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The Current-Account Balance and the Dollar: 1977-78 and 1983-84

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CONTENTS

LIST OF TABLES

LIST OF FIGURES

1 INTRODUCTION

In the late 1970s, particularly during the dollar depreciation of 1977-78, there appeared to be a close connection between current-account statistics and the behavior of the U.S. dollar against other major currencies. The apparent importance of the current account was reinforced by the failure of other "fundamentals" to explain the violent exchange-rate movements of 1977-78.

In both 1977 and 1978 the dollar depreciated by more than 20 percent against the Japanese yen and Swiss franc, and by more than 10 percent against the German mark (Table 1). Yet the growth of the money supply was typically lower in the United States than in the other countries. This paradox was particularly marked in 1978; M1 growth was much less in the United States than in Germany, Japan, or Switzerland. Indeed, the currency against which the dollar depreciated the most (the Swiss franc) had the largest money-supply growth.[1] Real interest rates, measured *ex post*, appear to have been very similar in the United States and the countries against which the dollar depreciated, because in the United States the higher inflation was more or less offset by higher nominal short-term interest rates. It must also be remembered that a substantial part of the widening inflation differential was a consequence rather than a cause of dollar depreciation. The depreciation raised import prices in the United States and lowered them in the strong-currency countries.[2] Thus, it is not surprising that the current account moved to the forefront in popular and academic discussions.[3]

This study was partially written while I was a consultant for the Organization for Economic Cooperation and Development in 1984-85, but the views expressed are mine and should not be associated with the OECD. I would like to thank Dave Coe, Franek Rozwadowski, Jeffrey Shafer, Christian de Saint-Etienne, Anti Suvanto, and two referees for helpful comments, and Cathryn Carlson for efficient research assistance. Any remaining errors are my own. Research support from Swarthmore College is gratefully acknowledged.

[1] One might thus be led to believe that there is an inverse rather than direct relationship between relative U.S. money growth and depreciation of the dollar. For this period, however, it is incorrect to view the direction of causation as running exclusively from money supplies to exchange rates, because monetary policies responded to exchange-market developments. The very large money-supply rise in Switzerland in 1978 was attributable to unsterilized exchange-market intervention by the Swiss National Bank intended to hold down the appreciation of the Swiss franc. To a lesser extent, the same thing occurred in Germany and Japan.

[2] While imports from the United States are a relatively small share of total European and Japanese imports, a large share is invoiced in dollars (31 percent for Germany in 1976, 90 percent for Japan, according to data in Nakamura, 1980).

[3] See Shafer and Loopesko (1983) for a discussion of the interrelationship between theoretical exchange-rate models and the actual experience with flexible rates in the 1970s.

TABLE 1
PERCENTAGE CHANGE [a] IN THE U.S. DOLLAR EXCHANGE RATE IN RELATION TO THE "FUNDAMENTALS," 1977 AND 1978

	1977	1978
Exchange-rate changes: [b]		
German mark/dollar	12.3	15.1
Japanese yen/dollar	22.0	23.3
Swiss franc/dollar	22.5	23.5
FRB trade-weighted average dollar	8.0	10.6
M1 growth:		
Germany	11.2	13.2
Japan	8.2	13.4
Switzerland	4.1	22.6
U.S.	7.9	6.6
CPI inflation:		
Germany	3.5	2.4
Japan	4.8	3.5
Switzerland	1.1	0.7
U.S.	6.8	9.0
Short-term interest rate: [c]		
Germany	2.6	2.6
Japan	4.1	3.4
Switzerland	1.1	0.1
U.S.	6.1	9.3
Current-account balance: [d]		
Germany	4.1	9.0
Japan	10.9	16.5
Switzerland	3.4	4.4
U.S.	−14.5	−15.4

[a] End of year to end of year.

[b] Positive figures represent appreciation against the dollar.

[c] Treasury bill rates except for Switzerland, which is 3-month deposit rate.

[d] Billions of dollars.

SOURCES: *Main Economic Indicators, Economic Outlook*, OECD; *Bulletin*, Federal Reserve Board.

Market commentary frequently referred to this connection. On October 17, 1978, the *Wall Street Journal*'s foreign-exchange column noted:

> Analysts said a major factor in the dollar's steep plunge yesterday was Japan's announcement that its trade surplus with the U.S. widened in September . . . . (p. 2)

International economists have also noted this relationship. Frankel (1982a, p. 516) wrote:

> Coincident with the collapse in the explanatory power of the monetary model was the apparent emergence of the traditionally-noted correlation between current accounts and exchange rates. The dollar's fall in 1978 and its stabilization in 1979 coincided precisely with periods of large current-account deficit and balance, respectively.

Reviewing experience in the 1970s, Cooper (1982, p. 7) remarked:

> . . . the real effective exchange rate followed a classic pattern: it declined in relation to a deterioration in the current-account position of the United States, and it appreciated in response to an improvement in the current account. Whatever the exact channel of causation, the relationship was a close one.

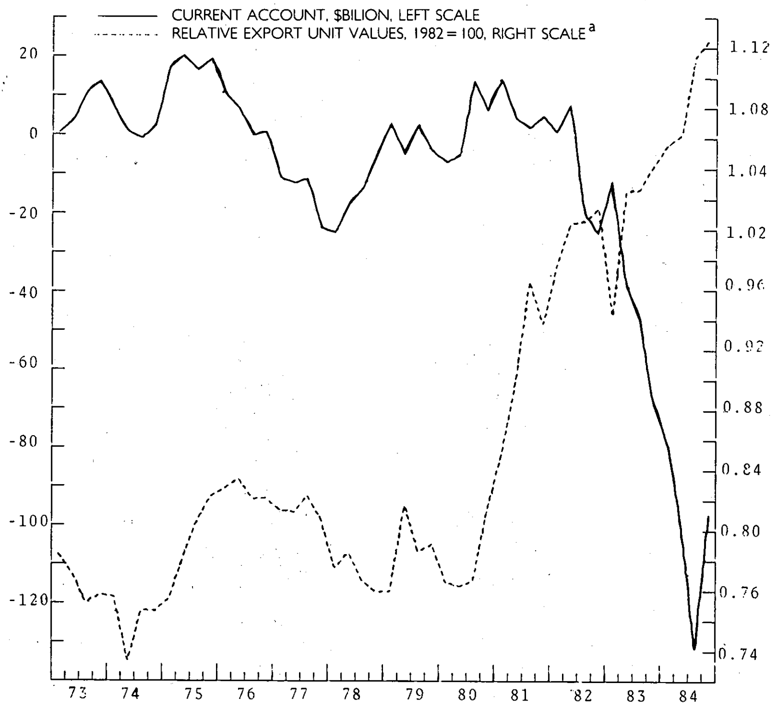
Cooper pointed to similar relationships for Germany and Japan.

As soon as economists had introduced current-account flows into asset-market models, however, the observed relationship collapsed, much as the monetary models had collapsed in 1978. The dollar appreciated in 1983-84 despite ballooning U.S. current-account deficits that dwarfed those of 1977-78 (Figure 1).[4] The U.S. current-account deficit exceeded $100 billion in both 1984 and 1985, compared with $15 billion in 1978. According to the U.S. Department of Commerce, the United States became a net debtor in 1985. Several studies published in 1985 predicted that, in the absence of a sharp decline in the dollar from its early 1985 level, the U.S. net debtor position could reach several trillion dollars over the next two decades (Krugman, 1985; Isard and Stekler, 1985; Marris, 1985). Krugman's simulations showed that the U.S. net foreign debt as a share of gross national product would reach levels similar to those of the most heavily indebted developing countries, even if the dollar depreciated gradually in real terms, as implicitly forecast by the interest-parity relationship. In view of these large prospective current-account deficits, Krugman, Marris, and others concluded that an abrupt rather than gradual decline of the dollar was very likely. As Krugman pointed out, the "hard landing" hypothesis was inconsistent with rational speculative behavior in the foreign-exchange market. Although the dollar belatedly depreciated sharply between March 1985 and May 1986, it is puzzling that the market re-

[4] Since 1981, the statistics have shown a large global current-account deficit, indicating that at least some countries are recording larger deficits or smaller surpluses than they are actually incurring. The global discrepancy increased from less than $5 billion annually in 1977-79 to $100 billion in 1982, and it remained in the $70-$90 billion range in 1983-84. Thus, it is possible that there are errors in the current-account statistics cited here, notably the U.S. deficits. However, the IMF *World Economic Outlook* (May 1984, p. 88) suggests that "the discrepancy does not appear to be so concentrated in the statistics of a particular group of countries as to throw doubt on the global pattern of current-account balances or on the principal changes in the pattern suggested by the recorded figures."

FIGURE 1

THE U.S. CURRENT ACCOUNT AND THE REAL DOLLAR EXCHANGE RATE



[a] An increase represents dollar appreciation.
SOURCE: OECD *Economic Outlook* and *Main Economic Indicators* data files.

mained oblivious to the informational content of the U.S. current-account deficits in 1983-84 after showing an acute and perhaps excessive awareness of U.S. current-account deficits in 1977-78.

This study examines the analytical and empirical relationships between current accounts and exchange rates. Chapter 2 uses the asset-market approach, which identifies two standard channels through which current-account balances are thought to influence exchange rates: the effects of wealth transfers on portfolio balance and the effects of current-account surprises on equilibrium exchange rates. Chapter 2 presents an illustrative portfolio-balance model and discusses the importance of the current account relative to other influences on asset-market equilibrium in the 1970s and early 1980s. Chapters 3 and 4 then turn to the relationship between the current account and the equilibrium exchange rate, in 1977-78 and 1983-84 respectively. The approach of this study is to focus on particular episodes of exchange-rate history, which may be helpful in view of the poor performance of structural econometric models of exchange-rate determination.[5] The central theme is that the analytical basis for linking current-account balances and exchange rates is much weaker than the experience of the 1970s suggested. This is important, because the conclusion that the large U.S. current-account deficits of the mid-1980s implied "overvaluation" of the dollar rested to some extent on past experience, especially in 1977 and 1978.

[5] The well-known study by Meese and Rogoff (1983) shows that the standard structural models do not outperform forward rates or random walks in out-of-sample forecasts, even when purged of forecasting errors in the explanatory variables.

2 THE CURRENT ACCOUNT, NATIONAL WEALTH, AND PORTFOLIO BALANCE

A Portfolio-Balance Model

A familiar starting point for exchange-rate analysis is the asset-market equilibrium condition that equates the interest-rate differential to the expected exchange-rate change adjusted for an exchange-risk premium, so that the risk-adjusted yields of holding assets denominated in alternative currencies are equalized.

Consider a two-country world, consisting of America (A) and Europe (E). Let i denote the nominal interest rate, e be the log of the exchange rate (the price of a mark in dollars), and a be the exchange-risk premium (the expected excess return on holding dollar assets). Let $\hat{e}$ be the expected exchange-rate change for the interval corresponding to the maturity of the interest rates. The asset-market equilibrium condition can be written

$$\hat{e} + a = i_A - i_E \; . \tag{1}$$

Equation (1) can be transformed into a relationship between the real-interest-rate differential and the expected change in the real exchange rate by adding the inflation-rate differential to both sides of the equation, but this adjustment is not important here, as my focus is on the current account rather than on monetary policy. In the following, the inflation-rate differential is assumed away, so that nominal and real exchange rates move together.

Exchange-rate expectations are assumed to be regressive toward an equilibrium exchange rate $\bar{e}$:

$$\hat{e} = k(\bar{e} - e), \quad (k > 0) \; . \tag{2}$$

Combining (1) and (2),

$$e = \bar{e} + (i_E - i_A + a)/k \; . \tag{3}$$

Equation (3) states that the actual exchange rate depends on the equilibrium exchange rate, the interest-rate differential, and the risk premium. For expositional simplicity, interest rates will be assumed constant in the remainder of this study. Endogenous interest rates could be introduced by disaggregating asset supplies into monetary and nonmonetary assets, as in the models of Tobin and de Macedo (1980) and Girton and Henderson (1977), but such models indicate that endogenous interest rates do not alter the qualitative pattern of the results illustrated here. In addition, this chapter holds the equilibrium exchange rate constant, although it will vary in the following chapters.

Current-account imbalances transfer wealth from deficit to surplus countries. This wealth transfer has implications for portfolio balance and hence the exchange-risk premium when interest-bearing assets are imperfect substitutes across currencies and asset preferences differ across countries. For example, if home-currency preference prevails, so that each country holds a relatively high proportion of its wealth in domestic-currency assets, a U.S. current-account deficit entails dollar depreciation. Wealth is transferred to regions having a lower preference for dollar assets than does the United States, requiring a rise in the risk premium on dollars (an increase in a). Models that feature the wealth-transfer effects of current-account balances include Kouri (1976, 1983), Branson (1977), Tobin and de Macedo (1980), Rodriguez (1980), Allen and Kenen (1980), and Golub (1983).

Although the focus of my model is on the risk premium, it is worth noting that there are other channels through which wealth transfers associated with current-account balances tend to result in depreciation of the deficit country's currency. The wealth transfers associated with current-account flows may alter relative demands for money, if those demands are functions of wealth, as in Frankel (1982b) and Obstfeld and Stockman (1984). A U.S. current-account deficit lowers U.S. wealth and U.S. money demand, and raises foreign wealth and foreign money demand, under the assumption that each country has a relative preference for its own money. In a monetary model of the exchange rate, the relative fall in U.S. money demand will depreciate the dollar by raising the U.S. price level or lowering the U.S. interest rate relative to the corresponding foreign variables.

Another mechanism whereby wealth transfers alter exchange rates occurs when domestic and foreign goods are imperfect substitutes, demands for goods are a function of wealth, and the exchange rate moves to reestablish the equilibrium relative price of goods. If each country has a relative preference for its domestic goods, the familiar connection of current-account deficits and depreciation obtains (Dornbusch and Fischer, 1980). A U.S. deficit entails a relative fall in U.S. wealth, a fall in global demand for U.S. goods, and a deterioration of U.S. terms of trade. If goods prices are sticky, the terms-of-trade change is brought about through dollar depreciation.

The remainder of this chapter analyzes the importance of the current account relative to other disturbances to portfolio equilibrium, including official intervention in the foreign-exchange market and changes in the stock of national wealth generated by capital formation, government budget deficits, and capital gains on existing assets. Obstfeld and Stockman (1984) point out that capital formation can swamp the current account's effect on wealth. Some empirical studies have recognized the roles of government debt issues and intervention (Dooley and Isard, 1983; Frankel, 1982a), but none to my knowledge has considered private-sector issues of bonds and equities, which may be much larger in practice than government debt issues. This omission is potentially significant because, as Blanchard and Dornbusch (1984, p. 106) note,

> Empirical studies of risk premia have established two facts. First, that in the international interest linkage there appears definitely a risk premium. International interest differentials do not differ from depreciation rates randomly. But it is also the case that attempts to explain the risk premium in terms of current accounts or wealth changes have not been very successful. This is perhaps not surprising when we bear in mind that in empirical work attention has focused on public debt and cumulative current accounts at the exclusion of the value of claims to real assets, and in particular the stock market. Of course, movements in the value of the stock market swamp the impact of budget deficits on wealth and even more so the impact of current accounts.

Difficult issues arise in the modeling of claims to real assets. As Tobin (1982) has pointed out, it is not clear that equities should be regarded as being denominated in any particular currency, because a company's earnings may be independent of the currency in which its shares are denominated. Furthermore, evidence provided by Blanchard and Summers (1984) indicates that debt and equities are imperfect substitutes. Nonetheless, it seems reasonable to regard equities as closer substitutes for domestic-currency assets than for foreign-currency assets. As Tobin (1982, p. 122) observes,

> The principal location and the legal and tax domicile of the business do entangle its earnings with the domestic and exchange value of the currency. For both foreigners and local investors, equity in the country's businesses may be a closer substitute for home debt than for foreign debt securities.

The implication of relaxing the assumption that bonds and equities are perfect substitutes when denominated in the same currency is discussed below.

In addition, country risk is ignored, making the location of the issues irrelevant; dollar-denominated bonds issued outside the United States are regarded as perfect substitutes for dollar-denominated bonds issued in the United States. To the extent that there is a close correspondence between the location of the issuer and the currency of denomination, this assumption is not essential. Such an assumption is made more tenable because the focus of the model is on outside assets, that is, assets that constitute part of net wealth. Financial intermediation, as in the Eurocurrency market, does not alter global net wealth, because assets and liabilities cancel.[1] The supply of outside

[1] This is not to say that the Eurocurrency market is irrelevant for exchange-rate determination. The growth of international financial intermediation undoubtedly makes asset demands more sensitive to yield differentials and thereby increases the volatility of exchange rates.

assets changes only with government deficits, capital accumulation, and capital gains on government debt and equities. It is possible, of course, for government deficits and capital accumulation to be financed by issuing foreign-currency debt, in which case the currency mix of outside assets differs from the geographical mix of issuers. Such foreign-currency outside-asset issues can be incorporated into the model, but few data are available, except on intervention in foreign-exchange markets.

The model developed here draws on Dooley and Isard (1983) and Frankel (1982a). It can be solved for the exchange-risk premium, defined in equation (1), as a function of asset supplies and demands. Interest-rate differentials and the equilibrium exchange rate are assumed to be invariant, as noted earlier.

The aggregate home-currency assets of the two countries, America (A) and Europe (E), are dollars (F) and marks (G) respectively. Each country holds both domestic and foreign-currency assets. Let f and g denote the shares of wealth (W) held in dollars and marks respectively. The exchange rate, e, is used to convert European asset demands and wealth into dollars (so that W_E denotes European wealth measured in dollars). The asset demands are assumed to depend solely on the yield differential between dollar and mark assets—the risk premium a.

Equilibrium in the asset market requires that asset supplies equal asset demands in the two markets, one of which is redundant by Walras's law. Consider the equilibrium in the market for dollar-denominated assets, expressed in dollars:

$$F = f_A(a) \cdot W_A + f_E(a) \cdot W_E \, . \tag{4}$$

Differentiating (4) and solving for the change in the risk premium,

$$da = \frac{dF - f_A dW_A - f_E dW_E}{f_A' W_A + f_E' W_E} \tag{5}$$

Since the denominator is positive, equation (5) states that the exchange-risk premium on dollar assets will rise when the supply of dollar assets rises relative to the demand. Given regressive expectations, as in equation (2), the dollar depreciates when there is a rise in the risk premium on dollar assets. Therefore, we obtain the standard result that the dollar depreciates when there is an excess supply of dollar assets. If dollar and mark assets are very close substitutes, however, the derivatives f_A' and f_E' are very high; small changes in the risk premium engender large changes in desired holdings of assets, and the risk premium will not vary much in response to changes in asset supplies and demands. An implausible implication of high substitutability is that portfolio shares are not anchored, since there is no basis for home-currency preference. But casual observation suggests that home-currency preference does hold in reality, although it may be diminishing as the internationalization of financial markets advances.[2]

Wealth changes as a result of new saving (S) and of capital gains on the existing stock of assets. Capital gains can arise from changes in home-currency prices and exchange rates. For simplicity, it is assumed that America's capital gains, other than those attributable to exchange-rate changes, are approximately equal to the capital gains on total dollar assets outstanding. A parallel assumption is made for Europe. This is realistic inasmuch as each country holds most of the assets denominated in its own currency. Let CG denote the capital gains on domestic assets. The changes in wealth, measured in dollars, can be written,

$$dW_A = S_A + CG_A + G_A de, \tag{6}$$

$$dW_E = S_E + CG_E + G_E de \; . \tag{6'}$$

The last term captures the capital gains on the dollar value of mark-asset holdings due to exchange-rate changes.[3]

Private domestic saving, in turn, is equal to the government budget deficit (D), net capital formation (C), and the current-account balance (B), by the standard national-income accounting. Because America's and Europe's current-account balances must sum to zero in a two-country world, we have

$$S_A = D_A + C_A + B \tag{7}$$

$$S_E = D_E + C_E - B \; . \tag{7'}$$

For simplicity, let $CG + C + D = H$ (changes in the "home" component of wealth). Then from equations (6), (6′), (7), and (7′) we obtain

$$dW_A = H_A + B + G_A de \; , \tag{8}$$

$$dW_E = H_E - B + G_E de \; . \tag{8'}$$

The change in the stock of dollar-denominated outside assets, dF, would be identical to America's domestic-asset accumulation, H_A, if each country issued assets denominated only in its home currency and there were no foreign-exchange market intervention. But issues of foreign-currency outside assets are equivalent to issues of mark bonds combined with sterilized intervention sales of dollars of an equal amount. Thus, we can represent the link

[2] In 1983, foreigners held only $97 billion in U.S. corporate stocks (*Survey of Current Business*, August 1984, p. 40), while outstanding U.S. corporate equities had a market value of over $2 trillion. Even if foreign holdings of U.S. equities are underreported, it is clear that home-currency preference prevails for equities.

[3] The capital gains due to exchange-rate changes can be written in this form because wealth can be written $W_A = F_A + eG_A$, and we take $e = 1$ initially.

between A's domestic-asset accumulation and the net increase in the supply of dollar assets by

$$dF = H_A - I \,, \tag{9}$$

where I is the intervention purchase of dollars, broadly defined.

Substituting equations (8), (8′) and (9) into equation (5) and rearranging,

$$da = [-(f_A - f_E)B - I + (1 - f_A)H_A - f_E H_E - (f_A G_A + f_E G_E)de]/\Delta \,, \tag{10}$$

where $\Delta > 0$ is the denominator of equation (5). Equation (10) illustrates the role of portfolio preferences f_A and f_E in determining the relative importance of current-account balances, intervention, and changes in asset stocks for exchange-rate determination in a portfolio-balance setting.

A U.S. current-account deficit involves a transfer of wealth from America to Europe that matters only insofar as $f_A \neq f_E$. The magnitude of the current-account effect depends on the extent of home-currency preference. Intervention, which alters F, has a greater dollar-for-dollar effect than a current-account imbalance, unless home-currency preference is absolute ($f_A = 1, f_E = 0$).

Government and private issues of debt and equities alter both asset stocks and wealths.[4] New U.S. corporate-debt issues, for example, raise F and W_A by equal amounts (assuming the issues are denominated in dollars). Therefore, they will alter the exchange rate only if home-currency preference is *not* absolute ($f_A \neq 1$). Asset-stock changes associated with wealth changes matter for exchange rates only if wealth owners desire portfolios diversified by currencies.

As will be seen below, current-account flows are usually small relative to changes in asset stocks, but this does not necessarily imply that the effects of asset creation dominate the effects of current-account flows, because—as equation (10) indicates—the weights differ. The weights attached to asset creation, $(1 - f_A)$ and f_E, are likely to be quite small if home-currency preference prevails. In the limiting case where $f_A = 1$, $f_E = 0$, asset creation is irrelevant for portfolio balance; only current-account balances and intervention matter, equally. Equation (10) collapses to

$$da = \frac{-I - B}{\Delta} \,. \tag{10'}$$

In a number of empirical models, such as the OECD's (Holtham, 1984), the risk premium is a function of the private sector's net foreign-asset position,

[4] The market value of the capital stock is equal to the market value of the securities that represent claims to the earnings, i.e., debt and equities.

which is appropriate when equation (10′) holds. If home-currency preference is weak or nonexistent, however, asset creation swamps the current account. In the special case where $f_A = f_E = 1/2$, the current account becomes irrelevant. Equation (10) becomes

$$da = [-I + 1/2(H_A - H_E) - 1/2Gde]/\Delta \, . \qquad (10'')$$

Greater international similarity of asset preferences reduces the role of the current account in exchange-rate determination.

The analysis has been carried out under the assumption that bonds and equities are perfect substitutes when denominated in the same currency. In this case, a rise in the market value of American equity raises the risk premium on dollar assets and the dollar depreciates, when home-currency preference is not absolute. This result will be qualitatively unchanged as long as domestic equities are closer substitutes for domestic bonds than for foreign bonds. If they are closer substitutes for foreign bonds, however, the result will be reversed.

The model generates the apparently counterintuitive results that increases in the market value of government debt or corporate securities raise the risk premium on dollar assets and cause depreciation of the dollar. This result reflects the partial-equilibrium nature of the model, which focuses solely on the financial dimensions of various possible shocks. For example, a stimulative U.S. fiscal policy raises U.S. real interest rates and thereby entails dollar appreciation, but this effect is ignored in the model. The model points out that at given aggregate demands for goods and money, the increased supply of dollar-denominated government debt leads to depreciation of the dollar. (See Girton and Henderson, 1977, for a model with endogenous interest rates where this result remains valid.) Another way of viewing this financing effect is to note that the dollar would be even stronger if the budget deficit were financed through issues of mark-denominated bonds rather than dollar-denominated bonds. A similar qualification applies to a favorable U.S. profitability shock; the shock itself results in appreciation of the dollar, but the endogenous increase in the market value of equities mitigates the appreciation.

For other wealth-transfer effects of current accounts—the money demand and goods demand mentioned earlier—the total change in national wealth is the relevant variable. To the extent that a rise in U.S. national wealth raises the demand for U.S. money or U.S. goods, a rise in the market value of equity in the United States unambiguously causes the dollar to appreciate. In summary, a rise in national wealth occasioned by domestic-asset accumulation has an ambiguous effect on the exchange rate, depending on the substitutability of capital and bonds and the size of the portfolio-balance effects relative to the money-demand and goods-market effects.

Empirical Dimensions of Current-Account Balances

Table 2 shows *changes* in domestic-asset supplies, current-account balances, and levels of intervention for Germany, Japan, and the United States from 1974 to 1984. These are the variables identified by the portfolio-balance model. The variable H of the model corresponds to the sum of the first two columns (the change in the market value of the capital stock and the change in net government debt). Sources and methods are described in the Appendix.

It is immediately apparent from Table 2 that current-account balances are generally much smaller than the changes in the domestic component of wealth, with the exception of the 1984 U.S. current-account deficit. This is true even on the narrow definition of the capital stock adopted here, which excludes financial enterprises, residences, land, and human capital. In many instances, changes in the market value of the capital stock reach well over a hundred billion dollars, whereas the current-account balances for any of these countries never exceeded $20 billion prior to 1983. Even the 1983-84 U.S. current-account deficits are not very large relative to typical changes in supplies of domestic assets.

Furthermore, the *levels* of domestic-asset stocks are very large relative to net foreign-asset positions, as shown in Table 3. The net foreign-asset position of a country is conceptually equal to its cumulative current-account balance, adjusted for revaluation effects due to changes in prices and exchange rates. There may be statistical differences, however, between current accounts and identified capital flows. Two measures of the domestic capital stock are shown in Table 3. The first is the market value of the nonfinancial business sector (the stocks corresponding to the flows shown in Table 2). The second is more comprehensive, covering the replacement cost of all industry and dwellings, although it still does not include land, human capital, etc. The German, Japanese, and U.S. net foreign-asset positions are small relative to domestic and foreign capital stocks. The 1983-84 current-account flows are large relative to the levels of their net foreign-asset positions, but much less significant relative to world capital stocks.

Table 2 also shows that it is misleading to identify asset creation with government debt. Capital stocks are quantitatively much more important than the size of the net government debt. Thus, empirical analyses such as those of Frankel (1982a) that use a narrow definition of wealth consisting only of government debt may be inadequate.

The fact that domestic-asset stocks are high relative to current-account flows is not necessarily inconsistent with the current account having a substantial portfolio-balance effect on exchange rates if home-currency preference is sufficiently high. However, foreign-exchange-market intervention

TABLE 2

CHANGES IN DOMESTIC-ASSET STOCKS, CURRENT-ACCOUNT BALANCES, AND INTERVENTION, GERMANY, JAPAN, AND THE UNITED STATES

(in billions of dollars)

	Change in the Market Value of the Capital Stock [a]	Change in the Net Government Debt	Current-Account Balance	Foreign Exchange-Market Intervention [b]
Germany:				
1974	55.1	5.9	10.3	0.7
1975	69.6	22.8	4.0	1.1
1976	34.5	16.7	3.9	−3.6
1977	93.9	13.7	4.1	−2.9
1978	101.3	18.7	9.0	−9.7
1979	137.9	21.3	−6.1	3.1
1980	−147.7	28.7	−15.7	15.6
1981	6.0	25.2	−5.5	−1.6
1982	132.5	19.3	3.4	−2.9
1983	138.7	16.8	4.1	1.2
1984	N/A	N/A	6.0	1.2
Japan:				
1974	21.4	−1.2	−4.7	−1.2
1975	59.7	13.8	−0.7	0.6
1976	114.1	21.5	3.7	−3.8
1977	128.9	25.2	10.9	−6.5
1978	80.8	61.0	16.5	−10.0
1979	97.0	45.3	−8.7	13.1
1980	164.3	37.5	−10.7	−5.0
1981	155.8	52.6	4.8	−3.6
1982	−50.8	36.7	6.8	4.7
1983	304.4	N/A	20.8	−1.5
1984	N/A	N/A	35.0	−2.1
U.S.:				
1974	−163.1	16.4	2.1	8.7
1975	43.8	70.6	18.3	4.6
1976	319.4	46.7	4.4	10.4
1977	−14.9	37.1	−14.5	35.0
1978	31.1	14.9	−15.4	33.5
1979	130.2	12.9	−1.0	−10.0
1980	183.2	42.0	1.9	9.1
1981	185.5	48.9	6.3	1.2
1982	−72.7	125.1	−9.2	−2.0
1983	520.9	143.0	−41.6	4.0
1984	N/A	N/A	−101.6	−0.5

[a] Nonfinancial enterprises only. For details on methods and sources for this and other variables, see the Appendix.

[b] Net purchases of domestic currency by monetary authorities.

SOURCES: OECD publications and data files, IMF *International Financial Statistics* (see Appendix for details).

TABLE 3
NET FOREIGN-ASSET POSITIONS AND CAPITAL STOCKS,
GERMANY, JAPAN, AND THE UNITED STATES
(in billions of dollars)

	1975	1978	1981	1983
Germany:				
Net foreign assets	39	59	26	30
Capital stock I	345	585	526	730
Capital stock II	1,111	1,707	2,024	1,952
Japan:				
Net foreign assets	9 [a]	36	11	37
Capital stock I	687	1,375	1,733	1,861
Capital stock II	1,035	1,905	2,498	2,594
U.S.:				
Net foreign assets	74	76	143	105
Capital stock I	1,103	1,429	1,928	2,376
Capital stock II	2,724	3,951	5,483	5,920

Capital stock I: Market value of nonfinancial corporate and quasi-corporate enterprises.

Capital stock II: Replacement cost of total industry and dwellings at current prices, net of depreciation.

[a] 1976 level (not available for 1975).

SOURCES AND METHODS: See the Appendix for details.

must also be considered. Official purchases of dollars reduce the outstanding stock of dollar-denominated assets and thus tend to cause the dollar to appreciate. Unless home-currency preference is absolute, equation (10) shows that intervention has a greater dollar-for-dollar effect than a current-account flow. A $1 U.S. current-account deficit, redistributing that much wealth from the United States to foreign countries, generates an excess supply of dollar assets smaller than $1 if home-currency preference is less than absolute. But an official purchase of $1 creates an initial excess demand of exactly $1.

Intervention data are presented in the final column of Table 2. A notable feature is that intervention was much larger in the late 1970s than in the 1980s. In particular, official purchases of dollars in both 1977 and 1978 were more than double the U.S. current-account deficits. Official sales of marks and yen were correspondingly large in 1977 and 1978. This implies that central banks more than offset the portfolio effects arising from the current-account configuration. Even in the limiting case of absolute home-currency preference, when each country holds only its home currency, that is, when the portfolio-unbalancing effects of wealth transfers are at their greatest, central-bank intervention in 1977 and 1978 would have had a larger offsetting effect by altering the currency composition of world financial wealth. Portfolio effects of current-account imbalances cannot by themselves explain the 1977-78 dollar depreciation, as originally pointed out by Hooper and Morton (1982).

A way to salvage the wealth-transfer argument is to assume that interest-bearing assets are perfect substitutes across currencies but non–interest-bearing monies are not. In this situation, the wealth transfers will lower the U.S. demand for money and raise the German, Japanese, and Swiss demands for money. Sterilized intervention will have no effect because of the perfect substitutability of securities. Frankel (1982b) uses this argument, contending that it explains why monetary theories of exchange-rate determination fail in 1977-78. He also suggests that the wealth transfers may explain "the case of the missing money" in the United States, that is, the apparent fall in the money-demand function in the United States. For the latter point, the timing is clearly incorrect, since the problems with U.S. money-demand equations began several years before 1977. It also seems doubtful that current-account balances and the wealth elasticity of the demand for money are large enough to have a significant effect on the demand for money and the exchange rate. Furthermore, much German, Japanese, and Swiss intervention was not sterilized.

Turning again to the 1983-84 current-account deficits, a factor that may have mitigated their portfolio-balance effects is that less than half the counterpart of those deficits showed up as surpluses of other OECD countries (Table 4). Inferences with regard to the distribution of current-account balances are hampered by the large global current-account discrepancy. If it is correct to infer, however, that the increasing U.S. deficits were in part reflected in a reduction of the deficits of the less-developed countries, the wealth-transfer effects of the U.S. deficits on portfolio equilibrium were decreased. The less-developed countries have a high marginal propensity to hold dollar assets (or, more exactly, a high propensity to issue dollar liabilities to finance deficits), so wealth was transferred between regions having similar portfolio preferences.

In any case, home-currency preference has probably been falling in the 1970s and 1980s, because the rapid internationalization of financial markets has reduced the informational and transactions costs of holding assets denominated in foreign currencies. A crude indicator of the internationalization of portfolios is provided by the growth of the international banking system.[5] In

[5] See Mendelsohn (1980) for an account of the evolution of international financial markets. Various measures of the size of the international banking system are provided in each issue of *World Financial Markets*, Morgan Guaranty Trust. The gross size of the assets and liabilities of the international banking system increased from less than $100 billion before 1970 to over $2 trillion in the 1980s.

TABLE 4
GLOBAL CURRENT-ACCOUNT PATTERN, 1982-84
(in billions of dollars)

	1982	1983	1984	Change, 1982-84
U.S.	− 9	−42	−102	−93
OECD less U.S.	− 18	16	36	54
OPEC	− 15	−22	− 10	5
Other non-OECD [a]	− 60	−25	− 12	48
Global discrepancy [b]	−103	−72	− 87	16

[a] Non–oil-producing developing countries and centrally planned economies.

[b] See footnote 4, Chap. 1.

SOURCE: *Economic Outlook*, OECD, June 1985, Table 52.

the portfolio-balance model, the role of the current account diminishes as home-currency preference recedes.

Summary

In the 1970s current-account flows were very small relative to the changes in and levels of total wealth. The 1977-78 U.S. deficits amounted to only about one-tenth of 1 percent of the value of the U.S. capital stock. Also, intervention purchases of dollars more than offset any portfolio-balance effects of the 1977-78 U.S. current-account deficits. In 1983-84, the U.S. current-account deficits became much larger, but they were still small relative to U.S. and foreign wealth levels, in a world of increasing capital mobility. It is therefore not completely surprising that the 1983-84 deficits did not have a noticeably depressing effect on the dollar. But why then did movements of the dollar and other major currencies appear to be closely related to current accounts in the 1970s? This question is addressed in Chapter 3. The "sustainability" of the 1983-84 U.S. current-account deficit is examined in more detail in Chapter 4.

3 THE CURRENT ACCOUNT, THE EXCHANGE RATE, AND THE J-CURVE IN THE 1970S

Chapter 2 showed that the portfolio-balance model cannot account for the correlation between current-account flows and exchange-rate changes that was observed in the 1970s. In this chapter, we explore other possible reasons for this correlation, in particular "news" effects of current-account statistics and the effects of exchange-rate changes on current-account balances. The analytical framework will also be used to elucidate the exchange-rate–current-account nexus in the early 1980s. For these purposes, the asset-market model of Chapter 2 must first be transformed into a balance-of-payments framework.

From Asset-Market Equilibrium to Balance-of-Payments Equilibrium

As shown in Stevens *et al.* (1980), a balance-of-payments equilibrium condition can be substituted for one of the asset-market equilibrium conditions. The "Stevens substitution" can be carried out for the model of Chapter 2.

The asset-market equilibrium condition (4) for the dollar can be written in first-difference form as

$$dF = dF_A + dF_E \; . \qquad (4')$$

Now, America's wealth consists of dollar and mark assets: $W_A = F_A + eG_A$. Again, taking first differences and rearranging, and setting $e = 1$ initially,

$$dF_A = dW_A - dG_A - G_A de \; . \qquad (11)$$

Also, recall from Chapter 2,

$$dW_A = H_A + B + G_A de \; , \qquad (8)$$

and

$$dF = H_A - I \; . \qquad (10)$$

Substituting (11), (8), and (10) into the asset-market equilibrium condition (4′), the terms involving H_A and $G_A de$ drop out, leaving

$$B + I + (dF_E - dG_A) = 0 \; . \qquad (12)$$

This is the balance-of-payments equilibrium for America: its current-account surplus, intervention purchases of dollars, and the net capital inflow into dollar assets (E's purchases of dollar assets less A's purchases of mark assets) must sum to zero.[1] Let K denote this net capital flow into dollar assets.

Since G_A and F_E are functions of the yield differential a, the capital flow K is a function of the change in a. From the definitions of the risk premium in equation (1) and exchange-rate expectations in equation (2), the capital flow will be a function of the equilibrium exchange rate $\bar{e}$ as well as the current exchange rate e, so that $K = K(a)$, where

$$a = i_A - i_E + k(e - \bar{e}) , \tag{13}$$

and the initial level of a is assumed to be zero for expositional simplicity. A rise in $\bar{e}$ generates expectations of dollar depreciation, reducing the *ex ante* excess return on dollar assets, and thus brings about a net capital flow into mark assets. The reverse is true for a rise in e. In addition, changes in the spot exchange rate affect capital flows through revaluation effects. If both countries hold positive amounts of foreign-currency assets, the revaluation effect on wealth augments the expectations effect: dollar depreciation (a rise in e) raises the share of marks in A's wealth and lowers the share of dollars in E's wealth, generating an excess demand for dollars and thus an incipient capital flow into A.

The current account B is also a function of the exchange rate (strictly speaking, the real exchange rate, but the difference between inflation rates is assumed to be zero for expositional convenience). The effect of e on B reflects the J-curve; a rise in e may lower B initially, but trade elasticities rise and B increases eventually. Hence, we can write the balance-of-payments equilibrium condition as

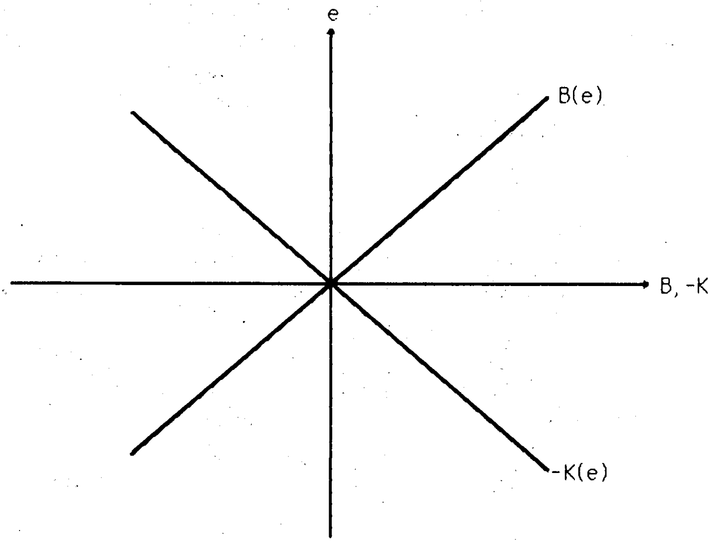
$$B(e, \ldots) + I = -K(e, \bar{e}, \ldots) . \tag{14}$$

The exchange rate e is deemed to maintain the balance-of-payments equilibrium, with all other arguments of the B and K functions treated as parameters, as in Kouri (1983). "News" effects of current-account surprises can be modeled as changes in $\bar{e}$, which shift the $K(e)$ function.

It will be assumed that each country holds positive amounts of foreign-currency assets or, if not, that the expectations effects of exchange-rate changes dominate the revaluation effects, so that $K_e > 0$. For the moment, suppose that there are no J-curve effects ($B_e > 0$). We can represent the balance-of-payments equilibrium diagrammatically in Figure 2, which shows the cur-

[1] The interpretation of equation (12) as a balance-of-payments equilibrium condition is strictly correct only if there are no outside asset issues in foreign currency other than foreign-exchange market intervention. If there are such asset issues, these should be included in the variable I, so that intervention is more broadly defined than in the balance-of-payments accounts. Similarly, the left-hand side of equation (12) will no longer correspond to geographical capital flows.

FIGURE 2
BALANCE-OF-PAYMENTS EQUILIBRIUM



rent and capital accounts as functions of the exchange rate. The signs of the slopes are implied by $B_e > 0$ and $K_e > 0$. For expositional convenience we assume that the initial equilibrium is such that $B = K = I = 0$. Intervention can be read off the diagram as the horizontal gap between the B and $-K$ lines, since $I = -K - B$. It can be seen that the foreign-exchange market is stable: if the exchange rate is such that $I + B + K > 0$ *ex ante*, dollar appreciation (a fall in e) restores equilibrium by lowering both B and K.

The short-run equilibrium depicted by the intersection of the B and $-K$ lines will not be a long-run stationary equilibrium unless the current account is at its long-run equilibrium value (which need not be zero), because the current-account flows alter stocks of wealth, asset demands, and hence the position of the $-K$ line.

The Dollar and the "News" Hypothesis in 1977-78

The news hypothesis suggests that current-account statistics may be important for assessing long-run competitive positions and future current accounts, thus exerting much more powerful exchange-rate effects than a static portfolio-balance model indicates. When the United States registers an unexpectedly high current-account deficit, it may signal that the U.S. dollar is overvalued relative to its long-run equilibrium value, depending on how the market interprets the underlying disturbances—whether the current-account surprise is perceived to be permanent or transitory. A number of papers have stressed the role of current-account "news": Isard (1980), Hooper and Morton (1982), Mussa (1980), Dornbusch (1980), Freedman (1979), and Hakkio (1980).

This news hypothesis is consistent with the 1978 puzzle: (1) dollar depreciation against the mark, yen, and Swiss franc, (2) a current-account deficit for the United States and current-account surpluses for Germany, Japan, and Switzerland, and (3) intervention purchases of dollars greater in absolute value than the U.S. current-account deficit. Unexpectedly large U.S. current-account deficits, which were viewed to be persistent, induced expectations of dollar depreciation, eliciting private capital flows out of dollar assets. Official intervention mitigated but failed to offset the tendency of the dollar to depreciate.

Consider the leftward shift in the B line shown in Figure 3, which could be due to cyclical factors such as a fiscal expansion in the United States, or to a structural deterioration of the U.S. current-account position. By itself, such a shift implies dollar depreciation; the dollar/mark rate goes from e_0 to e_1 in Figure 3. If intervention purchases of dollars accompany the current-account shock, however, and they are larger than the horizontal shift of the B line, the dollar will appreciate to e_2 instead of depreciating to e_1.

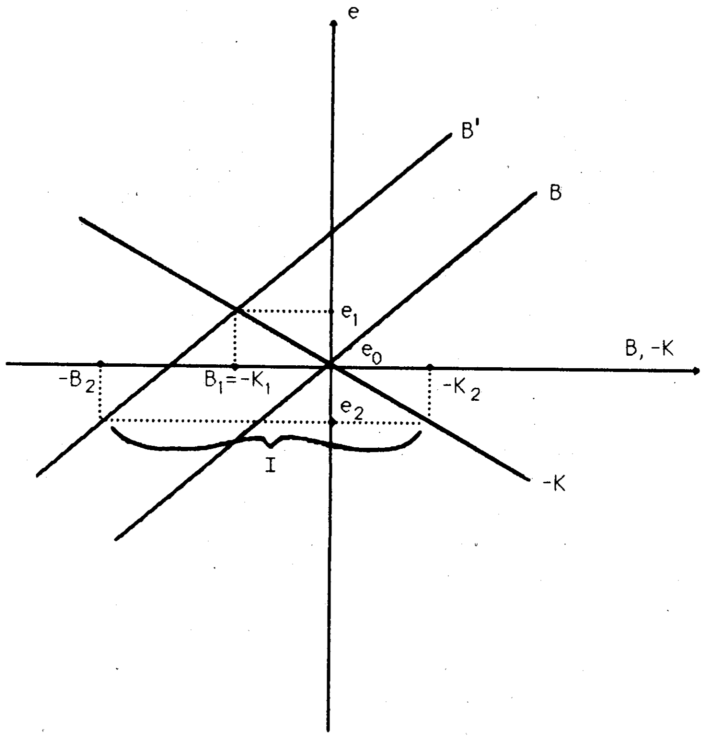
How then is it possible to reconcile the 1978 dollar depreciation, U.S. current-account deficit, and intervention pattern in this framework? Clearly the $-K$ line must have shifted too, to the right. If this shift is large enough, it is possible to observe simultaneously a depreciation of the dollar, a current-account deficit, and official purchases of dollars greater than the size of the current-account deficit. In Figure 4, the shift of the B and $-K$ lines leads to a depreciation of the dollar from e_0 to e_1 and a current-account deficit equal to B_1 and thus smaller than official purchases of dollars, I. This capital-account shift might occur if the current-account shock had news effects. The 1977-78 U.S. current-account deficits may have been viewed as an indication of a fall in the equilibrium value of the dollar, giving rise to the rightward shift of the $-K$ line.

An Alternative Hypothesis: The J-Curve

An alternative interpretation of the 1978 data can account for the observed correlation between current accounts and depreciation. It is the influence of the J-curve, which is a consequence of the fact that price elasticities of export supply and import demand are generally larger in the long run than in the short run.[2] Consider an unexpected appreciation of the mark, perhaps due to

[2] See Goldstein and Khan (1984) for a survey of empirical estimates of price elasticities of trade that corroborates the existence of J-curve effects. These estimates suggest that the perverse initial response of trade balances to real-exchange-rate changes may last about two years.

FIGURE 3
A CURRENT-ACCOUNT SHOCK

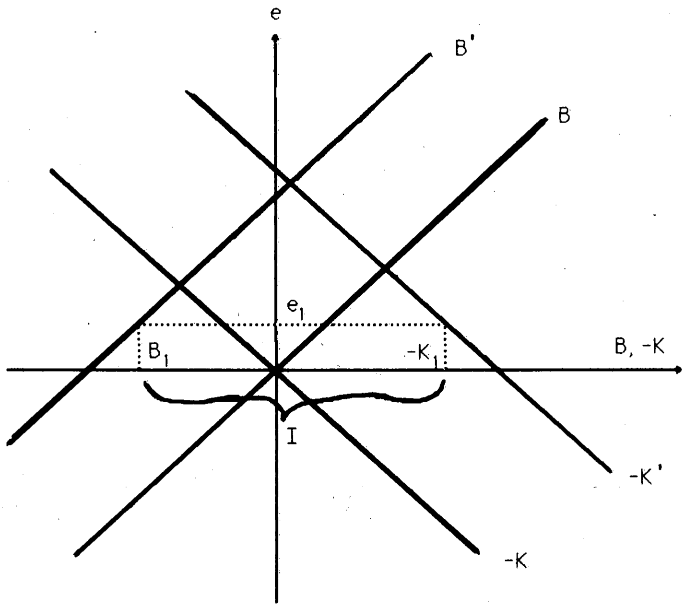


stochastic changes in American or German portfolio preferences. Because price elasticities are low in the short run, the appreciation will drive the German current account into surplus rather than deficit, particularly since the appreciation is unexpected and there are no anticipatory trade-volume adjustments. Over time, however, the volume effects of the appreciation increase and the German current account moves into a deficit (relative to the initial situation).

This possibility is represented in Figure 5 as a downward-sloping B line. The foreign-exchange market remains stable if the B line is steeper than the $-K$ line, as drawn. A shift in the $-K$ line to the right, reflecting a portfolio shift out of dollar assets into mark assets, partially offset by official purchases of dollars, leads to the 1977-78 configuration of a U.S. current-account deficit, dollar depreciation, and intervention purchases of dollars larger than the current-account deficit.

In addition to these two possible interpretations of the observed configu-

FIGURE 4
CURRENT-ACCOUNT SHOCK WITH "NEWS" EFFECT ON THE CAPITAL ACCOUNT



ration, some combination of the two is also possible. In the next section, a disaggregation of changes in trade flows is shown to support the second interpretation for 1978, involving a capital-account disturbance and J-curve effects on the current account rather than the news effects on the capital account. An analysis of the 1977 data, by contrast, indicates that both current- and capital-account shocks occurred.

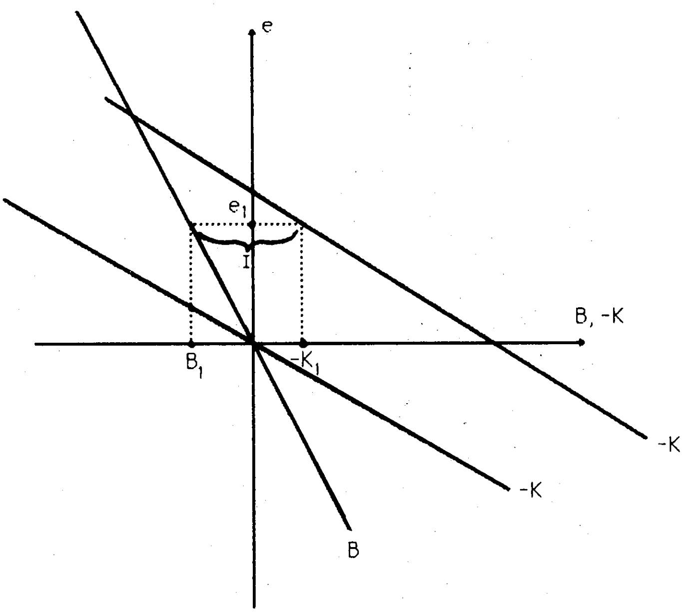
The Relevance of Information on Trade Volumes and Unit Values [3]

Dornbusch (1980) provides an ingenious test of the news hypothesis that unexpected current accounts cause unexpected exchange-rate changes. Dornbusch defines an unexpected exchange-rate change as the difference between the forward premium and the actual exchange-rate change.[4] He uses the biannual current-account forecasts reported in the OECD *Economic Outlook* to measure expected current-account balances. The OECD forecasts reflect

[3] This section draws on Golub (1981).

[4] This assumes the absence of risk premia, or at least that risk premia are negligible compared with the size of exchange-rate movements, an assumption that seems reasonable when exchange rates move by more than 10 percent per year, as in 1977 and 1978.

FIGURE 5
CAPITAL-ACCOUNT SHOCK WITH A J-CURVE EFFECT
ON THE CURRENT ACCOUNT



multilateral consultation and are reasonable proxies for consensus forecasts.[5] The unexpected current-account balance is thus the discrepancy between the OECD forecast and the actual current-account balance. Dornbusch regresses unexpected exchange-rate changes on unexpected current accounts for the United States (using a trade-weighted average of dollar exchange rates), Japan (using the dollar/yen rate), and Germany (using the dollar/mark rate). In each case the regression coefficient has the correct sign and is statistically significant. For example, an unexpected Japanese surplus is associated with unexpected yen appreciation.

I will show, however, that much of what Dornbusch is picking up are J-curve effects rather than news effects of current-account shocks.

An unexpected deterioration of the U.S. current account can be attributed either to a fall in the volume of U.S. net exports or to the J-curve effect of a real dollar depreciation. The news hypothesis applies to unexpected changes in the volume of net exports, since it is founded on the idea that current accounts provide information about the real factors underlying payments positions. To the extent that unexpected current accounts are attributable to un-

[5] OECD forecasts are made by the OECD Secretariat. Preliminary Secretariat forecasts are revised after meetings in which all member countries participate.

expected terms-of-trade changes, the culprit is likely to be the J-curve. Thus, if one can decompose unexpected current accounts into volume and terms-of-trade components, it should be possible to discriminate between the news hypothesis and the J-curve effect. The J-curve effect, in turn, could result from either a depreciation of the dollar or a drop in U.S. inflation relative to foreign inflation. An unexpected fall in relative U.S. inflation can be ruled out in 1977-78, because the U.S. inflation rate rose sharply relative to the inflation rates of Germany and Japan, as seen earlier in Table 1. J-curve effects in 1977-78 could therefore have arisen only through depreciation of the dollar.

Fortunately, the OECD forecasts not only current-account balances but changes in merchandise trade balances and the breakdown of trade-balance changes into volume and terms-of-trade components. Following Dornbusch's methodology, we can define the unexpected trade volume and terms-of-trade components as the difference between the OECD forecasts and the actual outcomes.

Before proceeding, it should be noted that there are two sources of forecast error in measured terms-of-trade effects of exchange-rate changes. The first is the J-curve effect. The second is a valuation effect. The latter arises because the OECD forecasts are based on national statistics in domestic currency but are reported in dollars. An appreciation of the yen will have an effect on the Japanese trade balance measured in dollars even without a J-curve effect if Japan is running a trade surplus initially. Suppose that there is no J-curve effect and that the yen appreciates unexpectedly against the dollar. The Japanese current-account balance will show a larger-than-expected surplus when measured in dollars despite the fact that there is no forecast error in the surplus when measured in yen. Of course, this problem does not arise for the U.S. forecast. In the OECD statistics, the valuation effect is lumped together with second-order effects that arise when prices and quantities both change. They appear under "Other" in the OECD data. Since the second-order effects are small for the magnitudes involved here, the "Other" entry can be associated with the valuation effect.[6]

An examination of the 1978 data shows that most of the unexpected current accounts are attributable to forecast errors in the terms-of-trade components rather than the trade-volume components (Table 5). The most striking results are for Japan. Not surprisingly, Japan had an unexpectedly large current-

[6] The second-order effects will be less than $1 billion in all cases, since the first-order terms-of-trade and volume effects are each less than 10 percent of the value of total trade, so that the second-order effects are less than 1 percent of the value of total trade.

The OECD forecasts assume unchanged exchange rates. The twelve-month forward premia against the dollar at end-December 1977 were 4.6 percent for the mark and 4.2 percent for the yen. The difference between the forecasts implied by the forward premia and the OECD exchange-rate assumption are small compared with the 15.1 percent appreciation of the mark and the 23.3 percent appreciation of the yen against the dollar in 1978.

account surplus in 1978. Note that the forecast error for the trade balance accounts for the bulk of the forecast error for the current balance. To see whether the unexpected Japanese surplus was cause or effect of the unanticipated appreciation of the yen in 1978, we must examine the breakdown in the trade-balance error. The results are unambiguous: the Japanese trade surplus actually declined unexpectedly in volume terms by $7 billion, but the terms-of-trade error amounts to an almost $13 billion unanticipated increase in the Japanese surplus attributable to the appreciation of the yen. There can be little doubt that the appreciation of the yen was cause rather than effect of the unexpected surge in the Japanese current-account surplus in 1978. Contrary to widespread fears, the Japanese trade balance was already beginning to adjust in 1978.

TABLE 5
BREAKDOWN OF OECD FORECAST ERRORS, 1978
(in billions of dollars)

	Forecast	Actual	Forecast Error
Current accounts:			
Germany	3	8.7	5.7
Japan	10	16.5	6.5
U.S.	−19.25	−24.5 [a]	−5.25
Changes in trade balances:			
Germany	0.5	6.0	5.5
Japan	1.5	7.25	5.75
U.S.	− 2.5	− 3.5	−1.0

Breakdown in Trade-Balance Errors

	Volume			Terms of Trade				
				J-Curve			Valuation Effect [b]	Total T-o-T Error
	Forecast	Actual	Error	Forecast	Actual	Error		
Germany	0.5	0.0	−0.5	0.0	3.5	3.5	2.5	6.0
Japan	1.0	−6.0	−7.0	0.5	8.25	7.75	5.0	12.75
U.S.	0.5	2.0	1.5	−3.0	−4.75	−1.75	−0.5	−2.25

[a] Uses the statistical definition of the current account before the 1978 revision (see footnote 7 on p. 27).

[b] This is the column called "Other" by the OECD; it consists of "second-order terms and—in times of exchange-rate movements—valuation effects through dollar appreciation/depreciation." Since the second-order terms are small, I have labeled the whole item "Valuation Effect" (see footnote 6, p. 25).

SOURCE: *Economic Outlook*, OECD (December 1977), Tables 30, 33 (forecast); (July 1979), Tables 27, 37 (actual).

The picture is similar in the German case. Again, the current-account and trade-balance forecast errors are large and almost equal. The forecast error is accounted for entirely by the unexpected terms-of-trade effects, because the trade-volume forecast was almost exactly on target. Just as in the case of Japan, the unexpectedly high current-account surplus appears to be wholly attributable to the unexpected appreciation of the mark.

For the United States, the trade-balance forecast error accounts for only a fraction of the current-account forecast error.[7] Nevertheless, the breakdown shows that the trade-balance forecast error was entirely due to unexpected depreciation of the dollar; U.S. trade performed better than expected in volume terms. Furthermore, invisibles are also subject to the J-curve effect, so some of the remainder of the current-account forecast error may be attributable to terms-of-trade effects.

A similar examination of the data for 1977, shown in Table 6, reveals more

TABLE 6
BREAKDOWN OF OECD FORECAST ERRORS, 1977
(in billions of dollars)

	Forecast	Actual	Forecast Error
Current accounts:			
Germany	5	3.8	− 1.2
Japan	0	11.0	11.0
U.S.	− 3	−20.2	−17.2
Changes in trade balances:			
Germany	2.5	2.5	0.0
Japan	−2.5	7.5	10.0
U.S.	−2.0	−22.0	−20.0

Breakdown in Trade-Balance Errors [a]

	Volume			Terms of Trade		
	Forecast	Actual	Error	Forecast	Actual	Error
Germany	1.5	0.5	− 1.0	1.0	2.0	1.0
Japan	−4.0	1.5	5.5	1.5	6.0	4.5
U.S.	−1.5	−16.0	−14.5	−0.5	−6.0	−5.5

[a] The "Other" term reported in Table 5 as the "Valuation Effect" is not shown in the 1978 OECD trade-balance table.

SOURCE: *Economic Outlook*, OECD (December 1976), Tables 21, 22 (forecast); (July 1978), Tables 24, 25 (actual).

[7] The statistical definition of the U.S. current account was revised in 1978 to include reinvested earnings of direct investment (see *Survey of Current Business*, June 1978, Part 2, p. 7). The effect of the statistical change was to reduce the reported U.S. deficit by $8.5 billion. Hence, $8.5 billion is added to the $16 billion reported U.S. deficit in order to make a meaningful comparison with the OECD forecast.

mixed results. The U.S. current-account deficit increased unexpectedly while Japan registered a large unexpected surplus. The German forecast was close to the actual outcome. Unexpected terms-of-trade movements account for half of the Japanese forecast error and a third of the U.S. forecast error.

Summary

In 1978, the OECD forecast errors of the current-account balances of Germany, Japan, and the United States were wholly due to J-curve and valuation effects associated with exchange-rate changes. The volume forecasts were either on target or erred in the opposite direction from the overall forecast, suggesting that there were no shocks to the current account. The news hypothesis therefore fails as an explanation of the 1978 dollar depreciation. Instead, the 1978 balance-of-payments data are consistent with a shift in portfolio preferences away from dollar assets. Similar forces were at work in 1977, although somewhat less decisively.

4 1980-84: U.S. CURRENT-ACCOUNT DEFICITS AND DOLLAR APPRECIATION

The evolution of the U.S. balance of payments and the dollar since 1980 can be summarized as follows. The dollar appreciated almost continuously through the 1980-84 period in both real and nominal terms. In 1980 and 1981, the United States registered small current-account surpluses, despite the 1979-80 rises in the price of oil.[1] In 1982, however, the current account shifted into deficit, and the deficit widened sharply in 1983 and 1984. Intervention was small throughout 1980-84 relative to the movements of the current account.

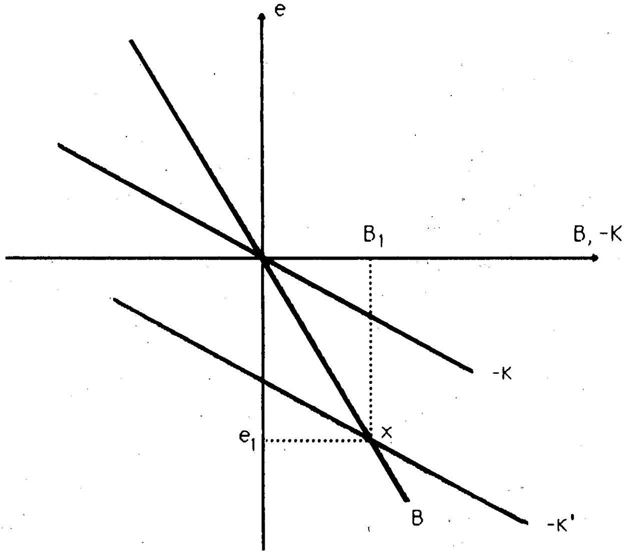
The combination of dollar appreciation and U.S. current-account deficits indicates that capital-account shocks raising the demand for dollar assets have been responsible for the strength of the dollar. This interpretation is consistent with market commentary focusing on interest-rate differentials and the favorable climate for investment in the United States. A number of studies (Shafer and Loopesko, 1983; Hooper, 1984; Sachs, 1985; and Frankel 1985) attribute much of the dollar appreciation to relatively high U.S. long-term real interest rates. High U.S. real interest rates, in turn, could reflect stimulative fiscal policy combined with tight monetary policy or an increase in returns to capital, as discussed below.

Figures 6 and 7 depict a sequence of developments that are consistent with the 1980-84 facts. Figure 6 portrays the situation in 1980-81. The capital-account shock is shown as a leftward shift of the $-K$ line. The B line is downward sloping in the short run, owing to the J-curve effect. We ignore intervention, which was small, so that balance-of-payments equilibrium obtains at point X, with the dollar appreciating to e_1 and the current account registering a surplus of B_1. Over time, however, the B line rotates clockwise to the position shown in Figure 7. In addition, there was probably a leftward shift of the B line because of the U.S. recovery in 1983-84, as imports rose with U.S. activity. This is shown in Figure 7 as the shift to B'. These two effects in isolation should have resulted in dollar depreciation relative to e_1 in Figure 6. Hence, the continued appreciation of the dollar in 1983-84 implies that the $-K$ line continued to shift leftward to $-K''$ in Figure 7, with an equilibrium

[1] Excluding the effects of changes in oil prices in 1980, there was a $29 billion improvement in trade volumes, of which $12½ billion was unexpected, and a $6 billion improvement in the terms of trade, of which $4½ billion was unexpected, as measured by the OECD forecast errors. The large gain in trade volumes reflects the steepness of the 1980 recession in the United States and the lagged effects of the previous dollar depreciation.

FIGURE 6

THE DOLLAR AND THE CURRENT ACCOUNT, 1980-81



at Y characterized by a strong dollar, e_2, and a current-account deficit B_2. Estimates by the OECD and the Bank for International Settlements indicate that roughly half the increase in the U.S. deficit is attributable to the strong U.S. recovery relative to that of its trading partners in Europe and Latin America (the shift in the B line) and the remainder is due to the loss of competitiveness associated with the strong dollar (the movement along the B line required by the shift in the $-K$ line).[2]

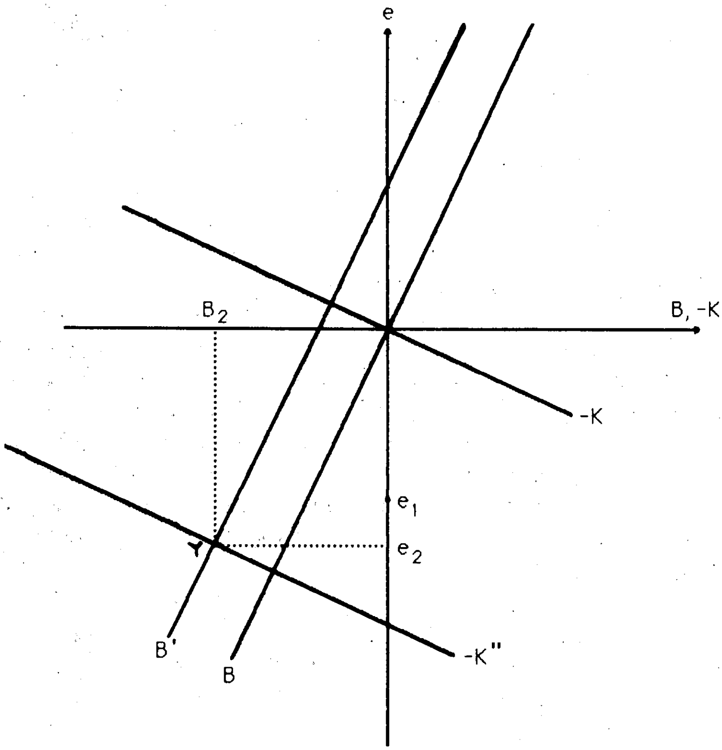
The "sustainability" of the 1983-84 pattern—a strong dollar and a U.S. current-account deficit—is controversial.[3] One view is that the current-account deficits must eventually undermine the "overvalued" dollar, as the United States becomes an increasingly large net debtor to the rest of the world (Marris, 1985, and Krugman, 1985). Implicit in this view is that the leftward shift

[2] Bank for International Settlements, *Annual Report 1983-84*, p. 85.

[3] Krugman (1985) points out that the concept of "sustainability" itself requires careful analysis. He argues that gradual real depreciation of the dollar is implicit in differences in real long-term interest rates. Therefore, he defines an unsustainable situation as one where economic analysis indicates that the dollar should be expected to depreciate markedly more rapidly than at the rate implicit in real-interest-rate differentials. Krugman's analysis can be questioned because of the difficulties of measuring long-term expectations of inflation and risk premia, which render the application of interest-rate parity problematical. However, one can conclude that there are two possible concepts of "sustainability": (1) the dollar remains at its early 1985 level or (2) the dollar depreciates gradually. The analysis in this section is relevant to both concepts.

FIGURE 7

THE DOLLAR AND THE CURRENT ACCOUNT, 1982-84



of the $-K$ line will be reversed as foreigners become unwilling to hold ever-rising net claims on the United States. We saw earlier, however, that changes in net foreign-asset positions may be a poor indicator of total changes in wealth and portfolio disequilibrium.

An alternative view is that a structural change in the U.S. economy has taken place such that the climate for business investment has improved.[4] A surge in profitability and investment in the United States is compatible with a sustained real appreciation of the dollar and a permanent capital inflow. As Sachs (1981) has stressed, the sustainability of a prolonged current-account deficit depends in part on whether the corresponding capital inflow reflects high investment or reduced saving. To the extent that it reflects increased productive investment, the returns on the investment allow the servicing of

[4] Herbert Giersch has been associated with this argument. See, e.g., *The Economist* (Sept. 15, 1984), p. 76.

the rising foreign indebtedness without a reduction of future consumption or investment, and they may also increase the competitiveness of the traded-goods sector. Furthermore, a rise in profitability in the United States would tend to stimulate capital inflows as rates of return on equities and other assets increased. In terms of the model used here, the rise in U.S. profitability and investment raises the long-run equilibrium real exchange rate ($\bar{e}$ falls) and the equilibrium U.S. balance of payments involves a current-account deficit until the profitability differential is eliminated.

It is therefore of interest to determine whether U.S. current-account deficits in 1977-78 and 1983-84 financed higher consumption or higher productive investment relative to other years. Table 7 presents a flow-of-funds decomposition of U.S. saving and investment, expressed as percentages of GNP.[5] Domestic private saving and investment are both net of depreciation, residential investment, and inventory accumulation, and thus focus on net additions to the stock of business fixed capital. (Residential-housing construction is excluded because it does not increase the long-run competitiveness of the U.S. economy and housing services are largely, although not completely, nontraded.) The current-account balance should be equal to the difference between total domestic saving and investment, but there are small statistical discrepancies. By comparing columns 3 and 4 with column 5, movements in current accounts can be associated with changes in domestic saving and investment.

The 1973-81 averages of total domestic saving and investment, as defined in Table 7, were both 3.0 percent of GNP, which is to say that the current-account balance averaged close to zero. The 1977 and 1978 current-account deficits, which were both about 0.7 percent of GNP, reflected below-average saving. In 1984, net business fixed investment rose relative to the depressed recession levels of 1982 and 1983, but not in relation to the 1973-81 average. Therefore, the 1983 and 1984 current-account deficits appear to be the counterpart of a drop in national saving in the form of high federal budget deficits, because private saving in 1983 and 1984 was slightly above the 1973-81 average of 3.9 percent. Including net residential investment in the definitions of domestic saving and investment does not alter the conclusion that the 1983 and 1984 current-account deficits reflect low saving rather than high investment. If housing is included, net investment averaged 5.2 percent of GNP from 1973 to 1981 and was 4.9 percent in 1984.

Table 7 understates the performance of investment in 1984 because the implicit price deflator for investment rose by less than the GNP deflator over the 1978-84 period; real investment as a percentage of real GNP was higher than

[5] A similar table, which I prepared while a consultant at the OECD, appears as Table 34 in *OECD Economic Outlook*, 38 (June 1985), with the difference that inventory accumulation is included in private domestic saving and investment.

TABLE 7

U.S. DOMESTIC SAVING AND INVESTMENT AND NET FOREIGN INVESTMENT

(in percentage of GNP)

	Domestic					
	Net Private Saving [a] (1)	Government Saving [b] (2)	Total Saving [c] (3)	Business Net Fixed Investment (4)	Current-Account Balance [d] (5)	Statistical Discrepancy (6)
1973	3.8	0.6	4.4	4.0	0.5	0.1
1974	3.9	−0.3	3.6	3.4	0.3	0.1
1975	6.9	−4.1	2.8	1.9	1.2	0.3
1976	4.1	−2.1	2.0	2.0	0.3	0.3
1977	2.8	−0.9	1.9	2.6	−0.7	0.0
1978	2.9	0.0	2.9	3.4	−0.7	−0.2
1979	3.0	0.6	3.6	3.7	−0.1	0.0
1980	4.2	−1.2	3.0	3.0	0.2	0.2
1981	3.9	−0.9	3.0	3.0	0.1	0.1
1982	5.6	−3.8	1.8	1.9	−0.2	−0.1
1983	4.4	−4.1	0.3	1.5	−1.1	0.1
1984	3.9	−3.4	0.5	2.8	−2.6	−0.3

[a] Excluding depreciation, residential investment, and inventory accumulation.

[b] Federal plus state and local budget surpluses.

[c] Net private plus government saving.

[d] Excluding allocations of SDRs to the United States. With this adjustment, net foreign investment is conceptually identical to the current-account balance, but there are some statistical differences between the National Income and Product Accounts definition of net foreign investment and the Balance of Payments Accounts treatment of selected items.

SOURCES: U.S. Department of Commerce *Survey of Current Business*, various issues; *Annual Report*, Council of Economic Advisers, 1985.

the numbers shown in the table. In addition, gross investment rose relative to net investment, and it could be argued that gross investment is more relevant for long-run competitiveness because it is a better indicator of embodied technological progress.

Table 8 reports net and gross real investment as percentages of GNP. The figures for 1984 suggest a slightly stronger performance by net investment relative to the 1973-81 average of 2.9 percent and a much more vigorous gross investment boom, well above the 1973-81 average of 11.7 percent. Blanchard and Summers's (1984) finding that there has been a structural shift in the share of real investment in real GNP reflects their use of gross rather than net investment. Surprisingly, after-tax corporate profits, also reported in Table 8, had a relatively weak recovery in 1983 and 1984. The ratio of after-tax profits to GNP in 1984 was below the levels of the late 1970s, especially the 1977-78 period of dollar weakness.

TABLE 8
U.S. REAL INVESTMENT AND CORPORATE PROFITS
(in percentage of GNP)

	Real Investment [a]		Corporate
	Net	Gross	Profits after Tax [b]
1973	4.0	11.0	5.8
1974	3.4	10.9	5.9
1975	1.9	9.7	5.2
1976	1.9	9.7	5.8
1977	2.0	10.2	6.4
1978	3.2	11.0	6.9
1979	3.5	11.5	6.8
1980	2.8	11.3	5.7
1981	3.0	11.4	4.7
1982	1.9	11.3	3.4
1983	1.6	11.1	3.8
1984	3.1	12.5	4.0

[a] Business fixed investment deflated by the respective investment deflator, divided by GNP in constant prices.

[b] Including inventory valuation adjustment (IVA) and capital consumption adjustment (CCA), divided by GNP in current prices.

SOURCES: *Annual Report*, Council of Economic Advisers, 1985.

Thus, no clear pattern emerges for 1983-84 when current accounts are examined in the context of changes in domestic saving and investment. Gross investment suggests a domestic investment boom, but net investment and profits indicate otherwise. At least half the U.S. current-account deficit in 1984 is the counterpart of domestic dissaving in the form of the federal budget deficit.

5 CONCLUSIONS

In the 1970s, particularly during the 1977-78 dollar depreciation, exchange-rate movements were sometimes ascribed to current-account developments. Theoretical and empirical asset-market models of exchange-rate determination resurrected the current account. In most of these models, the current account affects exchange rates by redistributing world wealth or changing expectations about future current-account patterns and long-run equilibrium exchange rates. The wealth-redistribution effect matters when preferences for goods or assets differ between countries and these preferences are a function of wealth. It has been shown in this study, however, that current-account flows in the 1970s were very small relative to other sources of change in wealth, notably variations in the market value of the capital stock. In addition, exchange-market intervention more than offset portfolio-balance effects arising from the U.S. current-account deficits of 1977-78.

The unexpected rise in U.S. current-account deficits in 1977-78 turns out to be due mostly to the J-curve effects of dollar depreciation rather than to "news" of real deterioration in the U.S. trade performance. The dollar depreciation caused current-account deficits in the short run because of the low price elasticities of trade volumes. In the longer run, however, volume effects dominate, and it is thus not surprising that the correlation between current accounts and exchange rates seen in the 1970s broke down dramatically in the 1980s in the face of a *sustained* real appreciation of the dollar.

Even the 1984-85 U.S. current-account deficits of over $100 billion and the similarly large U.S. deficits projected for 1986 and beyond do not by themselves necessarily indicate that the dollar was "overvalued" in the early 1980s, despite the widely publicized shift of the United States from a net creditor to a net debtor position. Given the sizes of capital stocks, however measured, a $100 billion U.S. deficit amounts to a small fraction of U.S. and foreign wealth, and in recent years changes in the domestic component of wealth for the United States, Germany, and Japan have often easily exceeded $100 billion. Therefore, in a world of high capital mobility, the redistribution of wealth caused by the U.S. deficits need not bring the dollar down. Furthermore, a current-account deficit may be the counterpart of a boom in productive investment, which permits a rising foreign debt to be serviced without depressing future consumption or investment. It is not yet clear, however, whether the United States has entered a prolonged period of high investment relative to the 1970s. To a large extent, the 1983-84 current-account deficits were the counterpart of a decline in U.S. saving in the form of government budget deficits, rather than a structural increase in the rate of return on capital investment in the United States. In this context, it is not surprising that the dollar depreciated sharply in late 1985 and early 1986.

APPENDIX

DATA: SOURCES AND METHODS

Market value of the capital stock (Tables 2 and 3) is obtained by capitalizing net interest payments and dividends paid by enterprises. The net interest payments and dividends are derived from the OECD National Accounts, Table 7 ("Accounts for Non-Financial Corporate and Quasi-Corporate Enterprises"). The net figures are the differences between disbursements and receipts. Net interest and dividends are then capitalized using the corporate-bond rate (Baa or equivalent) and the dividend yield, from OECD Financial Statistics, Vol. 1. The figures are converted to dollars using average annual exchange rates. This method of calculating the market value of the capital stock follows Tobin and Brainard (1977).

Net government debt (Table 2) is defined as the net financial liabilities of the general government sector (central government, local authorities, and social security agencies combined). These are unpublished data provided by the OECD, Department of Economics and Statistics, Monetary and Fiscal Division.

Current-account balances and intervention (Table 2) are from the IMF's *International Financial Statistics*. Intervention corresponds to line 77fd, which is defined as the total change in reserves net of the change in liabilities to foreign authorities (line 79bd) minus valuation changes, SDR allocations, and the monetization of gold (line 78dd).

Net capital stock at replacement cost (Table 3) is derived from *Flows and Stocks of Fixed Capital*, OECD, Department of Economics and Statistics, 1983, which lists the national sources of its information. The definitions differ somewhat by country. In the case of Japan, the data cover only gross capital stocks at 1975 constant prices, excluding dwellings. The Japanese data were therefore adjusted by converting to current prices, adding an estimate of the gross housing stock, and excluding depreciation, which was obtained from the OECD *National Accounts*. The housing stock was estimated by using the OECD average housing-to-nonhousing capital stock, available for seven countries (Australia, Finland, Germany, Great Britain, Norway, Sweden, and the United States).

Net foreign-asset position (Table 3) data for Germany and Japan were provided by the Balance of Payments division of the OECD; the original sources are: *Monthly Report*, Bundesbank, and *Balance of Payments Monthly*, Bank of Japan. The source for the United States is the *Survey of Current Business*, August 1984, p. 40.

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