Financial Implications of the U.S. External Deficit

Of all the potential problems associated with the U.S. current account deficit, none has caused more concern than its financing. By official estimates, the net book value of U.S. liabilities to foreign countries, including equities, is now about $500 billion and is increasing at a rate of over $100 billion annually. This growth has spawned numerous fears about foreigners' capacity and willingness to continue lending to this country and about the consequences of rising foreign influence on U.S. financial markets. Prominent observers have warned of serious economic strains if the rapid accumulation of external debt continues. These strains include growing pressures on domestic interest rates and the dollar, increased financial volatility with risks of financial crisis, and constraints on U.S. macroeconomic policies imposed by the need to maintain foreigners' willingness to hold our debt.

All of these concerns reflect the presumption that further rapid accumulation of external debt will make the financing of the U.S. current account deficit progressively more difficult. Nevertheless, little concrete information about the potential severity of these problems is available. Prior analyses have generally focused on projected aggregate indicators, such as U.S. debt and debt service relative to GNP or foreign wealth, and have relied upon criteria supplied by past experience to assess the seriousness of the problem. While suggestive, historical comparisons have only limited relevance to the financing of the deficit of the world's largest economic power in an era of rapid internationalization of financial activities. The economic implications of continued U.S. deficits are likely to be determined by more specific conditions. These include the situation of key groups of foreign investors, their capacity and willingness to absorb further U.S. debt, and the magnitude of the changes in interest rates and exchange rates that are likely to be required.

This article examines the present and future implications of financing U.S. external deficits. Without attempting to be comprehensive, we analyze several features of the past funding of the deficit that probably will help to determine the impact of future financing. We then use this analysis, as well as evidence drawn from previous literature, to assess the financial implications of future deficit scenarios and their potential effects on domestic interest rates and on the dollar's value.

As the first section shows, the financing of the U.S. deficit since 1982 has been characterized by the general predominance of private capital inflows, the growing importance after 1985 of official financing, and increasing exposures to U.S. dollar securities by foreign financial institutions, particularly Japanese institutional investors. The analysis suggests that these patterns are likely to change somewhat in coming years. In particular, direct investment is likely to provide significantly more net financing for the current account deficit in future years than it has since 1985. Foreign financial institutions, however, may be somewhat less willing than in the past to rapidly increase their holdings of U.S. dollar assets, particularly in relation to their overall portfolios.

The analysis in the second section draws on past financing experience and other evidence to assess the possible financial impact of future U.S. external deficits. By raising foreign investors' exposures to dollar assets

and their attendant risks, continued rapid U.S. debt accumulation may well lead to upward pressures on domestic real interest rates and downward pressures on the dollar. Estimates from the literature suggest that while the pressures arising from any single year's deficit are probably modest, the cumulative effects over a number of years could be significant, particularly if foreign lenders perceive that large external deficits are likely to persist.

Applying this analysis to two alternative financing scenarios suggests that a deficit that declined steadily to 1 percent of GNP by 1993 would most likely produce only a modest further increase in foreign exposures to U.S. assets; any increases in domestic interest rates and fall in the dollar needed to finance such a deficit path thus are probably relatively small. However, the potential financial strains are likely to be more serious, and less predictable, if the current account deficit remains indefinitely at the high levels of recent years. In such. a case, private foreigners' exposures to U.S. debt and its attendant risks are likely to rise significantly over the next five years. This situation, and the prospect of further large debt increases in the future, could cause potentially troublesome financial strains, including a significant rise in domestic long-term real interest rates and ongoing downward pressures on the dollar.

Review of financing since 1982
The more than $600 billion the United States has borrowed from abroad since 1982 is historically unprecedented in magnitude. Indeed, many observers have been surprised by this country's ability to borrow such large amounts without encountering major financial difficulties. Understanding how the external deficit has been financed, therefore, should help in evaluating the prospects for, and implications of, future financing. Accordingly, in this section we present an overview of the main patterns of deficit financing over the last six years and then proceed to focus on two important aspects of these patterns.

Financing overview
The United States has become a net borrower from abroad because the various sectors of the economy collectively are spending more than they earn and thus have an excess demand for funds in the aggregate. In particular, the federal government's borrowing demands have risen sharply with the increase in the budget deficit since 1982, while the surplus of the household sector has fallen with the decline in the personal savings rate. U.S. borrowing from abroad can come through a number of channels and a variety of instruments whose relative importance at any time is a joint reflection of

the needs and capacities of the individual borrowers and lenders. To some extent, funds flow directly from foreign savers to U.S. deficit sectors, but more often they come through banks and other financial intermediaries here and abroad. These funds are supplied not only by private entities but also by foreign central banks and, occasionally, other government agencies. Foreign lending to the United States typically occurs through three main channels: banks, securities purchases by financial and nonfinancial entities, and direct investment by foreign corporations in U.S. subsidiaries and affiliates.[1] The *ultimate* source of the funds borrowed by the United States is the group of nations with current account surpluses, now primarily Germany, Japan, and several of the Asian newly industrializing economies. As we will see, these funds to a large extent have been channeled to the United States through other countries.

Table 1 gives the main features of the financing of the U.S. current account deficit since 1982 as given in U.S. balance of payments statistics. These figures reveal the direct channels through which our deficit has been financed although they do not necessarily identify the ultimate sources of the funds. Recorded U.S. borrowing from abroad since 1982 has totaled about $600 billion, but actual borrowings have probably been somewhat greater since not all capital flows are reported.[2]

Several features of this financing are of particular interest. First, private capital inflows have supplied the bulk of the financing of the deficit but their importance has declined noticeably in recent years. Private sources accounted for nearly 80 percent of the total for the period as a whole, and virtually all of the funding during the first three years, 1983-85. Since 1985, however, the share of private capital inflows in total financing has declined to about 70 percent, with the remainder coming from official sources.

The increased importance of official financing of the U.S. deficit after 1985 in large part reflects heavy dollar

[1]The U.S. balance of payments classifications reflect a mix of these channels and instruments. Capital inflows are divided into five major groups: net borrowing by U.S. resident banks from private entities abroad (banking flows), net borrowing by U.S. nonbanks, net securities purchases, direct investment net inflows, and changes in net liabilities to foreign central banks and other official agencies (official flows). Direct investment is defined as the increase in claims on an enterprise in which the foreign investor has a 10 percent or greater interest. The net inflows of course reflect the difference between U.S. gross lending and borrowing (gross outflows and inflows). In 1988, for example, U.S. banks increased their outstanding claims on foreigners by $57.5 billion while their liabilities to abroad rose by $78.9 billion, leaving a net inflow of $21.4 billion.

[2]U.S. statistics report a cumulative current account deficit for 1983-88 of nearly $700 billion, $100 billion more than recorded net capital inflows. The difference, known as "errors and omissions" in the balance of payments, is generally thought to consist primarily, although not entirely, of unrecorded financial flows.

purchases by major foreign central banks in Europe and Japan to slow the dollar's depreciation and consequent appreciation of their own currencies.[3] This activity was largely concentrated in 1986-87 and was actually much more extensive than indicated by recorded capital inflows. Indeed, total foreign central bank intervention in 1987 (the year of greatest activity) is estimated to have exceeded $100 billion, amounting to nearly two-thirds of the total U.S. current account deficit.[4] The bulk of the dollar purchases were placed with institutions abroad, however, and hence were not recorded in U.S. balance of payments data. To some extent, the exchange rate pressures that sparked the official interventions may reflect a decline in private foreigners' willingness to add further to their U.S. dollar assets during this period; probably at least as important, however, were altered market perceptions about the future course of policies affecting the dollar in the wake of the 1985 Plaza agreement. In any case, net official dollar purchases appear to have dropped markedly in 1988 while private financing of the current account has rebounded.[5]

Equally noteworthy is the composition of the private capital inflows financing the U.S. deficit; these inflows are in part typical of past experience and in part a departure from it. As in most years prior to 1982, private foreign funds have been supplied to the United States primarily through banks and through net sales of securities, in large part to foreign institutional investors.[6] The contribution of net direct investment inflows has been comparatively modest and highly variable. Indeed net direct investment inflows were virtually negligible over 1985-87 despite rapid growth in both inflows and outflows, but picked up sharply last year. We consider the factors underlying the direct investment patterns and their likely future development at the end of this section.

The relative importance of banking and securities net inflows has varied considerably over time, a pattern that is consistent with past experience. Bank loans and securities issuance represent alternative but substitutable sources of funds to large borrowers. The funds

[3]In addition, Taiwan's central bank acquired nearly $50 billion in dollar assets in the course of investing its large balance of payments surpluses. See Robert McCauley and Rama Seth, "Financial Consequences of New Asian Surpluses," this *Quarterly Review*, Summer 1987. More recent data can be found in the *Financial Statistics* of Taiwan District, the Republic of China.

[4]See Bank for International Settlements, *58th Annual Report*, June 1988, pp. 187-89.

[5]The combined official foreign exchange reserves of Japan, Germany,

Footnote 5 continued
and the United Kingdom (the three largest interveners) fell by over $10 billion in the first three quarters of 1988, largely as a result of heavy dollar sales by Germany; substantial dollar purchases resumed in the fourth quarter, however. Taiwan's heavy dollar purchases have also largely ceased. Recorded official inflows in the U.S. balance of payments for 1988 in large part reflect transfers to this country of official accounts placed abroad (in 1987) rather than new acquisitions of dollar assets. In effect, U.S. balance of payments data understate the true role of official sources in financing the deficit in 1987 and somewhat overstate that role in 1988.

[6]The bulk of funds coming through U.S. banks represent transactions with foreign banks, in many cases their own subsidiaries. Banks are also large purchasers of foreign securities although, as noted later in the text, they typically hedge their foreign currency exposures.

Table 1

Direct Financing of the U.S. Current Account Deficit
(In Billions of Dollars)

	1983	1984	1985	1986	1987	1988†
Total net capital inflows	35.1	80.3	97.3	123.3	135.5	118.9
Net official inflow	−0.4	−5.5	−7.9	33.8	55.3	39.1
Net private inflow	35.4	85.8	105.1	89.4	80.2	79.7
Direct investment	11.6	22.5	1.0	6.3	−2.5	21.8
Securities	10.1	30.8	63.9	70.5	30.2	39.4
U.S. nonbanking concerns	−6.6	9.7	0.6	−7.1	5.3	−2.9
U.S. banks nie‡	20.4	22.7	39.7	19.8	47.2	21.4
Memo:						
U.S. current account balance	−46.2	−107.1	−115.1	−138.8	−154.0	−135.3
U.S. net inflows from foreign banks§	−15.7	36.2	27.7	15.4	27.4	—

Sources: *Survey of Current Business; International Financial Statistics*; BIS, *International Banking Developments*.
Note: (+) represents net inflows.
†1988 figures are preliminary. Dash (−) indicates that data are unavailable.
‡nie: not included elsewhere.
§Change in net claims on the United States of BIS-reporting banks outside the United States.

flowing through the two channels are greatly influenced by the relative levels of short-term and long-term interest rates as well as other market factors. For example, the sharp rise in securities relative to banking inflows in 1986 was partly attributable to the decline in long-term relative to short-term dollar interest rates during that period; this flattening in the yield curve encouraged borrowers to shift from shorter term bank funds to longer term securities.

The overall importance of securities inflows in financing the U.S. deficit since 1982 represents a significant departure from past experience, however. In the 1970s, banks typically were the major conduits for private international capital flows. The large external surpluses of the oil-producing nations that arose in the wake of the 1974 oil price increase, for example, were placed primarily with banks in the United States and Europe for relending to deficit nations. Although banks have continued to play a major role during the 1980s, securities flows have become the most important instrument for channeling funds from surplus nations in Europe and Asia to finance the U.S. deficit. Over the 1983-88 period as a whole, cumulative net securities inflows into this country exceeded banking inflows by almost 50 percent and accounted for more than half of total net private capital inflows.

The predominance of securities in financing the U.S. deficit substantially reflects two closely related developments. First, international securities markets have expanded dramatically both in volume and range of participants over the last several years. Spurred by major financial liberalizations undertaken in Europe and Japan in the late 1970s and early 1980s, these markets have become an important source of funds for major corporations and a key outlet for financial intermediaries seeking to diversify their portfolios. Second, international securities transactions have been stimulated considerably by the preference of financial institutions in Japan, the largest surplus nation, for longer term assets. This preference is largely attributable to the prominence of life insurance and pension funds (which typically have long-term investment horizons) in channeling Japanese savings and is reflected in the structure of Japanese capital flows: securities transactions account for nearly all of net private capital outflows from Japan since 1982.

The growth of international securities markets and foreign preferences for holding long-term assets also help to explain the regional pattern of U.S. deficit financing (Table 2). The bulk of the funds provided by the major surplus countries, Japan, Germany, and to a lesser extent Taiwan and Korea, have gone through intermediaries in third countries (primarily in Europe) rather than flowing directly to the United States. Only one-quarter of Japan's total capital outflows have come directly to the United States; most of the remainder has been placed in Europe. In contrast, the United Kingdom, whose current account was close to balance until 1988, has been the proximate source of nearly 40 percent of U.S. private net capital inflows over 1983-87 and virtually all of the banking inflows. These patterns reflect a growing tendency for foreign institutions to place funds in the international banking and securities markets centered in London. Borrowers and lenders often prefer to use these international markets because of their breadth and relative freedom from regulation. For example, institutions throughout the world place large amounts of funds in London (in many cases with their own affiliates) that are then channeled to entities throughout the world.[7] Government and corporate securities of the United States and other countries are issued and widely traded in the Eurobond markets and purchased by investors from a wide range of countries, including, increasingly, Japan.

Finally, Chart 1 shows the cumulative effect of U.S. borrowing on this country's net indebtedness position. Based on preliminary estimates, the *book value* of total U.S. indebtedness to other countries at the end of 1988 was about $485 billion.[8] While much concern has been expressed about this indebtedness, its significance is difficult to assess without further information, including the holdings of U.S. assets in relation to the overall portfolios of the key groups of foreign lenders.

Exposures of foreign financial institutions

While suggestive, the aggregate U.S. investment position is of only very limited use in judging the financial effects of U.S. borrowing from abroad. More important from this perspective are the exposures to U.S. assets and their risks that major groups of foreign investors have incurred in the course of lending to this country. These exposures are likely to be key determinants of the terms that foreign investors will require to maintain or increase their claims on the United States, and hence of the difficulty of financing future current

[7]This institutional feature largely explains why banking inflows into the United States come predominantly from the United Kingdom. In contrast, Japanese banks have been net borrowers of short-term funds from both the United States and Europe in recent years. These funds have in large part been used to fund Japanese bank purchases of foreign securities.

[8]The true market value of U.S. indebtedness is a matter of controversy. U.S. net direct investment claims are probably understated by the official data because the book value of foreign direct investments in the United States tends to be closer to market value than is the case for U.S. direct investments abroad. Other factors, however, may lead to the underestimating of U.S. liabilities. In particular, the discrepancy between the reported U.S. current account deficit and net capital inflows (errors or omissions) is widely thought to include significant amounts of unrecorded U.S. borrowing from abroad.

account deficits. In this respect, the positions of foreign financial institutions are of particular interest, because these institutions have been the primary source of private financing of the U.S. current account. As we have seen, foreign banks have accounted for nearly one-fifth of U.S. net private capital inflows since 1982; along with banks, nonbank financial institutions such as life insurance companies and pension funds are the major foreign private purchasers of U.S. securities.

In financing our deficit, foreign financial institutions are potentially exposed to country and currency risks. Country risk refers to the possibility that a nation's borrowers as a group will be unable to repay foreign creditors. Although country risk is an important factor for institutions lending to certain developing nations, it is unlikely to be a serious constraint on foreign credit to the United States for the foreseeable future, since the possibilities of aggregate default or serious limits on repatriation of foreign funds are quite small.[9] Poten-

[9]Note also that foreign banks as a whole remain net debtors to the United States. Admittedly, country risk eventually could become a

tially more important as an influence on foreigners' willingness to lend to the U.S. is the currency exposure involved in (net) holding of dollar assets and the attendant risk of losses from unanticipated dollar depreciation. Continued large U.S. external deficits will, almost inevitably, lead to a rise in private foreigners' aggregate net exposure to dollars. To the extent that the deficit is not financed by official dollar purchases or direct investment inflows, it will usually be financed by dollar-denominated liabilities held by private foreigners.[10]

Banks, however, generally do not bear significant amounts of currency exposure. Foreign banks do make

Footnote 9 continued
significant factor in U.S. borrowing if large deficits persisted for many years.

[10]U.S. borrowers may issue foreign currency liabilities. In practice, this occurs only to a limited extent, however. Moreover, U.S. entities are not the only issuers of dollar assets. External debt of developing countries, for example, is largely denominated *in* dollars. Nonetheless, the U.S. budget and current account deficits are likely to be the dominant sources of *additions* to the supply of dollar assets in coming years. We discuss this issue further in the next section.

Table 2

The Financing of the U.S. Current Account Deficit by Area
(In Billions of Dollars)

	1983	1984	1985	1986	1987	1988†
Net capital inflows from						
Japan	3.4	17.7	25.4	24.1	21.0	39.5
Official	−12.1	−5.2	−18.3	1.7	10.1	—
Private	15.5	22.8	43.7	22.3	10.8	—
Direct investment	0.4	4.7	2.2	5.3	3.5	—
Securities	2.1	7.5	21.6	18.8	14.2	—
U.S. banks nie‡	13.0	10.4	19.2	−1.8	−8.5	—
Continental Europe§	7.9	16.4	0.5	7.0	30.2	−7.2
Official	0.5	−1.1	−0.7	−1.6	1.8	—
Private	7.4	17.6	1.2	8.6	28.4	—
United Kingdom	17.0	15.9	32.3	44.2	65.1	20.2
Official	−2.4	−5.9	3.0	−4.1	−2.5	—
Private	19.4	21.9	29.3	48.3	67.6	—
Rest of world	6.8	30.3	39.1	47.9	19.2	64.0
Official	13.7	6.7	8.1	37.7	45.8	—
Private	−6.9	23.5	31.0	10.2	−26.6	—
Memo: Regional current account balances						
Japan	20.4	34.8	49.2	85.4	87.0	78.6
Continental Europe§	4.2	13.9	22.5	50.4	46.5	—
France	−4.4	−0.8	0.0	3.0	−4.1	−4.2
Germany	5.0	9.6	16.7	39.7	44.7	48.1
United Kingdom	5.7	2.7	4.2	0.2	−2.8	−25.4

Sources: *Survey of Current Business; various central bank publications.*
Note: (+) represents net inflows (current account surplus in memo items).
†U.S. data for 1988 are annualized averages of the first three quarters. Dash (−) indicates that data are unavailable.
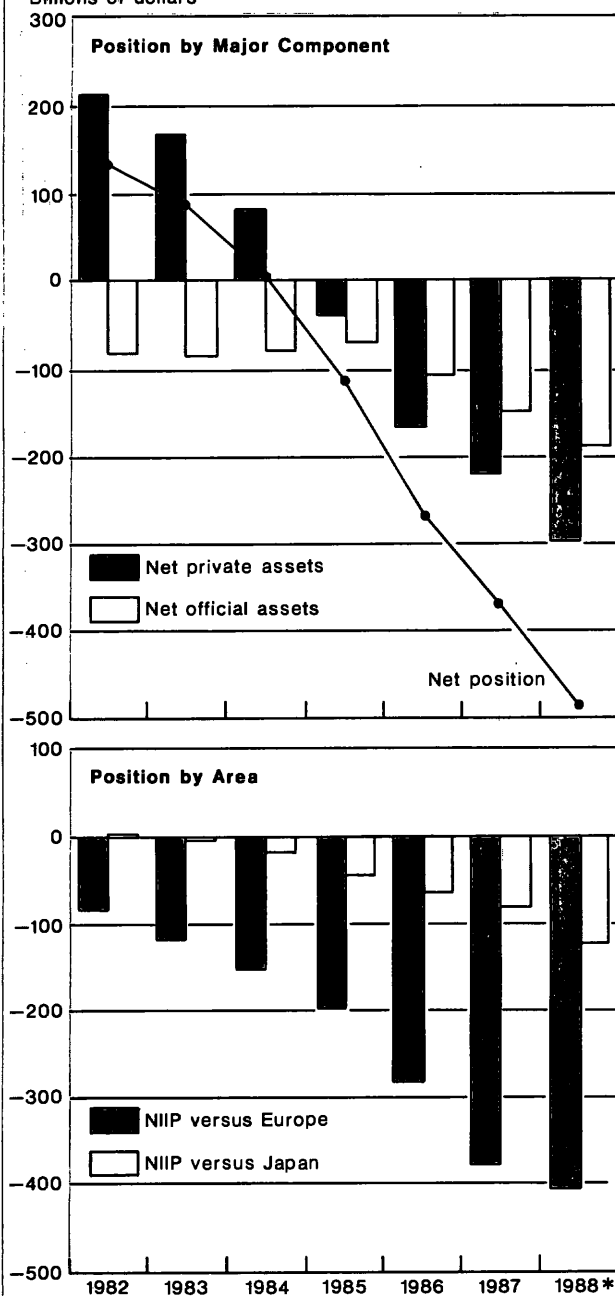‡nie: not included elsewhere.
§Includes Belgium, France, Germany, Italy, Luxembourg, Netherlands, and certain European organizations.

Chart 1

U.S. Net International Investment Position

Billions of dollars

Position by Major Component

- ■ Net private assets
- □ Net official assets

Net position

Position by Area

- ■ NIIP versus Europe
- □ NIIP versus Japan

1982 1983 1984 1985 1986 1987 1988*

Source: Department of Commerce, Bureau of Economic Analysis.

*Estimates based on 1988 flows added to year-end 1987 positions.

dollar loans but typically hedge their exposure with offsetting dollar liabilities. In contrast, many large nonbank financial institutions have substantial net dollar holdings. Thus the present holdings of these institutions are likely to be quite important in determining the difficulty with which additional dollar exposure arising from future U.S. deficits will be absorbed. Unfortunately, information on the foreign securities holdings of nonbank financial institutions (particularly the currency composition of these holdings) is quite limited for most countries, although substantial data are available for Japan. The Japanese situation is of considerable significance, both because Japanese institutional investors are among the largest foreign purchasers of dollar assets and because their experience is probably at least partly indicative of that of nonbanks generally.

As shown in Table 3, long-term foreign securities holdings of Japanese nonbank financial institutions have grown very rapidly since 1982 and now total more than $250 billion. Estimates by Fukao and Okina[11] indicate that dollar-denominated instruments make up slightly less than three-quarters of this total, although a significant fraction, perhaps as much as one-third, are hedged by offsetting dollar liabilities (mainly forward sales). Life insurance companies and trust accounts — the dominant institutional investors by virtue of their role as the primary managers of retirement funds — are the largest nonbank holders of foreign securities, accounting for one-third and one-quarter respectively of the total; the remainder are held primarily by investment trusts (similar to mutual funds), savings banks, and the government-owned postal life insurance fund. Foreign securities holdings of the major nonbank financial groups are now a significant fraction of their total assets but are generally well below legal ceilings.[12]

Several factors account for the rapid growth of dollar and other foreign securities holdings of Japanese insti-

[11]See Mitsuhiro Fukao and Kunio Okina, "Internationalization of Financial Markets and Balance of Payments Imbalances: A Japanese Perspective," Institute for Monetary and Economic Studies, Bank of Japan, Working Paper, July 1988. Section II of the paper provides a highly informative analysis of the behavior of Japanese institutional investors and its implications for Japanese capital flows. Note that the Table 3 figures for currency composition and amount hedged are rough averages for all financial institutions. Both vary significantly across classes of institutions and over time as market conditions change. Note also that short-term and some other foreign currency assets are not included in the table data. Fukao and Okina estimate that inclusion of such instruments would raise the foreign security share of life insurance company assets by several percentage points.

[12]Ceilings for the major private nonbank financial institutions are now 30 percent of total assets; this is nearly twice the present ratio maintained by life insurance companies, the largest holders of foreign securities. Thus, legal ceilings probably are not presently a binding limit on foreign securities holdings. Note also that because of large equities holdings valued at historical cost, foreign securities' share of the market value of nonbank assets is apt to be considerably lower than the book value shares given in the table.

tutions. The relaxation in the early 1980s of previously stringent government controls on capital flows encouraged nonbanks to diversify into foreign assets. U.S. dollar securities have been especially favored because of their high liquidity and attractive yields. They have proved particularly desirable to the life insurance companies and pension funds, which have very large amounts of funds to invest, a relatively long investment horizon, and a strong preference — based on regulatory and accounting rules — for high-interest-bearing assets.[13] These considerations suggest that the rapid growth in dollar holdings of nonbanks in part represents a stock adjustment to a desired level that, for regulatory and other reasons, could not be attained earlier. The demand for dollar assets has also been stimulated by declining Japanese government borrowing and falling interest rates, which have reduced the supply and attractiveness of domestic long-term investment outlets. At the same time, funds available to life insurance companies and trust funds have grown comparatively swiftly because of the rapid increase in retirement savings and the elimination of most tax pref-

erences on bank savings accounts.

Since 1987, foreign securities purchases by Japanese financial institutions have slowed noticeably.[14] While partly a response to large losses incurred as a result of dollar depreciation, the slowdown suggests that the stock adjustment process may be coming to an end, at least for the major institutions. In particular, Japanese life insurance companies appear now to be almost as diversified into foreign securities as their counterparts in the United Kingdom, and more so than their counterparts in most major European countries.[15] This does not mean that Japanese institutions are

[13]These institutions generally must pay dividends out of their interest income only, rather than total earnings including capital gains. This helps to explain why German mark and Swiss franc instruments make up a negligible proportion of foreign securities holdings; see Fukao and Okina, "Internationalization of Financial Markets," Table 2.

[14]Net foreign securities acquisitions by Japanese investors have nonetheless remained quite high because growing purchases by nonfinancial corporations have substantially offset declining purchases by financial institutions. Preliminary data suggest that nonfinancial investors accounted for at least one-half of Japanese net securities inflows in 1988, compared to about one-third in 1986. Unfortunately, very little information about the holdings or behavior of nonfinancial corporations is available.

[15]U.K. institutional investors tend to be among the most internationally diversified of investors from the major industrial nations. Diversification of Japanese pension funds also appears to be at least as great as in the United States and most of continental Europe, although below that in the United Kingdom; again see Fukao and Okina, "Internationalization of Financial Markets," Table 6. Other more recent Japanese entrants to the foreign securities markets, including public institutions, may continue to undergo stock adjustment for some time.

Table 3

Foreign Securities Holdings of Major Private Japanese Institutions
(End-Year Holdings)

	Private Banks†	Institutional Investors			
		Total‡	Life Insurance	Trust Banks§	Investment Trusts
Level in trillion yen					
1983	2.7	5.7	2.9	0.9	0.2
1985	7.3	14.1	4.8	3.5	1.6
1987	10.6	29.4	10.3	7.9	4.1
1988	11.1	33.6	12.1‖	8.3	4.8
Share of total assets					
1983	0.9	—	7.7	2.0	1.7
1985	2.0	—	9.3	5.4	8.3
1987	2.2	—	13.7	7.9	9.2
1988	2.1	—	14.1	7.2	9.1
Memo: 1988 foreign securities holdings					
In billions of dollars#	86.7	262.5	94.5	64.8	37.5
Share of total securities holdings	12.5	—	31.0	15.3	14.5

Source: Bank of Japan, *Economic Statistic Monthly.*
Note: Data generally include securities with maturities of one or more years only.
†Includes banking accounts of trust banks.
‡Dash (—) indicates that data are unavailable.
§Trust accounts only.
‖November figure.
#Valued at 128 yen/dollar, approximately the average for 1988.

likely to curtail purchases of U.S. dollar securities; simply maintaining present asset shares would entail very substantial acquisitions in coming years.[16] However, Japanese nonbanks now may be less willing than before to add substantially to their dollar exposures relative to total assets and, if so, could demand somewhat higher U.S. interest rates to do so.
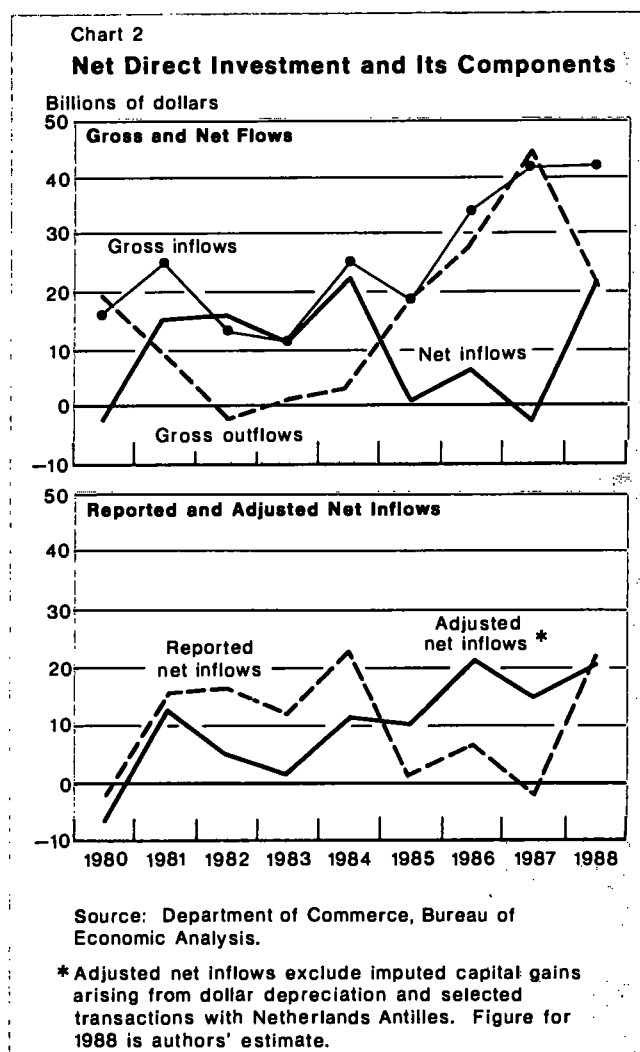
More generally, the Japanese record suggests that future demand for dollar assets will be subject to a number of important but potentially conflicting influences. In particular, the forces generated by international financial integration and the domestic financial liberalization now underway in all major industrial countries could affect the demand for dollar assets significantly. These changes are likely to encourage further diversification into foreign securities, particularly in continental Europe where it has so far been relatively limited. At the same time, however, as foreign financial markets and the range of available instruments broaden, the availability of assets competing with the dollar in foreign securities portfolios is apt to increase. Partly for this reason, institutions abroad may reduce the dollar share of their expanding foreign holdings in coming years. Demand for dollar assets will also be affected by the availability of attractive investment outlets in foreign countries and by perceptions of the currency exposure and other relative risks associated with dollar investments.

Role of direct investment

The rapid growth in direct investment inflows and outflows (Chart 2, upper panel) raises questions about the reasons for the trends and their implications for future financing from this source. These questions are of interest in part because direct investment net inflows may reduce, at least to some extent, the effective dollar exposure foreigners incur in financing a given U.S. external deficit.[17]

Recent trends in direct investment flows are analyzed in detail in Appendix A by David Fernandez. That analysis indicates that the increase in outflows

[16]A rough calculation suggests that Japanese nonbank financial institutions could add $15 billion to $20 billion per year to net dollar holdings without increasing their exposure relative to total assets. This assumes that total assets grow by about 12 percent in yen terms (roughly the rate of the last several years) while the dollar depreciates by about 3 percent each year, enough to offset the projected inflation differential between the two countries. Nonfinancial corporations could probably also make substantial further dollar purchases without increasing their exposure.

[17]Of course, direct investments involve some currency exposure. Real estate investment, for example, may be subject to as much currency risk over the medium term as a bond holding. Nevertheless, for other types of direct investment, and over longer horizons, the currency risk is probably a less significant factor than for a fixed nominal income instrument.

over the last several years is in large part an artifact of the dollar's depreciation. Much of the growth in outflows reflects imputed capital gains of U.S. affiliates arising from revaluation of assets denominated in foreign currency; these imputed earnings automatically rise when the dollar falls. In the U.S. balance of payments accounts (but not in those of most other countries), these are recorded as direct investment income in the current account and, to the extent they are unrepatriated, as an offsetting direct investment outflow in the capital account. Direct investment outflows excluding this component are well below the total reported figures and show much less growth over the last several years. This pattern strongly suggests that future (reported) U.S. direct investment abroad will be significantly below the levels of recent years — unless the dollar continues to decline rapidly.

Chart 2

Net Direct Investment and Its Components

Billions of dollars

Source: Department of Commerce, Bureau of Economic Analysis.

*Adjusted net inflows exclude imputed capital gains arising from dollar depreciation and selected transactions with Netherlands Antilles. Figure for 1988 is authors' estimate.

In contrast, the sharp increase in direct investment inflows appears to arise from more fundamental and potentially lasting economic forces. Virtually all of the inflows represent new equity purchases by foreigners. A significant portion of direct investment here, particularly inflows from U.K. investors, has gone to finance foreign participation in the merger and acquisition boom now underway in the United States. Also important has been the establishment or expansion of production and business facilities by foreign-owned enterprises, primarily in manufacturing, wholesale and retail trade, and finance. In addition, Japanese institutional investors have been making substantial investments in U.S. real estate, recreation, and related facilities, in part to diversify their large holdings of U.S. fixed income assets.

The strong foreign incentives to invest in the United States suggest that direct investment inflows may remain quite high for some time. To a significant degree, however, the recent inflows probably also represent a stock adjustment to newly perceived U.S. opportunities that is unlikely to continue indefinitely. Japanese investment in U.S. auto facilities, for example, is likely to decline once production targets are achieved. These considerations suggest that although direct investment inflows may remain high, they probably will not grow as rapidly as in the past several years. However, since outflows are likely to be much lower than recently (unless the dollar falls quite substantially), a significant amount of *net* financing through direct investment can probably be expected in coming years. In particular, net inflows excluding exchange rate valuation effects have averaged nearly $20 billion over the last three years (Chart 2, lower panel) and probably provide a much better indication of future funding from this source than the much smaller recorded figures would suggest.

Future financing prospects and implications
Our review of the past six years suggests that the financial effects of future U.S. external deficits will be determined by a variety of forces. The impetus to financial diversification that has stimulated demand for dollar assets over the past six years may continue, although not necessarily as strongly. However, incentives to diversify into currencies other than the dollar could grow, particularly given the significant dollar exposures that have already been incurred by some major foreign investors. Future demand for U.S. assets will also be affected by various domestic and international economic conditions and by developments in the supply of competing assets issued by foreign governments and other entities, among other factors.

The net effect of these developments on future

financing of the U.S. current account cannot be predicted with precision. Nonetheless, we can attempt in this section to indicate how plausible future current account paths might be financed and to provide a qualitative assessment of the financial pressures that may result. We begin with a conceptual analysis of the effects of U.S. debt accumulation on interest rates and exchange rates. We then apply this analysis in evaluating illustrative financing scenarios corresponding to alternative evolutions of the current account deficit over the next five years.

Financial implications of the debt accumulation
When the United States runs a current account deficit, it must borrow from abroad by giving foreigners claims on U.S. residents. Most assets issued by U.S. residents are denominated in dollars, so foreigners will typically accumulate dollar assets when financing a U.S. current account deficit.[18]

The response of financial markets to a U.S. current account deficit will therefore depend importantly on the willingness of foreigners to hold a larger share of dollar assets in their portfolios. Dollar assets are likely to be riskier for foreigners than assets denominated in their domestic currency if only because of the difficulty of predicting exchange rate changes. Thus as foreigners' dollar holdings rise in relation to their wealth, an adjustment in the financial markets is likely. This adjustment can take a combination of two forms. First, rates of return on U.S. assets might increase to compensate foreigners for the additional risk they face by holding dollar assets. That is, U.S. real interest rates would have to increase relative to interest rates in other countries in order for additional dollar holdings to become attractive. Second, exchange rates could adjust to restore equilibrium in asset markets by reducing the value of dollar assets in foreign portfolios. This dollar depreciation would effectively offset the rise in the dollar share of foreign portfolios that would otherwise occur.

The financial adjustment accompanying the current account deficit depends on the extent to which foreigners are willing to substitute dollar assets for assets denominated in their home currency. Factors influencing the substitutability of internationally traded assets include regulatory provisions toward cross-border financial transactions, differences in tax treatment, and differences in risk. For most industrial countries, the most important influence on the substitutability of foreign and home assets is their relative risks, which are

[18]The U.S. external deficit reflects both a decline in the private saving rate and a rise in government borrowing. Together, these developments imply that foreigners must hold a greater share of outstanding dollar assets.

largely a reflection of two factors: the perceived volatility in their own returns and the extent to which foreign assets offset (diversify) fluctuations in domestic asset yields. Evidence on this point suggests that dollar assets and foreign currency assets generally are good substitutes; that is, investors require relatively small additional return to change the shares of the two assets in their portfolios.[19] Thus, a U.S. current account deficit is likely to have a large effect on U.S. interest rates only if it substantially raises the share of dollar assets in foreign portfolios.

While the recent U.S. current account deficits are large in historical terms, they do not represent a very large share of private industrial country wealth. For example, the 1988 current account deficit of about $135 billion represents roughly 1.3 percent of the wealth of the seven major industrial countries at the end of 1987 (that is, the value of outstanding government bonds and equities for the United States, Japan, Germany, the United Kingdom, Canada, France, and Italy). Thus, a U.S. current account deficit of this size would add a relatively small amount to the share of dollar assets in aggregate foreign portfolios during any particular year. The cumulative effects of a deficit sustained over several years would be greater and potentially more significant, however.

To provide an indication of the likely size of the interest rate adjustments accompanying current account deficits, we use a mean-variance model of international asset demand.[20] This model of asset choice assumes that investors choose their portfolios to balance required return and risk (as measured by the variance of returns). Assuming that international investors have a fixed trade-off between risk and expected return, the expected returns on a particular asset will be proportional to the additional risk introduced into the average, or world, portfolio by holding slightly more of that asset. Changes in portfolio shares will generally alter the risk associated with each asset in the portfolio and thus alter the required return on each asset. Our estimates suggest that small to moderate increases in the dollar share of aggregate portfolios add only modestly

to total risk; consequently only fairly small compensating increases in yield are required.

Table 4 reports estimates of the effect of a U.S. current account deficit equal to 1 percent of industrial country wealth on the annualized real return of one-month dollar-denominated assets measured relative to returns in selected countries. The U.S. external deficit is assumed to be matched by the combined surpluses of Japan and Germany. The estimates are based on return volatilities estimated from observed (ex post) yields over the last several years.[21] The table shows, for example, that the deficit would raise U.S. real interest rates relative to German interest rates by 6.1 basis points. This estimate represents the direct impact of a single year's external deficit only. If the deficit is expected to persist, the effect on longer-term yields is likely to be greater, since short-term rates would be expected to rise in future years.

These estimates may somewhat understate the effect of additional dollar indebtedness to foreigners. The estimates are based on the assumption that investors expect to experience risk in the future similar to that observed on average in the past. In practice, however, the return volatility and associated risks of financial assets can vary considerably over time horizons of several years. It is not unusual, for example, to observe volatility varying by a factor of two or more over periods of several years.[22] If this pattern were to per-

[21]These estimates are described in Appendix B. They are obtained using the model presented in Karen Lewis, "Inflation Risk and Asset Market Disturbances: The Mean-Variance Model Revisited," *Journal of International Money and Finance*, September 1988.

[22]See Charles Engel and Anthony Rodrigues, "Tests of International CAPM with Time-Varying Covariances," *Journal of Applied Econometrics*, 1989 (forthcoming); and Alberto Giovannini and

Table 4

Change in U.S. Return, Relative to Other Countries, Resulting from a U.S. Currrent Account Deficit Equal to 1 Percent of World Wealth
(Annual Rate in Basis Points)

Country	Change in One-Month U.S. Real Interest Rate Relative to Other Countries†
Germany	6.1
Japan	7.7
Canada	0.3
United Kingdom	4.3
France	5.9
Italy	5.0

†The calculations assume current account surpluses in Germany and Japan equal to one-third and two-thirds of the U.S. total deficit, respectively.

[19]See Jeffrey Frankel, "The Implications of Mean-Variance Optimization for Four Questions in International Macroeconomics," *Journal of International Money and Finance*, March 1986; Jeffrey Frankel and Charles Engel, "Do Asset-Demand Functions Optimize over the Mean and Variance of Real Returns? A Six-Currency Test," *Journal of International Economics*, December 1984; and Benjamin Friedman and Kenneth Weiller, "The Substitutability of U.S. and Foreign Assets," Federal Reserve Bank of New York, Research Paper no. 8714, in *International Integration of Financial Markets and U.S. Monetary Policy*, December 1987.

[20]See William Branson and Dale Henderson, "The Specification and Influence of Asset Markets," in Ronald W. Jones and Peter B. Kenen, eds., *The Handbook of International Economics*, vol. 2 (New York: North-Holland, 1985), for a detailed description of this model.

sist, the additional return required for holding more dollar assets, under some circumstances, could be as much as twice that in Table 4. Such an outcome, or an even greater interest rate effect, is at least a real possibility if large external deficits persist and foreign dollar exposures consequently grow well beyond those observed in the past.

If domestic real interest rates do not adjust to the additional U.S. debt arising from the current account deficit — a plausible development if monetary authorities were pursuing a policy of stable real interest rates — then dollar depreciation is likely to restore equilibrium. This depreciation would effectively reduce the foreign currency value of dollar assets, leaving unchanged the dollar asset share in foreign portfolios.[23] The exchange rate adjustment in one year depends on the shifts in the overall demand for assets associated with the current account deficit. For example, the combination of a U.S. deficit and a Japanese surplus shifts demand from dollar assets to yen assets. The change in demand induced by U.S. and Japanese current accounts of the size that occurred in 1988 would lead to roughly 3 percent depreciation of the dollar against the yen.[24]

Future financing scenarios

While the precise financial impacts of future U.S. deficits are impossible to predict, the evidence we have reviewed above provides a basis for roughly assessing the consequences of alternative plausible paths for the external deficit over the next several years. Of particular interest is whether the financing of future U.S. deficits will be feasible without significant increases in domestic interest rates or dollar depreciation beyond those needed to offset the differential between U.S. and foreign inflation. We base our assessments in part on two hypothetical scenarios for the financing of the assumed deficit paths, using assumptions about various components derived from past experience. These scenarios should be viewed as indications of the range of possible outcomes rather than precise forecasts.

The main assumptions underlying the two scenarios are given in Table 5. The two paths for the U.S. current account deficit probably span the range of the most

Footnote 22 continued
Philippe Jorion, "The Time-Variation of Risk and Return in the Foreign Exchange and Stock Markets," Columbia University Working Paper, 1987. These authors present evidence that conditional variances of monthly returns are occasionally at least twice the value of the unconditional variances on which our calculations are based.

[23]To the extent that dollar depreciation is anticipated, nominal U.S. interest rates will rise relative to foreign returns.

[24]The basis for this calculation is described in more detail in Appendix B. Frankel, in "The Implications of Mean-Variance Optimization," has argued that expectational effects could imply larger depreciation.

likely outcomes: in the first, more pessimistic path, the deficit remains at 2¼ percent of GNP, roughly its present level, over the next five years. This scenario essentially corresponds to little change in policy or other fundamental conditions underlying the external deficit. In the second path, the deficit falls steadily to 1 percent of GNP by 1993. This path is most likely to accompany a substantial reduction in the U.S. fiscal deficit and reasonable demand growth abroad. Most other plausible paths for the current account deficit fall between these two illustrative cases.

Our assumptions for net direct investment and official inflows are based on recent experience, as reviewed in the last section. We assume that the net direct investment inflow increases by $2.3 billion per year from a 1988 base of $21.8 billion. This growth is consistent with the trend of net inflows, excluding currency translation effects, over the last several years (see Appendix A). As explained earlier, these translation effects are unlikely to be as large as those observed recently. In order to concentrate on potential strains associated with private financing, we assume that official dollar asset holdings rise by 8 percent per year, a rate roughly consistent with average recent behavior and foreign nominal GNP growth.[25] While official interven-

[25]According to figures reported by the International Monetary Fund, official dollar holdings as measured by dollar foreign exchange reserves were about $320 billion at year-end 1987. Average growth in

Table 5

Assumptions Underlying the Financing Scenarios
(In Billions of Dollars)

	1988	1989	1990	1991	1992	1993
Official inflows†	39.1	27.7	29.9	32.3	34.8	37.6
Direct investment net inflows	19.0	24.1	26.4	28.7	31.0	33.3
Current account deficit						
Scenario I	135	125	135	146	157	170
Scenario II	135	125	100	80	65	55

Memo:

Foreign nominal GNP growth (foreign currency)	6 percent per year
Dollar depreciation	2 percent per year
Net wealth growth‡	8 percent per year

Note: 1988 data are actual (preliminary) figures.
†Official inflows are assumed to include all net foreign official purchases of dollar-denominated assets.
‡Net wealth is approximated by government debt plus stock market capitalization for the United States, the United Kingdom, Germany, Japan, Canada, France, and Italy. Growth is in dollar terms.

tion may be greater in periods of financial market pressure, we argue below that the intervention would have to be extraordinarily large to avoid private financing strains entirely, at least under the high deficit scenario.

The projected financing of the high current account scenario, given in Table 6, indicates that continuation of U.S. deficits at their present level relative to GNP will lead to substantial growth in external debt, both absolutely and (more importantly) relative to industrial country wealth. Under this more pessimistic scenario, total net debt increases at an annual rate of more than 20 percent, while the position excluding official obligations (a very rough proxy for the dollar exposure of private investors) grows by 24 percent per year, roughly triple the assumed growth of foreign GNP measured in dollars. As a share of wealth, the private net debt of the U.S. doubles from about 2.6 percent of wealth in 1988 to 5.2 percent in 1993 — a modest level

Footnote 25 continued
these holdings was about 5.3 percent per year over 1982-86, compared to about 10.8 percent for 1982-87. Our projected growth over the next five years is thus about midway between these averages.

in absolute terms but a substantial proportionate rise.

In contrast, in the second scenario with a steadily falling deficit, net debt grows much less rapidly, particularly after 1990, and net private debt varies little after 1990 relative to wealth (Table 7). The current account deficits and the debt increases are close to those of the first scenario through 1990 but much lower in the subsequent years.

Because of potential financial strains in the high deficit scenario, actual official financing could exceed the amounts assumed in our calculations. Central bank intervention would probably not be great enough, however, to eliminate the differences between the scenarios.[26] In particular, official financing would have to average over $100 billion annually during the next five years to keep the share of dollar assets in wealth at its 1988 estimated level (see the memorandum in Table 6). This level of official financing could probably be kept up for a year or two but, if sustained over the entire five-year horizon, would more than double the stock of for-

[26] If, for example, official inflows after 1988 were twice the value shown in Table 5, private holdings of dollar-denominated debt as a share of total wealth would be about one percentage point less at the end of the horizon under the pessimistic current account scenario than our projections now imply, but would remain higher than in scenario 2.

Table 6

Financing Projections — Scenario I

	Average Annual Flow		End-Year Stock†		
	1989-90	1991-93	1988	1990	1993
U.S. external debt (billions of dollars)	130	158	488	748	1221
Annual growth (percent)	24	18			
Private capital inflows (billions of dollars)	101	123	299	502	870
Securities and banking (billions of dollars)	76	92	324	476	751
External debt as a share of net wealth‡ (percent)			4.3	5.6	7.3
Private external debt as a share of net wealth‡ (percent)			2.6	3.8	5.2

Memo: Required official financing to maintain 1988 private net debt share of wealth (billions of dollars per year)

Scenario I	105	128
Scenario II	91	37

Note: The calculations are based on the assumptions in Table 5.
†Debt stocks are book value terms and are based on the end-1987 official estimates.
‡Net wealth is government debt plus stock market capitalization for the United States, United Kingdom, Germany, Japan, Canada, France, and Italy.

Table 7

Financing Projections — Scenario II

	Average Annual Flow		End-Year Stock†		
	1989-90	1991-93	1988	1990	1993
U.S. external debt (billions of dollars)	113	67	488	713	913
Annual growth (percent)	21	9			
Private capital inflows (billions of dollars)	84	32	299	467	562
Securities and banking (billions of dollars)	58	1	324	441	443
External debt as a share of net wealth‡ (percent)			4.3	5.4	5.5
Private external debt as a share of net wealth‡ (percent)			2.6	3.5	3.4

Note: The calculations are based on the assumptions in Table 5.
†Debt stocks are book value terms and are based on the end-1987 official estimates.
‡Net wealth is government debt plus stock market capitalization for the United States, United Kingdom, Germany, Japan, Canada, France, and Italy.

eign official dollar holdings.[27] To maintain control of money and credit growth, central banks would have to offset dollar purchases of this magnitude with large sales of domestic assets; consequently, the banks might experience significant technical difficulties in carrying out monetary policy.[28] For these reasons, sufficient official financing to prevent a marked rise in the dollar exposure of private foreign lenders under the first scenario seems unlikely, unless strains in financial markets were to become very substantial.

Financial implications

Coupled with the analysis earlier in this section, our examination of the financing projections scenario strongly suggests that a sustained current account deficit near current levels will lead to potentially significant financial pressures on domestic interest rates and the dollar. In contrast, such financial pressures are likely to be much smaller, particularly after 1990, in the declining deficit scenario. The exact size of these pressures is hard to predict because it depends on a variety of influences affecting demand for U.S. dollar assets and on factors influencing the supply of U.S. and foreign currency assets. However, the scenarios imply that the financial pressures will be lower if the deficit declines than if it does not.

These impressions are confirmed by rough estimates of the scenarios' financial implications based on the framework discussed earlier in this section. Table 8 shows the increase in U.S. real interest rates relative to rates abroad needed to ensure private financing for the projected current account deficit path with no further real dollar depreciation (that is, assuming that all the financing pressures fall on interest rates rather than exchange rates). These estimates are measures of the effect of additional dollar exposure and do not include other influences on interest rates that could arise.

The analysis suggests that continued large external deficits would lead to moderate increases of about 26

to 33 basis points in U.S. short-term interest rates relative to rates abroad. The estimated increase in longer-term rates is noticeably higher, about 37 to 46 basis points, because of expectations of increasing short-term rates as the debt continues to accumulate in future years. In contrast, the declining deficit scenario would imply an increase in long-term interest rates relative to foreign returns that was less than half as large, with much of the change early in the period.

Table 9 shows the decline in the dollar that would be needed to induce private foreigners to supply the necessary deficit financing without an increase in real interest rates. (The required depreciation is essentially that required to prevent foreign dollar holdings from increasing in relation to wealth). Higher relative U.S. real interest rates are likely to be avoidable under the pessimistic current account scenario only at the cost of significant further dollar depreciation. Indeed, the dollar might fall by 25 percent further in the next few years under these circumstances.

In practice, financing of a continued large U.S. deficit is likely to lead to a combination of interest rate increases and dollar decline. Moreover, the absolute effects on U.S. interest rates also depend upon the deficit's impact on foreign yields. The effects shown in Tables 8 and 9 appear fairly moderate, but they may be somewhat misleading. An increase of 37 to 46 basis points in U.S. long-term real interest rates, for example, is not large in comparison with the rates' yearly fluctuation. A permanent increase of this magnitude, however, is more substantial in relation to the longer term average of this rate (typically about 2 to 3 percent for government bonds). Such an increase could have a

[27]Indeed, current official dollar reserves may now be significantly above those desired under more normal circumstances because of the heavy interventions since 1985. To a greater extent than over the last three years, future intervention is likely to arise from the actions of a few major industrial country central banks. The reason is that Taiwan, which accounted for nearly one-quarter of all official dollar purchases in 1986-87, is unlikely to add significantly to its holdings over the next several years.

[28]Three major countries, Japan, Germany, and the United Kingdom, have typically accounted for most of the dollar purchases by foreign industrial country central banks. In all three countries, dollar purchases exceeded the total growth in bank reserves in 1987. Monetary policy operations to control bank reserve growth are conducted most easily in domestic assets and only with more difficulty in foreign securities. While serious monetary control problems do not seem to have resulted from the heavy interventions of 1986-87, they could develop if dollar purchases were to continue at that rate for several more years.

Table 8

Increases in U.S. Real Interest Rates Relative to Japan and Germany
(Basis Points)

	Short-Term Rate		Long-Term Rate	
	Scenario I	Scenario II	Scenario I	Scenario II
Japan				
1990	13	11	26	15
1993	33	16	46	17
Germany				
1990	10	9	21	12
1993	26	13	37	14

Notes: The increases in U.S. real interest rates relative to specific foreign rates are measured from end-1988 through the end of the given period. The scenarios are defined in Table 5. The short-term rate refers to an annualized one-month holding period yield. The long-term rate is the annualized return on five-year bonds.

noticeable impact on the domestic cost of capital and on investment spending. Furthermore, the required increase in U.S. interest rates would be even greater if foreign real interest rates were to rise — a particularly likely outcome if the external deficit remains high.

More important, these estimates of financial impacts are probably conservative, especially if the current account deficit does not decline appreciably. As indicated earlier, investors may perceive the risk of holding dollar assets as substantially greater than that implied by past experience. It is conceivable, for example, that continued large U.S. external deficits would seriously undermine market confidence in this country's policy credibility and economic stability; in that case, the interest rates required to maintain foreign holdings of U.S. debt could be considerably higher than those shown in the table.

These exercises can only suggest the possible patterns that the future financing of U.S. external deficits may follow. Because future demand for U.S. dollar assets is likely to be affected by a number of factors not explicitly considered in our analysis, the potential outcomes in either deficit scenario may vary greatly. Nevertheless, the analysis does strongly imply that continued external deficits at present levels could lead to increased financial pressures with economically significant implications. In this sense, continued high deficits may pose clear financial risks. In contrast, the analysis suggests that these risks might be largely avoided if the deficit declines steadily and substantially over the next several years.

Conclusion

For a number of years there have been warnings that continued rapid accumulation of U.S. external debt to finance large current account deficits will lead to serious financial strains. Yet the financing of the deficit has proceeded more smoothly than most observers thought possible when the deficits first emerged in the

Table 9

Cumulative Dollar Depreciation against the Yen Implied by the Scenarios
(In Percent)

	Scenario I	Scenario II
1990	11	9
1993	26	13

Notes: Depreciation is measured from end-1988 through the end of the given period and is an addition to that assumed in Table 5. Financial pressures are assumed to fall entirely on exchange rates with no change in real interest rates.

early 1980s. This apparent contradiction between prediction and experience has raised questions about how serious the financial consequences of continued large deficits might be. Historical precedents provide only very limited guidance in answering such questions because of the exceptional size of the U.S. deficit and the rapidly changing world financial environment in which it is being financed.

This article has attempted to identify key features of the financing of the U.S. current account deficit and to assess what past experience and other evidence suggest about the risks that may arise under plausible future deficit scenarios. We have seen that the experience with funding the deficit since 1982 provides both positive and negative signals about future financing prospects. Among the positive indications is the fact that most of the $600 billion borrowed from abroad over 1983-88 has come from private sources. Official financing admittedly has become important during the last three years, although in part because of exchange rate policies; private financing, in any case, has again been the dominant financing source over the last year. Also encouraging is the likelihood that direct investment will provide a significant amount of current account financing over the next several years.

At the same time, however, there are signs that future conditions may be somewhat less favorable to U.S. borrowing from other countries. Purchases of U.S. securities, the largest single source of current account financing, have been greatly encouraged by the diversification of foreign investor portfolios in response to the growing international financial integration of the 1980s. Major foreign financial institutions, particularly in Japan, now have significant exposures to U.S. dollar assets as a result of this process and they may be less willing to increase these exposures in the future. Additional development of international financial markets, as well as changes in the financial climate within major foreign industrial countries, may encourage investment in assets competing with the dollar, and hence may lead to slower growth in the demand for U.S. assets than in the past.

Given the complexity of the factors involved, any assessment of the effects of future financing of U.S. external deficits is likely to be quite imprecise. Our analysis has been based on the assumption that the private foreign exposure to dollar assets arising from the U.S. external deficit will be a key determinant of the deficit's financial impacts. In principle, increases in private foreign net dollar holdings relative to wealth, or in the perceived risks of dollar assets, are likely to lead to financial changes, including upward pressures on domestic real interest rates and downward pressures on the dollar. Continued external deficits at present

rates in relation to GNP are very likely to lead to ongoing growth in private foreign dollar exposures and may imply significant financial pressures in coming years. The estimated increase in long-term real interest rates under this scenario, slightly less than one-half of one percentage point by 1993, is sizable compared to historical averages, although not so large in relation to the average of the last several years. But this estimate, based largely on historical experience, is likely to prove conservative. Given the growing uncertainties about the macroeconomic and financial environment that are likely to accompany continued high deficits, the pressures on interest rates and exchange rates could easily be considerably greater than those implied by the simple model used for the text estimates, and their economic impacts could be significantly more adverse.

On balance, therefore, the evidence suggests that there is a basis for concern about the potential financial consequences of continued large external deficits and rapid accumulation of indebtedness to foreigners. This, of course, does not mean that major financial strains are either imminent or inevitable; nor can the possibility be ruled out that further changes in world financial conditions favoring demand for U.S. assets, or other factors, will allow future U.S. deficits to be financed without serious problems. Nonetheless, there is tangible and concrete evidence that the risks of serious financial problems are growing and will continue to rise in coming years if the external deficit is not brought down substantially.

Juann Hung
Charles Pigott
Anthony Rodrigues

Appendix A: The Role of Direct Investment

This appendix examines the role of direct investment in the financing of the U.S. current account deficit and considers how that role might change as the adjustment process proceeds. Foreign direct investment inflows into the United States have grown steadily throughout the decade, spurred on mainly by favorable U.S. economic conditions. The outflow of U.S. direct investment abroad, while exhibiting more volatile behavior, has also expanded over this period. Between 1985 and 1987, the inflows and outflows of direct investment basically canceled each other out, leaving net direct investment with little to contribute to the financing of growing U.S. current account imbalances. (It has, however, made a substantial contribution in 1988.) Nevertheless, our analysis suggests that many of the factors that recently affected direct investment inflows and outflows may be transitory, and that direct investment will provide significant net financing over the next several years.

Overview
In the balance of payments accounts, "direct investment" refers to investments by foreigners in business enterprises in which the foreigners' control exceeds 10 percent. Direct investment funds can enter the country in three different ways. First, a parent corporation can directly place funds in a business outside its home country's borders — establishing a new plant abroad, buying out an existing factory, purchasing real estate, participating in a joint venture with a foreign firm, or increasing its equity holdings beyond the 10 percent threshold. Second, a foreign affiliate may decide not to repatriate its earnings to the parent corporation but to reinvest them in its own operations. Third, the foreign affiliate can raise funds in the Euromarket or other foreign securities markets.

The motives for undertaking direct investments are generally more complex than those determining portfolio investments. While the composition of a securities' portfolio is typically based primarily on the expected yields and risks of its components, direct investments are influenced by a mix of corporate strategies, macroeconomic conditions in different nations, and national policies toward foreign investment.

Chart 2 of the text shows the pattern of net direct investment flows during the 1980s. The chart reveals that earlier in the decade a surplus of direct investment entered the United States; these funds significantly offset concurrent imbalances in the U.S. current account. From 1985 to 1987, the current account deficit continued to balloon, but direct investment flows fell into balance, providing little net capital inflow to offset our net current outflows. This pattern changed again in 1988 as direct investment outflows fell and net inflows rose to over $20 billion.

Foreign direct investment in the United States
The low level of net direct investment over 1985-87 cannot be attributed to any diminution of foreign willingness to invest in U.S. businesses. Indeed, flows of foreign direct investment have grown steadily throughout the decade, building to a high of $42 billion in 1988. Most of these funds are "new" investments made by foreign corporations, which means that foreigners are concentrating on buying out existing U.S. firms or establishing U.S. affiliates.

Appendix A: The Role of Direct Investment *(continued)*

Much of this growth can be attributed to favorable economic conditions in the United States. Moderate growth in economic activity and low inflation, combined with the depth of the domestic market, make the United States an attractive location for foreign firms. In addition to the country's favorable economic climate, factors that have recently strengthened foreign direct investment include increased mergers and acquisitions activity, foreigners' desire to diversify their investment portfolios, and the fall in the dollar's value since 1985.

The current wave of U.S. corporate restructuring has created an unusual opportunity for foreigners to obtain U.S. businesses. By far the most active players in this international mergers and acquisitions activity have been the British. A recent study by the *British-American Deal Review* estimates that the British committed $32.5 billion to acquire 400 U.S. companies in 1988; the Japanese are estimated to have bid roughly $12 billion last year. British investors, reaping large corporate profits at home, have moved aggressively during this period of restructuring, particularly in the areas of manufacturing, retail trade, and financial services. These purchases have secured the British position as the largest direct investor in the United States. The Japanese, however, have been reluctant to engage in hostile takeovers of U.S. corporations, although their direct investment position in the United States has increased. The Japanese share of total direct investment in this country rose from 8 percent to 13 percent during the 1982-87 period, making Japan the third largest direct investor after the United Kingdom and the Netherlands.

Much of the growth in Japanese direct investment can be explained by the desire of Japanese institutional investors to diversify their portfolio of U.S. assets. Well-publicized real estate purchases by Japanese life insurance companies and other financial entities have increased Japanese direct investment in the United States without necessarily augmenting productive capacity here. The placement of these funds, however, does provide the Japanese investor with a stream of returns in the form of rents and, in this sense, represents an alternative to bond or other securities investments. Moreover, income from real estate and other similar ventures, at least over the long run, is apt to provide a better hedge against inflation than fixed (nominal) income instruments.

Dollar depreciation since 1985 has also supported the growth of foreign direct investment in the United States. Though the purchase price of U.S. assets falls with the drop in the dollar, the foreign currency value of income from these investments falls as well. A recent paper by Richard Caves, however, finds that net foreign direct investment responds positively to dollar depreciation.†

The boost given to direct investment inflows by these three factors — increased mergers and acquisitions activity, foreign portfolio diversification, and dollar depreciation — may be viewed as a break from the growth path determined by long-term corporate planning. What we may be observing is a stock-adjustment process in which foreigners are building up their stocks of U.S. corporate assets to some desired level dictated in part by the global strategies of different multinationals (strategies such as developing niches in foreign markets, diversifying raw materials sources, or capitalizing on lower wage rates abroad). To the extent that the acceleration in direct investment inflows since 1986 is the result of foreigners seizing the opportunity to close the gap between their actual and desired stocks, we can expect the inflows to slow from their present growth at some point in the future.

U.S. direct investment abroad
In contrast to the steady growth of foreign direct investment through the 1980s, flows of U.S. direct investment abroad have been quite erratic, exhibiting little trend growth. Direct investment outflows were near zero in 1982, jumped to over $44 billion in 1987, and then fell to $20 billion in 1988. In this decade, almost all of the growth in U.S. direct investment abroad has come from the reinvested earnings of U.S. foreign affiliates. In 1987, 72 percent of direct investment outflows came from reinvested earnings, and between 1981 and 1985 the flow of reinvested earnings actually exceeded the total outflow of direct investment funds.‡ Equity capital, or "new" direct investment, which constituted the bulk of the increase in foreign direct investment into the United States, contributed little to the outflow of direct investment (only 9 percent in 1987).

The fluctuations in direct investment outflows do not necessarily reflect changes in the desire of U.S. multinationals to invest or expand their operations abroad. In fact, much of the volatility in direct investment outflows is due to two accounting peculiarities that have a sub-

†See Richard E. Caves, "Exchange Rate Movements and Foreign Direct Investment in the U.S.," Harvard Institute of Economic Research, Discussion Paper no. 1387, May 1988.

‡This is possible if the sum of the two other types of direct investment flows, equity capital and intercompany debt, is negative. The continued strong contribution of reinvested earnings to total outflows from the United States contrasts with direct investment financing in other industrial nations. For example, reinvested earnings represented only 1 percent of German direct investment outflows between 1980 and 1983. See "International Investment and Multinational Enterprises," OECD, 1987.

stantial impact on the data.§ First, the Commerce Department treats changes in asset values arising from exchange rate changes as income accruing to the foreign affiliate in the current account. This bookkeeping profit is then recorded as an offsetting capital outflow (to the extent it is not repatriated). These items can be quite large when the value of the dollar changes significantly. For example, in 1987 capital gains from dollar depreciation added over $15 billion to reported direct investment outflows, more than one-third of the total. Removing these capital gains and losses (which are generally ignored in the balance of payments accounts of other industrial countries) provides a more accurate picture of the true underlying trend in direct investment outflows.‖

The second adjustment to the direct investment outflow data arises from transactions between U.S. parent companies and their affiliates in the Netherlands Antilles. Before 1984 it was advantageous for U.S. corporations to raise new capital by issuing Eurobonds through their Netherlands Antilles affiliates and then to borrow these funds from their offshore subsidiaries. In the direct investment outflow data, these transactions appear as *negative* capital outflows. The Tax Reform Act of 1984 repealed the 30 percent withholding tax on interest paid to all foreigners, not just to tax havens like the Netherlands Antilles, making this convoluted financing path unnecessary. As a result, the main flow of capital between the countries is now *from* the United States *to* the Netherlands Antilles as the U.S. corporations pay off the old Eurobonds. Capital outflows with Netherlands Antilles affiliates became positive in 1985 and totaled $2.5 billion in 1987. The removal of these transactions will increase direct investment outflows before 1985 and lower them in subsequent years.

Adjusting for these two distortions of the outflow data involves subtracting both capital gains due to translation adjustment and outflows to Netherlands Antilles affiliates. The reported and adjusted data are shown in Chart 1A. With these adjustments, flows of direct investment abroad are much less volatile than they appear in

§See Robert N. McCauley, "Prospects for U.S. Debt Service Obligations," study prepared for the Joint Economic Committee, 1989 (forthcoming).

‖Translation adjustments resulting from exchange rate movements should be assessed at the end of the year along with the other valuation adjustments. Therefore, these corrections to the flow data will not affect the direct investment position series reported by the Commerce Department.

the Commerce Department data and considerably below reported outflows for 1985-87.

Future prospects
As Chart 2 of the text reveals, net direct investment inflows, excluding the two adjustments just discussed, have been significantly positive in recent years. Our analysis suggests that while direct investment inflows should grow more slowly than in recent years, they are likely to exceed outflows. Assuming that the dollar is fairly stable, net direct investment should make a significant contribution to current account financing in the coming years.#

David G. Fernandez

#Box-Jenkins models of direct investment inflows and adjusted outflows imply that both components, as well as net direct investment, tend to increase over time. The text estimates of future net direct investment are based on a regression of net adjusted inflows on a time trend; this regression implies an increase of net direct investment of about $2.3 billion per year.

Chart 1A

Reported and Adjusted Direct Investment Outflows
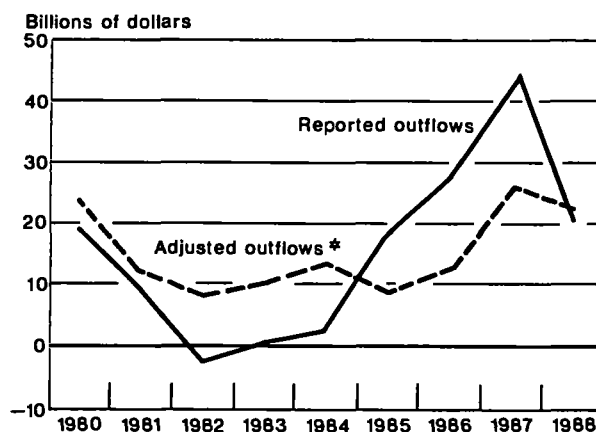
Source: Department of Commerce, Bureau of Economic Analysis.

*Adjusted direct investment outflows exclude capital gains and selected transactions with Netherlands Antilles affiliates. Figure for 1988 is authors' estimate.

Appendix B: Computing Interest Rate and Exchange Rate Effects

Our estimates of interest rate and exchange rate effects are derived from the single-period mean-variance model of asset choice, which assumes that investors choose their portfolios by balancing expected return against variance of return. Specifically, investors will continue to add a risky asset to their portfolios until the marginal return from the asset is equal to the marginal variance, weighted by the investors' desired trade-off between return and variance. Assuming a one-month time horizon for investors, the major sources of uncertainty are unexpected changes in exchange rates and unexpected inflation. Lewis has shown that asset demand under these conditions will depend on both the expected return and risk of assets as shown below:[†]

$$x = [R \ Var(a)]^{-1} \ [r - r^{us} - Ea]$$
$$- [Var(a)]^{-1} \ Cov(a,p) \ w.$$

In the expression above, demand for foreign currency assets is given by the desired shares of each asset in the portfolio, x, and may be expressed as the sum of a speculative portfolio, $[R \ Var(a)]^{-1} \ [r - r^{us} - Ea]$, and a minimum variance portfolio, $- [Var(a)]^{-1} \ Cov(a,p) \ w$. The speculative portfolio suggests holding each asset at a share that sets its contribution to expected return equal to R times its contribution to variance. R, the coefficient of relative risk aversion, gives the additional expected return investors require for each additional unit of risk, which is measured here by the variance of unexpected dollar appreciation, $Var(a)$. Speculative demand rises with the expected returns on the assets, relative to the return on dollar assets, which equals $[r - r^{us} - Ea]$ where Ea represents the expected rate of dollar appreciation relative to other currencies.

The minimum variance portfolio gives asset demand when investors are completely risk averse, that is, when $R = \infty$. Even an extremely risk averse investor might hold an asset denominated in a foreign currency with the same expected return as a domestic asset if unexpected dollar appreciation against the currency, a, were negatively correlated with unexpected changes in the investor's inflation rate, p. This strategy creates a hedge against domestic inflation. World demand for assets will depend on the distribution of wealth over countries, w, with greater weight placed on the demand of investors in wealthier countries. A current account deficit leads to a change in world demand as wealth shifts from the deficit country to surplus countries.

Our estimates of the key parameters in the model—the variance of unexpected exchange rate appreciation and the covariances between forecast errors in exchange rates and in inflation—are derived using data from November 1977 through October 1988 for Japan,

Germany, Canada, France, Italy, the United Kingdom, and the United States. The forecast error variances from a vector autoregressive model of spot exchange rates and inflation rates, measured by country consumer price indexes, are used to estimate $Var(a)$ and $Cov(a,p)$.

The literature has provided a wide range of estimates for the coefficient of relative risk aversion.[‡] Lewis estimated our model over a similar time period and obtained a coefficient around six. Her measure was used throughout this analysis.

Country net government debt and wealth stocks are measured following a procedure proposed by Frankel.[§] We add the debt measures to stock market capitalization, obtained from published figures in *Morgan Stanley Capital International Perspective*, to obtain 1987 figures for country wealth and assets denominated by currency.

The asset markets, interacting with product and factor markets, will determine the exchange rate and interest rate changes associated with a current account deficit. Two views of asset market adjustment are used here to bound the likely exchange rate and interest rate changes. The first emphasizes interest rate adjustment, which is most likely when authorities follow policies of fixed exchange rates. In this case, relative returns will change to equate asset demand and supply after a shift in demand induced by a current account deficit. The second emphasizes exchange rate adjustment, which is most likely when monetary authorities fix interest rates. As world demand for assets shifts with a current account deficit, exchange rate movements could restore equilibrium through appreciation of currencies whose assets are in excess demand and through depreciation of currencies in excess supply.

The mean-variance model typically implies small annual interest rate responses and somewhat larger exchange rate responses to a current account deficit. Since current account deficits are typically a small share of wealth, they imply small shifts of wealth from deficit to surplus countries and relatively small shifts in world demand for assets. Most evidence suggests that assets denominated in different currencies are reasonably good substitutes so that small changes in the demand for assets will be accompanied by modest changes in relative returns.

To illustrate these points, consider a model of demand for assets denominated in yen and U.S. dollars:

$$x^{jp} = [R \ Var(a)]^{-1} \ [r^{jp} - r^{us} - Ea] -$$
$$[Var(a)]^{-1} \ [Cov(a,p^{jp}) \ w^{jp} + Cov(a,p^{us}) \ w^{us}].$$

[‡]Estimates range from two, in Frankel, "In Search of the Exchange Risk Premium," to fifty, in Giovannini and Jorian, "The Time-Variation of Risk and Return."

[†]Lewis, "Inflation Risk."

[§]See Frankel, "In Search of the Exchange Risk Premium."

Appendix B: Computing Interest Rate and Exchange Rate Effects *(continued)*

Here x^{jp} is the share of Japanese yen assets in the world portfolio, R is the coefficient of relative risk aversion, a is the rate of appreciation of the dollar against the yen, r^{jp} and r^{us} are one-month rates on yen- and dollar-denominated assets respectively, p^{jp} and p^{us} are Japanese and American inflation rates, and w^{jp} and w^{us} are the shares of Japanese and American wealth in world wealth. We used a value of 6 for R and obtained the following variances and covariances using data from November 1977 through October 1988:

$$\text{Var}(a) = .001229, \ \text{Cov}(a,p^{jp}) = -.001235,$$
$$\text{and } \text{Cov}(a,p^{us}) = -.00000073.\|$$

According to these estimates, demand for yen assets grows as Japanese wealth or U.S. wealth increases:

$$x^{jp} = [6 \times .001229]^{-1} [r^{jp} - r^{us} - Ea]$$
$$- [.001229]^{-1} [-.001235 \ w^{jp} -.00000073 \ w^{us}] \text{ or}$$

$$x^{jp} = 135.6 [r^{jp} - r^{us} - Ea] + 1.005 \ w^{jp}$$
$$+ .000594 \ w^{us}.$$

The size of the coefficient on the expected return implies that investors view yen and dollar assets as good substitutes, since small changes in relative returns generate large shifts in the share of yen assets. Inverting the equation, we can express expected returns on dollar assets relative to yen assets as a function of the yen asset share as well as Japanese and U.S. wealth shares:

$$[r^{us} - r^{jp} + Ea] =$$
$$-.007374 \ x^{jp} + .00741 \ w^{jp} + .00000438 \ w^{us}.$$

A U.S. current account deficit of $135 billion (the size of the deficit in 1988), would imply a decline of 1.3 percent in the U.S. share of industrial country wealth, measured at the end of 1987.# If the Japanese current account surplus were two-thirds of the size of the U.S. deficit, somewhat above the 1988 level, the Japanese wealth share would increase by 0.9 percent. Our equation for expected return implies that the annualized U.S. return would increase relative to Japanese returns by

about $12 \times .00067 = .008$, or about 8 basis points at an annual rate. The magnitude of this estimate is consistent with others in the literature.

The exchange rate change required to equilibrate asset markets, assuming no change in relative returns, is derived using the fact that the share of yen assets in total wealth x^{jp} is the ratio of the dollar value of yen-denominated assets divided by the dollar value of world assets, or:

$$x^{jp} = A^{jp} \ e \ / \ (\ A^{row} + A^{jp} \ e \ ),$$

where A^{jp} is the stock of yen-denominated assets, e is the exchange rate measured in dollars per yen, and A^{row} is the dollar value of assets not denominated in yen. A U.S. current account deficit, accompanied by a substantial Japanese current account surplus, shifts wealth from the United States to Japan and, according to the demand equation, induces an increase in the world demand for yen assets. Dollar depreciation will raise the dollar value of yen assets, equating demand and supply.* Each percentage point depreciation of the dollar raises the dollar value of yen assets by $x^{jp} \ (1-x^{jp})$ percent so the required dollar depreciation is $[\ x^{jp} \ (1-x^{jp}) \ ]^{-1}$ times the change in demand for yen assets. If the previous example of a $135 billion U.S. current account deficit is used, the Japanese wealth share increases by 0.9 percent, generating greater demand for yen assets of approximately nine-tenths of one percentage point. A dollar depreciation of $[.39(1-.39)]^{-1}0.9 = 3.8$ percent is required to match the increased demand for yen assets induced by the U.S current account deficit.†† This estimate is comparable to others reported in the literature.‡‡

The calculations of interest rate or exchange rate effects for the financing scenarios are similar to the examples above except that a specific pattern of future current account surpluses in Germany (one-third of the U.S. deficit) and Japan (two-thirds of the U.S. deficit) is assumed, the seven country version of the asset demand model is used to compute interest rate and exchange rate effects, and 1987 asset shares are used throughout the projection period.

‖These estimates are in decimal form and imply a standard error in forecasting monthly dollar appreciation of about three and a half percentage points ($=100 \ \sqrt{.001229}$). The similarity between the variance of unexpected dollar appreciation and the covariance between unexpected appreciation and Japanese unexpected inflation results largely from measuring Japanese inflation in terms of the dollar, which is the numeraire currency for aggregation. This method is based on Lewis, "Inflation Risk."

#Industrial country wealth is defined as government debt plus stock market capitalization in Japan, Germany, Canada, France, Italy, the United States, and the United Kingdom.

*This approach follows Frankel, "The Implications of Mean Variance Optimization."

††This is based on the estimate that Japanese outside assets and stock market capitalization were about 39 percent of the total dollar value for the United States, Japan, Germany, the United Kingdom, Canada, France, and Italy.

‡‡In "The Implications of Mean-Variance Optimization," Frankel argues that larger estimates will be obtained if present deficits lead to an expectation of greater future deficits. In that case, present asset demand reflects both the wealth shift arising from the current account deficit and the expectation of future exchange rate depreciation. Greater exchange rate adjustment will be required to equate asset supplies and demands.