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FISCAL POLICY AND THE EXTERNAL DEFICIT: SIBLINGS, BUT NOT TWINS

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ABSTRACT

This paper first surveys a number of partial and macroeconomic approaches to the determination of the current account, and then summarizes the evidence from multicountry economic models about the linkages between U.S. government spending and the U.S. current account during the 1980s. The available evidence from a large number of multicountry models suggests that the U.S. fiscal policy of the first half of the 1980s was responsible for about half of the buildup in the external deficit, and that the accumulated net foreign debt is about 500 billion dollars higher than it would have been without the fiscal expansion.

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1. Introduction.

At the end of the 1970s, the U.S. external and government accounts were both in rough balance.[2] Over the subsequent decade, the federal fiscal deficit and the current account deficit both grew dramatically. The federal fiscal deficit, on a calendar-year national accounts basis, peaked at $206 billion in 1986, while the current account deficit, after initially growing more slowly, reached $139 billion in 1986. Both deficits were approximately $150 billion in 1987.[3]

The purpose of this paper is to describe the linkages between these two deficits. First I shall outline some of the alternative simplified approaches that have been used to explain the evolution of the current account of the balance of payments, especially those approaches that focus on the possible linkages between the fiscal and external deficits. I shall then survey more thoroughly some of the available evidence about the extent to which the two deficits have been linked during the 1980s. After a review of the evidence about the link between

1980s fiscal policy and the 1980s current account deficit, I shall finish by assessing the extent to which the current account might respond to possible future changes in fiscal policy. The linkages between fiscal policy and the current account in the 1990s might be expected to be different than they were in the 1980s, since the U.S. external position has changed from large net creditor to net debtor, changing the extent to which interest rates and exchange rates influence the U.S. current account.

2. Alternative Approaches to the External Deficit.

There are both partial and macroeconomic approaches to the current account.

2.1 Partial Approaches.

The chief and most long-standing partial approach to the current account explains the evolution of imports and exports separately, with each being determined by relative prices and spending in the United States and its trading partners. Some of these analyses focus on the relative rates of spending growth, and on the income elasticities measuring the extent to which U.S. imports respond to growth in U.S. spending, and the extent to which U.S. exports respond to increases in foreign spending. Separate estimation of U.S. import and export equations frequently shows that imports respond to increases in U.S. spending by more than U.S. exports respond to increases in foreign spending, thus giving rise to the worry that there may be a secular decline in the U.S. trade balance unless there are continuing falls in the real value of the U.S. dollar or higher rates of spending growth outside the United States.[4]

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4 For example, the U.S. current account blocks of the six multicountry models whose properties are surveyed by Bryant, Holtham and Hooper (1988, p. 133) show long-run income elasticities averaging 1.87 for non-oil imports and 1.27 for goods exports.

Other studies emphasize the role of relative prices in the determination of imports and exports. Three key questions arise, relating to the influence of exchange rates on trade prices, the influence of trade prices on trade flows, and the possibility that initial import price effects are sufficiently larger than the volume effects so that a drop in the value of the dollar may initially lead to a worsening of the nominal current account, even though real imports are falling and real exports rising.

With respect to the first question, the pass-through of the exchange rate into trade prices, the traditional assumption has been that primary commodities are sold at prices set in world markets, while most manufactures are sold at prices set separately by each supplier. Under this simple view, a drop in the value of the U.S. dollar would lead to a corresponding increase in the U.S. price of Japanese cars, since the U.S. price would be equal to the fixed Japanese Yen price multiplied by the higher number of U.S. dollars required to buy enough Yen to pay for the car. However, recent research[5] and even casual observation have revealed that most manufacturers selling into large foreign markets are acutely aware of pressures on their market share, and hence tend to absorb, at least in the short-run, much of the effect of exchange rate changes, thus insulating U.S. import prices from the initial effects of exchange rate changes. This tends to defer the eventual volume adjustments, but if the initial import volume effects are sufficiently small then the lags in the 'pass through' of exchange rate changes to import prices may actually improve rather than worsen the U.S. nominal trade balance, at least initially, in the face of a drop in the value of the dollar.

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5 See, for example, Branson and Marston (1989), Froot and Klemperer (1988), Krugman (1987), Mann (1986) and Marston (1989).

"Elasticity pessimism" is the expression used to describe the view that the volume of trade responds so little to a change in the exchange rate that the nominal U.S. current account might actually worsen in response to a lowering in the value of the dollar. Most empirical evidence suggests that there is a short-term worsening in the current account in response to a lower value of the dollar, but that this effect is reversed by the second year.[6] The initial worsening of the nominal current account, followed by a subsequent improvement, poses problems chiefly because of its effects on expectations. If a large drop in the value of the dollar is followed by further worsening of the current account, market participants are likely to become pessimistic about the future prospects for U.S. "competitiveness", leading to still larger drops in the value of the currency. The same influence, in reverse, may well have been part of the story of the dramatic rise in the value of the dollar between 1982 and March 1985.

Partial approaches to the current account are helpful in explaining some key elements of trade decisions. However, they do not help to unravel the linkages between fiscal policy and the current account, because they stop short at the proximate determinants of trade flows, which are expenditures and relative prices. To get further, we need to adopt a more macroeconomic approach, in which the levels of aggregate expenditure, prices and exchange rates are themselves determined.

2.2 Macroeconomic Approaches.

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6 For example, five of the six multicountry models analyzed by Bryant, Holtham and Hooper (1988 p. 113) have U.S. current account blocks that show a first-year worsening of the nominal current account by an amount averaging, for the five models, 0.37% of GNP, from a 20% decline in the nominal value of the U.S. dollar. In four of these five models, the current account effect becomes positive by the second year. In the fifth model, the negative section of the 'J-curve' lasts until the third year.

Several simplified macroeconomic approaches have been used to explain the evolution of the current account. In these simple approaches, the determination and role of the exchange rate, and of relative prices more generally, are suppressed, or at least treated in an implicit manner. The core of these approaches is the national income and expenditure relationship, wherein the level of real national output Y is the sum of final domestic expenditure (equal to the sum of consumption, investment and government spending on goods and services, =C+I+G, often referred to as domestic absorption) plus net exports (X-M).

The absorption approach makes use of the fact that the current account, or net exports of goods and services in this simple exposition, (which excludes foreign transfer payments, such as foreign aid and immigrants' remittances, and ignores the special factors determining net investment income) is equal to the excess of output over absorption. Thus anything that increases absorption, such as an increase in government spending, will increase the current account deficit by the same amount, except to the extent that the increase in government spending is offset by reductions in consumption or investment spending, or provided by increases in output. A 'supply-side' approach to the U.S. fiscal policy in the early 1980s would have argued that the tax cuts could have induced enough extra effort, and hence output, to provide for the extra spending, either by governments, or by private consumers or businesses with higher after-tax incomes, to avoid large buildups in either the fiscal deficit or the current account.

An important variant of the absorption approach is provided by a demand-oriented open-economy Keynesian multiplier approach, in which aggregate income is increased by the increase in government spending, and the current account worsened by the induced change in imports, by an amount roughly

equal, under fixed exchange rates, to the marginal propensity to import times the increase in income.

Under flexible exchange rates, the effects of fiscal policy on the external deficit depend on the degree of capital mobility, and on the nature of exchange rate expectations. If there is no capital mobility, the currency would depreciate, under fiscal expansion, by enough to close off the import leakage, thus insulating the current account from the fiscal deficit. Under perfect capital mobility, with static expectations about exchange rates and prices, this model, first developed by Robert Mundell[7], forces the domestic currency to appreciate under fiscal expansion, by enough to fully crowd out any increase in income, thus forcing the induced fiscal deficit to be matched by an external deficit of the same size.

A number of more recent macroeconomic approaches have set up the same national income relationship in a different way, so as to emphasize the identity between domestic investment and total savings. Rewriting the familiar national income identity to show investment on the left-hand side, and adding taxes to allow a distinction between private and public saving, domestic investment can be seen to be equal to the sum of private, government and foreign saving:

$$I = (Y-T-C) + (T-G) + (M-X).$$

Seen this way, net foreign savings, which are net imports of goods and services, and hence are simply the current account deficit, are the amount by which investment spending exceeds net national savings, which in turn is the sum of private and government savings. Thus any increase in the fiscal deficit would lead

7 The model with perfect capital mobility and static expectations was first presented in Mundell (1963), as a special case of the model with imperfect capital mobility developed earlier by Mundell and also by Meade (1951) and Fleming (1962). The model, especially the version with perfect capital mobility is often referred to as the Mundell-Fleming model, with subsequent uses and developments surveyed by Frenkel and Razin (1987b).

to a one-for-one increase in the current account deficit (i.e. net foreign savings) unless there were offsetting reductions in domestic investment (e.g. being crowded out by higher domestic interest rates) or increases in private savings (generated, e.g., by higher income levels, or by tax changes influencing saving decisions, as emphasized in some supply-side approaches).

Four particular cases of the savings-investment approach are worthy of special mention.

1. The 'twin deficit' view, known earlier in the United Kingdom as the 'New Cambridge' approach, in which there is a one-for-one offset of changes in government savings (i.e. the fiscal surplus) and foreign savings (as measured by the current account deficit). Thus any increase in the fiscal deficit would be matched by an increase in the external deficit - a reduction in public savings being offset by an increase in foreign savings. The assumption here is that any induced changes in domestic investment are exactly matched by changes in private savings. In the event that the higher fiscal deficit led to a net reduction in private investment spending (with 'crowding out' caused by higher interest rates exceeding the 'accelerator effects' from the higher levels of output), this would require a reduction in private savings for the twin deficits view to hold precisely. If the higher fiscal deficit led to higher incomes and hence higher private savings, then the current account deficit would be smaller than the fiscal deficit, unless induced private investment more than used up the induced private savings.

2. National saving determines domestic investment. This view stresses the long-established correlation between national saving rates (i.e. the sum of private savings and government savings) and domestic investment rates (i.e. the amount of capital expenditures in the domestic economy). Feldstein and Horioka (1980) analyzed this evidence in an important paper arguing that measures to increase

national savings, whether by governments or the private sector, would be likely to lead to higher investment rates, and hence to greater economic growth in the future. To the extent that the link from national savings to private investment flows through interest rates, a greater fiscal deficit might, according to this view, lead to some increase in the current account deficit to the extent that the higher interest rates induce a higher real value of the dollar.

3. The Intertemporal Approach (e.g. Frenkel and Razin 1987a) assumes full employment, perfect foresight, perfect international markets for capital and tradeable goods, and studies how the international implications of government deficits depend on the source and timing of the deficit, the relative saving propensities of the public and private sectors, and the relative extent to which public spending falls on tradeable and non-tradeable goods. As would be expected, a fiscal deficit caused by a temporary increase in spending is more likely to increase the current account deficit if the spending is concentrated on tradeable goods (Frenkel and Razin 1988b, pp.20-27). The effects of tax changes are especially complex, depending also on which type of tax is being changed, as well as on the timing and preference factors coming into play with changes in government spending.[8]

As Dornbusch (1989) and others have pointed out, one implication of the perfect markets and far-sighted optimizing behaviour assumed in this approach is that there is no policy significance to any current account or fiscal imbalances.

One of the most important benefits of the intertemporal approach has been to focus attention on the likely timing and duration of fiscal actions, and on the nature of private expectations about future government spending and taxes. As

8 Under a certain configuration of preferences, Frenkel and Razin (1988a, p.313) show that a deficit caused by a fall in taxation of consumption or on foreign borrowing tends to worsen the current account, while lower income taxation tends to improve it.

we shall see later, temporary and permanent changes in spending can have very different effects on output, interest rates, exchange rates, and the current account.

The Ricardian approach (Barro 1974, 1989) is a special case of the intertemporal optimization approach, in which (infinitely) long-lived consumers foresee the future taxes eventually required to finance deficits created by current tax reductions, and reduce their current consumption correspondingly, so that there is no link between fiscal deficits and the current account, at least to the extent that the deficits are caused by changes in tax rates.[9]

4. The sustainability approach (e.g. Krugman 1988) also focuses on savings and investment balances, but differs from the intertemporal optimization approach by raising the possibility that markets are insufficiently forward-looking, or insufficiently consistent in their macroeconomic expectations, to foresee the future consequences of today's external deficits. In particular, the approach calculates whether the market's expected rate of future decline of the dollar in real terms, as measured by current real interest rate differentials, is large enough to eventually stop the growth in the ratio of external debt to GNP. If it is not, then the current level of the exchange rate is described as unsustainable. The application of the approach by Krugman was based only on the impact of the exchange rate on the current account balance, and put aside the other links between final spending and the current account. Other versions of the savings and investment approach emphasize the spending links more directly, with the exchange rate playing a

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9 Barro (1989, p. 40) notes that Ricardian equivalence, and the lack of relation between budget deficits and the current account, applies strictly only to deficits created by changing the pattern of taxes for a given flow of government expenditures. However, the empirical evidence he reports relates to correlations between government deficits and the current account, without reference to the sources of the government deficits.

facilitating role, by moving far enough to enable continual matching of the current account with desired capital movements.

Further removed from the savings and investment approaches, but sharing with the Krugman approach the view that market participants may value the dollar at unsustainable or undesirable levels, is the Fundamental Equilibrium Exchange Rate (FEER) approach of Williamson (1985) and Williamson and Miller (1987). This approach addresses the sustainability issue in a different way, by starting with some assumption about the desired accumulation of net foreign liabilities, and then calculating the exchange rate path that would be "expected to generate a current account surplus or deficit equal to the underlying capital flow over the cycle, given that the country is pursuing 'internal balance' as best it can and not restricting trade for balance of payments reasons." (Williamson 1985, p. 113).

The evidence reported in the following sections of this paper is not directly focussed on the question of sustainability, for either exchange rates or current account balances, except to the extent that these issues arise in particular models. The main focus of attention will be on the empirical linkages shown between fiscal deficits and external deficits. All of the models used to provide the evidence are both macroeconomic and international, providing for determination of trade flows, interest rates and exchange rates for all of the major countries, usually within a consistent treatment of the global patterns of trade and investment. Some of the models presume fully forward-looking behaviour by consumers and investors, and some do not; the differences between these two types of model will be examined after a preliminary review of the evidence from a larger sample of models.

3. How Closely Related Are the Fiscal and External Deficits?

It is not very helpful to examine simple correlations between fiscal deficits and external deficits, either over time for a single country or across countries,

since both variables represent the results of many forces, some of which make the two deficits move together, and others apart. For example, a self-inspired investment boom in the United States would tend to raise U.S. GDP, to lower the fiscal deficit and to raise the external deficit. On the other hand, a drop in U.S. exports caused by a fall in foreign demand would tend to lower U.S. GDP, and to raise both the fiscal and external deficits, with the effects on the external deficit being generally greater than those on the fiscal deficit.

As for the links from government spending to the current account, the size of the effect is much in dispute, although most approaches would show some positive connection; that an increase in the fiscal deficit would, to the extent that it also raised real income, domestic prices, interest rates and the exchange rate, also tend to increase the external deficit. How can the size of the effect best be measured? Since simple theoretical models can't help to establish the magnitudes, and complex theoretical models soon become ambiguous in their predictions of even the net direction of effects, there is no realistic alternative to the use of empirical models that represent the key elements of macroeconomic structure.

In order to capture the exchange rate and foreign trade effects of fiscal policy, the frameworks or models used must also capture the trading decisions of other countries. To do this in a consistent manner, a number of models have been developed that treat the main industrial countries in a fairly complete and symmetric manner, usually with a more limited treatment of income and trade determination in the rest of the world.

Over the past five years, several collaborative workshops have been held, sponsored on one or more occasions by the Brookings Institution, the Federal Reserve Board, the IMF, and the Japanese Economic Planning Agency, to bring together the major multicountry models of economic activity and trade, to

compare their properties, and to assess their implications for major policy issues of the day.[10] Since one of the key issues has been the explanation of the U.S. external deficit, including the linkage between fiscal policy and the external deficit, the results of this collaborative research are easily focussed on the twin deficits question.

What does the evidence show? First some results, and then some cautions and qualifications. I shall first present the basic results showing the consequences of an increase in debt-financed U.S. government spending, sustained over the six years shown, equal to 1% of real GNP. For an average of the results from ten multicountry models, Figure 1 shows the effects on the fiscal deficit and on the external deficit, in both cases measured as a percent of baseline GNP.[11] To give some approximate measure of the spread of the results, a band (plus and minus one standard deviation) is drawn about each of the averages.[12]

10 The conferences and models involved are described in more detail, with references to the primary descriptions of the participating models, in Bryant, Helliwell and Hooper (1989).

11 The data were prepared in comparable form and reported in Bryant, Helliwell and Hooper (1989). The sample of ten models reported here is the BHH twelve-model sample removing two models for which some of the series reported in this paper were not available. Appendix Table A-4 reports the primary data for a larger sample of eighteen 'models' (some of which are different versions of the same model), which in turn is the full twenty-model sample used by BHH less two models for which not all the series were available. Most of the model runs used a decrease in U.S. federal spending, and all of the results were converted to that basis, assuming approximate linearity of responses, for the experiments reported in BHH. For this paper, the results are reported as though the expenditure changes were increases in government spending, so as to make the evidence more easily applicable to explaining the increasing fiscal and external deficits of the 1980s.

12 A strict interpretation of these standard deviations would require that the observed properties were based on samples from a population of models with normally distributed properties. The models could be considered to differ by being different estimates of the properties of an underlying 'true' model of the economy, or else being representative of the variety of models actually used by those forming expectations of the effects of policies. The observations are in fact neither independent nor random, as some models have been excluded on the basis of implausible properties, some of the results are from slightly different versions of the same model, and some of the models are intentionally similar to one another. In addition, the distributions are not normal, especially in the eighteen model sample, where, especially in the later years, the distributions are

Figure 1

Average Current Account Deficit and Government Deficit GNP Shares.

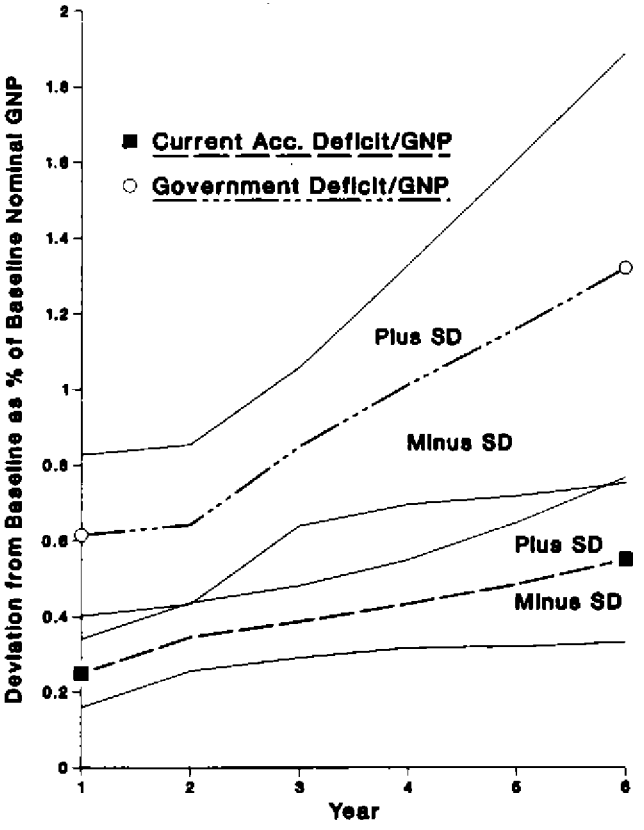
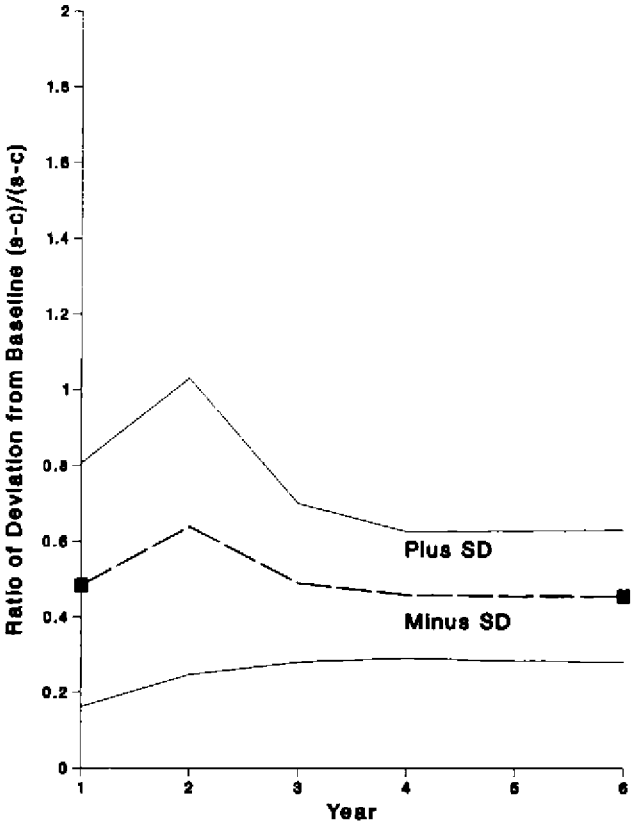


Figure 2

Average Ratio of Current Account Deficit to Government Deficit



In all cases, the initial effect of the government spending on the fiscal deficit is less than the initial size of the spending, reflecting the positive effect of the spending on income and tax revenues. As time progresses, however, the size of the induced deficit increases as a share of baseline nominal GNP, mainly because of the interest payments on the increasing public debt, but partly also because of the higher interest rates and price levels. For the first two years, the net effect on the fiscal deficit averages about 0.6% of GNP. It increases thereafter, passing through 1% in the fourth year.[13]

The current account deficit effect starts at .25% of GNP, increasing sharply to .35% in the second year, and then growing more gradually thereafter. The second year growth reflects the working through of the J-curve effects of the higher value of the U.S. dollar, while the continuing increase thereafter reflects both the continuing loss of competitiveness in response to the growing real value of the dollar and interest payments on the growing external debt.

Figure 2 brings together the effects on the fiscal and external deficits to show the extent to which the two deficits move together in response to an increase in government spending. In the first year, the ratio of the induced external deficit to the induced fiscal deficit is just under one-half (.48). It rises in the second year, reflecting the sharp second-year increase in the external deficit effects described above, and then returns to just below one-half, ranging between .45 and .49 for the rest of the six-year period. The fairly narrow bands around the average show that the models, despite their diversity of structure, all show that the two deficits are closely related but far from being twins.

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skewed by one or two implausible outliers, as is apparent from the results for individual models reported in Appendix Table A-4.

13 The means and standard deviations plotted in Figures 1 and 2 are reported in Appendix Table A-1.

Figure 3

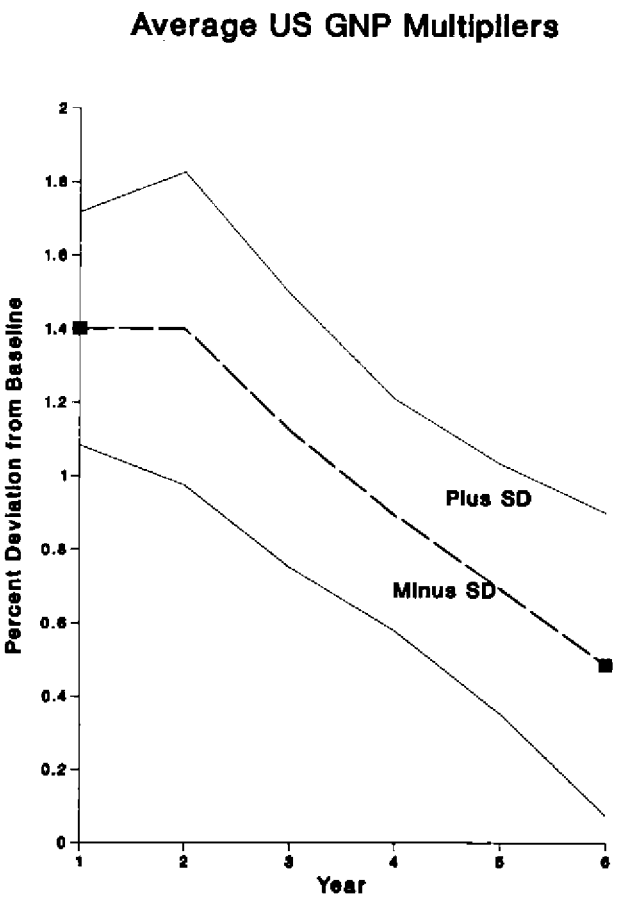
Average US GNP Multipliers
Percent Deviation from Baseline
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
1
2
3
4
5
6
Year
Plus SD
Minus SD

Figure 4

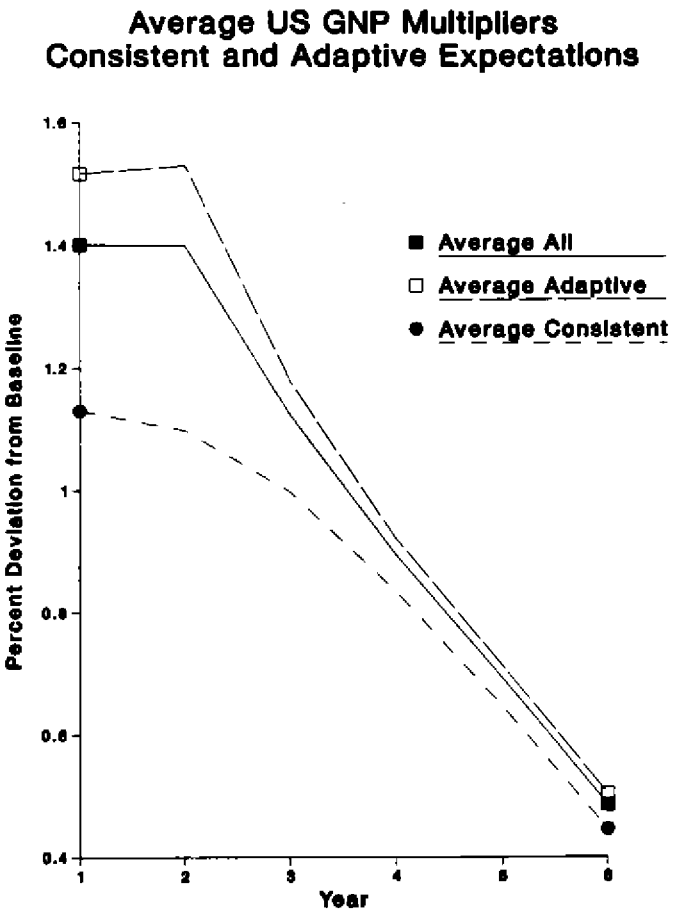
Average US GNP Multipliers
Consistent and Adaptive Expectations
Percent Deviation from Baseline
1.6
1.4
1.2
1
0.8
0.6
0.4
1
2
3
4
5
6
Year
Average All
Average Adaptive
Average Consistent

Figure 3 shows that the increasing effects of government spending on the two deficits are not because real spending and output continue to grow- on the contrary, the average real GNP effects of the fiscal expansion show multipliers of about 1.4 in the first two years, dropping steadily thereafter, averaging 0.5 in the sixth year. Figure 4 shows that the real GNP effects are smaller in the models with forward-looking or model-consistent expectations, usually referred to as rational expectations. This happens because in these models the future crowding-out effects are foreseen, especially in financial and foreign exchange markets, so that long-term interest rates and the exchange rate rise more, and much sooner, than in models where expectations adjust adaptively. Although the real exchange rate crowding out therefore occurs faster in the models with consistent expectations, the effects on the nominal current account build up more slowly, as the J-curve effects take a year or more to work themselves out.

4. What If Fiscal Policy Had Been Different in the 1980s?

To get some rough answer to this question, simulations with the INTERMOD multicountry model[14] have been used to estimate how different the U.S. deficit and debt position in the 1980s might have been if U.S. fiscal policy had been less expansionary in the first half of the 1980s. This can only be done in a very approximate manner, as there is no easy definition of what the alternative fiscal policy might have been, and even less way of knowing the extent to which the actual fiscal policy changes were foreseen by the financial markets, a factor

14 The model was developed in the Canadian Federal Department of Finance, based on the 1988 version of the IMF's MULTIMOD (Masson et al, 1988), extended to include separate country blocks for each of the G-7 economies, and prepared in both mainframe and PC versions, as described in Helliwell, Meredith, Durand and Bagnoli (1990). The simulations reported in this section use version 1.2, which differs from the earlier version principally by implementing a monetary policy that holds the money supply unchanged in response to fiscal changes, instead of the earlier monetary policy reaction function that dampened the interest-rate effects of fiscal policy changes. Version 1.2 has a monetary sector with properties very like the average of those of the multicountry models surveyed by Helliwell, Cockerline and Lafrance (1988).

that has great importance in models with forward-looking expectations. To avoid making any personal guesses on the nature of the alternative policy, I use the Helkie-Hooper (1988, Table 2-15) estimates of the cumulative federal government fiscal expansion between 1980 and 1985, approximately equal to the IMF estimates of federal government fiscal expansion, totalling some 3.5% of GNP. On the presumption that the broad features, but not the year-to-year variations of the fiscal expansion were foreseen by financial markets, the increases are spread evenly over the years 1980 to 1985. The fiscal expansion is then left constant in real terms (about $100 billion 1980 dollars) for the rest of the decade, and then subsequently removed.[15]

Figures 5 and 6 show the results of this fiscal policy experiment, using both adaptive and consistent expectations versions of INTERMOD. Figure 5 shows the effects on the fiscal and external deficits, and also on the ratio of the external debt to GNP, while Figure 6 shows the effects on interest rates and the exchange rate, under the assumption that the money supply is the same under the two alternative patterns of government spending.

The results based on model-consistent expectations, combined with the assumption that the fiscal expansion was foreseen, suggest that the 1986 fiscal deficit was 3.3% of GNP larger (about $140 billion), and the current account deficit 1.3% of GNP larger (about $55 billion) than they would have been without the fiscal expansion. As the figures show, the current account effects continue to rise through the decade, as the foreign debt share continues to build up. Because the

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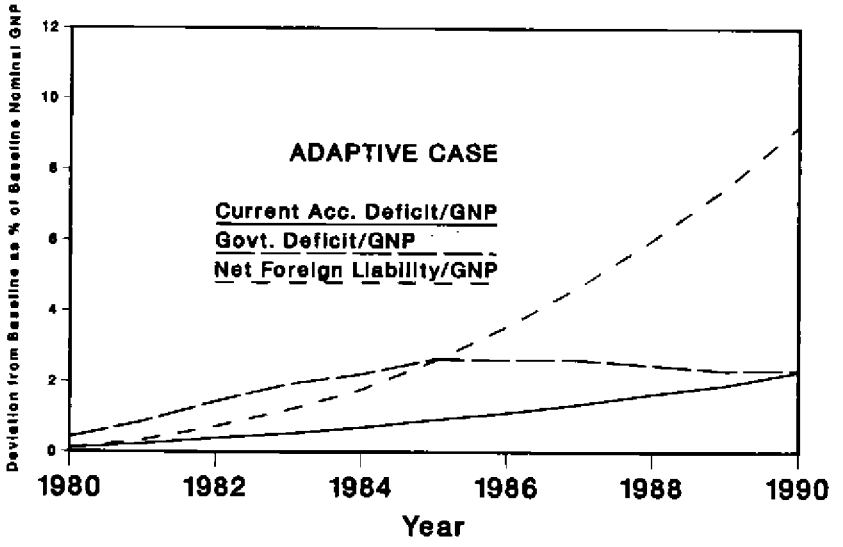
15 This is to avoid the possibility of unstable long-term solutions of the models with forward-looking expectations. In these models, an unsustainable fiscal policy is foreseen by the financial markets, so that the future fiscal policy must be consistent with the model's portfolio equilibrium conditions. The fiscal expansion is reduced by 20% of the annual declining balance in each year following 1990. This has no effect on the 1980s results for models with adaptive expectations, since policies expected to be introduced after 1990 have no explicit effects on 1980s behaviour in these models.

Figure 5
Intermod: Current Account Deficit, Government Deficit and Net Foreign Liability GNP Shares.



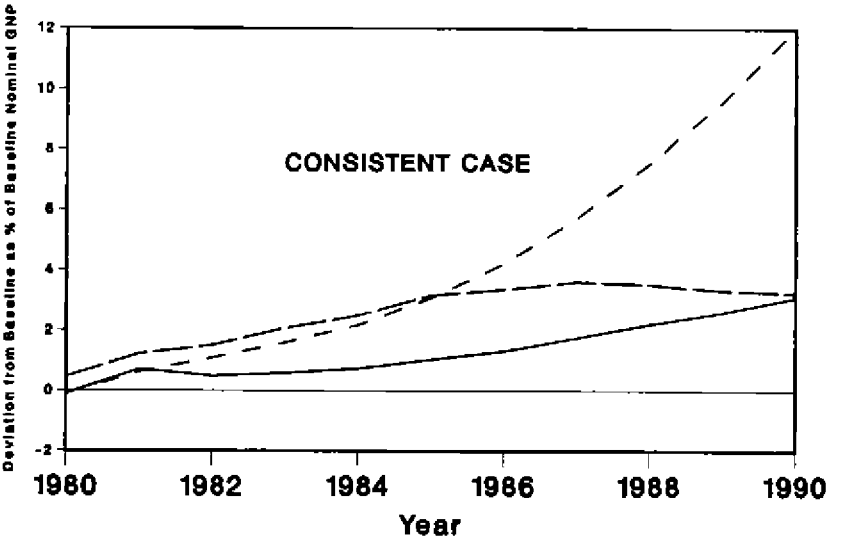
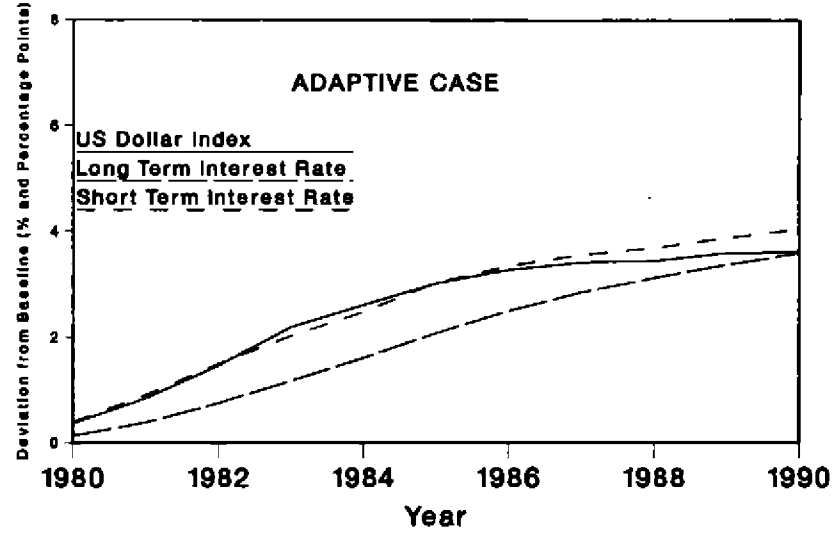
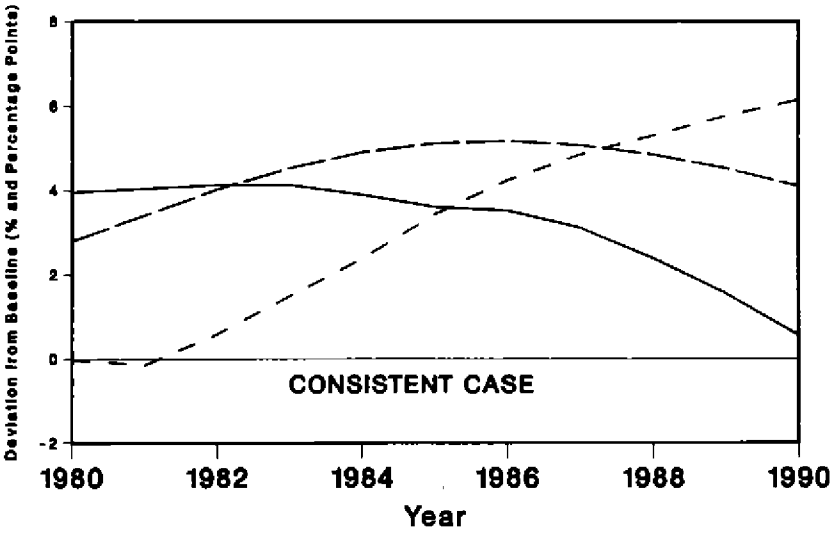


Figure 6
Intermod: Exchange Rate and Interest Rates.





future increases in government spending are foreseen at the beginning of the decade, there are immediate increases in the external value of the dollar[16], and in long-term interest rates, that almost completely crowd out the income-increasing effects of the government spending.[17]

Under adaptive expectations, the future effects of the fiscal expansion are not foreseen, and the increases in the value of the dollar, and in long-term interest rates, are much less. As a result, the increases in income are larger, and the government deficit increases are generally smaller, under adaptive expectations. The external deficit comparison is more ambiguous. Under adaptive expectations, the higher income means higher real imports, which tend to make the current account effects larger. However, there is much less increase in the value of the dollar, and hence much less reduction in real net exports via that channel. However, the nominal current account is less rapidly affected by these relative price effects, because the dollar cost of U.S. imports falls when the dollar is stronger, as it is under consistent expectations. As time progresses, the external deficit effects become much larger, especially under consistent expectations, when the J-curve effects have time to work themselves through.

A striking feature of the results, under both adaptive and consistent expectations, is the build-up of government and external debt, and the growing importance of debt service charges. By the end of 1989, net foreign debt is higher by $500 billion, and government debt $1,000 billion higher, under consistent

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16 The importance of expected future budget deficits in determining the value of the dollar has been widely studied and emphasized, e.g. by Feldstein (1986).
17 As shown in Figure 4.1 of Bryant, Helliwell and Hooper (1989), expected future increases in government spending can lower aggregate spending when they are announced, because the crowding-out effects of the exchange rate and long-term interest rates appear immediately, while the demand-expanding effects of the government spending appear only later. Similar effects of anticipated future spending are shown by other researchers using model-consistent expectations, e.g. Masson and Blundell-Wignall (1985), Haas and Masson (1986) and McKibbin and Sachs (1989, Table 6).

expectations.[18] As a result of the accumulation of foreign debt, there is a substantial wedge created between real output (GDP, or value-added within the United States) and real income (GNP, real income accruing to U.S. residents), equal to the reduction of net interest and dividend income from foreigners. By 1989, real GNP has fallen by more than 1% relative to GDP, representing the net cost of servicing the foreign debt.

The numbers used in this section are not intended as precise estimates, since they come from only one of many models,[19] and, more importantly, because we cannot know to what extent the fiscal expansion of the 1980s was foreseen, and hence how much of the higher interest rates and higher exchange value of the dollar can properly be attributed to it.[20] Nevertheless, the evidence from a substantial number of models, and from several alternative approaches, suggests that the U.S. fiscal policy of the first half of the 1980s was responsible for about half of the buildup of the external deficit, and that cumulated foreign debt is now about half a trillion dollars higher than it would have been without the fiscal expansion.

If U.S. fiscal policy was not responsible for more than half of the 1980s growth of the external deficit, what were the remaining factors? One frequent candidate is tighter U.S. monetary policy, which helped to raise the value of the

18 Under adaptive expectations, where the expansionary effects of the fiscal policy are larger, the debt build-up is smaller: $400 billion in external debt and $800 billion of government debt.

19 The debt accumulation results are not available for a wider variety of models. Not all of the multicountry models account fully for the interactions between debt accumulation, both domestic and foreign, and the resulting debt service payments.

20 In addition, the interaction between deficits and debt is strong enough that the baseline matters. The INTERMOD estimates of the effects of the U.S. fiscal policy on the external deficit would be slightly smaller if the experiments were run on a baseline that excluded the policies. On the other hand, INTERMOD and MULTIMOD both have an endogenous tax policy that comes into play to guarantee that the debt/GNP ratio does not become explosive, and this plays a role in limiting the estimates of the induced fiscal deficit, and hence debt, in the latter half of the 1980s.

dollar and hence to crowd out real net exports. However, when the multicountry models are run under tighter U.S. monetary policy, they typically show very little net effect on the external deficit. For example, Table 3.1 of Bryant, Helliwell and Hooper (1989) shows that a 1% U.S. monetary expansion lowers the value of the U.S. dollar by about 1%, on average, but has no net effect on the current account, since the relative price effects are offset by the increased imports caused by the higher levels of U.S. final demand.

Another widely studied possibility is that the exchange market over-valued the U.S. dollar in the middle 1980s, independent of the induced effects of the monetary and fiscal polices of the time, and that this added to the external deficit. The multicountry models show, on average, that each 1% increase in the value of the dollar, not caused by either fiscal or monetary policy changes, worsens the U.S. current account, in the third year, by somewhat less than $1 billion.[21]

There is also the possibility, noted by Genberg (1988) and others, that abnormal increases in private investment spending, whether based on changes in the tax rules and rates applicable to investment spending (which have not been explicitly incorporated in the fiscal policy assessments in this paper), or to changes in business confidence, could also have contributed to the increase in the current account deficit, at least during the period when the new capacity has not been fully brought on stream.

Finally, there is the role of fiscal contraction in countries outside North America. The G-7 countries outside North America followed generally restrictive fiscal policies over the first half of the 1980s, by amounts averaging about 2.5% of their GNP, as estimated by Helkie and Hooper (1988, Table 2-17). Table 1 below

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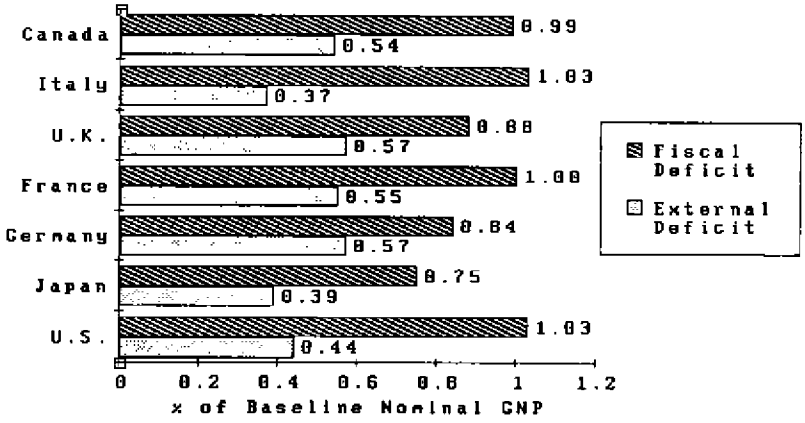
21 A gradual depreciation of the dollar, totalling just under 25% by the fourth year, improves the U.S. current account, in that year, by about $19 billion, as reported for an average of 11 models in Bryant, Henderson, et al, eds. (1988, Supplemental Volume, Table F, p. 100).

shows INTERMOD estimates of the linkages between the fiscal and external deficit consequences of separate fiscal expansions (with spending increased by amounts equal to 1% of GDP) in each of the G-7 economies, with the countries shown in ascending order of size from top to bottom. All seven countries show substantial linkages between the external and fiscal deficits, with the external deficit effects being slightly greater for the smaller and more open economies. Italy provides a slight exception, due mainly to the high private savings rate there, an often-noted feature of the Italian economy.[22]

Table 1

3rd Year Effects of Fiscal Expansion-
Consistent Expectations



22 The data are drawn from Tables A1 and A3-A8 of Helliwell, Meredith et al (1990). It should perhaps be noted that the three savings rates (private, government and foreign) do not sum to zero, as a percentage of baseline nominal GNP, but to the change in nominal investment, also measured as a share of baseline GNP. Thus international differences in the extent to which private investment is induced or crowded out by the fiscal expansion can also play a role in mediating the differences between the external and fiscal deficit effects. All of the G-7 countries show induced investment, averaging about the same as Italy's .6% of baseline GNP, while Italy's personal savings, at 1.25%, is among the highest.

Precise calculation of the implications of foreign fiscal policy for the U.S. current account would require taking account of each country's policy separately, since each of the G-7 countries has different trading links with the United States. However, a reasonable approximation can be provided by using the evidence for changes in government spending in the non-U.S. members of the OECD (referred to as the 'rest of the OECD' or ROECD), as provided for the 1986 Brookings conference, and reported in Bryant, Henderson et al, eds. (1988). Using this evidence, Helkie and Hooper (1988, Table 2-17) estimate that the tighter fiscal policy in the ROECD contributed an additional $25 billion to the U.S. external deficit in 1986.

Putting together the model-based evidence of the external deficit effects of U.S. fiscal policy, foreign fiscal policy, and other factors leading to dollar appreciation in the 1980s, Helkie and Hooper (1988, Table 2-17) estimate that about $135 billion of the 1986 U.S. current account deficit can be explained.[23] In any event, the aim of this paper is not to explain fully the evolution of the U.S. current account, which raises a number of larger issues, but to spell out the evidence linking U.S. fiscal policy to the external deficit. This evidence is perhaps best summarized by a 50% rule of thumb - that an increase in the fiscal deficit arising from changes in government spending, in the macroeconomic environment of the 1980s, is likely to have been accompanied by an increase in the external deficit about half as large.

5. Implications for the 1990s

This paper has been devoted to a summary of the model-based evidence of the linkage between fiscal policy and the external deficit in the 1980s. The experiments used were based on the analysis of changes in the current and

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23 Subsequent refinements of these estimates are reported in Hooper and Mann (1989).

future levels of government spending, where (at least in the models with consistent or forward-looking expectations) the proposed changes in future spending were fully credible to all participants. The real world is more complicated than this in at least two important ways. First, the political process does not operate so as to provide a close link between currently announced objectives and actual future policy, so that any announcement of future policy is bound to be discounted at least partially in the minds of market participants.[24] Second, given the inevitable uncertainty about future events, institutions and behaviour, policies are perhaps better analyzed in terms of the reactions of policy-makers to unfolding events. There is increasing research using models to evaluate alternative policy rules in this way[25], but so far there is no evidence available on the design and consequences of alternative deficit reduction strategies in this more general framework. In any event, benchmark estimates of the type surveyed in this paper will remain relevant to more complex studies of policy strategies.

To what extent is the evidence presented in this paper transferable to the 1990s? Several of the experiments included in the results for this paper were in fact based on the consequences of reductions in U.S. government spending starting in 1987 or 1988, and extending into the 1990s. These results thus largely incorporate the accumulated debt levels of this period, and the broad features of

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24 This may have the effect of making the actual effects of policies fall in between the paths predicted by models with adaptive and rational (i.e. model-consistent) expectations. This is by no means sure, however, as it depends on the structure and diversity of the processes actually used by market participants to form their expectations about future policy, as well as on their beliefs about the structure of the economy itself.

25 Current examples of the evaluation of alternative monetary policy rules, including the implications for policy coordination, include Frenkel, Goldstein and Masson (1989) and Taylor (1989). Evaluation of policy rules in a stochastic environment is the focus of continuing collaborative research among users of multicountry models, with a workshop to be held in Washington in the spring of 1990.

the results are likely to be relevant for assessments covering the first half of the 1990s.

It is therefore likely to remain the case, to the extent that the models assessed come close to capturing the main elements of macroeconomic linkages, that reductions in the fiscal deficit will, on their own, contribute to a reduction in the external deficit about half as great. This arises from the combined effects of the lower domestic final demand and the higher foreign demand spurred by the lower real value of the dollar. The lower real value of the dollar comes about partly from a lower nominal value and partly from a lower U.S. inflation rate.

On the other hand, monetary expansion, whether intended to offset the temporary contractionary effects of fiscal deficit reduction[26] or to lower the value of the dollar to help encourage net exports, has almost no net effect on the external deficit, despite a very large effect on the value of the dollar.[27]

Drops in the value of the dollar coming from other sources than changes in fiscal and monetary policies are estimated, with much imprecision, to have only a slight net effect on the external deficit. Thus the link between the exchange rate and the external deficit depends critically on what is making the exchange rate move. According to the evidence surveyed here, a lower value of the dollar only

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26 Almost all of the multicountry models surveyed show that there is complete or nearly complete crowding out (or crowding in, in the case of fiscal contraction) of real private spending and net exports in the medium term, in response to changes in government spending, so that the real GNP effects of budget reductions are temporary, although spread over years rather than months. The models with forward-looking expectations also show that credibly announced future changes in fiscal policy have much smaller real GNP effects, since the exchange rates and long-term interest rates move quickly so as to accelerate the substitution of private expenditures for public ones.

27 As shown by the results in Bryant, Henderson et al, eds. (1988, Supplemental volume, Table E, p. 87). The inflationary effects of the monetary expansion combine with the expenditure-increasing effects to offset the increases in net exports that might otherwise be expected to follow from a reduction in the value of the dollar.

has a material effect on the external deficit when it is caused by a change in domestic final spending. Thus, to the extent that reducing the external deficit should become a focus of macroeconomic policy, reductions in the fiscal deficit provide the policy instrument.

Since the two deficits are siblings (half-sisters or half-brothers?) rather than twins, domestic policy alone is not likely to remove the external deficit entirely, especially in the short-run. Higher real growth in countries outside North America, as would be implied by their continuing convergence towards North American levels of real income and productivity, is therefore likely to be a welcome partner to domestic fiscal policy in obtaining and maintaining both fiscal and external balance. Once internal balance and sustainability of the external position seem secure, however, there seems little reason why the external deficit or surplus should be a focus of special policy attention anyway, beyond being an interesting record of the international pattern of saving and investment.

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APPENDIX TABLES

Guide to Model Mnemonics

EP(1988FR)	EPA: World Econometric Model of the Japanese Economic Planning Agency
EPA (EMIE)	"
MC(1988FR)	MCM: Multicountry Model of the US Federal Reserve Board
MCM (EMIE)	"
NI(1988FR)	GEM: Global Economic Model of the National Institute of Economic and Social Research of the United Kingdom
OE(1988FR)	OECD: Interlink model system of the Economics and Statistics Department of the OECD
OECD(EMIE)	"
LI(1988FR)	LINK: Project Link model
LINK(EMIE)	"
MP(1988FR)	MPS: Federal Reserve Board MPS model
MU	MULTIMOD: MULTI-region econometric MODel of the IMF
INY	INTERMOD: Adaptive case.
INZ	INTERMOD: Consistent case.
LIV (EMIE)	LIVERPOOL: The Liverpool model built by Patrick Minford and associates at the University of Liverpool
DRI (EMIE)	DRI: International Model of Data Resources Incorporated
EEC (EMIE)	COMPACT: developed by the staff of the EC Commission
MCK (EMIE)	MSG: Mckibbin-Sachs Global model developed by Warwick Mckibbin and Jeffrey Sachs at Harvard University
MINI(EMIE)	MINIMOD model constructed by Richard Haas and Paul Masson at the International Monetary Fund

Notes: EMIE: Refers to the project "Empirical Macroeconomics for Interdependent Economies". The conference was held at Brookings in March 1986, and the proceedings are published as Bryant, Henderson et al, eds, (1988). 1988FR: Refers to Federal Reserve Board Conference, May 1988.

Table A-1

Effects of a Change in Government Expenditures Equal to 1% of GNP

Means and Standard Deviations for Ten Model Sample

	Year	1	2	3	4	5	6
(a) ugnpv	mn	1.401	1.400	1.123	0.894	0.693	0.486
	sd	0.317	0.426	0.373	0.315	0.340	0.412
(b) ucurdef/ ugnp	mn	0.250	0.346	0.387	0.434	0.485	0.551
	sd	0.091	0.091	0.095	0.116	0.164	0.218
(c) ugdef/ ugnp	mn	0.615	0.643	0.850	1.013	1.161	1.321
	sd	0.212	0.210	0.210	0.316	0.443	0.568
(d) ucurdef/ ugdef	mn	0.484	0.639	0.490	0.459	0.456	0.457
	sd	0.322	0.392	0.211	0.167	0.172	0.174

Units: (a) Percent Deviation from baseline
(b),(c) Deviation from baseline as percent of nominal baseline GNP
(d) Ratio of deviation from baseline (s-c)/(s-c)

Mnemonics: mn = Mean, sd = Standard Deviation
ugnpv = US real gross national product
ugnp = US nominal gross national product
ucurdef = US current account deficit
ugdef = US government deficit

Ten Model Sample: MC, OE, MU, INY, INZ, MCM, DRI, EEC, MINI, OECD

Table A-1 (contd.)

Correlation Matrix for Ten Model Sample

Year 1				
(a)	1.000			
(b)	0.227	1.000		
(c)	-0.726	0.133	1.000	
(d)	0.830	0.434	-0.774	1.000
	(a)	(b)	(c)	(d)
Year 2				
	1.000			
	0.603	1.000		
	-0.663	-0.452	1.000	
	0.786	0.808	-0.877	1.000
Year 3				
	1.000			
	0.493	1.000		
	-0.443	-0.196	1.000	
	0.580	0.769	-0.745	1.000
Year 4				
	1.000			
	0.297	1.000		
	-0.354	0.125	1.000	
	0.486	0.619	-0.654	1.000
Year 5				
	1.000			
	0.174	1.000		
	-0.351	0.177	1.000	
	0.415	0.559	-0.653	1.000
Year 6				
	1.000			
	0.030	1.000		
	-0.396	0.174	1.000	
	0.291	0.606	-0.590	1.000

Table A-2

Means and Standard Deviations for Eighteen Model Sample

	Year	1	2	3	4	5	6
(a) ugnpv	mn	1.328	1.323	1.086	0.867	0.615	0.268
	sd	0.373	0.576	0.561	0.419	0.485	1.352
(b) ucurdef/ ugnp	mn	0.247	0.349	0.389	0.421	0.454	0.497
	sd	0.117	0.143	0.172	0.205	0.271	0.361
(c) ugdef/ ugnp	mn	0.578	0.583	0.766	0.941	1.104	1.281
	sd	0.249	0.249	0.258	0.346	0.454	0.634
(d) ucurdef/ ugdef	mn	1.176	0.887	0.685	0.639	0.651	0.652
	sd	3.077	1.026	0.846	0.909	1.065	1.097

Units: (a) Percent Deviation from baseline
(b),(c) Deviation from baseline as percent of nominal baseline GNP
(d) Ratio of deviation from baseline (s-c)/(s-c)

Mnemonics: mn = Mean, sd = Standard Deviation
ugnpv = US real gross national product
ugnp = US nominal gross national product
ucurdef = US current account deficit
ugdef = US government deficit

Eighteen Model Sample: EP, MC, NI, OE, LI, MP, MU, INY, INZ, EPA, LIV, MCM, DRI, EEC, LINK, MCK, MINI, OECD

Table A-2 (contd.)

Correlation Matrix for Eighteen Model Sample

Year 1				
(a)	1.000			
(b)	-0.027	1.000		
(c)	-0.525	-0.120	1.000	
(d)	-0.138	0.412	-0.598	1.000
	(a)	(b)	(c)	(d)
Year 2				
	1.000			
	0.344	1.000		
	-0.400	-0.401	1.000	
	0.062	0.725	-0.696	1.000
Year 3				
	1.000			
	0.155	1.000		
	-0.223	-0.298	1.000	
	-0.118	0.690	-0.662	1.000
Year 4				
	1.000			
	0.178	1.000		
	-0.133	-0.095	1.000	
	-0.129	0.534	-0.609	1.000
Year 5				
	1.000			
	0.562	1.000		
	-0.230	-0.060	1.000	
	0.097	0.428	-0.580	1.000
Year 6				
	1.000			
	0.618	1.000		
	-0.517	-0.178	1.000	
	0.171	0.395	-0.514	1.000

Table A-3

Means for Adaptive and Consistent Expectations Models

Year	1	2	3	4	5	6
Adaptive Models: MC, OE, INY, MCM, DRI, EEC, OECD						
(a) ugnpv	1.517	1.530	1.178	0.920	0.713	0.504
(b) ucurdef/ugnp	0.292	0.368	0.403	0.438	0.479	0.535
(c) ugdef/ugnp	0.588	0.601	0.853	1.037	1.203	1.392
Consistent Models: MU, INZ, MINI						
(a) ugnpv	1.130	1.098	0.997	0.834	0.646	0.446
(b) ucurdef/ugnp	0.152	0.295	0.349	0.424	0.500	0.588
(c) ugdef/ugnp	0.677	0.742	0.843	0.957	1.065	1.157

Note: Reported numbers are means.

Units: (a) Percent Deviation from baseline
(b),(c) Deviation from baseline as percent of nominal baseline GNP

Mnemonics:

ugnpv = US real gross national product
ugnp = US nominal gross national product
ucurdef = US current account deficit
ugdef = US government deficit

Table A-4

Results from Individual Models

UGNP (Percent Deviation from Baseline)

	1	2	3	4	5	6
EP	1.406	1.111	1.118	1.034	0.917	0.809
MC	1.565	1.773	1.552	1.429	1.366	1.212
NI	1.150	0.850	0.250	0.050	0.175	0.300
OE	1.012	0.907	0.578	0.476	0.339	0.136
LI	1.030	0.660	0.450	0.490	0.530	0.480
MP	2.031	2.838	2.601	1.612	-0.648	-4.822
MU	1.064	1.232	1.188	1.040	0.846	0.616
INY	1.550	1.760	1.550	1.260	0.990	0.760
INZ	1.220	1.110	1.050	0.910	0.740	0.550
EPA	1.578	1.710	1.605	1.575	1.604	1.916
LIV	0.653	0.573	0.523	0.498	0.471	0.447
MCM	1.564	1.838	1.434	0.936	0.522	0.057
DRI	2.049	2.103	1.444	0.980	0.853	0.957
EEC	1.340	1.245	1.049	0.850	0.645	0.446
LINK	1.247	1.219	0.983	0.709	0.474	0.282
MCK	0.811	0.855	0.780	0.703	0.621	0.552
MINI	1.106	0.953	0.753	0.552	0.353	0.173
OECD	1.536	1.082	0.637	0.510	0.275	-0.043

UGDEF/UGNP (Deviation from Baseline as Percent of Baseline Nominal GNP)

EP	0.550	0.639	0.673	0.730	0.809	0.865
MC	0.414	0.386	0.558	0.683	0.779	0.908
NI	0.749	0.465	0.898	1.355	1.400	1.134
OE	0.820	0.746	0.937	1.159	1.330	1.521
LI	0.031	0.136	0.188	0.172	0.152	0.161
MP	0.402	0.377	0.589	0.977	1.602	2.660
MU	0.766	0.817	0.914	1.033	1.147	1.236
INY	0.700	0.760	0.880	1.010	1.150	1.270
INZ	0.720	0.880	1.030	1.200	1.360	1.500
EPA	0.302	0.263	0.590	0.971	1.363	1.692
LIV	0.978	0.992	1.031	1.066	1.098	1.155
MCM	0.382	0.320	0.599	0.912	1.188	1.475
DRI	0.218	0.408	0.896	1.214	1.382	1.466
EEC	0.832	0.764	0.887	0.635	0.507	0.511
LINK	0.493	0.384	0.387	0.454	0.567	0.697
MCK	0.757	0.811	0.944	1.093	1.273	1.476
MINI	0.545	0.528	0.585	0.638	0.688	0.734
OECD	0.752	0.826	1.211	1.644	2.082	2.590

Table A-4 (continued)

Results from Individual Models

UCURDEF/UGNP (Deviation from Baseline as Percent of Baseline Nominal GNP)

EP	0.076	0.290	0.363	0.441	0.529	0.630
MC	0.283	0.419	0.471	0.523	0.583	0.636
NI	0.140	0.105	0.146	0.196	0.177	0.141
OE	0.364	0.356	0.369	0.416	0.450	0.483
LI	0.417	0.618	0.740	0.720	0.732	0.794
MP	0.304	0.477	0.337	0.162	-0.037	-0.323
MU	0.234	0.302	0.343	0.398	0.450	0.519
INY	0.210	0.260	0.300	0.350	0.410	0.480
INZ	0.120	0.380	0.440	0.550	0.660	0.780
EPA	0.211	0.491	0.604	0.679	0.758	0.855
LIV	0.168	0.166	0.141	0.125	0.103	0.104
MCM	0.253	0.396	0.524	0.657	0.818	0.993
DRI	0.272	0.522	0.519	0.463	0.473	0.569
EEC	0.281	0.281	0.289	0.275	0.234	0.198
LINK	0.130	0.156	0.145	0.124	0.104	0.093
MCK	0.498	0.523	0.649	0.795	0.961	1.142
MINI	0.101	0.204	0.265	0.324	0.389	0.466
OECD	0.382	0.341	0.349	0.382	0.384	0.384

UCURDEF/UGDEF (Ratio of Deviation from Baseline (s-c)/(s-c))

EP	0.138	0.454	0.539	0.604	0.654	0.728
MC	0.684	1.085	0.844	0.766	0.748	0.700
NI	0.187	0.226	0.163	0.145	0.126	0.124
OE	0.444	0.477	0.394	0.359	0.338	0.318
LI	13.452	4.544	3.936	4.186	4.816	4.932
MP	0.756	1.265	0.572	0.166	-0.023	-0.121
MU	0.305	0.370	0.375	0.385	0.392	0.420
INY	0.300	0.342	0.341	0.347	0.357	0.378
INZ	0.167	0.432	0.427	0.458	0.485	0.520
EPA	0.699	1.867	1.024	0.699	0.556	0.505
LIV	0.172	0.167	0.137	0.117	0.094	0.090
MCM	0.662	1.237	0.875	0.720	0.689	0.673
DRI	1.248	1.279	0.579	0.381	0.342	0.388
EEC	0.338	0.368	0.326	0.433	0.462	0.387
LINK	0.264	0.406	0.375	0.273	0.183	0.133
MCK	0.658	0.645	0.687	0.727	0.755	0.774
MINI	0.185	0.386	0.453	0.508	0.565	0.635
OECD	0.508	0.413	0.288	0.232	0.184	0.148