International Payments Imbalances in Japan, Germany, and the United States

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The persistent current account imbalances of the United States, Japan, and Germany have been a source of surprise, concern, and puzzlement to international policymakers since the turnaround of the dollar in 1985, and even before that. Prescriptions to reduce these imbalances have become the central point of international policy analyses, as in the International Monetary Fund's *World Economic Outlook* (1988) and the Organisation for Economic Cooperation and Development's *OECD Economic Outlook* (1988). In this paper we review the existing projections of these imbalances and present a dynamic model that can be used to analyze the sources of the imbalances and the policies to reduce them. We use the model to discuss scenarios that the international organizations have developed, and we present alternative scenarios that may be preferable.

In the opening section we review the existing projections. First, we show the projected 1989 imbalances for the three countries in the context of the world distribution of imbalances. Here, the question of European integration comes forward immediately. The German current account surplus for 1989 is projected at $40–45 billion, while the surplus of OECD Europe is less than $10 billion and that of the European Community, about $15 billion. Thus, concern about the German surplus would be greatly reduced if Germany were considered to be part of an integrated Europe. Next we review the IMF and OECD reference scenarios based on current and announced future policy for the three countries. These show persistent, large imbalances out to 1992, and

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support the organizations' proposals for policy changes in the direction of an expansion of domestic demand in Japan and Germany, and contraction in the United States.

A small theoretical model is developed in the following section that is used to illustrate the sources of the current imbalances in fiscal shifts in the early 1980s and to analyze the effects of proposed shifts in policy, interpreted as fiscal adjustments. The model is a dynamic version of the "fundamentals" model in Branson (1988), which is, in turn, a two-country version of the model in Branson (1985). We interpret the position of the three countries in 1988 as a point along a dynamic adjustment path that began in the early 1980s and includes the turnaround in 1985. We then show the effects of the policy shifts from that point. This differs from earlier analyses such as that in Krugman (1987) or Branson (1988), which at least implicitly begin from points of equilibrium. The basic result is that the policy shifts would be accompanied by further real depreciation of the dollar against the DM and yen except for one case. That is the case of a large, anticipated fiscal shift where the market causes the dollar to depreciate so much in anticipation of the shift that it appreciates when the shift finally occurs. In this case, the current account imbalances would have to be anticipated to reverse under existing policies, including the anticipated fiscal shift. None of the projections includes this case, so it seems safe to rule it out.

Our versions of three alternative scenarios considered by the IMF (1988) and the OECD (1988) are then presented and discussed. These are (1) a market-driven depreciation of the dollar, (2) fiscal contraction in the United States alone, and (3) fiscal contraction in the United States and expansion in Japan and Germany. These alternatives are produced using a system operating at the Bank of Italy that compares alternative projections of the international institutions and can produce additional projections using the multipliers from the different organizations' models. The projections of the alternative scenarios are consistent with the theoretical model, with further dollar depreciation in the fiscal policy scenarios. Scenario 2, with fiscal contraction in the United States alone, produces a slowdown in growth in all areas, more marked in the OECD model. The largest projected reduction in the U.S. current account deficit, $86 billion by 1992, comes in Scenario 1 in the IMF model.

The balanced fiscal policy scenario, with the United States contracting and the others expanding, would leave world saving and therefore average world real interest rates approximately unchanged. To reduce real interest rates and benefit the developing country debtors, the aggregate fiscal deficit would have to be reduced, as in Scenario 2. But that scenario maximizes the chance of recession. So we have developed alternative scenarios with fiscal contraction in the United States and monetary expansion in Japan and Germany. These scenarios are discussed in the final section, and they resemble the actual policy stance

since late 1986. They produce nearly as much adjustment in the U.S. current account as the balanced fiscal scenario, with more projected growth outside the United States and lower real interest rates. Thus, we conclude that these scenarios may be preferable to the others.

Current Account Projections

In recent years a number of international organizations, including the IMF and the OECD, have formulated alternative medium-term scenarios to aid in the analysis of the problems of adjustment of external imbalances of various groups of countries. The alternatives are generally built upon a baseline scenario that is a run of a simulation model, sometimes econometric, assuming existing policy, somehow defined. The alternatives then change the policy assumptions and rerun the model, taking into account to some extent the possibility that the policy changes will themselves alter the behavioral equations of the model.

The projections discussed in this section are based on the *reference scenarios* (or *baselines*) derived from the IMF Multimod and the OECD Interlink models, assuming (a) no change in current or announced policies, (b) a predicted path for key exogenous variables such as oil and other commodity prices, and (c) approximately unchanged real exchange rates over the simulation period. (The details of the assumptions are given in the notes to table 3.) The time horizon of the simulations is five years, beginning in 1988. The IMF scenario is reported in IMF (1988); the OECD scenario is in a background document for OECD (1988). Here we use the reference scenarios to discuss the distribution of current account imbalances internationally, and the projected evolution of the imbalances of the United States, Japan, and Germany.

The projected world current account balances for 1989 are shown in table 1. The first column gives the OECD projections in billions of dollars, and the second in percent of GNP, where available. The third column compares the IMF projections as a percent of GNP. The table is based on the OECD projections because they include the dollar amounts and more countries. The OECD current account deficit in 1989 is projected to be $64 billion, with deficits of $144 billion in North America and $9 billion in the Antipodes, and surpluses of $80 billion in Japan and $9 billion in Europe. The Asian newly industrializing countries (NICs) show a surplus of $24 billion (a range of $22–32 billion in the IMF projections), and the rest of the world (ROW) a $26 billion deficit.

The world deficit, or current account discrepancy, in the OECD projections of table 1 is $66 billion. The world deficit in the IMF projections is $60 billion. The IMF breaks this down into a trade *surplus* of $39 billion and deficits of $84 billion on services and $15 billion on transfers (IMF 1988, p. 143).

Table 1
World Current Accounts, 1989

Area or Country	OECD Projections $ billion	OECD Projections % GNP	IMF Projections % GNP
OECD	−64	−.4	−.3[a]
North America	−144	−2.6	
United States	−132	−2.6	−2.6
Canada	−12	−2.2	−2.3
Japan	80	2.6	2.5
OECD Europe	9	.2	
Australia-New Zealand	−9	−3.0	
Asian NICs	24 (22–32)[b]		6–9[b]
Korea	7		
Taiwan	15		
Hong Kong	2		
Singapore	0		
Rest of World (ROW)	−26		
(OPEC)	−4		
World Total	−66		

[a] IMF total for industrial countries, which excludes OECD countries Greece, Portugal, and Turkey.
[b] IMF estimated range for Asian NICs.
Source: OECD (1988), IMF (1988).

Aside from the world deficit, the main impression we get from table 1 is that North America (mainly, of course, the United States) and Japan have large imbalances, both in levels and as fractions of GNP, and that the NICs and the ROW also have marked imbalances. These are smaller in levels, but larger in terms of GNP, and about the same size. OECD Europe and Australia-New Zealand have imbalances that are small in levels, but large as a fraction of GNP in the latter area. Among the industrial countries, the impression is one of large imbalances in the United States, Japan, and the NICs, with much smaller ones in Europe and the Antipodes. Any problem concerning Germany disappears into the OECD Europe aggregate in table 1.

The distribution of imbalances within Europe is shown in table 2, which follows the same format as table 1. In table 2 we see the amplitude of imbalances across Europe. The biggest imbalance in levels is Germany's, while Norway's is the biggest in terms of GNP.

The data of table 2 can be looked at in several ways. Clearly there is a large offset to the $42 billion German surplus. The surplus of the European Monetary System (EMS) countries is $39 billion, so the rest of the EMS is roughly in balance. Thus the offset is a deficit in the non-EMS countries. The European Economic Community (EEC) has a surplus of $16 billion, so the EEC non-EMS members have a collective deficit of $23 billion. A non-institutional way to look at the data is suggested by the

Table 2
OECD Europe Current Accounts, 1989

Area or Country	OECD Projections $ billion	OECD Projections % GNP	IMF Projections % GNP
OECD Europe	9.0	.2	
Surplus Countries	55		
Belgium-Luxembourg[ab]	2.0	1.2	
Germany[ab]	42.0	3.3	3.1
Ireland[ab]	.5	1.2	
Netherlands[ab]	4.5	1.9	1.8
Switzerland	6.25	3.1	3.2
Deficit Countries	45		
Austria	−.5	− 4	
Denmark[ab]	−2.5	−2.2	
Finland	−3.25	−2.9	
France[ab]	−6.0	−.6	−.3
Greece	−2.25	−4.1	
Iceland			
Italy[ab]	−1.0	−.1	−.2
Norway	−5.75	−5.8	
Portugal[a]	−1.0	−2.2	
Spain[a]	−5.25	−1.4	
Sweden	−2.75	−1.4	
Turkey	−1.0	−1.3	
United Kingdom[a]	−14.0	−1.6	−1.1
EEC	16	.3	
EMS	39.5		

[a] EEC Member

[b] EMS Member

Source: OECD (1988), IMF (1988). Differences in degree of rounding are in the source tables.

separation of surplus and deficit countries in table 2. The surplus countries are a core group around Germany. Viewed from this aspect, all of the periphery except heroic Ireland is in deficit.

The extent to which we should consider the German, or the core, surplus as an independent imbalance, rather than submerge it into a European aggregate, depends on how integrated we think the aggregate is. We do not break out states or regions in the United States for purposes of this analysis because we consider that country to be definitively integrated. Suppose we considered the EMS to be integrated from the point of view of financing external imbalances. Then we would see the core EMS surplus as automatically financing the EMS deficits, and the external surplus shrinks to $39 billion. If we accept the Single European Act as expressing a definitive decision on integrating the EEC from this point of view, then the EMS surplus is automatically available to finance EEC imbalances, and the external imbalance shrinks to $16 billion. If we think that the non-EEC members will take the necessary

Table 3
IMF Reference Scenario (percentage growth rates, except where noted)

	1987	1988	1989	1990	1991	1992
United States						
Real GNP	2.9	2.5	2.9	2.8	2.8	2.8
GNP Deflator	3.0	3.1	3.5	3.5	3.5	3.5
Current Balance						
$ Billions	−160.7	−138.5	−128.4	−113.0	−120.0	−128.0
Percent of GNP	−3.6	−2.9	−2.5	−2.1	−2.1	−2.1
Japan						
Real GNP	4.2	3.7	3.7	3.6	3.6	3.6
GNP Deflator	−.2	1.6	1.8	1.5	1.5	1.5
Current Balance						
$ Billions	87.0	77.1	74.6	65.0	70.0	75.0
Percent of GNP	3.6	2.7	2.4	2.0	2.0	2.0
Real Exch. Rate (Yen/$)	179.16	160.23	160.23	160.23	160.23	160.23
Germany						
Real GNP	1.7	1.7	1.7	2.3	2.3	2.3
GNP Deflator	2.1	2.0	2.0	2.3	2.3	2.3
Current Balance						
$ Billions	44.3	42.0	41.5	42.5	45.0	47.6
Percent of GNP	3.9	3.3	3.1	3.0	3.0	3.0
Real Exch. Rate (DM/$)	2.00	1.86	1.86	1.86	1.86	1.86

Source: Authors' calculations on IMF data.

Table 4
OECD Reference Scenario (percentage growth rates, except where noted)

	1987	1988	1989	1990	1991	1992
United States						
Real GNP	2.9	2.4	1.7	2.1	2.2	2.2
Private Consumption Deflator	4.0	3.9	3.8	3.9	4.0	4.2
Current Balance						
$ Billions	−160.7	−134.0	−105.0	−108.0	−113.0	−116.0
Percent of GNP	−3.6	−2.8	−2.1	−2.0	−2.0	−1.9
Japan						
Real GNP	4.2	3.4	3.0	3.2	3.2	3.3
Private Consumption Deflator	−.1	1.6	1.9	1.8	1.9	1.9
Current Balance						
$ Billions	87.0	81.0	79.0	83.0	88.0	93.0
Percent of GNP	3.6	3.0	2.8	2.7	2.7	2.6
Real Exch. Rate (Yen/$)	174.05	170.10	173.28	173.28	173.28	173.28
Germany						
Real GNP	1.7	1.4	1.2	2.0	2.0	2.0
Private Consumption Deflator	.5	1.7	1.6	1.6	1.5	1.4
Current Balance						
$ Billions	44.3	41.0	32.0	31.0	32.0	34.0
Percent of GNP	3.9	3.3	2.5	2.3	2.2	2.2
Real Exch. Rate (DM/$)	2.05	1.94	1.98	1.98	1.98	1.98

Source: Authors' calculations on OECD data.

Key Assumptions for the Reference Scenarios (Tables 3 and 4)

IMF	OECD
Fiscal Policy	*Fiscal Policy*
United States: The fiscal position is projected on the basis of currently legislated expenditures and the existing tax system; no allowance is made for possible fiscal measures additional to those that have already been enacted by the beginning of 1988. As a result, the general government deficit as a percent of GNP is projected to decline from 2.2 percent in 1988 to 0.9 in 1992.	United States: Fiscal policy is based on the October 1987 CBO's budgetary projections, adjusted to take account of the legislation passed on 21st December 1987 and the OECD Secretariat's estimates of slower growth and higher interest rates. In particular, the federal deficit as a percent of GNP is projected to decline from 2.4 percent in 1988 to 1.6 percent in 1992.
Japan: The general government financial balance as a percent of GNP is assumed to be roughly constant over the projection period (−0.8 percent in 1988, −0.7 thereafter).	Japan: Fiscal consolidation is assumed over the medium term with the general government balance moving from −1.1 percent of GNP in 1988 to a small surplus by the end of the projection period.
Germany: The general government financial balance as a percent of GNP is projected to reach −2.7 percent in 1988 (as against −1.7 in 1987) and to decline somewhat in 1989; it is reach set at −2.6 percent by the end of the projection period.	Germany: The fiscal package due for 1990 is assumed to be implemented as announced with income taxes cut by DM 19 billion; general government deficit as a percent of GNP is projected to increase from 2.3 percent in 1988 to 3 percent in 1992.
Monetary policy is assumed to be aimed at preventing any acceleration of underlying inflation.	*Monetary policy*, in general, is characterized by money growth somewhat in excess of the growth of nominal GNP; there is a slow movement in nominal short-term and long-term interest rates; real long-term interest rates also gradually decrease over the medium term.
Exchange rates are assumed to be constant in real effective terms at their January 1988 levels.	*Exchange rates* are stable in nominal terms from November 1987 to the end of 1989 and broadly stable in real terms thereafter.

steps to be within the single European market, we come back to the $9 billion surplus of OECD Europe. Thus how we view the core EMS surplus in a world analysis depends on the degree of integration of the core with concentric groups of increasing economic distance, and this degree of integration itself is changing rapidly. So we are left with a range of uncertainty between inclusion of two Europes into the analysis, one with a surplus of around $55 billion and the other with a deficit of $45 billion, or one Europe with a surplus of $9 billion.

This uncertainty will not be resolved in this paper, partly because it is the topic of a separate research program, but more importantly because the available simulation models have not resolved it. The models allow us to analyze adjustment among the United States, Japan, and Germany, but not to expand or contract the European aggregate easily. So for the simulation results in the rest of the paper, we will stay with this aggregation, sometimes interpreting "Germany" as approximating "Europe."

The reference scenarios of the IMF and the OECD are summarized in tables 3 and 4. Each shows the paths of real GNP, the private consumption deflator as a measure of inflation, the current account balance, and the real bilateral exchange rate for the United States, Japan, and Germany. In both scenarios Japan grows faster than the United States, which in turn grows faster than Germany. The growth rates in the IMF scenario are higher than those in the OECD scenario for all three countries, by about one-half of a percentage point. The OECD has a higher inflation path for the United States, and lower inflation in Japan and Germany.

The most striking aspect of both the scenarios is the persistence of large external imbalances over the simulation horizon, based on current policy. The United States deficit and the surpluses of Japan and Germany shrink in both scenarios out to 1990, and then stabilize as a percent of GNP. The two scenarios have similar paths for the United States deficit, with the IMF at 2.1 percent of GNP in 1992, and the OECD at 1.9 percent. The IMF projects a smaller surplus than the OECD for Japan, 2.0 percent versus 2.6 percent in 1992, and a larger surplus for Germany, 3.0 percent versus 2.2 percent in 1992. The sum of the two surpluses in 1992 is about the same in the two projections, $122.6 billion in the IMF scenario and $127 billion in the OECD's. It is worth noting that in the IMF scenario the intra-European imbalances are larger by 1992 than in the OECD scenario, as evidenced by the larger German surplus.

In both scenarios, the real bilateral exchange rates remain approximately constant after 1988, by assumption. The persistence of the large current account imbalances then raises the question whether the financial markets are going to be willing to continue to finance these imbalances at constant real exchange rates. The answer is, most probably no. The dollar would have to depreciate further against the DM (or ECU) and especially the yen in the absence of policy action. The secretariats use the apparent unsustainability of the reference scenarios to argue for policy change in the direction of slower growth of domestic demand in the United States and faster growth in Japan and Europe (IMF 1988, pp. 24–26 and OECD 1988, pp. xi–xiv). Both concentrate on fiscal contraction in the United States. The OECD is unclear on the choice of demand policy instrument in Japan and Germany, as is the

IMF in the case of Germany. The IMF favors monetary expansion in Japan. Both secretariats appeal to structural adjustment in Europe and Japan as policies to reduce the external imbalances.

The IMF and the OECD do not discuss explicitly the likely effect of the policy changes on real exchange rates; this is understandable. However, both treat the policy changes as substitutes for further exchange rate adjustment. It is argued by Krugman (1987) and Branson (1988), among others, that the policy changes would work to reduce the external imbalances *through* changes in real exchange rates. This view is supported both by theoretical analysis and by simulation experiments on the IMF and OECD models.

Real Exchange Rate Dynamics

A shift in domestic demand growth between two areas operating near their current levels of full-employment output will have predictable effects on real exchange rates, as noted by Krugman (1987). A slowdown in demand in the United States and an increase in Japan and Germany (Europe) will reduce world demand for U.S. output and increase it for Japanese and German output. This will tend to increase the prices of Japanese and German output relative to the U.S. This is a real depreciation of the dollar against the DM (ECU) and yen. In this section we develop a two-country model that captures analytically the dynamics of this adjustment of real exchange rates with exogenous shifts in real domestic demand. The model is useful in interpreting the simulation results that follow. It also produces the conditions under which the policy shifts *would* be accompanied by dollar appreciation, rather than depreciation, in real terms.

The model includes two countries, or areas; for concreteness we will call the home country the United States and the foreign country with starred * variables Japan. All variables in the model are real. The level of output in both countries is taken as given, in order to concentrate on real exchange rates and interest rates. This assumption can also be justified by noting that medium-term recession or inflation is not an acceptable part of an adjustment package. The policy shifts are represented as exogenous shifts in fiscal positions. Expectations of movements in the real exchange rate are rational, so the model is forward-looking and solutions proceed from the long-run equilibrium to the short. Here we present only the details needed to show the basic results; a full discusion of the model is in the appendix. The model is a two-country version of the fundamentals model in Branson (1985). It adds rational expectations and stock-adjustment dynamics to the version in Branson (1988).

The Model

The model has four equations, representing the national accounts, or IS, equilibrium in the two countries, the arbitrage equilibrium between the two financial markets, and the accumulation of their net debt position via the current account. The national income equations are

$$D = S(r) - X(e,B), \text{ and} \tag{1}$$

$$D^* = S^*(r^*) + X(e,B). \tag{2}$$

Here D,D^* are the home and foreign country's "structural" fiscal deficits, since we assume full employment; S,S^* are the excesses of private saving over investment; X is the home country's current account surplus, r,r^* are the real interest rates; e is the real exchange rate in terms of home currency per unit of foreign exchange (so an increase signifies a depreciation of the home currency); and B is the net debt of the home to the foreign country. We assume that S and S^* are increasing functions of r and r^*, and X is an increasing function of e and a decreasing function of B. Since we have only two countries, the same X enters both equations. To avoid problems in evaluation of B, we assume it is denominated in an average of the two currencies.

The arbitrage condition that links the financial markets is

$$r = r^* + \hat{e} + p(B). \tag{3}$$

Here $\hat{e}$ is the expected rate of change of the real exchange rate, and p is a risk premium, increasing in B. This is a summary form of a portfolio model in which debt in both currencies is held in international portfolios. Equation (3) introduces real exchange rate dynamics into the picture. The other dynamic equation is the accumulation of the debt position, given by

$$\dot{B} = -X(e,B). \tag{4}$$

A home-country current account surplus reduces its debt position.

Long-Run Equilibrium

In the long-run equilibrium, the real exchange rate is expected to remain constant, or trendless in a stochastic version of the model, so $\hat{e}$ in equation (3) would be zero. The current account would be balanced, so X in equations (1), (2), and (4) would be zero. This would be the case even if the two economies were on a balanced growth path, with each accumulating the other's debt.

The long-run solution of the model is recursive and simple. Equations (1) and (2) with $X = 0$ determine the real interest rates at which

domestic private saving finances the budget deficit in each country. An increase in D or D* eventually requires an increase in r or r* to finance it domestically. Then equation (3) with $\hat{e} = 0$ determines the debt position that yields the risk premium p that equals the difference between the two real interest rates. Finally, the requirement that $X = 0$ gives the value of the real exchange rate that is consistent with the debt position. This is the value of the exchange rate that gives a trade balance that just finances the debt service.

An example will illustrate the movement of long-run equilibrium. Consider an increase in D, the home (U.S.) structural deficit. From equation (1) with $X = 0$, the home r must rise to stimulate the excess saving to finance the rise in D. From (3) with $\hat{e} = 0$ and an increase in $r - r^*$, the home debt position must rise. This increases the debt service, requiring a real depreciation in the long run to generate the trade surplus to finance it. With $X = 0$ in the long run, if B increases so must e. The United States is on a path towards this equilibrium in 1988.

Short-Run Equilibrium and Dynamics

In the short run, neither $X = -\dot{B}$ nor $\hat{e}$ need be zero, so we need the entire model to locate the dynamic path to the long-run equilibrium. To locate that path, we find the separate loci in e,B space along which alternatively $\dot{B} = 0$ and $\hat{e} = 0$. The long-run equilibrium is at their intersection. Then we study graphically the dynamics around that point to locate the unique stable saddlepath into it. This is the dynamic adjustment path of B and e. Finally, we can do comparative dynamics by seeing which locus is shifted by any given disturbance, and how the saddlepath shifts.

The $\dot{B} = 0$ line in figure 1 is the locus of points along which $X = 0$. An increase in B reduces X, and requires an increase in e to hold X to zero. So along the $\dot{B} = 0$ line the current account is in balance. Above it, the home current account is in surplus, that is $X > 0$, and B is decreasing. Above it, B is increasing. These dynamics of the debt position are given by the horizontal arrows in figure 1. Any exogenous event such as a change in tastes or technology that makes the home country more competitive, that is, would generate a current account surplus at the pre-existing equilibrium, shifts the $\dot{B} = 0$ line down. Any such event favoring the foreign country's competitiveness shifts it up.

Derivation of the $\hat{e} = 0$ line is a little more complicated. From equation (3), an increase in B with $\hat{e} = 0$ requires an increase in $r - r^*$. An increase in r increases S in equation (1), and a reduction in r* reduces S* in equation (2). Both require an increase in X to maintain equilibrium in (1) and (2). This requires an increase in e, and since X has increased, the rise in e is greater than along the $\dot{B} = 0$ line. So the $\hat{e} = 0$ line in figure 1 is steeper than the $\dot{B} = 0$ line.

To obtain the dynamics of e around $\hat{e} = 0$, begin with a point on the line, and then consider an increase in e for a given B. The increase in e increases X, requiring an increase in r and a decrease in r* to maintain equilibrium in (1) and (2). This increases $r - r^*$ in equation (3), so for a given B, $\hat{e}$ must become positive. For financial equilibrium to be maintained with the interest differential greater than the risk premium, the exchange rate must be expected to rise. Thus for financial market equilibrium, if the exchange rate is higher than is compatible with zero expected increase, it must be expected to rise even more. If expectations are rational, the exchange rate will rise. Below the $\hat{e} = 0$ line, the exchange rate falls. These unstable dynamics are shown by the vertical arrows in figure 1.

An increase in D or a decrease in D* shifts the $\hat{e} = 0$ line down. Consider an increase in D. For a given debt position, maintaining $\hat{e} = 0$ in equation (3) requires that r and r* rise by the same amount. In equation (2), with D* unchanged, the rise in r* and therefore S* requires a fall in X and therefore e. This is consistent with an increase in S in equation (1) that is smaller than the increase in D, so X goes down. Similarly, if D* is reduced, both interest rates fall. In equation (1), the resulting reduction in S with D unchanged requires a reduction in X and therefore a reduction in e to maintain equilibrium. So an increase in D or reduction in D* shifts $\hat{e} = 0$ down, and a reduction in D or increase in D* shifts it up.

Putting the dynamics of e and B together in figure 1, we see the unique stable saddlepath ss into the equilibrium, lying between the $\dot{B} = 0$ and $\hat{e} = 0$ lines. The ss path has the properties that it goes to the equilibrium E_0, and along it expectations are realized. All the other paths are speculative bubbles, heading off toward infinity along an asymptote that is perpendicular to ss. Following a disturbance, for the existing debt

Figure 1

The Saddlepath Equilibrium

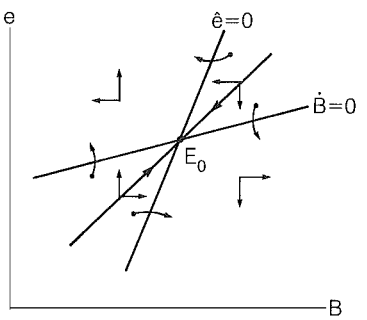
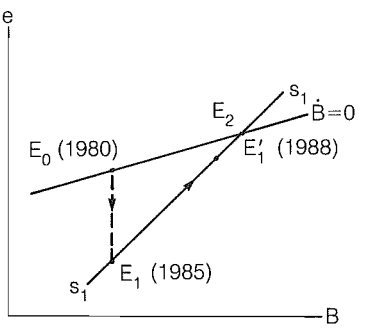


Figure 2

Unanticipated Increase in D



position B, the exchange market searches for the e value that is on the saddlepath into the new equilibrium.

We can illustrate the dynamics by returning to the example of an unanticipated increase in the home (U.S.) structural deficit D. This shifts the $\dot{e} = 0$ line down, creating a new ss path that runs into a new long-run equilibrium out along the $\dot{B} = 0$ line in figure 1. The situation is shown in figure 2. The original equilibrium from figure 1 is E_0, and the new equilibrium is E_2. The new adjustment path is s_1s_1 into E_2. The real exchange rate jumps down (dollar appreciates) to E_1 at the original debt position, creating a current account deficit. This then begins the adjustment toward E_2.

The path from E_0 to E_1, and up towards E_2, describes roughly the path of the dollar since 1980. The shift in the structural fiscal deficit was not sudden, unanticipated, and known fully at the time of its announcement, so the movement from E_0 to E_1 proceeded by fits and starts, ending in 1985. In addition, disturbances connected with the appearance of the debt crisis in 1982, and a possible speculative bubble in 1984–85, added to the turbulence. The point here is just that the model predicts the general outline of the movement, first appreciation then depreciation, with a current account deficit accumulating the debt position.

On this interpretation, in 1988 we are at a point such as E_1', above the original E_0, but well short of E_2. The OECD competitiveness measures (OECD 1988, p. 55) show a gain of about 15 percent in 1988 over 1980, but no forecast says that at the existing exchange rates as of mid-1988, the current account deficit would shrink to zero. So in the discussion of policy alternatives to follow, we will assume that the United States, Japan, and Germany are at a point like E_1' in figure 2.

Unanticipated Shift in Fiscal Policy in 1989

In order to set the stage for the analysis below of an anticipated shift in fiscal positions, we can briefly discuss the effect of an unanticipated shift beginning from the initial position of 1988, E_1' in figure 2. We focus here on fiscal actions, but the results hold for any exogenous shift in domestic demand. Suppose that at point E_1', the United States reduces its fiscal deficit, and Japan and Germany increase theirs, all in an unanticipated fashion. What path would we expect for the real exchange rate? The answer is illustrated in figure 3.

Let us take point E_1' as the 1989 point on the path from E_1 to E_2 from figure 2. The fiscal adjustment would shift the $\dot{e} = 0$ locus back up, giving a new long-run equilibrium along $\dot{B} = 0$ left of E_2 in figure 3. The real exchange rate would jump up (home currency depreciate) onto the new ss path into the new equilibrium.

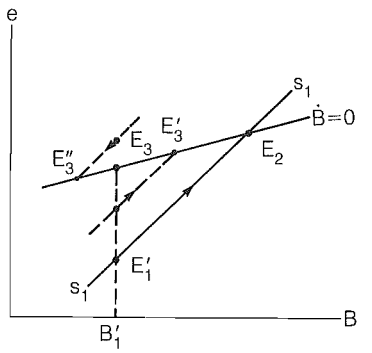
If the fiscal adjustment were small enough that the new long-run equilibrium is to the right of E_3 in figure 3, for example E_3', the new ss path would be below $\dot{B} = 0$, and run up and right into it. Then the real exchange rate would jump up and then continue up into the new equilibrium with the current account deficit diminishing gradually to zero. The fiscal shift would reduce the eventual depreciation by speeding it up in the present. The final equilibrium would be between E_2 and E_3.

The other alternative is a larger fiscal adjustment that moves the new equilibrium left of E_3 in figure 3, for example E_3''. Then the new ss path would be above $\dot{B} = 0$, and run left and down into the new equilibrium. In this case the exchange rate would overshoot, with the home currency depreciating so much as to generate a current account surplus, and then gradually appreciating back to equilibrium left of E_3 on $\dot{B} = 0$. If the fiscal adjustment moved the equilibrium exactly to E_3, the exchange rate would jump there and stop.

In all of these cases, the unanticipated fiscal adjustment generates a jump real depreciation in the home currency. This speeds up adjustment of the current account balance, and is the analytical basis for the assertion that fiscal adjustment would cause a real depreciation of the dollar. To get the opposite, we have to go to an anticipated fiscal adjustment.

Figure 3

Unanticipated Fiscal Adjustment



Anticipated Shift in Fiscal Deficits

Consider the case of a fiscal adjustment that is anticipated by the markets. Then the basic result from Wilson (1979) is that the real exchange rate in the present model will jump onto an unstable bubble path relative to the existing equilibrium such that it reaches the new ss saddle path at the time when the anticipated fiscal shift occurs. Again,

there are two cases, depending on the size of the correctly anticipated shift. These are shown in figures 4(a) and 4(b).

For a small anticipated fiscal shift, the path would resemble that from E_1' to a to b to E_3 in figure 4(a). The new saddle path that will be relevant when the shift occurs is below $\dot{B} = 0$, and the exchange rate jumps into an unstable path relative to E_2 that takes it to point b when the shift occurs. In this case the exchange rate shows first a jump depreciation of the home currency to point a, and then further depreciation to points b and E_3, with the home deficit shrinking throughout.

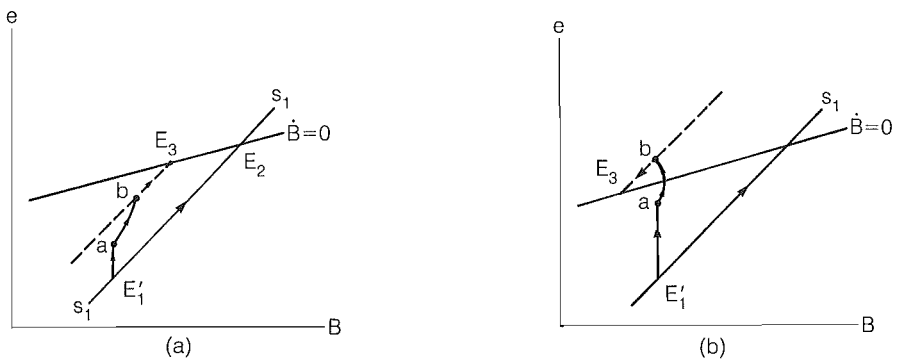
The case of a large anticipated fiscal shift is shown in figure 4(b). Here the relevant new saddle path is above $\dot{B} = 0$, running down and left to E_3. Again, the adjustment path is $E_1' \rightarrow a \rightarrow b \rightarrow E_3$. But in this case, the trip along the unstable path from a to b carries the exchange rate above $\dot{B} = 0$, and the currency then appreciates from point b to E_3 after the actual fiscal shift occurs. This is the case in which the fiscal shift leads to an appreciation of the dollar. (It was first suggested to us in a conversation with Francois Bourguignon.)

The border line between the two cases illustrated in figures 4(a) and 4(b) would be a fiscal shift that locates E_3 on $\dot{B} = 0$ to the right of E_1' just enough that the trip along the unstable path from a to b ends at E_3 when the shift occurs, that is, a shift that makes points b and E_3 the same. In that case, no further adjustment would occur after the fiscal shift. It may be interesting to note that this anticipated shift would be smaller than the unanticipated shift that takes the equilibrium to E_3 in figure 3. This is because in the pre-announced case, the anticipatory jump in the exchange rate provides a head start on the speeded-up reduction of the current account deficit.

On the assumption that in 1988 a substantial correction in at least the U.S. fiscal deficit is expected, which case of figure 4 is applicable? One difference between the two cases would be that in case (a), at point

Figure 4

Anticipated Fiscal Adjustment



b when the fiscal shift comes, the current account of the home country is in deficit, while in case (b) it is in surplus. Given the empirical J-curve lags of adjustment of trade behind real exchange rates, this distinction could be interpreted as follows. If projections including the fiscal shift show an eventual surplus at current exchange rates after the shift, we are in case (b), and the dollar would appreciate after the shift. If the projections show an eventual deficit after the shift at current exchange rates, then we are in case (a), and the dollar would depreciate. The OECD and IMF projections show continued current-account deficits, suggesting that case (a) holds, if in fact a fiscal shift is anticipated by the markets.

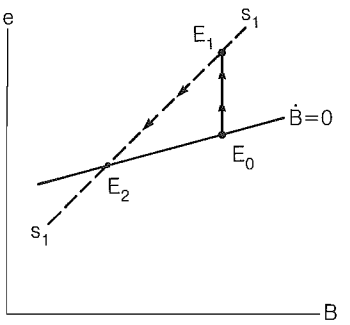
Exogenous Increase in the Risk Premium

In order to connect with the discussion of the Multimod simulations in the next section, here we briefly discuss the effect of an exogenous increase in the risk premium p in equation (3) for a given level of the debt position B, starting from the original equilibrium of figure 1. This would shift the $\hat{e} = 0$ line up, as shown in figure 5. The increase in p in equation (3) requires an increase in $r - r^*$ to maintain financial equilibrium with $\hat{e} = 0$. The rise in r and fall in r^* increase S and reduce S^* in equations (1) and (2). This requires an increase in X and therefore in e.

The upward shift of the $\hat{e} = 0$ line creates the new s_1s_1 adjustment path in figure 5. The real exchange rate jumps up to E_1, generating a current account surplus. The exchange rate and debt position then fall towards the new equilibrium at E_2. This is the path we see in the Multimod simulations below.

Figure 5

Exogenous Shift in the Risk Premium



Alternative Fiscal Policy Scenarios

During 1988 the IMF and the OECD have used their models to produce projections based on alternative assumptions about policies. These are generally published as changes from the current reference scenario. We have programmed these alternatives as linear multipliers to be added to the updated reference scenarios as they appear. (See Gomel, Marchese, and Martinez Oliva (1988) for details.) Three of these policy alternatives are discussed in this section. We have also included in the program the unit multipliers from each model so we can produce our own alternative projections. One of these is discussed in the next section.

The IMF Multimod is a close empirical representation of our two-country theoretical model discussed above, with variable output and prices sticky in the short run. It includes endogenous variation of exchange rates and arbitrage equations with terms for risk premia. So policy simulations with Multimod produce endogenous variations in exchange rates. In addition, simulations can be performed with exogenous variations in risk premia and endogenous variation in exchange rates. Expectations in Multimod are forward-looking, so the simulations include "model-consistent" exchange-rate expectations. A detailed description of the model, and a full set of multiplier runs, are provided in Masson et al. (1988).

The OECD Interlink model has more price stickiness and output variation than Multimod. Exchange rates are exogenous, and expectations adjust adaptively. A detailed discussion of Interlink and its multipliers is provided in Richardson (1987). In performing comparative simulations, we sometimes take the endogenous exchange rate results from Multimod and use them as exogenous input to the Interlink simulations. While the Interlink simulations and the OECD projections provide more country coverage than Multimod, the latter is a closer representation of the theoretical framework.

In this section we discuss three alternative policy scenarios over the period 1989–92 using the two models. Scenario 1 is an exogenous depreciation of the dollar in 1988. In Multimod, this is represented by a shift in the risk premium; in Interlink, it is simply exogenous. Scenario 2 is a gradual reduction in the U.S. fiscal deficit from 1988 to 1992 which is unanticipated until it is announced, with exchange rates endogenous in Multimod, and constant in nominal terms in Interlink. Scenario 3 is a gradual fiscal tightening in the United States and ease in Japan and Germany from 1988 to 1992, with exchange rates endogenous in Multimod and the dollar depreciating in nominal terms at 2 percent per year against the DM and yen in Interlink. The Multimod simulations are shown in table 5, and the Interlink simulations in table 6. To conserve

Table 5
Alternative Fiscal Scenarios in Multimod

	Scenario 1 Pure Dollar Depreciation				Scenario 2 Fiscal Restriction in United States				Scenario 3 Fiscal Restriction in U.S., Expansion in Japan, Germany, and Endogenous Dollar Depreciation			
	1989		1992		1989		1992		1989		1992	
	(A)	(B)	(A)	(B)	(A)	(B)	(A)	(B)	(A)	(B)	(A)	(B)
United States												
Real GNP	3.2	−1.5	2.9	−.8	3.1	−.4	2.8	−.4	3.0	−.4	2.8	−.4
GNP Deflator	3.9	.4	3.2	.2	3.5	0	3.3	−.2	3.6	.1	3.4	.1
Current Balance												
$ Billions	−91.8	36.6	−41.9	86.1	−118.2	10.2	−91.3	36.7	−118.2	10.2	−85.2	42.8
Percent of GNP	−1.8	.7	−.7	1.4	−2.3	.2	−1.5	.6	−2.3	.2	−1.4	.7
Japan												
Real GNP	3.3	−1.6	4.1	.7	3.5	−.6	3.7	0	3.6	−.1	3.7	−.2
GNP Deflator	−.3	−2.9	.8	−6.6	1.1	−1.0	1.2	−2.3	1.2	−1.0	1.3	−2.1
Current Balance												
$ Billions	70.2	−4.4	64.0	−11.0	68.7	−5.9	75.9	.9	67.5	−7.1	78.7	3.7
Percent of GNP	2.2	−.2	1.6	−.4	2.2	−.2	1.9	−.1	2.1	−.3	1.8	−.2
Real Exch. Rate (Yen/$)	148.9	−7.1	155.9	−2.7	155.7	−2.8	149.6	−6.6	151.8	−5.3	139.1	−13.2
Germany												
Real GNP	.8	−2.9	2.8	.5	1.4	−.9	2.5	.1	1.8	−.2	2.5	.6
GNP Deflator	.3	−2.8	1.7	−5.3	1.4	−.9	2.1	−1.8	1.3	−1.2	2.2	2.0
Current Balance												
$ Billions	37.5	−4.0	50.7	3.1	38.8	−2.7	50.0	2.4	37.5	−4.1	44.8	−2.8
Percent of GNP	2.7	−.4	3.0	0	2.8	−.3	2.8	−.2	2.7	−.4	2.5	−.5
Real Exch. Rate (DM/$)	1.71	−8.0	1.78	−4.2	1.78	−4.3	1.7	−11.1	1.79	−3.9	1.66	−10.7

(A) Percentage growth rates except otherwise marked. Figures in columns (A) were obtained applying the deviations from baseline derived from the simulations carried out by the IMF in August 1987 to the reference scenario depicted in table 4.

(B) For GNP, deflator and exchange rate, percentage deviations from levels in the baseline (or reference scenario); for current account balance, absolute deviations.

Source: Authors' calculations on IMF data.

Table 6
Alternative Fiscal Scenarios in Interlink

	Scenario 1 *Pure Dollar* Depreciation				Scenario 2 Fiscal Restriction in United States				Scenario 3 Fiscal Restriction in United States, Expansion in Japan and Exogenous Dollar Depreciation			
	1989		1992		1989		1992		1989		1992	
	(A)	(B)	(A)	(B)	(A)	(B)	(A)	(B)	(A)	(B)	(A)	(B)
United States												
Real GNP	2.3	1.4	1.6	−1.0	1.1	−1.2	1.4	−3.5	1.2	−.5	2.5	−.6
Private Consumption Deflator	6.9	3.7	5.7	9.6	3.7	−.2	3.4	−1.8	4.2	1.0	4.8	2.5
Current Balance												
$ Billions	−101.0	4.0	−79.0	37.0	−89.0	16.0	−66.0	50.0	−85.0	20.0	−47.0	69.0
Percent of GNP	−1.9	.2	−1.2	.7	−1.8	.3	−1.1	.8	−1.7	.4	−.8	1.1
Japan												
Real GNP	1.7	−1.6	3.3	−3.8	2.7	−.4	3.0	−1.4	3.5	1.1	3.3	1.7
Private Consumption Deflator	.8	−1.4	.8	−3.8	1.8	−.1	1.6	−.8	1.8	−.4	2.1	0
Current Balance												
$ Billions	76.0	−3.0	71.0	−22.0	75.0	−4.0	79.0	14.0	71.0	−8.0	55.0	−38.0
Percent of GNP	2.2	−.6	1.6	−1.0	2.7	−.1	2.3	−.3	2.4	−.4	1.5	−1.1
Real Exchange Rate (Yen/$)	145.7	−15.9	145.7	−15.9	173.1	−.1	171.5	−1.0	172.2	−.6	174.2	.5
Germany												
Real GNP	1.1	0	2.4	−1.1	.9	−.4	1.9	−1.1	.9	−.5	2.0	−1.0
Private Consumption Deflator	1.3	−.5	.8	−1.8	1.5	−.1	1.1	−.6	1.4	−.3	.8	−1.8
Current Balance												
$ Billions	37.0	5.0	30.0	−4.0	30.0	−2.0	26.0	−8.0	30.0	−2.0	26.0	−8.0
Percent of GNP	2.5	0	1.6	−.4	2.4	−.1	1.7	−.5	2.3	−.2	1.7	−.5
Real Exchange Rate (DM/$)	1.75	−11.4	1.75	−11.4	1.98	−.1	1.95	−1.2	1.96	−.7	2.02	2.3

(A) Percentage growth rates except otherwise marked. For scenario 2, the figures in columns (A) were obtained by applying the deviations from baseline derived from the simulations carried out by the OECD in April 1987 to the reference scenario depicted in Table 4.

(B) For GNP, deflator and exchange rate, percentage deviations from levels in the baseline (or reference scenario); for current account balance, absolute deviations.

Source: Authors' calculations on OECD data.

Key Assumptions for the Scenarios with Pure Dollar Depreciation[a] (Tables 5 and 6)

Multimod	Interlink
Fiscal Policy: Unchanged policy setting with respect to the reference scenario and endogenous revenues.	*Fiscal Policy*: Unchanged policy setting with respect to the reference scenario and endogenous revenues.
Monetary Policy	*Monetary Policy*: Broadly non-accomodating. In particular:
United States: Monetary conditions are tightened in order to avoid inflationary consequences of dollar depreciation; interest rates rise above the level in the reference scenario.	United States: Short-term interest rates are driven up to 9 percent as a counter to inflation and then fall to 7 percent as output weakens and inflation pressures ease; long-term interest rates rise from 9 to 11 percent over the projection period.
Japan and Germany: Interest rates decline somewhat with the appreciaiton of the currencies, as monetary growth rates remain unchanged.	Japan and Germany: Interest rates decline as inflation falls, with a floor on short-term rates at 2 percent.
Exchange Rates: A constraint is imposed over the ratio of U.S. net foreign indebtedness to GNP, that it must not exceed 15 percent in 1995, as against 22 percent in the reference scenario. Therefore, the exchange value of the dollar is assumed to decline in a way consistent with the reduction of U.S. current account deficit that keeps the foreign debt ratio at the desired level in 1995: the adjustment takes place in 1988, with the U.S. dollar depreciating by 15 percent in nominal terms against the other major currencies.	*Exchange Rates*: During 1988, the U.S. dollar depreciates by 20 percent against the yen and 15 percent against the DM in nominal terms. Then, exchange rates are constant in nominal terms in 1989, and broadly stable in real terms in the following years.

[a] Simulation carried out in August 1987 for Multimod and in February 1988 for Interlink.

Key Assumptions for the Scenarios with Fiscal Restriction in United States[a] (Tables 5 and 6)

Multimod	Interlink
Fiscal Policy	*Fiscal Policy*
United States: Federal government non-interest expenditure is reduced by amounts rising from $42 billion in 1988 to $91 billion in 1992 from the levels assumed in the reference scenario.	United States: Federal government expenditure is gradually reduced by about $70 billion and proceeds from income taxes increase by about $50 billion by the end of 1992 from the levels assumed in the reference scenario.
Japan and Germany: Unchanged policy setting with respect to the reference scenario and endogenous revenues.	Japan and Germany: Unchanged policy setting with respect to the reference scenario and endogenous revenues.
Monetary Policy: Interest rates decline in the United States in order to keep money growth on target; a reduction of interest rates is also projected, to a lesser extent, for Japan and Germany.	*Monetary Policy*: U.S. money supply growth decelerates broadly in line with nominal income, leaving short-term rates unchanged from the levels in the reference scenario; in Japan and Germany, interest rates also remain at the reference level.
Exchange Rates: Endogenous variations.	*Exchange Rates*: Nominal exchange rates unchanged from the levels in the reference scenario.

[a] Simulation carried out in August 1987 for Multimod and in February 1988 for interlink.

Key Assumptions for the Scenarios with Coordinated Fiscal Action and Dollar Depreciation[a] (Tables 5 and 6)

Multimod	Interlink
Fiscal Policy United States: The same policy setting as in Scenario 2. Japan: Higher fiscal expenditures in 1988–1990 by an amount equal to 0.5 percent of GNP.	*Fiscal Policy* United States: Starting from 1988, the general government financial deficit is cut back over four years by a further 2 percent of GNP, compared with the reference scenario, action being concentrated on government expenditure.
Germany: Lower tax revenues by an amount growing from DM 7.6 billion in 1988 to DM 20 billion in 1991. As a ratio to GNP, the fiscal stimulus is roughly the same as in Japan.	Japan: Starting from 1988, the general government financial deficit is increased over four years by a total of 1 percent of GNP compared with the reference scenario, action being concentrated on government expenditure; housing investment is increased by 3 percent per annum compared with the reference scenario.
	Germany: The same policy setting as in the reference scenario and endogenous revenues.
Monetary Policy: Interest rates decline in the United States and rise in Japan and Germany, in order to keep money growth on target.	*Monetary Policy*: Assumed to be broadly non-accomodating. In particular: United States: Unchanged money growth and lower interest rates compared with the reference scenario.
	Japan: Interest rates are assumed to be initially slightly higher than in the reference scenario before falling towards the end of the project period.
	Germany: Interest rates are rather lower than in the reference scenario reflecting weaker output growth and lower inflation.
Exchange Rates: Endogenous variations.	*Exchange Rates*: Steady decline of the U.S. and the Canadian dollars against other OECD countries of 2 percent per annum in nominal terms relative to the reference scenario.

[a] Simulation carried out in August 1987 for Multimod and in February 1988 for Interlink.

space, we show only the first and last years of the simulations, 1989 and 1992. Details of the assumptions are given in the notes to tables 5 and 6.

In Scenario 1 in table 5 we see the movement illustrated in figure 5 earlier. In 1989 the yen appreciates against the dollar in real terms by 7.1 percent and the DM by 8.0 percent. By 1992, these numbers are down to 2.7 and 4.2 percent. This shows the upward jump in the U.S. real exchange rate in figure 5, followed by the gradual fall.

The dollar depreciation is accompanied by a rise in the interest rate in the United States, and a fall in Japan and Germany. So the effect on demand is unclear in all cases. The depreciation stimulates demand in the United States, but the increase in the interest rate depresses it, and vice versa in Japan and Germany. On balance, the interest rate effect dominates in the short run in the United States, and the exchange rate effect dominates in Japan and Germany, as the growth rate of real GNP falls in all areas. These effects diminish in the longer run, and reverse by 1992 in Japan and Germany. The relatively smaller effects on real GNP in Multimod improve its correspondence to the theoretical model.

Multimod and Interlink both include empirical lags of adjustment of trade flows behind changes in exchange rates—J-curve effects. Thus the U.S. current account deficit in Scenario 1 of table 5 falls by $36.6 billion in 1989 and $86.1 billion in 1992. To see the effects on the current accounts of Japan and Germany, it is better to use the local currency numbers as a percent of GNP, since the exchange rates are falling against the dollar. The Japanese current account surplus falls by 0.2 percent of GNP in 1989 and 0.4 percent in 1992. These effects are smaller than the U.S. results. The German surplus shrinks by 0.4 percent of GNP in 1989, but that effect disappears by 1992.

Scenario 2 in table 5 shows the effect of a gradual reduction in U.S. government spending by an amount that increases from $42 billion in 1988 to $91 billion in 1992, relative to the baseline. This has a small depressive effect on U.S. growth throughout the simulation. The reduction of output growth in Japan and Germany is a little larger in the short run, but disappears by 1992. The yen appreciates against the dollar in real terms by an amount that increases from 2.8 percent in 1989 to 6.6 percent in 1992. The corresponding numbers for the DM are 4.3 and 11.1 percent.

The fiscal shift and the dollar depreciation reduce the U.S. current account deficit by $10.2 billion in 1989 and $36.7 billion in 1992. The effects on the current accounts of Japan and Germany are smaller, but go in the right direction. Since only the United States takes the fiscal action in the simulation, the gain to the U.S. current account is spread across all areas of the world.

Scenario 3 in table 5 adds a gradually growing fiscal stimulus in Japan and Germany to Scenario 2. The negative effect on U.S. growth is unaffected, while the negative effects in Japan and Germany are re-

duced. The effects on the real exchange rates and on the current account balances are increased. The reduction in the U.S. current account deficit in 1992 in Scenario 3 is $42.8 billion, compared with $36.7 billion in Scenario 2.

Comparison of the exchange rate and U.S. current account effects in Scenarios 1 and 3 is instructive. The early depreciation in Scenario 1 results in a larger improvement in the U.S. current account in both 1989 and 1992. Presumably this difference would be reversed eventually as the fiscal shift persists, but the result illustrates the gains from early action on the exchange rate, if action is inevitable.

The Interlink simulations are shown in table 6. In Scenario 1 the dollar is depreciated in nominal terms by 20 percent against the yen and 15 percent against the DM in 1988, and held roughly constant subsequently. The result is appreciation of the yen and DM that is larger than in the Multimod simulation in 1989, and even larger in 1992. The effects on the growth rates of real GNP in Interlink are quite different from those in Multimod. The U.S. growth rate increases in the short run, but falls by 1992. The negative effect on growth in Japan is the same in 1989, but increases to 1992 in Interlink. There is no short-run effect in Germany in 1989, but a negative effect by 1992. Interlink seems to show cumulating negative effects on real GNP growth over time in all three countries from a one-time real depreciation of the dollar.

The U.S. current account deficit in Scenario 1 of table 6 is essentially unchanged in dollar terms in 1989, although the increase in the growth rate suggests significant positive quantity effects. By 1992, the gain is $37.0 billion, less than half that of Multimod with a much larger dollar depreciation. The current account surplus of Japan is reduced in Interlink by more than in Multimod, even with the lower growth path of output. There is little effect on the German surplus in either model in Scenario 1.

The fiscal restriction in the United States in the Interlink Scenario 2 is about 30 percent larger than in Multimod. By 1992, the U.S. current account deficit is reduced by $37 billion in the Multimod simulation and $50 billion in Interlink. The depressive effects on real GNP growth are much larger in Interlink than in Multimod, and relatively larger in the United States than in Japan or Germany. As a result, with roughly constant real exchange rates in Interlink, the reduction in the U.S. current account deficit and the Japanese and German surpluses are larger than in the Multimod Scenario 2.

The Interlink Scenario 3 has government spending in Japan greater by 1 percent of GNP than in the reference scenario, and housing investment growing 3 percent per year faster. U.S. and German policies are the same as in Scenario 2. The result, in the last panel of table 6, is a small reduction in the growth rate in the United States, a larger increase in Japan, and a substantial decrease in Germany, relative to the

reference scenario. With real exchange rates roughly constant, this pattern of changes in demand produces a substantial reduction in the U.S. surplus, larger than in the Multimod Scenario 3, and an even larger reduction in the Japanese deficit. The effects on Germany come from the combination of the changes in growth in the United States and Japan, and on balance give a reduction of the surplus by about 0.5 percent of GNP by 1992.

From the simulation results, the Multimod seems to show current accounts more sensitive to changes in exchange rates than in Interlink. The latter has real GNP more sensitive to fiscal policy, and obtains its effects on current accounts from fiscal shifts through this channel. The Multimod simulations correspond more closely to our theoretical model described earlier, and show the effects of fiscal actions on the exchange rate. Presumably if the exchange rate were endogenized in the Interlink simulations, its movements would dampen output effects. For example, as fiscal policy tightens in the United States, the dollar depreciation contributes an expansionary force to demand. In that case, the effects of the fiscal shifts would be seen to come more through the exchange rate channel, as in Multimod.

Expansionary Monetary Policy in Japan and Germany

In this section we report the results of alternative simulations using the Multimod unit multipliers, and assuming monetary rather than fiscal expansion in Japan and Germany. We have three reasons for studying this option. First, with only fiscal contraction in the United States, the growth rate of real GNP falls in all three countries in the simulations of tables 4 and 5, and substantially so in the Interlink simulation. Second, as theory and the Multimod simulations show, the dollar will depreciate with either fiscal action in the United States alone or joint fiscal action. Using Multimod, we can find the degree of monetary expansion abroad that would prevent a jump in the dollar at the time of the fiscal shift in the United States or hold the average of the nominal exchange rates constant over the simulation period. This is how the alternative simulations are formulated. Third, a balanced joint fiscal action would leave world real interest rates high, while our alternatives would reduce them by reducing the aggregate world fiscal deficit. This can be seen by summing equations (1) and (2) to obtain the world saving-investment balance:

$$D + D^* = S(r) + S^*(r^*). \tag{5}$$

A reduction in D and equal increase in D^* would reduce r and increase r^*, leaving the average world real interest rate unchanged. But a reduction in D alone would reduce both rates in the short run, and the

U.S. rate in the long run. A reduction in average world real interest rates would benefit debtors, especially in the developing countries.

To perform the alternative simulations, we used the Multimod unit multipliers to formulate two alternative expansionary paths for monetary policy in Japan and Germany. The first is the amount of monetary expansion in 1988 in Japan and Germany that would offset the effects on their nominal exchange rates against the dollar in 1989 in the Multimod Scenario 2. These are 3.7 percent in Japan and 4.6 percent in Germany. These are the step increases in the money supply that would just offset the effects of the announcement and implementation of the fiscal program in table 5, Scenario 2, on nominal exchange rates at the time of the announcement. These were implemented in the simulation along with the Scenario 2 fiscal program. The money supplies subsequently grow at the rates in Scenario 2. The results are shown as Scenario 4 in table 7.

The policy alternatives in Scenario 4 resemble the policy actions actually in place since late 1986. Comparing M1 growth rates, in Japan M1 growth increased by 5.5 percentage points from 1985 to 1987, and in Germany it increased by 4.7 percentage points. Over the same period, the U.S. fiscal deficit was reduced by 1.9 percent of GNP. So Scenario 4 can be taken to approximate actual policy since 1986, as well as prospective policy in 1988.

The second monetary alternative was formulated as the increase in the average rate of growth of money in Japan and Germany that would offset the average effects on their nominal exchange rates in Multimod Scenario 2 over the simulation period. These are 1.7 percent in Japan and 2.3 percent in Germany. These increases in money growth rates were implemented in the simulation along with the Scenario 2 fiscal program. The results are shown as Scenario 5 in table 7.

Scenarios 4 and 5 in table 7 can be usefully compared with Scenarios 2 and 3 in table 5. A slight reduction in real growth in the United States occurs in Scenarios 4 and 5 compared to 2 and 3, but real growth increases in 1989 and 1992 in Japan and Germany. The real appreciation of both the yen and the DM is reduced in 1989 in both Scenarios 4 and 5 compared to Scenario 2. By 1992, the yen appreciates by about the same in Scenarios 4 and 2, but less in Scenario 5. The appreciation of the DM is less throughout Scenarios 4 and 5.

The reduction in the U.S. current account deficit in 1992 is $38.3 billion in Scenario 4 and $35.8 billion in Scenario 5, about the same as the $36.7 billion of Scenario 2 and less than the $42.8 billion of Scenario 3. With less appreciation of their currencies in the monetary policy simulations, the current account surpluses of Japan and Germany are not reduced in Scenarios 4 and 5 relative to the reference scenario, except for the reduction of 0.2 percent of GNP in Germany in 1992 in Scenario 4. The faster growth in Japan and Germany in Scenarios 4 and

Table 7
Alternative Monetary Scenarios in Multimod

	Scenario 4[a]				Scenario 5[b]			
	1989		1992		1989		1992	
	(A)	(B)	(A)	(B)	(A)	(B)	(A)	(B)
United States								
Real GNP	2.9	−.7	2.9	−.5	3.0	−.6	2.8	−.8
GNP Deflator	3.3	−.3	3.1	−1.0	3.4	−.2	2.9	−1.3
Current Balance								
$ Billions	−122.3	6.1	−89.7	38.3	−119.2	9.2	−92.2	35.8
Percent of GNP	−2.4	.1	−1.5	.6	−2.4	.1	−1.5	.6
Japan								
Real GNP	3.8	.1	3.6	.6	3.8	−.1	4.0	1.4
GNP Deflator	1.8	.5	1.3	0	1.8	.1	2.3	1.8
Current Balance								
$ Billions	77.8	3.2	81.8	6.8	75.3	.7	91.6	16.6
Percent of GNP	2.5	.1	2.1	.1	2.5	.1	2.4	.4
Real Exch. Rate (Yen/$)	159.0	−.8	150.0	−6.4	159.9	−.2	155.0	−3.3
Germany								
Real GNP	1.6	.7	2.4	1.5	2.2	.6	3.2	4.0
GNP Deflator	1.6	−.3	2.4	−.3	1.7	−.4	2.9	.5
Current balance								
$ Billions	41.8	.3	50.0	2.4	42.5	1.0	55.0	7.4
Percent of GNP	3.1	0	2.8	−.2	3.2	.1	3.3	.3
Real Exch. Rate (DM/$)	1.86	.1	1.69	−9.1	1.87	.5	1.81	−2.5

[a] Once-and-for-all money shock neutralizing exchange rate variations due to U.S. fiscal maneuver in 1989.

[b] Sustained money shock neutralizing average exchange rate variations due to U.S. fiscal maneuver over five years.

(A) Percentage growth rate except otherwise marked.

(B) For GNP, deflator and exchange rate, percentage deviations from levels in the baseline (or reference scenario); for current account balance, absolute deviations.

5 is partially generated by less current account adjustment. So the gain in stabilization of the bilateral exchange rates comes at the cost of current account adjustment in Japan and Germany. In these cases the improvement in the U.S. current account comes from the rest of the world.

Thus the scenarios of fiscal contraction in the United States and monetary expansion abroad yield mixed results. They would give approximately the same result for the U.S. current account deficit, with better results for growth in Japan and Germany, than the balanced fiscal package. They would also increase world saving and produce a bonus for the developing country debtors in the form of lower world real interest rates. But by stabilizing real exchange rates over the simulation period, they eliminate current account adjustment in Japan and Germany. This loss may be more than balanced by the gains from growth in Japan and Germany and lower world real interest rates.

Appendix: Two-Country Fundamentals Model

This appendix sets out the algebra of the model of exchange-rate and debt dynamics in the text. This is an extension of the fundamentals model presented in Branson (1985 and 1988), to include rational expectations dynamics. It permits us to analyze the effects of anticipated shifts in fiscal policy. The model has two countries or areas, home and foreign with starred * variables. We lay out first the expressions for the loci in e, B space that control the current-account and exchange-rate dynamics, and study their movements. Then we lay out the long-run equilibrium solution.

Current Account and Debt Dynamics

The current account surplus of the home country (X), and the deficit of the foreign country (−X), give the rate of change of net debt (B) of the home country. We assume the current account itself depends on the real exchange rate (e) and the debt position:

$$X(e, B) = -\dot{B}. \tag{A.1}$$

Here the partial derivative $X_e > 0$ gives the effect of the real exchange rate on the trade balance, and $X_b < 0$ gives the effect of the debt position on the flow of debt service. The $\dot{B} = 0$ locus in figure 1 comes from equation (A.1). Its slope is given by $-(X_b/X_e) > 0$. Above the $\dot{B} = 0$ locus $X > 0$, and B is decreasing. Below it, B increases. Anything that shifts the current account balance for given values of e and B shifts the $\dot{B} = 0$ locus.

Exchange Rate Dynamics

Exchange rate dynamics and interest rates are determined by the two national income equilibrium conditions and the open interest parity condition that links the two financial markets. The national income equilibrium conditions are:

$$D = S(r) - X(e, B), \text{ and} \tag{A.2}$$

$$D^* = S^*(r^*) + X(e, B). \tag{A.3}$$

Here D and D* are the home and foreign fiscal deficits, S and S* are the excess of private saving over investment, and r and r* are the real interest rates. We assume $S', S^{*\prime} > 0$. Financial market equilibrium is characterized by the open interest parity condition on real interest rates:

$$r = r^* + \hat{e} + p(B). \tag{A.4}$$

Here ê is the rationally expected rate of change of the real exchange rate, and p is the risk premium on home currency assets, with $p' > 0$.

The characteristics of the equilibrium locus along which ê = 0 in figure 1 can be obtained by setting ê = 0 in equation (A.4), and then totally differentiating (A.2) − (A.4) to solve for e, r, and r* as functions of D, D*, and B. The total differential, in matrix form, is equation (A.5):

$$\begin{matrix} & & \text{A} & & & & \text{B} & & \\ \text{A.2} & \begin{bmatrix} S' & 0 & -X_e \\ 0 & S^{*\prime} & X_e \\ 1 & -1 & 0 \end{bmatrix} & \begin{bmatrix} dr \\ dr^* \\ de \end{bmatrix} & = & \begin{bmatrix} X_b & 1 & 0 \\ -X_b & 0 & 1 \\ p' & 0 & 0 \end{bmatrix} & \begin{bmatrix} dB \\ dD \\ dD^* \end{bmatrix} . \end{matrix} \qquad \text{(A.5)}$$

The determinant of the A matrix is given by

$$|A| = X_e(S' + S^{*\prime}) > 0.$$

The solutions from (A.5) are given in table A.1. The term in de/dB is the slope of ê = 0, and the terms in de/dD and de/dD* give the vertical shift in ê = 0 with a change in one of the fiscal positions. The terms in the dr and dr* columns give the impact effect of a change in the debt position or in either fiscal position on the two interest rates. The slope term de/dB is larger than $-(X_b/X_e)$, the slope of $\dot{B} = 0$. The two shift terms de/dD and de/dD* show that an increase in the home budget deficit shifts ê = 0 down, and an increase in the foreign deficit shifts it up.

The dynamics of ê are given by the vertical arrows in figure 1. If e is above the ê = 0 locus, then X in equations (A.2) and (A.3) is larger than the value consistent with ê = 0 for given B, D, D*. This means that r must be larger than consistent with ê = 0 for (A.2) to hold, and r*

Table A.1
Short-run Comparative Statics of ê = 0

Exogenous Variables	Endogenous Variables		
	dr	*dr**	*de*
dB	$\frac{p'S^{*\prime}X_e}{\lvert A\rvert} > 0$	$-\frac{p'S^{*\prime}X_e}{\lvert A\rvert} < 0$	$\frac{S'S^{*\prime}p'}{\lvert A\rvert} - \frac{X_b}{X_e} > 0$
dD	$\frac{X_e}{\lvert A\rvert} > 0$	$\frac{X_e}{\lvert A\rvert} > 0$	$\frac{-S^{*\prime}}{\lvert A\rvert} < 0$
dD*	$\frac{X_e}{\lvert A\rvert} > 0$	$\frac{X_e}{\lvert A\rvert} > 0$	$\frac{S'}{\lvert A\rvert} > 0$

smaller for (A.3) to hold. With $r - r^*$ larger than consistent with $\hat{e} = 0$, from (A.4) $\hat{e}$ must be positive. If the exchange rate is expected to rise, under rational expectations it does rise. So for a point above the $\hat{e} = 0$ locus to be consistent with equilibrium, e must be rising, and below it, falling.

Equilibrium Dynamics

Dynamic adjustment to the long-run equilibrium proceeds along the ss saddle path in figure 1. This is the unique path that has the two essential properties that (a) it leads to the equilibrium, and (b) along it expectations of $\hat{e}$ are realized. All other paths are unstable "bubbles" that diverge to an asymptote normal to the ss path. Following a disturbance that shifts either the $\hat{e} = 0$ or the $\dot{B} = 0$ locus, for a given existing debt position the real exchange rate jumps onto the new ss path, and then the debt position and the exchange rate follow the ss path to the new equilibrium.

The comparative status of the long-run equilibrium can be obtained from equations (A.1) – (A.4) with X and $\hat{e}$ set to zero. From (A.2) and (A.3) with $X = 0$, we get in the long-run equilibrium,

$$dr = \frac{1}{S'}\, dD, \text{ and } dr^* = \frac{1}{S^{*\prime}}\, dD^*. \tag{A.6}$$

From the arbitrage equation (A.4) and (A.6) we obtain

$$dB = \frac{1}{p'}\left[\frac{1}{S'}\, dD - \frac{1}{S^{*\prime}}\, dD^*\right]. \tag{A.7}$$

Finally, from (A.1) with $X = 0$ and (A.7) we obtain

$$de = -\frac{X_b}{p'X_e}\left[\frac{1}{S'}\, dD - \frac{1}{S^{*\prime}}\, dD^*\right]. \tag{A.8}$$

The long-run solution is recursive.

As an illustration of the adjustment process, consider the effect of an unanticipated increase in the home fiscal deficit D (or decrease in D*), shown in figure 2. The initial equilibrium is E_0, from the previous figure. The increase in D shifts the $\hat{e} = 0$ locus down, according to the sign of de/dD in table A.1. This shifts the adjustment path ss down to s_1s_1 in figure 2, running into the long-run equilibrium E_2, where the new $\hat{e} = 0$ locus (not shown) intersects the unshifted $\dot{B} = 0$ locus.

The real exchange rate jumps down to point E_1, through a nominal appreciation of the home currency if price levels are slow to adjust. At

point E_1, the real exchange rate is expected to rise along s_1s_1. The appreciation generates a current account deficit that contributes to the finance of the budget deficit. The home interest rate exceeds $r^* + p(B_0)$ by the expected rate of increase of e.

The model exhibits an overshooting of the real exchange rate in response to a fiscal disturbance, in that the initial real appreciation is reversed in the increment to E_2. In order to service the increase in debt from B_0 to B_2, the home currency must eventually depreciate relative to E_0. But to accumulate the increase in debt, it must first appreciate to E_1.

The path from E_0 to E_1, and back toward E2 describes roughly the adjustment process of the U.S. real exchange rate and current account since 1980, with the 1988 point somewhat higher than E_0, but not yet at E_2. It is higher than E_0 because the real exchange rate has depreciated a bit relative to 1980, at least by the OECD's (1988) competitiveness measure. The contention that it has not yet reached E_2 follows from the hypothesis that at the existing level of e, the current account deficit would not go to zero. This implies further depreciation, in the absence of any further fiscal adjustment.

The main problem with this explanation of the path of the dollar since 1980 is that in fact the dollar appreciated in a series of irregular jumps from 1980 to 1985, rather than one single jump early in the period. The single jump from E_0 to E_1 would occur if the budget shifts had occurred fully when announced. In fact, the deficit in the United States emerged gradually, following a path that must have seemed uncertain from the point of view of the foreign exchange market.This could account for the irregular path to 1985. In addition, the 1985 peak could well have resulted from a temporary divergence onto a bubble path, as was argued by Krugman (1985).

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Discussion

*Paul R. Krugman**

This paper by William Branson and Grazia Marchese operates on two levels. At one level it presents a set of simulation results from major econometric models of the international economy, analyzing projections and alternative policy experiments. At the same time, the paper analyzes the same issues in terms of a small-scale theoretical model, in effect using it to model not only the world but also the bigger models. The result is an interesting mix, in which the sometimes obscure channels of influence in big models are illumined by the little model, while the little model gains in apparent relevance by the numerical results afforded by the bigger systems. In my comments I want to focus primarily on the small model, and on some aspects of the world that is being modeled.

On the whole I am highly sympathetic to the approach taken here. The small model embodies a basic point about international adjustments that ought to be universally accepted, but still is not. In mapping from the model to reality, however, there are some problems for which I have no good solution, but that I wish the authors had made more of.

What is important and right about the approach taken here is the emphasis on the complementarity of expenditure-switching and expenditure-reducing policies in any reduction of the U.S. external deficit. The current account balance is S−I; it cannot be narrowed unless the savings-investment gap is closed. But the current account is also X−M; the United States must sell more goods abroad or buy fewer foreign goods as part of the process of deficit reduction, which can only be accomplished by making U.S. goods and services relatively cheaper.

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Thus, reducing the deficit requires both a reduction in domestic demand and a depreciation of the dollar.

This should be an obvious point, yet it is one that policymakers seem oddly reluctant to accept. On the one side, some politicians, especially in the United States, seem to believe that currency depreciation can somehow solve the trade deficit all by itself, without any need for a domestic belt-tightening. On the other side, many central banks seem to believe that a lower U.S. budget deficit will somehow translate directly into a lower trade deficit, without any need for a lower dollar (and perhaps can even strengthen the dollar). The virtue of a model like this one is that it makes clear why exchange rate and expenditure adjustment are not alternatives, but necessarily go together.

While the model is useful for making this point, I am less convinced that a model like this one is adequate for understanding the economics of the dollar. There are two key problems. The minor one is the handling of lags, the major one the handling of expectations.

The point about lags should be apparent. While the econometric models used in the paper allow for slow trade adjustment, the theoretical model does not—and for that matter, even the econometric models almost surely understate the long-run effects of exchange rate changes. U.S. experience since the dollar began declining has demonstrated that the long lags in trade adjustment are surely as crucial a part of exchange rate dynamics as price adjustment or growing international indebtedness, which are the usual focus of dynamic exchange rate models. I think that the J-curve should be placed at the center of the story, not simply be given an occasional mention.

The other problem, which is harder to solve, is that of expectations. To close their model, the authors assume rational expectations—the device we all use, because of the lack of any good alternative. They then go on to suggest that the predictions of the model using this assumption track more or less the rise and fall of the dollar as it actually happened. Unfortunately, that just is not true.

The problem is that rational expectations, however persuasive as a modeling device, is an assumption that has no backing in the observed behavior of exchange markets, or indeed of financial markets in general. To take the simplest kind of test, forward rates not only are inefficient predictors of future spot rates, they are worse predictors than current spot rates; indeed, for many samples, forward premia are actually negatively correlated with subsequent exchange rate changes. Attempts to explain these results by invoking shifting risk premia look more and more like Ptolemaic epicycles, and the historical patterns of supposed risk premia do not make sense (a high risk premium on dollar assets when the dollar was rising, a negative premium when it was falling). Furthermore, it is by now a familiar point that the dollar's strength at its peak made no sense at all—had the dollar fallen as slowly as the market

apparently believed possible, the United States would have accumulated an infinite foreign debt.

No good answer exists to the question of how to model an irrational market. Ad hoc formulations of expectations formation are sometimes better metaphors for historical experience than rational expectations, but are subject to the Lucas critique. Models in which apparent irrationality is the result of a learning process when agents do not initially know the model are interesting but not really usable at this point. So I have no good alternative suggestion. All that I can advocate is caution: readers should be warned that our models do not account for history very well at all.

Discussion

*Yoshio Suzuki**

I found the paper by Professor Branson and Ms. Marchese extremely stimulating, because it dealt explicitly with the question of adjustment of external imbalances between the United States, Japan and West Germany, a matter of great concern for both policymakers and academics in each country. Since the paper is made up of a theoretical model and policy simulations, I take them up in turn. With respect to the theoretical model, I basically agree with the analytical framework.

The paper tries to explain the relationship between expansionary fiscal policy in the United States and the movements of the dollar exchange rate in the 1980s using a simple theoretical model. In this model, the exchange risk premium is one of the primary determinants of the real exchange rate, together with real-interest-rate differentials. Since it is difficult to explain the sharp depreciation of the dollar after 1985 without taking into account the effect of the risk premium that emerged from the massive current account imbalances, I agree to their emphasis on the risk premium factor.

However, this theoretical model is in some respects not necessarily relevant to the policy simulations and proposals discussed in the latter part of the paper. For instance, it is applicable only to the analysis of the effects of fiscal policy, not those of monetary policy, since it deals exclusively with the relationships among real variables, not nominal variables. However, the policy actions that the authors most strongly recommend in the latter half of the paper involve an expansionary *monetary* policy in Japan and in West Germany.

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I have another reservation with respect to the specification of the current account balance in this theoretical model. It is assumed that the current balance, excluding the investment income balance, depends solely on the real exchange rate. This assumption seems to come from the underlying model, in which the trade balance is determined by the real exchange rate and domestic and foreign gross national products. The cyclical movements in GNPs are then abstracted. This assumption is justifiable if the dominant portion of imports consists of intermediate goods and raw materials. In this case, the level of imports is essentially determined by the GNP. However, the ratio of imports of final goods to total imports is relatively high in the United States, and this ratio has been on an upward trend in Japan. Therefore, in both countries, imports depend not only on *production* but also on *absorption*. This implies that even if the real exchange rate and domestic and foreign GNPs are stable, the U.S. current imbalances can still be improved if the domestic absorption of the U.S. is suppressed, for instance by cutting the U.S. budget deficits. According to the model adopted here, the current account deficit of the United States cannot be eliminated without a further depreciation of the dollar, since the role of absorption in the current balance is ignored in the model. I am rather skeptical about this view.

Now, let me turn my attention to the simulation results and policy implications. The paper provides several possible scenarios of the future adjustment process.

(1) In Scenario 2, only the United States takes policy action and cuts its budget deficit. The merit of this scenario is a decline in the world real interest rate, while the demerit is a decline in the world growth rate.
(2) So, in Scenario 3, expansionary fiscal policy in Japan and West Germany is added to Scenario 2. The gain is a speed-up of the current account adjustment process due to a further depreciation of the dollar, and an increase in the growth rate, while the loss is that the world interest rate, on average, does not fall as compared to Scenario 2.
(3) In the last two scenarios, 4 and 5, which are preferred by Branson and Marchese, Japan and West Germany follow an expansionary monetary policy instead of a fiscal one, while the United States adopts the same contractionary fiscal policy as is the case in Scenario 3. In these scenarios, the world economy can maintain a high growth rate; thus, Scenarios 4 and 5 are better than Scenario 2. The world real interest rate falls; and so Scenarios 4 and 5 are better than Scenario 3. The major loss with these scenarios is the relatively slow adjustment of external

imbalances, in comparison with the other scenarios. But the authors conclude that two gains are superior to one loss.

I appreciate the clear-cut discussion presented here, and I would have agreed to the proposals of Scenarios 4 and 5 if the time had been 1986. However, the serious problem of this simulation today is the large difference between the assumed baseline forecasts for 1988 and the most recent actual data. Regarding Japan, the real growth rate in the first half of 1988 was 6 percent over the same period of the previous year, and the real growth rate for 1988 is now expected to be almost 6 percent. This growth rate is much higher than the IMF baseline of 3.7 percent or the OECD baseline of 3.4 percent. The IMF itself has already revised its estimate upward to 5.8 percent for 1988 and from 3.7 percent to 4.2 percent for 1989, in the latest *World Economic Outlook*. Also, the ratio of current account surplus to GNP in Japan has already fallen to 2.5 percent in the second quarter of 1988; this level is projected for 1989 in Scenarios 4 and 5. It has already been achieved a year in advance without any new policy.

Although these forecast errors by the IMF and the OECD are not the fault of these authors, they represent a serious problem with their simulation exercises. This rapid expansion of the Japanese economy is largely due to five successive cuts in the official discount rate in 1986 and 1987 to 2.5 percent, the lowest level in the history of the Bank of Japan. We also allowed a significant acceleration in the rate of monetary growth (in terms of M2 + CDs), which reached 12 percent at the end of 1987 compared with the appropriate long-run trend of 8 percent. Germany also has permitted an overshooting of its monetary target in recent years. However, the paper does not mention this expansionary monetary policy stance that has already been taken by Japan and Germany since 1986, and its results. Actually, a part of the policy recommendation of this paper, namely expansionary monetary policy in Japan and Germany, has already been implemented. The part that has not been implemented yet is the reduction of the U.S. budget deficits. The world is now worrying about a possible acceleration of inflation as a result of expansionary monetary policy in 1986 and 1987 in Japan and Germany without the promised cut in the U.S. budget deficits.

Taking account of these factors, this policy proposal should have been presented in 1986. In 1986 and through 1987, Japan has conducted an expansionary monetary policy in line with this proposal, while the United States has not cut its budget deficits enough. On the one hand, this has led to the expansion of the Japanese economy, one of the gains of this proposed scenario; but on the other hand, slow improvements in the U.S. current-account deficits and insufficient reductions in real interest rates continue, corresponding to the other, unrealized gains of the proposed scenario.

A rapid reduction of U.S. budget deficits is urgently needed. Even if the yen is forced to appreciate to some extent as a consequence, it would be desirable for the Japanese economy because it would reduce the possibility of excessive economic expansion and acceleration of the inflation rate. If the deflationary effects of the reduction of the U.S. budget deficits are much larger than expected, and if the Japanese economy threatens to go into a recession, Japan can take expansionary fiscal policy action without a large increase in its real interest rate, since the economy already has enough liquidity as a result of the past monetary expansion.

Lastly, the suggested loss in this proposed scenario, namely the possible delay in the external-imbalance adjustment, might not be as serious as predicted in the paper, when we consider the role of absorption, through which the cut in U.S. budget deficit affects the demand side. According to the empirical investigation by Hooper and Mann (1987) at the Federal Reserve Board, the increase in the U.S. current account deficits in the 1980s is largely attributable to the change in the real exchange rate when GNPs are used as explanatory variables. However, the role of the real exchange rate is significantly lessened and the role of the demand factor turns out to be more important, when absorption levels are used instead of GNPs. Considering the fact that the ratio of final goods imports to the total is about 50 percent in the United States, the effect of the cut in the U.S. budget deficits on its current account deficits may be quite large even if there is no further depreciation of the dollar.

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