural *b*	Inflation adjustment
1970	−0.1	0.4	.	1.4	1.6	.
1971	−0.9	−0.2	1.0	1.2	1.6	1.0
1972	−0.6	−0.4	0.7	1.2	1.3	1.0
1973	0.0	−0.6	1.1	1.3	0.7	1.2
1974	−0.8	−0.2	1.8	0.9	0.5	1.6
1975	−4.3	−2.0	2.0	−0.9	−0.1	1.6
1976	−2.9	−1.3	1.8	−1.1	−0.7	1.3
1977	−2.2	−1.0	1.9	−1.0	0.1	0.9
1978	−1.7	−1.6	1.5	−2.1	−0.5	0.6
1979	−2.4	−1.3	2.0	−2.5	−1.3	1.0
1980	−2.5	−1.2	2.6	−2.6	−1.4	1.3
1981	−4.0	−0.6	2.0	−3.7	−1.7	1.6
1982	−4.1	−0.9	1.6	−4.9	−2.2	2.0

a) Weighted averages are computed with 1982 GDP/GNP weights and exchange rates. Iceland, Luxembourg, Portugal, Switzerland and Turkey are excluded from the smaller OECD economies.
b) Structural budget balances are expressed as a percentage of potential GDP/GNP.
. Not available.
Source: Muller and Price (1984), Table A1.19 and A1.21.

the different elements which constitute the actual budget balance may have different crowding-out impacts have themselves not yet been subject to rigorous investigation.

Much of the empirical evidence on the degree of crowding-out adopts a macroeconomic econometric model simulation framework to evaluate the impact of a given fiscal stimulus. In one sense this is an appropriate framework as crowding-out effects are the net outcomes of many complex interacting economic processes which naturally lend themselves to overall assessment through the use of economy-wide models. Against this, the results are dependent on the specification of the structural equations of the model, which may not adequately incorporate all of the channels through which crowding-out effects operate. For this reason, investigation of structural economic relationships will also shed light on the crowding-out issue, notably in relation to those aspects of direct crowding-out which result from "ultrarationality" on the part of individuals, and in the context of expectations crowding-out[6]. In contrast, econometric models are best suited to assess the importance of financial crowding-out and output-induced crowding-in effects. However, the extent to which financial linkages and expectations influences are incorporated into the model will have an important bearing on the results which emerge, as will the interest elasticities embodied in the financial market and expenditure equations[7]. Most large-scale econometric models currently available are not sufficiently disaggregated to capture all of the crowding-out channels discussed above, a point which severely restricts their usefulness in assessing the overall impact of crowding-out.

In general, the degree of financial crowding-out will be determined at least in part by the extent to which government borrowing in financial markets is reflected in higher levels of interest rates[8]. While it is difficult to point to clear evidence of a contemporaneous link between interest rates and budget deficit levels, evidence for the major OECD countries is suggestive of a connection between the level of long-term interest rates and the projected ratio of the general government financial deficit to net private saving (See Price and Chouraqui, 1983, Chart 2, p. 33). Such relationships imply that longer-run crowding-out could constitute an immediate problem if current interest rates adjust in response to foreseen portfolio imbalances arising from future budget deficits. As a recent study notes: "If international differences in inflation and balance of payments are also taken into account as determinants of interest rates, countries with relatively high average long-term interest rates over the past decade also appear to be those with higher average debt/GDP ratios" (See Chouraqui and Price, 1984, p. 24). Such links, however, are not clear-cut and easily observable, particularly if adjustments are not made to reflect the cyclical position of the economy. There does nevertheless appear on balance to be sufficient evidence suggestive of a positive relationship between the level of interest rates and actual (and projected) borrowing requirements of governments, particularly in the more recent past[9]. There still remains the issue of the extent to which these interest rate responses are themselves reflected in some crowding-out of private sector activity as a result of bond-financed increases in government expenditure.

Despite the shortcomings involved in the use of large-scale macroeconometric models to assess the degree of crowding-out, estimated fiscal impacts are capable of shedding some light on this issue. Table 61 presents for each of the major OECD economies, the simulated effects of an increase for each country acting in isolation in real government expenditure equal to one per cent of real GDP, derived from the OECD INTERLINK model[10]. The fiscal impacts were estimated under four alternative policy regimes, depending first on whether monetary policy was accommodating or non-accommodating, and second on whether the exchange rate was held fixed or allowed to float. Accommodating monetary policy is defined in terms of adjustment of the money supply in order that the demand for money can be met at existing interest rates, while non-accommodating monetary policy is defined in terms of adherence to pre-determined monetary growth targets[11]. When the exchange rate is allowed to float, its net movement in the case of non-accommodating monetary policy depends upon the size of the current account response to the fiscal stimulus, the induced interest rate effects, the degree of capital mobility and the impact of various system responses on exchange rate expectations. Focusing on the output effects after four years, the results in Table 61 show fiscal multipliers in excess of unity in all countries except the United Kingdom when the exchange rate is fixed and monetary policy is accommodating. When the exchange rate is allowed to float, the fiscal multipliers increase in all countries, notably in France, due to the effects of

Table 61. **Simulated effects of a real government expenditure shock of one *per cent* of GDP[a]**
Differences from baseline

		Short-term interest rate[b]	Long-term interest rate[b]	Effective exchange rate[b]	Money supply [c,d]	Real GDP [c]	GDP deflator [c]	Current balance (US$ billion)
Canada								
Accommodating monetary policy; Fixed exchange rate	1981	–	–	–	0.39	0.88	0.18	−1.30
	1982	–	–	–	0.65	1.09	0.22	−1.66
	1983	–	–	–	0.80	1.13	0.27	−1.86
	1984	–	–	–	1.08	1.01	0.52	−2.11
Accommodating monetary policy; Floating exchange rate	1981	–	–	−0.19	0.41	0.89	0.19	−1.30
	1982	–	–	−0.42	0.75	1.14	0.30	−1.58
	1983	–	–	−0.61	1.00	1.25	0.43	−1.73
	1984	–	–	−1.03	1.40	1.20	0.78	−1.93
Non-accommodating monetary policy; Fixed exchange rate	1981	0.40	0.13	–	–	0.86	0.24	−1.30
	1982	0.53	0.23	–	–	1.00	0.49	−1.65
	1983	0.66	0.33	–	–	0.91	0.80	−1.85
	1984	0.76	0.43	–	–	0.69	1.12	−2.14
Non-accommodating monetary policy; Floating exchange rate	1981	0.39	0.13	0.03	–	0.86	0.23	−1.30
	1982	0.54	0.23	−0.09	–	1.00	0.49	−1.65
	1983	0.71	0.35	−0.32	–	0.94	0.85	−1.81
	1984	0.89	0.47	−0.66	–	0.78	1.27	−2.01
France								
Accommodating monetary policy; Fixed exchange rate	1981	–	–	–	0.75	0.79	0.39	−2.26
	1982	–	–	–	1.61	1.00	0.91	−2.68
	1983	–	–	–	2.63	1.14	1.63	−2.80
	1984	–	–	–	3.85	1.14	2.67	−2.98
Accommodating monetary policy; Floating exchange rate	1981	–	–	−0.36	0.74	0.80	0.38	−2.48
	1982	–	–	−1.14	1.69	1.06	0.95	−2.96
	1983	–	–	−2.33	3.01	1.33	1.89	−3.06
	1984	–	–	−4.05	4.84	1.57	3.35	−3.35
Non-accommodating monetary policy; Fixed exchange rate	1981	1.42	0.44	–	–	0.76	0.43	−2.18
	1982	2.04	0.80	–	–	0.84	0.98	−2.35
	1983	2.60	1.19	–	–	0.80	1.64	−2.13
	1984	2.96	1.55	–	–	0.61	2.29	−1.96
Non-accommodating monetary policy; Floating exchange rate	1981	1.39	0.43	0.48	–	0.74	0.43	−1.93
	1982	1.84	0.73	0.64	–	0.79	0.88	−2.37
	1983	2.30	1.07	0.58	–	0.74	1.43	−2.34
	1984	2.66	1.40	0.34	–	0.58	2.01	−2.24

	1984	2.66	1.40	0.34	–	0.58	2.01	−2.24
Germany								
Accommodating monetary policy; Fixed exchange rate	1981	–	–	–	0.93	0.94	0.33	−2.86
	1982	–	–	–	2.04	1.40	0.65	−3.59
	1983	–	–	–	2.76	1.55	0.79	−3.87
	1984	–	–	–	2.92	1.38	0.73	−3.80
Accommodating monetary policy; Floating exchange rate	1981	–	–	−0.29	0.90	0.93	0.30	−3.17
	1982	–	–	−0.77	2.04	1.41	0.65	−4.13
	1983	–	–	−1.20	2.95	1.66	0.91	−4.32
	1984	–	–	−1.53	3.44	1.64	1.02	−4.07
Non-accommodating monetary policy; Fixed exchange rate	1981	1.74	0.53	–	–	0.79	0.22	−2.58
	1982	2.17	0.86	–	–	1.00	0.40	−2.90
	1983	2.10	1.07	–	–	0.94	0.53	−2.54
	1984	1.58	1.09	–	–	0.72	0.52	−2.07
Non-accommodating monetary policy; Floating exchange rate	1981	1.84	0.56	0.90	–	0.79	0.28	−1.66
	1982	1.80	0.76	1.45	–	0.96	0.30	−2.22
	1983	1.26	0.78	1.47	–	0.77	0.19	−2.74
	1984	0.58	0.65	1.14	–	0.47	0.03	−2.84
Italy								
Accommodating monetary policy; Fixed exchange rate	1981	–	–	–	0.96	1.16	0.24	−2.48
	1982	–	–	–	1.56	1.28	0.37	−2.58
	1983	–	–	–	1.86	1.23	0.52	−2.39
	1984	–	–	–	1.97	1.13	0.59	−2.35
Accommodating monetary policy; Floating exchange rate	1981	–	–	−0.32	0.99	1.18	0.27	−2.53
	1982	–	–	−0.76	1.74	1.36	0.48	−2.59
	1983	–	–	−1.22	2.20	1.38	0.74	−2.39
	1984	–	–	−1.56	2.51	1.32	0.91	−2.27
Non-accommodating monetary policy; Fixed exchange rate	1981	0.47	0.20	–	–	1.07	0.12	−2.37
	1982	0.51	0.33	–	–	1.21	0.12	−2.42
	1983	0.52	0.41	–	–	1.17	0.19	−2.19
	1984	0.51	0.45	–	–	1.08	0.26	−2.13
Non-accommodating monetary policy; Floating exchange rate	1981	0.46	0.20	0.11	–	1.06	0.11	−2.36
	1982	0.49	0.32	0.11	–	1.19	0.10	−2.44
	1983	0.52	0.40	−0.06	–	1.18	0.18	−2.24
	1984	0.54	0.46	−0.28	–	1.12	0.27	−2.17

Table 61 (continued). **Simulated effects of a real government expenditure shock of one per cent of GDP**[a]

Differences from baseline

		Short-term interest rate[b]	Long-term interest rate[b]	Effective exchange rate[b]	Money supply [c,d]	Real GDP [c]	GDP deflator [c]	Current balance (US$ billion)
Japan								
Accommodating monetary policy; Fixed exchange rate	1981	–	–	–	0.52	1.14	−0.23	−3.52
	1982	–	–	–	1.73	1.72	0.06	−4.63
	1983	–	–	–	3.65	2.16	1.22	−5.18
	1984	–	–	–	5.50	2.33	2.57	−6.13
Accommodating monetary policy; Floating exchange rate	1981	–	–	0.10	0.53	1.14	−0.22	−3.46
	1982	–	–	−0.17	1.71	1.71	0.05	−4.81
	1983	–	–	−1.48	3.61	2.26	1.13	−5.82
	1984	–	–	−3.20	5.65	2.78	2.38	−6.73
Non-accommodating monetary policy; Fixed exchange rate	1981	2.23	0.73	–	–	1.05	0.34	−3.22
	1982	3.94	1.59	–	–	1.36	1.20	−4.06
	1983	5.08	2.43	–	–	1.36	2.30	−4.25
	1984	4.81	2.85	–	–	1.05	2.98	−4.38
Non-accommodating monetary policy; Floating exchange rate	1981	2.24	0.74	0.94	–	0.99	0.39	−2.72
	1982	3.50	1.45	1.63	–	1.15	1.17	−4.05
	1983	4.01	2.02	1.66	–	1.02	1.97	−4.84
	1984	3.51	2.24	1.07	–	0.71	2.36	−5.38
United Kingdom								
Accommodating monetary policy; Fixed exchange rate	1981	–	–	–	0.31	0.89	0.09	−2.22
	1982	–	–	–	0.74	0.87	0.34	−2.14
	1983	–	–	–	1.21	0.81	0.69	−1.97
	1984	–	–	–	1.66	0.71	1.14	−1.89
Accommodating monetary policy; Floating exchange rate	1981	–	–	−0.12	0.32	0.89	0.11	−2.28
	1982	–	–	−0.46	0.80	0.88	0.46	−2.26
	1983	–	–	−1.07	1.41	0.86	0.88	−2.12
	1984	–	–	−1.92	2.12	0.84	1.56	−2.03
Non-accommodating monetary policy; Fixed exchange rate	1981	0.20	0.08	–	–	0.89	0.15	−2.21
	1982	0.36	0.16	–	–	0.83	0.57	−2.02
	1983	0.43	0.23	–	–	0.68	1.11	−1.72
	1984	0.53	0.30	–	–	0.51	1.73	−1.53
Non-accommodating monetary policy; Floating exchange rate	1981	0.20	0.08	−0.03	–	0.89	0.15	−2.22
	1982	0.38	0.17	−0.32	–	0.83	0.60	−2.13
	1983	0.50	0.26	−0.94	–	0.72	1.25	−1.88
	1984	0.68	0.37	−1.78	–	0.62	2.11	−1.76

	1983	0.50	0.26	−0.94	–	0.72	1.25	−2.13
	1984	0.68	0.37	−1.79	–	0.62	2.11	−1.88
United States								
Accommodating monetary policy;	1981	–	–	–	0.98	1.42	−0.11	−11.13
Fixed exchange rate	1982	–	–	–	1.57	1.85	−0.12	−12.89
	1983	–	–	–	1.67	1.81	0.14	−13.33
	1984	–	–	–	1.79	1.55	0.53	−14.50
Accommodating monetary policy;	1981	–	–	0.04	0.98	1.42	−0.11	−11.06
Floating exchange rate	1982	–	–	−0.01	1.57	1.85	−0.12	−12.98
	1983	–	–	−0.28	1.67	1.82	0.12	−13.75
	1984	–	–	−0.65	1.80	1.60	0.49	−15.01
Non-accommodating monetary policy;	1981	1.41	0.42	–	–	1.27	0.18	−10.23
Fixed exchange rate	1982	1.81	0.97	–	–	1.32	0.58	−10.42
	1983	1.83	1.34	–	–	0.95	0.92	−9.82
	1984	1.77	1.53	–	–	0.58	1.14	−10.23
Non-accommodating monetary policy;	1981	1.39	0.41	0.80	–	1.25	0.21	−9.12
Floating exchange rate	1982	1.76	0.95	0.94	–	1.25	0.58	−10.12
	1983	1.71	1.29	0.81	–	0.86	0.87	−10.71
	1984	1.62	1.44	0.57	–	0.51	1.06	−11.55

a) The table shows deviations from the model baseline due to a counterfactual sustained real government spending increase of one per cent of GDP.
b) Percentage points.
c) Per cent.
d) For Canada, Italy and the United Kingdom a narrow money supply for which a stable demand function was identified is used and shown in the table. For the remaining countries a broad definition of the money supply is used.

currency depreciation on international competitiveness. When monetary policy is assumed not to accommodate the fiscal stimulus, the increased demand for money puts upward pressure on short-term interest rates, which in turn cause long-term interest rates to rise leading to crowding-out of investment and other interest-sensitive expenditure components. For most countries, the degree of interest-rate crowding-out is of a similar magnitude whether the exchange rate is fixed or floating. If the degree of crowding-out is measured by the reduction in the fiscal multiplier in the non-accommodating case relative to the accommodating case, the results indicate very little crowding-out in Italy, about 30 per cent crowding-out in Canada and the United Kingdom, between 50 and 60 per cent crowding-out in France and Germany and up to 70 per cent crowding-out in Japan and the United States. However, fiscal multipliers in the non-accommodating cases are positive in all cases, falling generally in the range 0.5 to 0.7, the main exception being Italy where the multiplier remains slightly above unity.

Additional evidence on crowding-out has been provided by a recent review of the simulation properties of a number of national econometric models (See Chan-Lee and Kato, 1984). The simulated effects in nine countries of a 1 per cent increase in government expenditure under alternative monetary policy assumptions were investigated. The models incorporate crowding-out effects which operate through transactions demand and portfolio effects plus those which, in an open economy under fixed exchange rates, result from the effects of interest rates on capital flows and hence the money supply. The results based on the models investigated differ both as regards the size of government expenditure multipliers, the dynamic profile of output responses and the degree of crowding-out. With regard to the crowding-out issue itself, the study concludes: "The majority of national models show comparatively weak crowding-out in the short and medium run in response to fiscal policy. By the seventh year, a number of models simulate relatively strong but not full crowding-out effects." (Chan-Lee and Kato, *op. cit.*, pp. 142-143).

The national models were also employed to investigate the extent of exchange rate crowding-out when government expenditure is changed. Under a system of floating exchange rates an increase (decrease) in government expenditure will cause interest rates to rise (fall), thus leading to capital inflows (outflows), an exchange rate appreciation (depreciation) and thus a decrease (increase) in net exports. Complete exchange rate crowding-out occurs when the net export adjustment fully offsets the output effects of the initiating fiscal policy change (although this ignores for example any beneficial effects due to temporary reductions in inflation which may offset the direct effects of exchange rate appreciation via the trade sector). The degree of exchange rate crowding-out can be assessed by simulating a government expenditure change (with non-accommodating monetary policy) under alternative assumptions of fixed and floating exchange rates. When these simulations were performed there was little evidence of exchange rate crowding-out in the short and medium-run. Indeed, as is the case of Table 2, almost all of the national models

investigated showed slightly larger output effects in the medium-run under floating exchange rates (See Chan-Lee and Kato, *op. cit.*, Table 7, p. 125).

The general picture which emerges from the econometric or model-based evidence reviewed above is somewhat conflicting, yet indicative of clear crowding-out effects in most cases, even though they are quite weak in some instances, particularly in the shorter-run. It is worth recalling, however, that the results are dependent upon the relationships embodied in the econometric models themselves, which in most cases do not incorporate all channels through which crowding-out effects may operate; "... most models remain broadly income/expenditure systems of a fundamentally Keynesian inspiration ... few embody fully-specified stock or wealth effects in expenditure functions, and none seems to embody the latest theoretical thinking on expectations or supply-side effects" (Chan-Lee and Kato, *op. cit.*, p. 146). Since these channels and effects are central to the crowding-out issue their omission from the models suggests that the results should be treated with considerable caution. In particular, the earlier discussion of crowding-out channels highlights that government budget deficits can influence private spending decisions in a number of subtle, difficult to measure ways. Their effects depend not only on the interest elasticities of money demand, investment and saving, but also on such factors as expectations about future tax and spending policy, the nature of the deficit-financed spending, and its substitutability with private spending.

Finally, there are the important effects which sustained budget deficits have on public debt/GDP ratios and associated interest payments by government. This latter effect would seem at the current time to be a consequence of past budgetary actions which is a major concern for governments in a number of countries. To the extent that this legacy from the past seriously impedes the flexibility of governments to pursue short and longer-run budgetary objectives, the resulting economic effects of budget deficits may not have yet fully revealed themselves.

NOTES

1. The discussion throughout this chapter will be couched in terms of general government budget deficits. However, it is important to recall that the borrowing requirements of the public sector overall will exceed this in many countries, since public enterprises are often also net borrowers (cf. Table 21).
2. The analytical discussion of crowding-out effects draws heavily on published work undertaken by members of the Monetary and Fiscal Policy Division of the OECD's Economics and Statistics Department. For more detailed information see OECD (1982); Price and Chouraqui (1983); Chouraqui and Price (1984); Muller and Price (1984).
3. Crowding-in would occur if the ratio of the substitutability of money for bonds to the substitutability of bonds for capital is greater than the ratio of the sensitivities of the demands for money and capital to changes in wealth. See Friedman (1978); Blinder and Solow (1974).
4. For a further discussion of this point, see Price and Muller (1984).

5. For more discussion of inflation-adjusted budget balances and the methodology used to estimate them, see Muller and Price (1984), Section III and Annex 3.

6. One aspect of direct crowding-out through "ultrarationality" is discussed in Chapter IV in the context of the impact of public pension schemes on household savings decisions.

7. There is also the more fundamental "rational expectations" critique of the usefulness of policy simulations with econometric models, associated with the work of Lucas (1976).

8. For a more detailed discussion of this topic, see Chouraqui and Price (1984), pp. 21-26.

9. Further evidence on this point, in the context of rational expectations models, is contained in a recent study by Masson, Blundell-Wignall and Richardson (1984).

10. The INTERLINK model is described in detail in OECD (1983d). The simulations reported in Table 61 are based on the new financial blocks which are presented and estimated in Blundell-Wignall *et al.* (1984). For some discussion of fiscal multipliers in an earlier version of the INTERLINK model, see the Annex to Larsen, Llewellyn and Potter (1983).

11. These monetary policy regimes are described in more detail in Blundell-Wignall *et al.*, *op. cit.*, pp. 24-26. It should be stressed that these policy regimes, while legitimate in the context of modelling fiscal impacts, are likely to encounter considerable problems if attempts were made to actually implement them. For example, it is probably unrealistic to assume that the monetary authorities could maintain interest rates constant in practice.