The Impact of Increased Government Saving on the Economy

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by

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ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

An increase in long-term economic growth requires higher investment in the OECD economies if it is to be achieved, otherwise faster growth will generate unsustainable pressure on resources. Higher investment can only occur if there is higher saving which could perhaps be generated by an increase in public sector saving. This paper looks at the consequences for five major economies of the OECD of a continued reduction in government deficits, or increase in surpluses, using the OECD econometric model. The conclusion of the paper is that using conventional economic relationships, a fall in government expenditure should increase national savings and lead to higher private sector investment. Over the longer term, the higher investment will raise the actual and potential output level of the economy -- more than compensating for the lower short-term level of output associated with the cuts in government expenditure.

Si à long terme on parvenait à accroître la croissance économique, cela nécessiterait une augmentation de l'investissement dans les économies de l'OCDE, dans le cas contraire une croissance plus rapide entrainerait des pressions sur les ressources. Il ne peut y avoir accroissement de l'investissement que s'il y a augmentation de l'épargne, celle-ci pouvant peut-être être générée par une hausse de l'épargne du secteur public. Le document montre les conséquences pour cinq des principales économies de l'OCDE d'une réduction des dépenses publiques ou d'un accroissement des exédents budgétaires en utilisant le modéle économétrique de l'OCDE. La conclusion de ce rapport est qu'en utilisant les relations économiques traditionnelles, une baisse des dépenses publiques augmenterait l'épargne nationale et conduirait à un accroissement de l'investissement du secteur privé. A long terme, l'accroissement de l'investissement augmenterait le niveau de la production réelle et potentielle ce dernier faisant plus que compenser la baisse à court terme du niveau de la production associée à une réduction des dépenses publiques.

The Impact of Increased Government Saving on the Economy

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The recent encouraging pace of the growth of productive investment in many OECD countries has been accompanied by rising inflation and higher interest rates, suggesting that higher saving will be required over the medium term if growth is to be maintained without excessive pressure on resources. While the relationship between government financial positions and private saving is ambiguous both in theory and practice, a steady fall in budget deficits (or even an interim move into surplus in those countries where private saving is low) should contribute to higher saving over the medium term. This point is especially pertinent given that, in many countries, further fiscal stringency to improve public-sector positions is required in any event. To help illustrate the issues involved, a set of scenarios has been prepared to quantify the impact on the economy of a cut in government expenditure amounting to one percent of GDP. The main features of the results were presented in Economic Outlook 45 (June, 1989). More details of the simulations and the results are presented here.

The scenarios use the OECD INTERLINK model, the standard properties of which have been recently summarised by Richardson (1). An important feature of this model, relevant to these scenarios, are that when government expenditure is cut, with a fixed nominal money supply and floating exchange rates, the level of output at first falls but then gradually increases until, after five years, output has returned to baseline in the case of Japan and Canada. In the case of the United States, Germany and the United Kingdom the initial depressive impact on output has more than halved after five years and output is moving towards its baseline value. The results show that government expenditure 'crowds out' private expenditure to a significant extent for the major OECD countries. Real short-term interest rates fall by between a half and one and a half percentage points depending on the country. Since the publication of the Richardson article, model properties have evolved somewhat (2), but the same simulations run over the same historical data period would show essentially similar results. An exception is the United States (Table 1) for which the consumption function in the model has been altered to include wealth effects; output now tends to move more rapidly back to baseline than was previously the case and indeed moves above baseline after four years.

The impact of government expenditure cuts on the saving-investment flows in the economy works along the following lines in INTERLINK. With lower government expenditure, lower output, a lower price level and a fixed nominal money supply, the real supply of money is raised and, to balance portfolios, interest rates have to drop relative to the rate of inflation. It is this induced fall in real interest rates that stimulates investment and lowers private saving. Thus, one crucial factor in determining the nature and extent of the response of the economy to movements in government expenditure is the size of the real balance effect. Given this importance, scenarios designed to illustrate the impact of government expenditure on saving-investment flows have to pay particular attention to the behaviour of the demand for money. In 1984, Atkinson et al. (3) found that it was possible to estimate a reasonably

stable money demand equation for each of the major seven countries. Since then, financial deregulation has made such money demand equations subject to relatively large errors in some countries; perhaps in part, this may be a response to the growing practice of paying interest on money balances The recent movement of residuals in the money demand equations for the major countries is shown in Table 2. The relatively large residuals shown in this table can complicate simulations as well as suggesting a possible instability in money demand functions. As a result, the present scenarios have been developed by imposing a path for real interest rates.

In imposing such a path, it is important that the evolution of real interest rates should be reasonable, taking account of the evidence of the national authorities' models of OECD countries and related empirical studies. Although somewhat dated by now, Chan-Lee and Kato (4) reviewed the properties of several national econometric models in the early 1980s. The simulations which they described were not undertaken on completely comparable assumptions, especially with regard to the treatment of the movement in foreign exchange reserves necessary to stabilise exchange rates in the fixed exchange rate simulations. Nevertheless, the simulations did typify the varying responses of economies to a decrease in government expenditure with fixed nominal money supply. All except one of the national models showed that a cut of government expenditure was associated with a fall in real interest rates (Table 3) By the fifth year, the average fall reported was 0.7 percentage points under fixed exchange rates and 0.6 points under floating exchange rates on the assumption that government expenditure was cut by 1 per cent of GDP, with a considerable dispersion from country to country. The slightly smaller fall in interest rates when exchange rates were allowed to float reflected an atypical rise in Japanese interest rates. The results of the same simulation from INTERLINK are shown also in Table 3 but refer only to the major countries. On average, real interest rates fall by 1.2 and 1.0 percentage points with fixed and floating exchange rates, respectively. Since 1984, the Brookings Institution has organised several conferences on the properties of world models. The papers presented to these conferences (5) indicate that most models show that the relationship between reductions in government expenditure and reductions in interest rates has become more pronounced. For instance, the mean response of real interest rates of twelve models of the U.S. economy to a cut of 1 per cent of GNP in government expenditure with fixed money and floating exchange ranges was a fall of 0.9 percentage points after 3 years rising to 1.7 percentage points after 6 years (op. cit. page 52, Table B). The MCM model of the Federal Reserve Board of Governors now shows a fall of 1.9 points in the real interest rate after five years compared to a fall of 1.1 points shown in the Chan-Lee article. For Germany and Japan, the evidence of multilateral models is mixed. The MCM model of the Federal Reserve Board and the GEM model of the U.K. National Institute show falls in real interest rates that average 0.7 points (Table 3A). The results from the Japanese EPA model shows smaller falls as does the Taylor model. This last model treats expectations in a different way to the other models (6).

These scenarios assume that short-term real interest rates fall by 0.75 percentage points in every country, less than would be suggested by the OECD model. It is more in line with the estimates of national authorities and other modellers, except for the United States where the consensus would appear to be that a cut in government expenditure would lower real interest rates by more than shown here. The assumed fall in interest rates is on the low side

especially as the scenarios assume that simultaneous action is taken by all countries to cut government expenditure. Such a scenario contrasts both with the national model simulations and the INTERLINK simulations reported in Tables 1 and 3. Such experiments show the impact on interest rates when one country alone takes fiscal action. When all countries take action, the initial depressive effect of government expenditure on output in one country is magnified by a fall in exports to other countries. As a result, the short-term fall in output and prices is larger generating more of a fall in real interest rates. The OECD model suggests that, with a simultaneous cut in government expenditure, the fall in interest rates would be over half as large again as in the case of a cut in government expenditure in a single country. The scenarios presented here assume a fall of 0.75 points in real short-term interest rates as it was felt that decreases of more than this amount could not be sustained in some countries given the current level of real interest rates in certain countries. Against this conservative treatment of short-term interest rates, long-term rates have been projected to move in line with short-term rates on the grounds that agents expect the change in government expenditure to be permanent and so the fall in short-term interest rates is also expected to persist.

Exchange rates have been held constant in nominal terms. This has been done because the primary determinant of exchange rates in the OECD model is interest rate differentials. If these are constant then the major capital flows will not occur and so nominal exchange rates can be held constant, to a first approximation. However exchange rates might still move because of capital flows provoked by inflation differentials between countries. In this type of scenario, though, these differentials tend to be small but nevertheless noticeable especially between Europe and North America (see Richardson op. cit., p. 74, Table 3).

In summary, the main assumptions that have been used in the first of these scenarios are that:

- - the volume of government expenditure on goods and services has been lowered by an amount equal to 1 per cent of real GDP in all OECD countries

- - real interest rates have been lowered by 3/4 per cent of a point over a five year period

- - nominal exchange rates have been held constant

As well, capital inflows to the developing countries and reserves of these countries have been held constant.

Further scenarios have been developed to illustrate particular aspects of the impact of cuts in government expenditure on the economy. The second scenario allows exchange rates to float. The third and fourth scenarios prolong the simulation period to ten years. The third scenario uses the same assumptions as the first while, in the fourth changes the way in which expectations of capital costs are determined differently (see below for detail).

The results of such scenarios will depend on the way in which private saving and investment respond to the change in interest rates. The reaction of private investment to falls in interest rates is determined by the supply block of the model which deals with the production and pricing decisions of businesses, as well as determining the inputs required to produce a given level of output (7). Both aspects of the block are relevant to these scenarios. Factor proportions are determined by the relative price of labour and capital. Reductions in expected real interest rates lower the user cost of capital and so induce an increase in the optimal amount of capital required to produce a given level of output. The rate of investment then changes gradually as the capital stock moves towards the optimal stock, at a speed which depends, amongst other things, on the extent to which the profit rate on capital exceeds the rate of return on financial assets. In the longer-term, changes in the capital stock tend to raise potential output and open a gap between actual and potential output. Such gaps, in turn, depress prices and profit margins and raise real wages so tending to further stimulate private sector demand and output (8). In this way, actual output moves towards the higher level of potential output. The adjustment of the actual capital stock to the optimal stock of capital is estimated to be extremely long-lived for two reasons: first not all movements in real interest rates are expected to be durable and so perceptions of future interest rates only change gradually, and even if perceptions of future interest rates changed quickly, only a small fraction of the capital stock is renewed each year, so limiting the annual adjustment of the capital-labour mix that can take place.

The factors influencing the movement of saving vary in different sectors of the economy and at different times. In the personal sector, initially, as activity drops, real disposable incomes are depressed and so private saving falls. When output and incomes rise, private saving does not recover as it is reduced by the reaction of households to lower real interest rates. The consumption functions in the model have the property that as real interest rates fall consumption rises, though this effect is offset to some extent in those countries where the private sector has extensive holdings of government debt. In these cases, the large holdings of debt tend to lower the income of the personal sector when interest rates fall. Business-sector saving can also change but is not likely to fluctuate markedly unless there are large sudden changes in output and, or, profitability. The initial increase in government saving is less than the expenditure cut as tax yields are lowered by the fall in output. When output recovers, tax yields also increase. At the same time, government sector interest payments are reduced by the initial improvement in the government financial balance and consequent reduction in government debt. In those countries where interest rates are relatively high over the baseline period, the compounded saving of interest is an important factor in boosting the initial increase in government saving. In countries where either interest rates were low or the initial loss of taxation is high, the long-term saving in government expenditure only matches the initial drop in expenditure.

The above responses of saving and investment to a cut in government expenditure assume that there is a substitution in the portfolio of private agents between real assets and government debt. If individuals assessment of the future includes not only a view of permanent post-tax income but also a view of future tax liabilities based on current debt and expenditure policies of the government, then changes in government debt may not affect consumption

since the change will not affect the expected lifetime income of the consumer. Nicoletti (9) has investigated this hypothesis. His conclusion was that in most countries, consumers discount future tax liabilities to only a limited extent, so that the Barro ultra-rational model of debt neutrality could be largely rejected. For Belgium and Italy, however, where public sector debt is particularly large, and also growing as a share of GNP, debt-neutrality could not be rejected. Nicoletti also found that agents, in general, are aware of the inflation tax on government debt thus adjust saving to compensate for the erosion of inflation of the outstanding stock of government debt.

The results of the first scenario involving a reduction in government expenditure show that in the five countries considered, the gain in national saving, while not large, is positive (Chart A and Table 4). The decrease in private saving is less than the increase in government saving. Averaged across countries, output moves relatively quickly back towards baseline and inflation is reduced (Tables 5A to 5E). The share of investment rises in nearly all countries. Moreover, the changes in the value shares of investment tend to understate the change in investment that is occurring. By the end of the scenario, the volume of business investment rises in five of the six countries considered (Table 4, second panel). Only for France does investment not increase after five years. Although the end-period rate of investment is still below baseline in France, its time path suggests that, eventually, it would react positively to the fall in interest rates. The results in the French case do show a net increase in national savings (10) and so, as domestic investment has not increased, investment abroad has to increase in order to balance the flows of saving and investment. In other words, there is an improvement in the current account. Over a longer period, this improvement in the French current account is diminished as domestic investment increases. The other major cross-country differences revealed in this scenario are the different responses in household saving and business investment in the United States and Japan. In the United States saving falls as the value of wealth rises. In Japan, household saving also falls, but to a much smaller extent, while the rise in business investment is much larger. This occurs because of the high substitution between capital and labour that is typically found in estimates of the Japanese production function. With the rise in investment outstripping that of saving the Japanese current account deteriorates and this is accentuated by Japanese exporters tending to lose market share when export markets decline. This loss in exports is then cumulated by a reduction in investment income.

The results of the second scenario, which allows for the possibility of floating exchange rates, show very little difference from the first scenario (Table 6). The assumption that short-term real interest rates fall by the same amount in all countries rules out major capital flows which would generate exchange rate movements. As price inflation is similar across countries, it is only these small differentials which cause exchange rates to move. Bilateral exchange rates against the dollar move, in general, by less than 0.5 per cent. The level of nominal GDP and the saving-investment balances are barely changed.

Even after five years, it would appear that neither of these scenarios has generated a new equilibrium in the economy. Towards the end of the period covered by both of these scenarios, significant changes are still taking place in some of the supply variables as they move towards their equilibrium values.

These long-term adjustments obscure the eventual consequences of an improvement in government financial balances. In order to explore the longer-term consequences of cuts in government expenditure, two further scenario were run over ten years (Scenario 3 and Scenario 4) In both, government expenditure and real interest rates were kept at the same level as in the first two scenarios which lasted only five years. The third scenario uses the standard method of determining the expected movement in capital costs. The desired rate of return used by companies to determine their user cost of capital depends on movements in the real rate of return on financial assets but with a long lag. However, if the financial markets expect the fall in real interest rates to persist, it is reasonable to imagine that industrial and commercial companies will also react more quickly to the change in real interest rates. The fourth scenario assumes that non-financial companies adjust their user-cost of capital at once when the real rate of return of financial assets falls. As a result, the adjustment of the production process towards using more capital proceeds at a more rapid rate.

The third scenario shows that the recovery in output continues in the second five year period, in line with the first case which showed that the recovery of output was well underway five years after the cut in government expenditure. By the tenth year, output has recovered to its initial levels in all countries, though Japanese output. reaches baseline and then drops slightly (Table 7, first block). Moreover, investment. the capital stock and potential output are all above baseline (Table 6, second block). This suggests that eventually actual output will rise above baseline in all countries in response to the higher level of potential. In addition to this beneficial effect, during the second five year period, the assumption of a three-quarter point drop in real interest rates allows a lower growth of monetary aggregates than in the first five years. The growth of the nominal money supply is reduced by up to 1 per cent per year and so inflation continues to remain a point below its baseline rate. If monetary policy had been kept constant and the growth of money kept unchanged. real interest rates would have tended to fall even more in the second five-year period and the increase in the level of potential output would have been more pronounced.

The behaviour of the supply side of the OECD model is particularly sensitive to expectations of future interest rates. A fourth scenario is necessary to illustrate the longer-run consequences of the change in the government expenditure, as these are still only imperfectly captured in the above case. For instance, at the end of the above ten-year scenario business investment is still increasing. This reflects both a necessarily slow adjustment of the actual capital stock to optimal (or desired) capital and the assumption that businessmen react not to the actual movement of long-term interest rates but to an expectation of future real interest rates. In the model, such expectations are generated adaptively and react slowly. If expectations of future interest rates were to react more rapidly to the movement in actual real interest rates, the impact on the economy of an improvement in government financial balances would come through more quickly. If, for instance, expectations of future real interest rates dropped immediately in line with the actual fall in long-term real rates, then output would be a half percent above its baseline level at the end of the period while potential output would be almost three-quarters of a point higher and the capital stock almost two points higher (Table 6, second panel).

The fourth scenario shows that the cumulative amount of output produced, following a cut in government expenditure, is greater than in the baseline, even in the ten year period of the scenario (Table 8). In previous scenarios, only the flow of output returned to baseline after between five and ten years. In this scenario, the cumulative loss in output returns to baseline after five years, though experience varies across countries. This scenario emphasises the importance of the mechanism by which expectations are formed in determining the reaction of the economy to cuts in government expenditure.

Concluding remarks

The results of the various scenarios show that an improvement in the financial balance of governments will, in the long-run have beneficial effects on the economy. In the short run the fall in output would be significant. After five years, the initial depressive effects of government expenditure cuts that are unaccompanied by change in taxation are largely overcome but the cumulated loss of output remains large, while the saving-investment balance of economies is generally improved. Investment is proceeding at a faster pace and national saving is higher. With capital accumulation higher, there is the possibility of the economy producing more output. Over the longer-term, the potential of the economy to produce more output is realised and expenditure cuts are transformed from a depressive to a stimulatory factor. Even so, the cumulative loss of output would not be made good until four years after the initial shock, in the most optimistic of the above scenarios. The policy of continued reduction in government expenditure would also improve the structure of government budgets, reducing the proportion of expenditure devoted to interest payments.

References

1. Richardson P., 1988, "The structure and simulation properties of the OECD INTERLINK model", OECD Economic Studies, No. 10, p. 57-122.

2. Main changes to the INTERLINK model since the Richardson article have been new import volume equations of manufactures, a new system for the determination of export and import prices of manufactures and the introduction of supply blocks for most of the smaller OECD countries. A new consumption function has been added to the U.S. model directly incorporating wealth effects.

3. Atkinson P., Blundell-Wignall A., Rondoni M. and Ziegelschmidt H., 1984, "The efficacy of monetary targetting: the stability of the demand for money in major OECD countries", OECD Economic Studies, No. 3, p. 145-176.

4. Chan-Lee J. and Kato H., 1984, "A comparison of the simulation properties of national econometric models", OECD Economic Studies, No. 2, p. 109-150.

5. Byrant R., Henderson, D., Holtham G., Hooper, P., Symansky S., (eds) 1988, "Empirical macroeconomics for interdependent economies", volume 2, part 1, Brookings Institution.

6. Taylor J., 1988, "The treatment of expectations in large multi-country econometric models", in Bryant et. al.

7. The original specification of the supply blocks was set out in Helliwell J., Sturm P., Jarrett P. and Salou G., 1986, "The supply side in OECD's macroeconomic model", OECD Economic Studies No. 6, p. 75-129. Revised and updated estimates are available in Jarret P., and Torres R., 1987, "A revised supply block for the seven major countries in Interlink", OECD Working Paper No. 41.

8. The concept of potential output as used at the OECD is described in: Martin J., and Jarret P., "Potential output in the seven major OECD countries", 1989, OECD Working Paper No. 66.

9. Nicoletti G., 1988, "A cross-country analysis of private consumption, inflation and the debt neutrality hypothesis", OECD Economic Studies No. 11, p. 43-88.

10. All of the scenarios show an atypically large decline in business sector saving in France. In reality, the split of the decline in private saving should be oriented more towards the household sector as the scenarios do not adequately capture the flow of government interest payments to French households.

CHART A

FISCAL TIGHTENING AND SAVING-INVESTMENT FLOWS
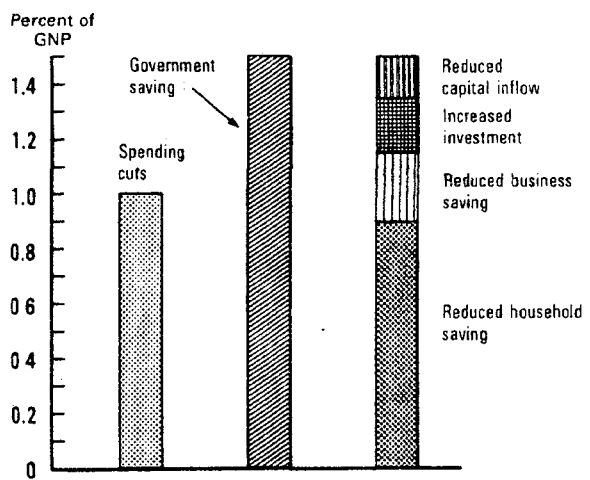
The impact on saving-investment flows after 5 years of a public expenditure
cut of 1 percent of GNP and lower real interest rates
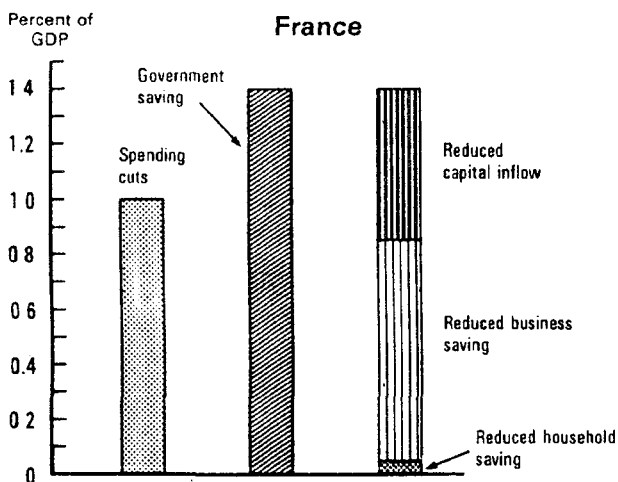% of GNP deviation from baseline

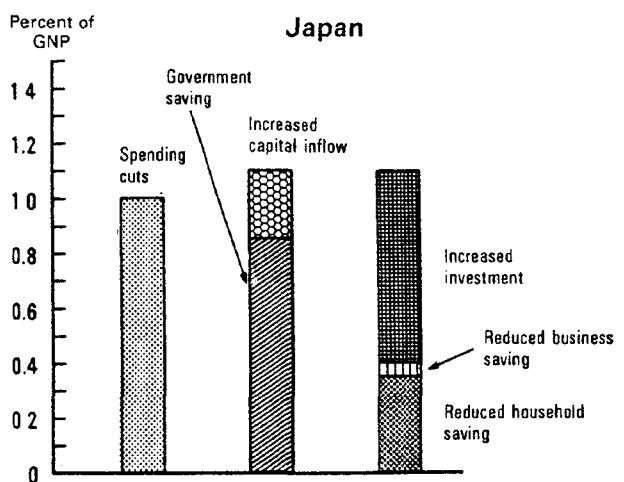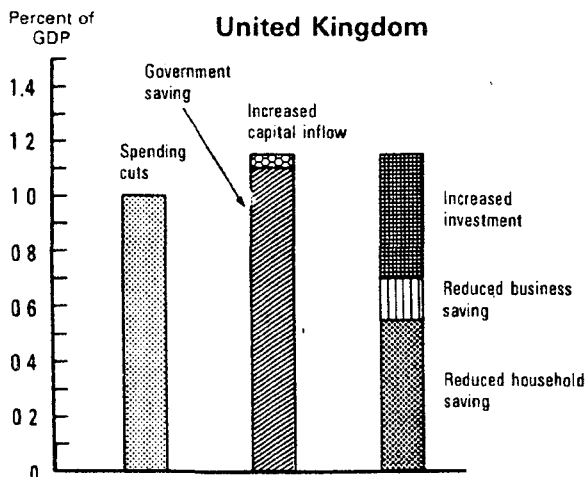## Mean values for the five countries

Percent of
GNP/GDP

United States

Percent of
GNP

France

Percent of
GDP

Japan
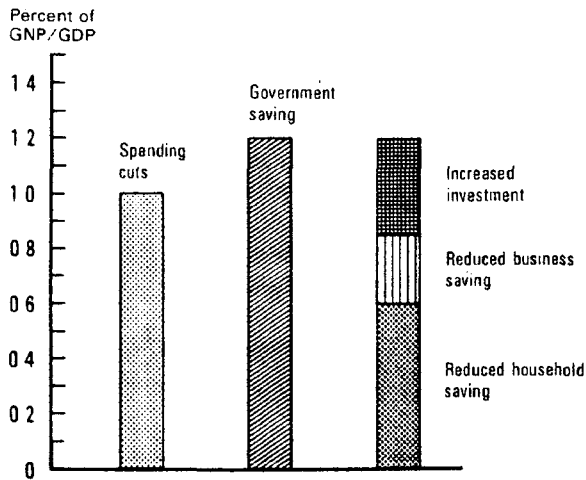
Percent of
GNP

United Kingdom

Percent of
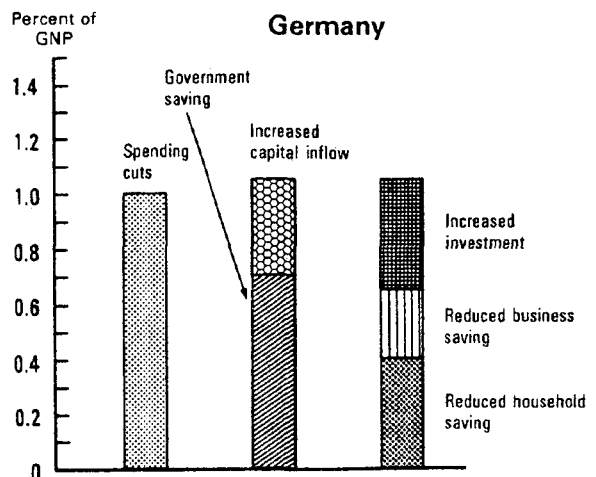GDP

Germany

Percent of
GNP

Table 1

The impact on output of a cut in government expenditures
The 1988 INTERLINK model compared to the 1989 model

Expenditure cut equals 1 per cent of GDP or GNP

Percentage difference from baseline

	United States		Japan		Germany		France	
	1988 model	1989 model	1988 model	1989 model	1988 model	1989 model	1988 model	1989 model
1983	-1.1	-1.5	-1.0	-1.0	-0.9	-0.9	-0.6	-0.5
1984	-0.8	-1.2	-1.2	-1.3	-1.0	-0.7	-0.9	-0.7
1985	-0.5	-0.3	-0.9	-1.1	-0.7	-0.4	-1.1	-0 8
1986	-0.5	0.1	-0.3	-0.7	-0.4	-0.3	-1.0	-0.8
1987	-0.4	0.1	-0.0	-0.2	-0.5	-0.4	-0.9	-0.7

	United Kingdom		Italy		Canada		Mean*	
	1988 model	1989 model	1988 model	1989 model	1988 model	1989 model	1988 model	1989 model
1983	-0.9	-0.7	-0.9	-0.9	-0.8	-0.7	-1.0	-1.1
1984	-0.8	-0.9	-1.0	-1.0	-1.1	-0.7	-0.9	-1.1
1985	-0.4	-0.7	-0.9	-1.0	-0.6	-0.7	-0.7	-0.6
1986	-0.3	-0.4	-0.7	-0.9	-0.2	-0.5	-0.5	-0.3
1987	-0.3	-0.3	-0.6	-0.8	-0.0	-0.3	-0.3	-0.2

The simulations reported here are for a single country and assume constant
nominal money supply and floating exchange rates. The results reported by
Richardson (1988), which are the basis of the 1988 column in the above table.
have had their signs changed as this table refers to a cut in expenditure
rather than an increase. The column headed 1989 uses the model and historic
data that are compatible with the projections in Economic Outlook 45.

* Weighted by the 1988 value of GDP.

Table 2

The instability of money demand functions in the major economies

Residuals of the money demand equation

% of actual

	1985	1986	1987	1988
United States	-0.2	-0.5	-2.1	-2.0
Japan	-0.3	-0.4	2.2	2.5
Germany	-0.3	-0.6	0.1	0.1
France	0.2	-1.4	1.4	1.9
United Kingdom	-1.7	2.4	5.4	7.3

The money demand equations refer to the following aggregates:

United States:	M2
Japan:	M2 plus certificates of deposit
Germany:	M3 with the break in the series in 1985 spliced in 1985
France:	M3
United Kingdom	Sterling M3

Source: Economic Outlook 45 database.

Table 3

The impact on real interest rates of a cut in government expenditures
Expenditure cut equals 1 per cent of GDP or GNP

Five years after shock
deviation from baseline

	Fixed rates		Floating rates	
	National model	INTERLINK	National	INTERLINK
United States	-0.8	-0.9	-1.1	-0.9
Japan	-0.3	-1.4	0.4	-1.2
Germany	-	-0.7	-	-0.6
France	-0.1	-2.0	-0.0	-1.5
Italy	-	-0.1	-	0.0
United Kingdom	-2.5	-1.8	-2.4	-1.3
Canada	-0.5	-1.5	-0.4	-1.4
Australia	-0.7	-	-0.8	.
Belgium	-0.1*	-	.	.
Finland	-1.0	-	.	.
Netherlands	-0.1	-	0.1	.
New Zealand	-0.5*	-	-0.5	.
Mean (unweighted)	-0.65	-1.20	-0.60	-1.00

National models compared

United States	Board of Governors Federal Reserve MCM model
Japan	EPA World model
France	INSEE Metric
United Kingdom	H.M. Treasury
Canada	Bank of Canada	RDXF
Australia	Reserve Bank	RBII
Belgium	Bureau de Plan	MARIBEL
Finland	Bank of Finland	BOF3
Netherlands	Central Plan Bureau	FREIA
New Zealand	Reserve Bank

Note: The results presented in Table 2 of the Chan-Lee article do not allow
precise figures for five years to be calculated. The five year
figures have been calculated using the average of the results for
three and seven years.

* After three years.

Source: Chan-Lee and Kato (4) for national models.
INTERLINK model Economic Outlook 45.

Table 3A

The impact on real interest rates of a cut in government expenditure

Government expenditure cut by 1 per cent of GDP

Estimates of different multilateral models
after 5 years

difference from baseline in percentage points

Country cutting expenditure

Model used	Japan	Germany	United States
Economic Planning Agency	-1.0	0.0	-3.7
Federal Reserve	-0.5	-0.6	-2.1
National Institute, U.K.	-1.0	-0.7	-0.4
Taylor	-0.1	-0.3	-0.4

Source. Brandon and Marquez: "The behaviour of monetary sectors and monetary policy: evidence from multicountry models". A paper presented to the Federal Reserve Board conference on "Monetary aggregates and financial sector behaviour on interdependent economies", Washington, D.C., May 1988. Tables 2.3, 2.10, 2.20.

Table 4

The impact on domestic savings/investment flows of
a cut in government expenditure

Government expenditure cut by 1 per cent of GDP or GNP

change from baseline after 5 years, per cent of GDP

Scenario 1

| | Saving | | Investment |
	Government	Private	Private
United States	1.6	-1.2	0.1
Japan	0.9	-0.5	0.6
Germany	0.7	-0.6	0.5
France	1.5	-0.9	0.1
United Kingdom	1.1	-0.8	0.3
Canada	1.7	-1.3	0.2

Change in volume of investment
Per cent difference from baseline after 5 years

	Housing	Business	Total
United States	0.0	1.1	0.8
Japan	1.9	2.2	1.7
Germany	-0.2	2.8	1.8
France	0.1	-0.3	-0.2
United Kingdom	-0.7	3.9	2.6
Canada	-0.3	0.2	0.0

This scenario shows the results of a cut in government expenditure of 1 per
cent of GDP accompanied by a fall in real interest rates of 3/4 of a point
five years after the initial shock.

Table 5A

The impact on the economy of a cut in government expenditure

Government expenditure cut by 1 per cent of GNP

United States

Scenario 1

Years after shock	1	2	3	4	5

Saving & Investment flows

Deviation from baseline share measured in percentage of GDP

	1	2	3	4	5
Government saving	0.7	0.8	1.1	1.4	1.6
Household saving	-0.3	-0.6	-0.8	-0.9	-0.9
Business saving	-0.4	-0.1	-0.1	-0.2	-0.3
National saving	0 1	0.2	0.3	0.3	0.3
Investment	0.0	0.2 ·	0.3	0.2	0.2
Capital inflow (1)	-0.1	0.0	0.0	-0.1	-0.1

Impact on principal economic variables

Deviation from baseline

	1	2	3	4	5
Output	-1.3	-0.5	0.1	0.1	0.0
Price level	-0.3	-1.1	-1.4	-1.9	-2.5
Inflation rate	-0.5	-0.7	-0.3	-0.5	-0.7
Unemployment	0.5	0.4	0.1	0.1	0.1
Real interest rates	-0.4	-0.6	-0.8	-0.8	-0.8
Nominal interest rates	-0.9	-1.3	-1.1	-1.3	-1.5
Government consumption	-5.1	-5.1	-5.1	-5.2	-5.2
Private consumption	-0.3	0.4	1.0	0.9	0.8
Business investment	-1.6	-0.5	0.9	1.1	1.1
Housing investment	0.0	5.4	3.6	0.7	0.0
Domestic demand	-1.4	-0.5	0.0	0.2	-0.3
Foreign balance	0.0	0.0	0.1	0.1	0.0
Exports	-4.0	-3.2	-1.4	-1.0	-1.2
Imports	-4.2	-2.9	-1.8	-2.2	-2.7
Current account	6.3	-1.6	0.9	7.9	10.8

The figures for current balance in the second block of results are in $bn while the figures for the inflation rate, unemployment rate and interest rates are in percentage points.

1. A negative sign, here, indicates a surplus of domestic saving over investment and hence a capital outflow.

Table 5B

The impact on the economy of a cut in government expenditure

Government expenditure cut by 1 per cent of GNP

Japan

Scenario 1

Years after shock	1	2	3	4	5

Saving & Investment flows

Deviation from baseline share measured in percentage of GDP

	1	2	3	4	5
Government saving	1.0	0.9	0.8	0.9	0.9
Household saving	-0.2	-0.4	-0.4	-0.4	-0.4
Business saving	-0.5	-0.4	-0.2	-0.1	-0.1
National saving	0.2	0.1	0.2	0.4	0.4
Investment	0.4	0.1	0.3	0.6	0.7
Capital inflow (1)	0.2	0.0	0.1	0.2	0.3

Impact on principal economic variables

Deviation from baseline

	1	2	3	4	5
Output	-1.5	-1.5	-1.0	-0.6	-0.4
Price level	0.0	-0.7	-1.2	-1.6	-1.9
Inflation rate	0.0	-0.6	-0.4	-0.4	-0.3
Unemployment	0.0	0.0	0.0	0.0	0.0
Real interest rates	-0.3	-0.6	-0.8	-0.8	-0.8
Nominal interest rates	-0.5	-1.3	-1.3	-1.1	-1.1
Government consumption	-10.8	-10.7	-10.7	-10.6	-10.5
Private consumption	-0.4	-0.3	-0.1	0.1	0.2
Business investment	-1.6	-1.9	0.3	1.6	2.2
Housing investment	-0.4	2.9	2.2	1.4	1.9
Domestic demand	-1.3	-1.4	-0.9	-0.3	-0.1
Foreign balance	-0.1	0.1	-0.1	-0.1	0.0
Exports	-5.0	-4.7	-3.9	-4.5	-5.3
Imports	-3.6	-4.3	-3.5	-3.2	-3.5
Current account	-5.7	-2.3	-4.0	-9.1	-12.6

The figures for current balance in the second block of results are in $bn
while the figures for the inflation rate, unemployment rate and interest rates
are in percentage points.

1. A negative sign, here, indicates a surplus of domestic saving over
    investment and hence a capital outflow.

Table 5C

The impact on the economy of a cut in government expenditure

Government expenditure cut by 1 per cent of GNP

Germany

Scenario 1

Years after shock	1	2	3	4	5

Saving & Investment flows

Deviation from baseline share measured in percentage of GDP

	1	2	3	4	5
Government saving	0.5	0.2	0.6	0.8	0.7
Household saving	-0.3	-0.3	-0.3	-0.3	-0.4
Business saving	-0.5	-0.1	0.0	-0.2	-0.3
National saving	-0.3	-0.2	0.3	0.3	0.1
Investment	-0.1	-0.1	0.7	0.8	0.4
Capital inflow (1)	0.2	0.1	0.4	0.5	0.3

Impact on principal economic variables

Deviation from baseline

	1	2	3	4	5
Output	-2.1	-1.8	-0.6	-0.6	-1.0
Price level	-0.1	-0.9	-1.3	-1.3	-1.6
Inflation rate	-0.1	-0.6	-0.3	-0.1	-0.4
Unemployment	0.6	1.0	0.6	0.5	0.6
Real interest rates	-0.3	-0.6	-0.8	-0.8	-0.8
Nominal interest rates	-0.7	-1.3	-1.0	-0.8	-1.2
Government consumption	-5.3	-5.4	-5.4	-5.4	-5.5
Private consumption	-0.6	-0.5	0.2	0.2	0.0
Business investment	-2.3	-0.4	1.8	2.5	2.8
Housing investment	-2.9	-0.9	2.8	1.6	-0.2
Domestic demand	-1.8	-1.7	-0.2	-0.1	-0.7
Foreign balance	-0.1	0.0	-0.2	0.0	0.1
Exports	-4.5	-4.4	-2.9	-2.4	-2.8
Imports	-4.0	-4.4	-2.0	-1.3	-2.2
Current account	-3.6	-3.5	-7.8	-8.2	-6.3

The figures for current balance in the second block of results are in $bn
while the figures for the inflation rate, unemployment rate and interest rates
are in percentage points.

1. A negative sign, here, indicates a surplus of domestic saving over
   investment and hence a capital outflow.

Table 5D

The impact on the economy of a cut in government expenditure

Government expenditure cut by 1 per cent of GDP

France

Scenario 1

Years after shock	1	2	3	4	5

Saving & Investment flows

Deviation from baseline share measured in percentage of GDP

	1	2	3	4	5
Government saving	1.0	1.0	1.2	1.3	1.5
Household saving	-0.1	-0.1	0.0	0.0	0.0
Business saving	-0.5	-0.6	-0.7	-0.8	-0.9
National saving	0.4	0.3	0.4	0.5	0.6
Investment	0.5	0.1	-0.1	-0.1	0.0
Capital inflow (1)	0.1	-0.2	-0.5	-0.6	-0.6

Impact on principal economic variables

Deviation from baseline

	1	2	3	4	5
Output	-0.8	-1.0	-0.9	-0.8	-0.7
Price level	-0.1	-0.3	-0.7	-1.1	-1.5
Inflation rate	-0.2	-0.2	-0.4	-0.4	-0.5
Unemployment	0.1	0.2	0.2	0.3	0.3
Real interest rates	-0.3	-0.6	-0.8	-0.8	-0.8
Nominal interest rates	-0.5	-0.8	-1.12	-1.1	-1.2
Government consumption	-5.3	-5.3	-5.3	-5.4	-5.4
Private consumption	-0.1	-0.2	-0.2	-0.2	-0.2
Business investment	-1.9	-2.3	-1.8	-1.1	-0.3
Housing investment	0.1	0.0	-0.2	-0.2	0.1
Domestic demand	-0.8	-1.2	-1.4	-1.4	-1.2
Foreign balance	0.0	0.2	0.1	0.0	0.0
Exports	-3.7	-3.4	-1.9	-1.5	-1.9
Imports	-3.3	-4.1	-3.8	-3.4	-3.4
Current account	-0.8	2.4	6.3	7.2	7.1

The figures for current balance in the second block of results are in $bn while the figures for the inflation rate, unemployment rate and interest rates are in percentage points.

1. A negative sign, here, indicates a surplus of domestic saving over investment and hence a capital outflow.

Table 5E

The impact on the economy of a cut in government expenditure

Government expenditure cut by 1 per cent of GDP

United Kingdom

Scenario 1

Years after shock	1	2	3	4	5

Saving & Investment flows

Deviation from baseline share measured in percentage of GDP

	1	2	3	4	5
Government saving	0.9	0.7	0.6	0.9	1.1
Household saving	-0.2	-0.5	-0.5	-0.6	-0.6
Business saving	-0.4	-0.4	-0.1	0.0	-0.2
National saving	0.3	-0.2	0.1	0.3	0.4
Investment	-0.1	-0.4	0.2	0.5	0.4
Capital inflow (1)	-0.4	-0.2	0.1	0.2	0.0

Impact on principal economic variables

Deviation from baseline

	1	2	3	4	5
Output	-1.0	-1.4	-0.9	-0.4	-0.2
Price level	0.1	-0.1	-0.8	-1.5	-1.9
Inflation rate	0.3	-0.3	-0.6	-0.6	-0.5
Unemployment	0.2	0.7	0.8	0.6	0.4
Real interest rates	-0.4	-0.6	-0.8	-0.8	-0.8
Nominal interest rates	-0.2	-1.0	-1.5	-1.5	-1.2
Government consumption	-5.2	-5.3	-5.3	-5.3	-5.4
Private consumption	-0.4	-0.6	-0.3	0.1	0.2
Business investment	-0.9	-1.0	0.9	3.1	3.9
Housing investment	-2.0	-4.2	-2.6	-0.6	-0.7
Domestic demand	-1.5	-1.9	-1.0	-0.3	-0.3
Foreign balance	0.3	-0.1	-0.2	-0.1	0.1
Exports	-3.3	-3.0	-1.7	-1.3	-1.5
Imports	-4.6	-4.1	-1.9	-0.9	-1.4
Current account	4.0	2.6	-0.3	-1.5	0.1

The figures for current balance in the second block of results are in $bn while the figures for the inflation rate, unemployment rate and interest rates are in percentage points.

1. A negative sign, here, indicates a surplus of domestic saving over investment and hence a capital outflow.

Table 6

The impact on the economy of a cut in government in government expenditure

The effect of allowing exchange rates to float

Scenario 2

Percentage difference after 5 years from scenario 1
with fixed exchange rates

	United States	Japan	Germany	France	United Kingdom
Effective exchange rate	0.6	0.0	0.4	0.4	0.3
Dollar exchange rate	0.0	-0.4	-0.5	-0.5	-0.4
Real output	0.0	0.0	0.0	-0.1	-0.1
Price level	-0.2	0.0	-0.2	0.0	0.0

Table 7

The impact after 10 years of a cut in government expenditure
Per cent deviation from baseline

Scenario 3: Standard model

	Output	Investment	Capital stock	Potential output
United States	0.4	1.9	0.6	0.1
Japan	-0.4	1.9	1.1	0.2
Germany	0.0	6.6	1.6	0.4
France	0.0	3.7	0.0	0.0
United Kingdom	0.2	6.0	1.3	0.6
Canada	0.8	2.6	0.5	0.5

The above scenario shows the impact on the economy after ten years of a cut in government expenditure of one per cent of GDP on the assumption that real interest rates fall by three-quarters of a point using the standard model.

Scenario 4: Expected user cost of capital moves in line with real interest rates

Per cent deviation from baseline

	Output	Investment	Capital stock	Potential output
United States	0.4	1.9	1.3	0.3
Japan	-0.3	2.0	2.4	0.4
Germany	0.4	7.8	2.7	0.8
France	0.4	4.1	1.8	0.5
United Kingdom	0.6	7.4	2.6	1.1
Canada	0.7	4.2	2.1	0.9

This scenario shows the impact of a cut in government expenditure when businesses react immediately to the fall in real interest rates caused by the cut in government expenditure.

Table 8

The impact on the level of cumulative output of a cut in
government expenditures

Government expenditure cut by 1 per cent of GDP or GNP

with speeded up reaction of the user cost of capital

Scenario 4

Percentage difference from baseline

Years after shock

	1	2	4	6	8	10
United States	-1.3	-1.2	-0.7	2.1	3.2	4.0
Japan	-1.5	-2.1	-0.4	2.4	3.9	3.6
Germany	-1.7	-2.6	-2.2	-1.4	-0.7	0.2
France	-0.9	-1.7	-2.5	-2.8	-2.7	-2.1
United Kingdom	-1.5	-2.8	-2.4	-1.6	-0.9	0.2
Weighted average	-1.4	-1.8	-1.1	1.1	2.2	2.7

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