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# Budget Deficits, Exchange Rates and the Current Account: Theory and U.S. Evidence

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Michael Hutchison and Charles Pigott\*

*Recent U.S. current account deficits represent a net inflow of foreign saving to help finance our government budget deficits. Budget deficits have raised domestic real interest rates and the real value of the dollar, causing the deterioration in our current account balance. Eventually our real interest rates should fall back toward world levels as foreign saving inflows increase. But, contrary to conventional wisdom, large U.S. current account deficits will probably remain as long as our budget deficits persist.*

Over the last several years, the United States economy has seen record highs in federal budget deficits, real interest rates, the dollar and trade deficits. Last year, the federal budget deficit climbed to \$195 billion, more than 5 percent of GNP—the highest rate of the postwar era. The federal deficit this year is expected to be about \$170 billion. U.S. real interest rates remain far above past historical averages, while the dollar recently reached a ten-year high against the German mark and British pound. Our current account deficit, measuring the difference between our imports and exports of goods and services, will probably reach \$90 billion for 1984—an all-time record. And to finance this deficit, our nation will have to borrow an unprecedented amount from abroad.

Many solutions have been proposed to deal with individual problems arising from these conditions. Growing fears that trade deficits, and the associated loss of jobs and markets for U.S. export industries, are “de-industrializing” America have added con-

siderably to protectionist pressures. Improving our trade deficit was also an objective of the recent U.S.-Japanese agreement to reduce Japan’s barriers to international capital flows.

Increasingly, though, deficits, high interest rates, and the dollar are being viewed not as isolated problems to be dealt with separately, but as closely related consequences of a common cause—government fiscal policy. Many analysts believe that federal budget deficits, by pushing up domestic interest rates, are ultimately responsible for the strong dollar, itself the major cause of the nation’s declining international competitiveness and rising trade deficit. This view suggests that only by balancing the budget can the other problems be fundamentally and permanently resolved.

Still, there remains considerable controversy over whether the budget deficits’ impacts are really this pervasive, and over what continued deficits may mean for the future. Some analysts believe that increased business investment yields resulting from recent tax cuts, rather than budget deficits themselves, are mainly responsible for our high real interest rates. Others argue that the high dollar is more a reflection of foreigners’ flight from political and economic problems in their countries than of

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\* Economist and Senior Economist, respectively. We would like to thank the Editorial Committee and Hang-Sheng Cheng for helpful comments, and Julia Lowell for her research assistance.

the attractiveness of high U.S. interest rates. There is also a very widespread view that our current account deficits cannot be sustained much longer, leading to predictions that the dollar must soon fall substantially to bring our international trade back to balance. Yet others argue that our external deficits, far from being an economic problem, have actually been beneficial by allowing domestic investment to remain strong despite the increasingly enormous credit demands from the government.

These controversies raise the fundamental question that is the focus of this paper—what are the impacts, short-term and long-term, of budget deficits in an *open* economy, one with trade and financial ties to abroad? In attempting to answer this question, our analysis begins with the observation that the current account deficit is not only the difference between our exports and imports, it is also the channel through which foreign saving is brought into our economy to help meet the credit demands of both the government and the private sector. In this way, a rise in the budget deficit may easily (but not inevitably) lead to a current account deficit, depending on the extent to which the government's credit demands are met, directly or indirectly, from foreign as well as domestic sources.<sup>1</sup>

In Section I, we develop a conceptual framework relating budget deficits, interest rates, exchange

rates, and the current account for an open economy under flexible exchange rates. This framework suggests that budget deficits are likely initially to raise domestic real interest rates which, in turn, push up the real exchange rate. As time passes, this increase in the real exchange rate leads to a current account deficit, allowing foreign saving to supplement domestic saving in financing the budget deficit. In applying this framework to the U.S. (Section II), we argue that this sequence fits our experience of the last several years fairly well, suggesting that budget policy is indeed mainly responsible for our current account deficits.

Since ongoing budget deficits imply an ongoing government need for private saving, our framework implies that, in principle, they can lead to ongoing current account deficits as well. For the U.S., this suggests that our current account deficits may indeed be sustained as long as our budget deficits remain. Furthermore, these external deficits may help reduce, although certainly not eliminate, the economic costs typically viewed as the consequence of budget deficits. In particular, the inflow of foreign saving into our economy should allow our interest rates, and the real value of the dollar, to decline somewhat, and domestic investment to escape substantially, if not completely, being "crowded out" by the government's credit demands.

## I. Conceptual Framework

In this section, we develop a conceptual framework to describe how budget deficits may influence the current account and the channels through which this influence is transmitted under a *floating* exchange rate regime. Our theory applies the modern asset market approach to exchange rate determination (for example, Dornbusch, 1976, Isard, 1980) to the static short-term fiscal analysis of Mundell (1962) and Flemming (1962). Our framework integrates and extends recent work on short-term dynamic adjustment of the open economy to fiscal deficits (for example, Blanchard and Dornbusch, 1984, Hodrick 1980, Sachs and Wyplosz 1984) with an analysis of the deficits' long-term impacts. The next section then applies this framework to recent U.S. history. Our analysis is deliberately heuristic and fairly non-technical. More formal and technical analysis is relegated to footnotes and cited references.

### A. The Accounting Relation

The basic reason that budget and current account deficits are related is because budget deficits represent a *use* of saving and current account deficits a *source* of saving. This may be seen from the national saving identity:<sup>2</sup>

$$\begin{aligned}
 (1) \quad (G - T) &= \\
 & \text{(Budget Deficit)} \\
 (S - I) &+ \\
 & \text{(Private Domestic} \\
 & \text{Saving Surplus)} \\
 (M + R - X) &+ \\
 & \text{(Current Account} \\
 & \text{Deficit)}
 \end{aligned}$$

The government budget deficit (expenditures less taxes,  $G - T$ ) must equal, or be financed by, the excess of private domestic saving ( $S$ ) over private

investment (I) plus the current account deficit. The current account deficit is the difference between a nation's expenditures on foreign goods and services (imports, M) and net transfers (R) and foreign expenditures on our products (exports, X). This difference must be financed by borrowing an equal amount of funds from abroad, and in this sense a current account deficit represents a net flow of foreign funds (foreign saving) to our economy.

In flow of funds terminology, the budget deficit and private investment constitute competing "uses" of savings. The "sources" of this saving are private domestic saving (S) and the funds from the foreign sector represented by the current account deficit.

It is not only true that a current account deficit requires a net inflow of foreign funds to finance it: a nation can sustain a net financial inflow from abroad *only* by incurring an equal current account deficit. Net borrowing from abroad effectively amounts to selling foreigners more "IOUs" than we purchase from them. Overall, a nation's accounts with abroad—trade and financial—must balance. A country cannot be a net borrower of foreign funds (net "exporter" of IOUs) without being a net importer of commodities and services. Thus, a nation can draw on foreign savings for its domestic needs only by incurring a current account deficit.

Taken by itself, an increase in government credit needs might be met partly by borrowing from abroad. This would seem to suggest that budget deficits would inevitably lead to current account deficits. However, the policies or other factors leading to a budget deficit will often affect domestic savings and investment as well. During a recession, for example, although the budget deficit tends to rise, the private domestic saving surplus typically increases even more (because of depressed investment demand). As a result, the budget and current account deficits generally move in opposite directions over the business cycle. Furthermore, government policies underlying a fiscal deficit could have an independent impact on private saving and investment that would make it unnecessary to borrow from abroad. Thus, while there is an important relation between budget and external accounts, there is no rigid mechanical linkage between the two. This means that a budget deficit's impact on domestic saving and investment demand must be assessed

before its implications for the current account can be determined.

## B. Short-run linkages

The purpose of this section is to trace out the likely short-term effects of a rise in the government budget deficit on interest rates, exchange rates, the domestic saving surplus and the current account.<sup>3</sup> To this end, we begin by sketching a simple outline of the dynamic process. We fill in the details and modify the story in the following section.

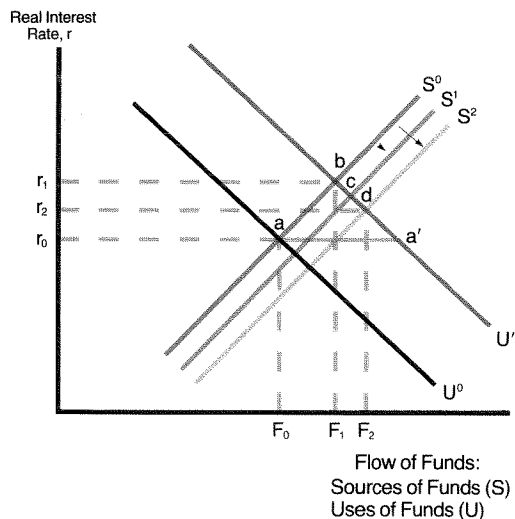
Consider the case where the government adopts policies that raise the budget deficit but do not *directly* affect private sector saving, investment or the current account. Initially, a rise in the budget deficit is likely to have expansionary effects on domestic output and employment. An expanding economy, in turn, generates an increased private domestic savings surplus which, to a large extent, may absorb the additional government demand for credit without putting significant upward pressure on real interest rates. As the standard textbook analysis suggests, interest rate pressures are more likely to be averted the larger the degree of unemployed resources in the economy and the stronger the stimulative impact the budget deficits have on output.

Once the economy approaches full employment and the initial output effects of a rise in the budget deficit subside, the remaining deficit must be financed from a combination of a rise in the private domestic saving surplus *relative* to GNP and from an inflow of foreign saving. Further increases in the private domestic saving surplus are unlikely to be forthcoming, however, without a rise in real interest rates.<sup>4</sup> In this instance, credit market pressures arising from the tender of government securities exert downward pressure on bond prices, and real interest rates rise as a consequence. Higher real interest rates, in turn, tend to stimulate private savings (lower interest-sensitive consumption expenditures) and slow investment outlays. Through this adjustment process, budget deficits may at first be financed largely from domestic sources.

This is illustrated in Figure 1, which shows the sources and uses of loanable funds in the domestic economy. The uses of funds represent government and private domestic demands for credit. The sources

Figure 1

Sources and Uses of Loanable Funds:  
Effects of a Rise in Government Credit Demands  
and Sluggish Foreign Capital Inflows



of funds (S) represent domestic private saving plus foreign saving flowing into the economy for a *given* current account deficit. That is, S represents a *short-run* sources-of-funds schedule. The economy is initially at equilibrium point a, with short-term real interest rate  $r_1$  and the uses and sources of funds equal at  $F_1$ . The increase in the budget deficit shifts out  $U^0$  to  $U^1$  as the government's demand for funds rises. At unchanged short-term real interest rates, the total demand for funds, represented by point  $a'$ , exceeds the available supply. Excess demand for funds under normal conditions will increase the real interest rate from  $r_0$  to  $r_1$ , moving the economy upward along  $S^0$  as private savings increase, and away from point  $a'$  to point b as private credit demands are scaled back.

In an open economy, however, increased foreign savings are also likely to partly finance increased domestic budget deficits. Higher domestic real interest rates, *ceterius paribus*, will cause investors to attempt to shift out of foreign assets and into domestic assets in order to take advantage of higher domestic real yields. The rise in demand for domestic assets, in turn, will put upward pressure on the domestic currency in the foreign exchange market.

As investors move to sell foreign currency for domestic currency and use the receipts to purchase higher yielding domestic bonds, they bid up the exchange rate.

Real domestic currency appreciation associated with higher real interest rates also represents a rise in the price of domestically produced goods relative to those produced abroad. This weakens export demand and spurs imports, causing the current account balance to deteriorate gradually. Current account deterioration, in turn, is the mechanism that allows foreign savings to begin to supplement domestic savings in financing domestic government budget deficits and private domestic investment. In our diagram, this shifts the short-run sources of funds schedule from  $S^0$  to  $S^1$  and further to  $S^2$ . The inflow of foreign savings, which gradually develops as the current account declines, represents an increase in the net supply of domestic assets held by foreign investors.

Thus, although increased foreign demand for domestic assets may at first result primarily in price effects (exchange rate appreciation), the supply (net stock) of domestic securities available to foreigners will also begin to increase as domestic currency appreciation in real terms causes the current account to decline and foreign capital to flow into the domestic economy. However, as the sources of funds schedule shifts outward following the inflow of foreign savings, domestic credit market pressures should ease, allowing real interest rates to fall back toward the world level. This is shown in the diagram as the movement from  $r_1$  to  $r_2$ , and the economy moves through a succession of new short-term asset market equilibrium positions represented by points b, c and d. This suggests that the inflow of foreign savings will play an increasingly important role in financing domestic budget deficits in an open economy.

The preceding describes the general pattern of initial adjustment in an open economy following a rise in the government budget deficit. However, the same pattern would also result from a business tax reduction or other policy that increases the after-tax return on domestic investment but does not necessarily increase the budget deficit. In those cases, private domestic investment demand would rise, leading to real interest and real exchange rate increases similar to those just described. Moreover,

when a policy increases both the after-tax return on domestic investment *and* the budget deficit, an additional reinforcing and magnifying effect on interest rates and exchange rates would likely be introduced. We now consider in more detail two features of this process: the different roles played by long-term and short-term interest rates and the role played by lags in the adjustment of the current account.

*Exchange Rates and Interest Rates.* The extent to which the real exchange rate initially appreciates will depend upon market expectations of the duration of government budget deficits and how they influence short-term and long-term real interest rates. The relationship between the real exchange rate and real interest rates may be seen explicitly by considering the equilibrium condition for international trade in assets:

$$r^* = r - (q - q^e) \quad (1)$$

where

$r, r^*$  = log of one plus the domestic and foreign real interest rates (yield to maturity), respectively.<sup>6</sup>

$q, q^e$  = log of the spot and expected future real exchange rate, respectively. (The real exchange rate is defined as the nominal exchange rate—foreign currency per unit of domestic currency—deflated by the ratio of the foreign to domestic price levels.) The bonds underlying  $r, r^*$  are of equal maturity and also correspond to the time horizon of the real exchange rate expected in the future.

The left-hand side of Equation (1) represents the expected real return (risk adjusted)<sup>5</sup> available to foreign investors for holding a foreign bond,  $r^*$ . The return available to foreign investors for holding domestic bonds has two components: the yield on the domestic bond,  $r$  (denominated in domestic currency), less the expected future depreciation of the domestic exchange rate. The expected percentage real depreciation of the currency, in turn, equals the difference between the currently observed real spot exchange rate (in log form) and the spot rate expected to prevail at the point the domestic bond matures and the foreign investor converts the proceeds from domestic to foreign currency.

Equalized expected real returns for similar bonds across countries is the condition for international

capital market equilibrium. When Equation (1) holds, this condition is met. The expected real return available on foreign bonds will then equal the expected real return on domestic bonds, adjusted for the expected change in the purchasing power of the currency. Investor arbitrage in international capital markets will cause this equilibrium condition to hold almost continuously.

This equilibrium condition should hold for the full term structure of real interest rates. For example, in equilibrium, a 10 percent rate of return on a one-year foreign security and a 12 percent rate of return on a one-year domestic security indicates that a 2 percent depreciation of the domestic currency is expected by investors over the course of the year. On the other hand, 10 percent and 12 percent annualized real yields on *five-year* foreign and domestic securities, respectively, suggest that an average 2 percent rate of currency depreciation *per year* is expected by investors over a five-year period, indicating a total expected depreciation to maturity of approximately 10 percent.

That is important because it suggests that budget deficit policies that lead to an increase in long-term interest rates are likely to have significantly larger impacts on real exchange rates than a policy giving an equal rise in short-term interest rates. For example, consider a one percentage point rise in the domestic 5-year real interest rate, with no change in the foreign real interest rate and no change in the real exchange rate expected to prevail five years in the future ( $q^e$ ). This would cause investors to bid up the real value of the domestic currency ( $q$ ) by 5 percentage points. The real value of the spot exchange rate in this case rises to that point *above* the expected future value of the exchange rate where the expected depreciation of the domestic currency (five percent over a five-year period) just offsets the additional return on the domestic security. In comparison, one percentage point rise in the domestic one-year real interest rate (with no change in other expected future short-term interest rates) would lead to a one percent appreciation of the domestic exchange rate, *ceterius paribus*, thereby setting up an expected depreciation of one percent over the year and restoring net yields on foreign and domestic securities to equality.<sup>7</sup>

Budget deficit policies that are not expected to be

reversed in the foreseeable future and that lead to significant increases in long-term real rates of interest would, therefore, probably result in a much greater appreciation of the domestic currency than deficits that are expected to be temporary and influence mainly short-term rates. Hence, market expectations of the duration of budget deficit policies in the economy and their influence on the term structure of interest rates will play a major role in determining the extent to which the domestic currency appreciates.<sup>8</sup>

*Current Account Adjustment Lags.* The path of the economy we have sketched is crucially dependent upon sluggish current account adjustment. In particular, lags in the adjustment of the current account to a rise in the budget deficit are primarily responsible for the rise, or “overshooting”, of domestic real interest rates and the real exchange rate above their long-term values. That is, given sufficient time, budget deficits may raise the current account deficit, either directly (as fiscal policies directly alter export supplies and import demands), or indirectly through their impact on real interest rates and the real exchange rate. Typically, though, these adjustments in exports and imports occur only after a considerable lag. In the interim, budget deficits must be financed primarily from private domestic surplus saving; domestic real interest rates then must rise to generate this surplus, driving the real exchange rate above its long-term value.

This process is usually rather lengthy. For example, exports and imports generally take two or more years to respond fully to changes in real exchange rates.<sup>9</sup> However, as the current account gradually adjusts and foreign savings do begin to supplement domestic sources in financing the budget deficit, pressures on domestic real interest rates are apt to ease. Real interest rates and the real exchange rate are then likely to begin falling back toward their long-term values, a process only completed when the current account has fully adjusted. (See Box I.) Conversely, “overshooting” of interest rates and the exchange rate would not occur if the current account were to adjust immediately. Such immediate adjustment implies that foreign savings could be instantaneously drawn upon to finance the rise in the budget deficit.

### C. Long-Term Consequences

Our analysis suggests that increasing inflows of foreign funds through the current account will ultimately ease pressures on domestic real interest rates and the real exchange rate. Where will this process end? And what are the long-term economic consequences of ongoing budget deficits? These questions raise several issues: the sustainability of current account deficits, the long-term consequences of ongoing budget deficits for domestic investment, future output and the economic well-being of the nation’s residents, as well as the ultimate level of domestic real interest rates and the real exchange rate.

In considering these issues, we assume that the government has instituted policies that lead to a permanent budget deficit fixed at some constant fraction of GNP. We also presume that domestic private saving does not rise enough to finance the deficit fully (so there is, at least potentially, a permanent need for foreign saving inflows). Full employment is also assumed since we are considering long-term consequences.

*Sustainable?* There is a widespread conviction that a nation’s current account cannot sustain a deficit on an ongoing basis, and ultimately must come back into balance. This view implies that an ongoing budget deficit would eventually have to be financed entirely from the surplus saving (S-I) of the domestic private sector; domestic investment (or consumption) ultimately would have to fall to finance the budget deficit.

This presumption would certainly be valid in a world in which there was no saving or growth. Foreign wealth would then be constant, yet each year foreigners would have to allocate an *additional* portion of that wealth to finance another nation’s current account deficit. Since foreigners would eventually run out of funds to lend, an on-going current account deficit—indeed, an on-going budget deficit—would be impossible in a static world economy.

In a growing world economy, however, foreign saving (which represents the increase in foreign wealth) could finance a nation’s current account deficit indefinitely (provided it did not exceed foreign saving). In this way, foreigners could lend to a

## Box 1

### Adjustment Following A Rise in the Government Budget Deficit: An Illustration

The theory outlined in the text suggests that a rise in government budget deficits over an extended period is likely to be associated with a rise in domestic real interest rates and with domestic exchange rate appreciation. It is argued that a rise in domestic savings and a fall in investment would allow the deficit to be financed initially from domestic sources, but, over time, foreign savings inflows would finance a significant portion—the speed of adjustment being dependent upon the elasticity of imports and exports to real exchange rate movements. As foreign savings supplement domestic savings to an increasing degree, however, it is argued that domestic real interest rates are likely to decline gradually toward world levels and that the real value of the domestic currency would depreciate.

Several additional assumptions allow us to provide a more specific illustration of the path the economy would likely follow given a rise in the government budget deficit. In particular, we assume that:

- (1) The current account adjusts more sluggishly to real exchange rate shifts than does net private savings to real interest rate movements.
- (2) Investors and other market participants are forward-looking in forming their expectations and anticipate perfectly the path of real short-term interest rates dictated by domestic credit market conditions (given the announcement of present and future budget deficits and knowledge of the differential adjustment speed between the current account and net private saving).
- (3) Monetary policy is unchanged and prices and output in the economy are not influenced by the rise in the government deficit. We also assume that foreign interest rates and prices over the transition period remain unchanged.
- (4) Foreign investors are willing to invest a significant portion of their savings in the domestic economy at the prevailing world rate of interest for an indefinite period.

Under these conditions, suppose the government announces a previously unexpected fiscal policy, either expenditure increase or tax reduction, that will gradually increase the size of the budget deficit (as a percent of GDP) until it reaches a maximum point at which it is expected to continue indefinitely. This could follow the path illustrated in the top panel (panel a) in Figure 2. This increased deficit must be financed and, given our assumption that the current account adjusts only gradually, net private savings will increase to meet the government's rise in credit demands. To effect the rise in net private savings, short-term real interest rates would increase through the sale of government bonds in credit markets and thereby dampen domestic interest-sensitive consumption and investment expenditure. As explained in the text, however, the rise in real short-term interest rates will cause the exchange rate to appreciate and the current account to gradually deteriorate, allowing an inflow of foreign savings which supplements net domestic savings in financing the budget deficit. Under our assumptions, the foreign sector will finance a growing portion of the budget deficit and at some point could begin to reduce the need for the expansion of net domestic savings; real short-term interest rates may edge downward as a consequence. An illustration of this pattern for net private savings, the current account deficit and short-term real interest rates is given in panels (b), (c) and (d) in Figure 2.

“Overshooting” of the net private saving balance and real short-term interest rates suggests that real long-term interest rates and the real exchange rate will also overshoot their long-run equilibrium values during the transition period, but will do so by an initial discrete jump followed by a gradual decline, rather than a “hump” pattern. This is because we have assumed that investors anticipate perfectly the path of real short-term interest rates and that they would therefore not attach any “liquidity premium” or risk factor to long-term interest rates relative to short rates. With no uncertainty, arbitrageurs would

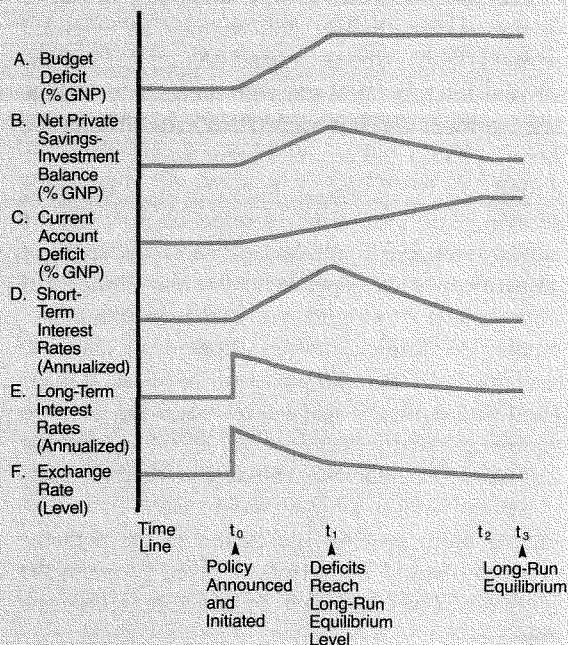


buy/sell long-term bonds until the real long-term rate of return just equals the present discounted value of the stream of real returns associated with holding a succession of short-term bonds in the future. This guarantees that no additional real return may be obtained from holding a succession of short-term bonds over one long-term bond. Thus, long-term real rates would, in equilibrium and with no uncertainty, equal a geometrically weighted average of present and future real short-term rates of interest.<sup>25</sup>

Under these circumstances, long-term real interest rates would rise immediately at the announcement of a new budget policy because the expected weighted average of present and future short-term rates is suddenly revised upward at that point. Long-term rates (of a *constant* maturity) would then gradually fall over time as the weighted average of future short-rates from that point on would decline. Intuitively, this results because, as the long-term rate moves through the transition period of temporarily high (above their long-run equilibrium level) short-term interest rates, a series of high short-rates at the beginning of the period is replaced by a series of expected future "low" short rates at the end of the spectrum, which in turn gradually bring down the short-rate weighted average and, thereby, the long-term interest rate of a constant maturity.

The real exchange rate will also "overshoot" its long-run equilibrium value under our assumptions, and will follow a pattern mirroring that of long-term real interest rates. This result is consistent with both the term structure of real long- and short-term rates and with the international asset market condition given as equation 1 in the text. Because we have assumed that foreign real interest rates remain unchanged, a rise in domestic real interest rates of any given maturity would be associated with an expected depreciation of the real exchange rate during the holding period of the bond. This equilibrium condition keeps the net return of the domestic bond equal to that available on the foreign bond. Hence, a rise in the domestic long-term real interest rate is associated with long-term depreciation of the exchange

Figure 2  
Dynamic Adjustment Path of the Large Open Economy to a Permanent Fiscal Stimulus (Starting From Full Employment Situation)



Assumptions:

1. Previously unexpected fiscal policy announced and partially initiated at point  $t_0$ .
2. Net private saving-investment balance responds faster to interest-rate shifts than does current account to exchange rate shifts.
3. Perfect foresight by participants of interest rates and exchange rates (Rational Expectations).
4. Perfect capital mobility.

rate. This is shown in panels (e) and (f) of Figure 2. The real exchange path shown in panel (f) is also consistent with the real short-term path in panel (d) because the  $t_0$ - $t_2$  period domestic short rates are all assumed to be above foreign short rates (even during the  $t_1$ - $t_2$  period when domestic short rates decline) and are therefore associated with a succession of short intervals where exchange rate depreciation is expected.

This discussion suggests the open economy's adjustment to a rise in budget deficits is likely to be

complicated, and that exchange rates and the current account will play important roles. With our forward-looking expectations structure, "overshooting" of real long-term interest rates and real exchange rates is an important aspect of the adjustment process. This reflects short-term real interest rate developments, as discussed above, but more fundamentally results from differential adjustment speeds between the current account and net private savings. For example, if the current account were able to adjust immediately to the increase in domestic government credit demands, present and future interest rates—and, hence, the value of the dollar—would not likely increase substantially, if at all. In this instance, foreign capital inflows would be available immediately to fill in the domestic savings shortfall as it arose and to avert pressure on domestic financial markets.

The transition process described here thus depends crucially on our assumption that the external sector (current account) adjusts more slowly to the fiscal shock than the domestic private sector, that is, the economy is assumed to resemble that of a closed economy in the short-term but to approach that of a completely open economy in the long-term. Also central are our assumptions about the possible long-run equilibrium (steady-state) positions the economy may eventually reach.

nation year-after-year while maintaining constant the share of their wealth devoted to that purpose (this share would, of course, be greater the larger the current account deficit in relation to foreign savings).<sup>10</sup> Thus, current account deficits are not intrinsically unsustainable in a growing world economy.<sup>11</sup>

*Willing?* The real limit to the sustainability of a current account deficit is likely to be the *willingness* of foreigners to lend their savings to the nation incurring it. Lending to another nation (its government or its citizens) often involves certain risks—known as "country risks"—that may limit the size of the current account foreigners are willing to finance on an on-going basis.

These country risks are of three basic types. The first, known as "sovereign risk", reflects the possibility that the government of the borrower will default, that is, repudiate its own and/or its citizens' foreign debts. The second, "transfer risk", refers to the possibility that the borrower will be unable to obtain the foreign exchange needed to repay a foreign debt (when the loan is extended in foreign currency). This is most likely to occur when a nation uses exchange controls to maintain an overvalued exchange rate. Transfer risk has proven to be the major country risk incurred in lending to developing nations. Finally, foreign (as well as domestic) lenders may also face possible losses from certain macroeconomic policies of the borrower's government. The most serious of these risks is from policies that lead to unanticipated inflation and currency depreciation and thereby reduce the real value of the funds lent.<sup>12</sup>

The degree of country risk critically affects the interest rate a nation must pay to borrow from abroad, as well as the amount of funds it can obtain. Where this risk is present, a country must compensate foreign lenders by paying them a real interest rate (adjusted for expected exchange depreciation—see Equation 2) above that prevailing abroad. This difference, the "country risk premium", is analogous to the yield premium paid by Baa over Triple-A domestic bonds.

Furthermore, the amount of funds a nation can borrow from abroad on an ongoing basis (the sustainable current account deficit) to help finance a given budget deficit will be smaller the greater is the country risk and associated risk premium. Indeed, if

the risk were great enough, a nation could find itself unable to sustain any current account deficit. An ongoing budget deficit would then raise domestic real interest rates permanently above world levels, to a level that reduced private investment relative to private saving enough to finance the deficit entirely from domestic sources. Thus, the higher the country risk, the more closely a budget's long-term impacts on interest rates and investment will resemble those for a closed economy, and the more domestic investment is ultimately constrained by the available domestic savings (less the budget deficit).

Where there is no country risk, a budget deficit's long-term impacts on domestic interest rates and investment are likely to be very different. In that case, foreigners would be willing to lend to the nation on the same terms as they receive at home. The resulting situation is analogous to that facing individual regions of the U.S. economy. Within the U.S., the *residence* of a borrower does not by itself usually affect the terms of a loan, nor does it generally affect the willingness of a lender to extend credit. Hence, an Alaskan firm can borrow on the same terms as a similar Illinois firm, and neither Alaskan nor Illinois savers generally have any "habitat" preference for investments in their own states' firms. In effect, all borrowers in a given type of activity regardless of their location face a single *national* interest rate. In an international context, the absence of country risk thus means that a nation with an ongoing budget deficit will see its domestic real interest rates ultimately fall back to world levels.<sup>13</sup>

Furthermore, absence of country risk also implies that the level of domestic investment will be determined by its profitability relative to investments abroad, not by the level of private domestic saving less the budget deficit—as is true for a closed economy. The on-going current account deficit thus equals the difference between the profitable level of domestic investment and domestic saving less the budget deficit, and will be financed by foreigners at world real interest rates. Again, the level of saving of Alaskan residents was not a serious constraint on investment in its oil fields; the oil fields were developed primarily with funds from non-residents.

In sum, where country risk is small, a budget

deficit's long-term impact on domestic investment will depend mainly upon how the policies generating the deficit affect the profitability of domestic investment. The more these policies enhance the profits from that investment, the higher the level of investment in the nation, and the larger its national output and current account deficits in the long-term. On this basis, deficits resulting from business tax cuts could raise a nation's share of world investment. Deficits that raise the demand for products the nation has a comparative advantage producing may also tend to encourage domestic investment by raising the prices of those products and hence the profits available to those producing them. Clearly though, budget deficits may also be generated by policies that reduce the yield to domestic investment and lead to a fall in its level relative to that abroad. When country risk is absent, therefore, the "content" rather than the size of the budget deficit determines its long-term impact on investment (and national output) and hence plays a critical role in determining the size of the ongoing current account deficit.

A similar observation applies to the long-term impact of budget deficits on the real exchange rate. The real exchange rate is simply the nominal rate "deflated" by the ratio of the domestic to the foreign price level. As such, it effectively measures the value of the nation's products in terms of those produced abroad (that is, the relative price of a "basket" of home-produced goods in terms of a "basket" of foreign products). Ultimately, this value will be determined by commodity demand and supply for these products. Accordingly, the deficit's long-term impact on the real exchange rate depends on how the measures underlying it affect the demand and supply for home versus foreign products. A deficit generated by measures that shift demand toward domestic products (for example by increasing expenditures on domestically-produced defense goods) will tend to raise their relative price in terms of foreign products. But a deficit may also lead to a long-term real depreciation if it shifts demand away from home goods, or increases their supply more than the demand for them. Again, the policies making up the deficits, rather than the deficits' size, are the determining factors.<sup>14</sup>

## II. Applications to the Recent U.S. Experience

The theory outlined in the previous section leads to specific predictions about the way budget deficits are likely to affect the current account, investment and saving, and about the exchange rate and interest rate linkages through which this process occurs. How well does the United States experience, particularly recently, fit the theory? And which assumptions underlying the longer run predictions of the theory seem to best fit the U.S. and its relationship with the rest of the world?

### A. The Recent U.S. Experience

The recent upward climb in the federal budget deficit is in fact associated with a substantial deterioration in the current account of the balance of payments. The federal budget deficit climbed from \$57.9 billion in 1981 to \$110.6 billion in 1982, and further to \$195.4 billion in 1983. Following a similar trend, the current account deteriorated over this period from a \$4.5 billion *surplus* in 1981, to an \$11.2 billion deficit in 1982 and a \$40.8 billion deficit in 1983. In addition, while budget deficits are expected to level off in 1984 and 1985 (the Council of Economic Advisors forecasts \$183 billion and \$180 billion deficits in 1984 and 1985, respec-

tively); current account deficits are expected to grow to new records—forecasts range from \$80–\$120 billion in both years. Budget deficits and current account deficits of this magnitude are unprecedented.

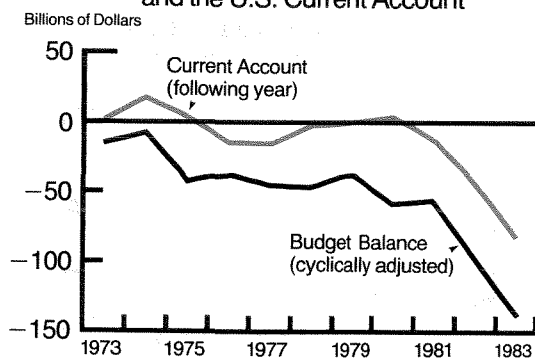
During the post-1973 floating exchange rate period, there has been a close correlation between the current account and federal budget balances. Chart 1 shows the tight link between the cyclically adjusted federal budget deficit and the current account balance of the following year (to allow for sluggish current account adjustment) in the 1973–83 period.

These developments are consistent with the pattern predicted by theory. In addition, the sharp deterioration in the current account is most probably related to the extraordinarily high value of the dollar in recent years. This inverse correlation is shown in Chart 2. Numerous formal empirical analyses also suggest that the more than 40 percent appreciation of the average value of the dollar since 1980 is responsible for the greater part of the U.S. current account deterioration.<sup>15</sup> The high level of real long-term interest rates (inflation-adjusted) prevailing in the U.S. since 1980, in turn, may be largely responsible for the dollar's dramatic appreciation. This is illustrated in Chart 3, and is the conclusion reached by a number of formal empirical studies.<sup>16</sup>

Moreover, part of the recent pattern of U.S. interest rates is also consistent with the dynamic process predicted by theory. In particular, the very high

Chart 1

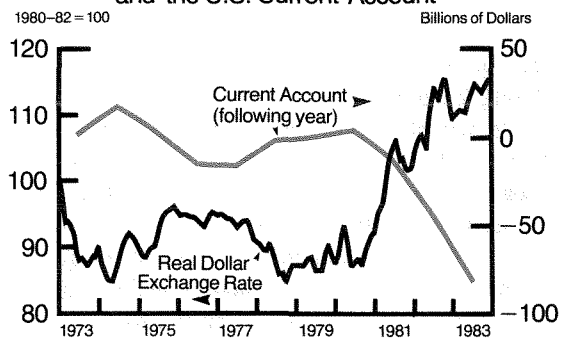
Federal Budget Balance and the U.S. Current Account



Source: Fieleke (1984), Chart 2, p. 7. Budget data are from *Survey of Current Business* and from Commerce Department staff; current account data are from *Economic Report of the President*, 1984, p. 250 (net foreign investment) and Commerce Department staff, except for 1984, which is a forecast.

Chart 2

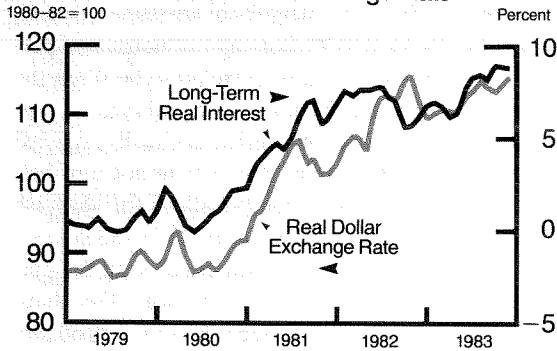
The Real Dollar Exchange Rate and the U.S. Current Account



Sources: Current account data—see notes to Chart 1; real dollar exchange rate data are from Morgan Guaranty Trust Company, *World Financial Markets*.

Chart 3

Long-Term Real Interest Rates and the Real Dollar Exchange Rate



Sources: Real dollar exchange rate—see notes to Chart 2; long-term real interest rate—difference between the 20-year constant maturity bond yield and the year-over-year percent change in the Personal Consumption Expenditure Index.

levels of short-term and long-term interest rates since 1981 may be attributable mainly to large and increasing federal government budget deficits (see Chart 4). The rapid runup in long-term rates, in particular, is consistent with market expectations of a long series of large future budget deficits, and associated high future short-term interest rates. Formal statistical evidence on the budget deficit/real interest rate link is inconclusive,<sup>17</sup> however, due perhaps to the fact that past large budget deficits have generally (aside from war periods) occurred during recessions when private credit demand was weak. In contrast to our present situation, past deficits typically have disappeared once the economy reached full-employment. Nevertheless, based on the lack of a strong simple statistical correlation during the greater part of the post-war period, several prominent observers have contended that present budget deficits are *not* primarily responsible for our high real interest rates, and therefore deny their consequences for the dollar and the current account.<sup>18</sup>

In contrast to what theory suggests, there is as yet no indication that credit market conditions in the U.S. have eased with the large inflow of foreign capital. Both real interest rates and the real value of the dollar continue to remain at high levels. Several factors may be responsible for these developments. Perhaps most important is the great deal of uncer-

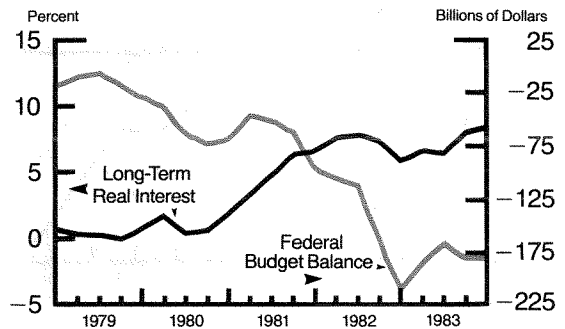
tainty involving the future course of U.S. fiscal and monetary policies and, hence, the future course of real interest rates. In the face of significant uncertainty, and with continual revisions of expectations as new information becomes available, the exact paths of real long-term interest rates and the real exchange rate are considerably more difficult to predict than our simple theory suggests. A high dollar and high real interest rates could continue for a considerable period under these circumstances.

A second factor may be the timing of the predicted decline in real rates and the dollar. Foreign capital inflows may not yet have reached the point where they can significantly ease pressures on U.S. capital markets, particularly in light of the rapid rise in private credit demands associated with the robust U.S. economic recovery. If this is the case, interest rates and the dollar could edge downward when the recovery matures and private credit demands abate.

In any case, the budget deficit explanation is at least as consistent with the actual record as the main alternatives that have been offered. As noted earlier, some have argued that the massive net inflows of capital mainly reflect flight into the U.S. as a "safe haven" from political and economic troubles abroad rather than a response to high U.S. real interest rates. But such a flight, while it could explain the high dollar and (hence) deteriorating current account, would tend to lower, rather than raise, U.S.

Chart 4

Federal Budget Balance and Long-Term Real Interest Rates



Sources: Federal budget balance data are from *Survey of Current Business*; real interest rate is the difference between the 20-year constant maturity bond and the year-over-year percent change in the Personal Consumption Expenditure Index.

real interest rates relative to those prevailing abroad. The safe haven analysis therefore cannot be the main explanation for the events we have traced.

Another potential explanation attributes the dollar's strength, and high U.S. real interest rates (on financial assets), to the increased after-tax yield on investment in the U.S. that resulted from recent reductions in corporate taxes. As indicated earlier, such a fiscal policy would raise private investment demand and lead to essentially the same pattern of interest rate, exchange rate, and current account adjustments as a budget deficit. This explanation, however, complements rather than competes with the budget deficit explanation. Both trace high interest rates and the high dollar to fiscal policy.<sup>19</sup>

## B. Long-Term Implications

Since there is some evidence that the theory of the last section does apply to the present U.S. situation, it is worthwhile to consider its implications concerning the long-term effects of our budget deficits should they persist indefinitely (as most observers believe they will without substantial policy changes). In particular, are the large current account deficits the U.S. has been running really unsustainable as many observers believe? If not, how large could they be on an ongoing basis? And will ongoing budget deficits inevitably mean high real interest rates, depressed investment and lower future output?

Large as U.S. current account deficits have been, they are still substantially less than the foreign saving available to finance them. For example, a deficit equal to 2.5 percent of GNP—slightly less than the rate projected for this year—represents about 12 percent of the saving of foreign industrial nations, net of depreciation. Foreigners certainly could finance U.S. deficits in this range, although the share of their wealth they ultimately would have to devote to claims on our country (about 12 percent) would certainly be very large by historical standards.<sup>20</sup>

Moreover, any country risk associated with the U.S. is apt to be very small, indeed negligible, *provided* foreigners remain confident that our inflation will continue to be contained. Given this confidence, foreign willingness to lend should not be a serious constraint on the size of future U.S. current account deficits.

The risk most often associated with foreign len-

ding—transfer risk—is apt to be negligible for the U.S. given the key international role of the dollar and the openness of our financial markets to foreign financial flows. Certainly, sovereign risk can also be neglected for the U.S. given its long history of political stability. Indeed, the U.S. and the dollar appear increasingly to be regarded as safe-havens for funds from abroad. This implies that foreigners would be willing to lend here on terms that are at least as favorable as those they would demand at home.

This scenario leaves unanticipated inflation as the major potential risk faced by foreign (and domestic) lenders to the U.S. An unforeseen and prolonged surge in U.S. inflation could seriously erode the purchasing power of funds lent (in dollars) by foreigners. If concerns were to arise that U.S. inflation might be rekindled, foreign reluctance to invest here could conceivably become a serious obstacle to the financing of our external deficits. However, another serious round of inflation is only likely to occur if there is a substantial shift in monetary policy away from its present anti-inflationary stance. In effect, then, country risk is apt to remain negligible for the U.S. as long as our government maintains the credibility of its anti-inflation commitment.<sup>21</sup>

*How large?* Assuming, then, that foreigners will finance an ongoing U.S. current account deficit, how large could it be? The answer clearly depends on the size of the ongoing public sector deficit, as well as on how private domestic saving and investment are affected (See Box 2 for further details). Current projections suggest that the combined deficit of federal, state, and local governments will average 3.0–3.5 percent of GNP in coming years under present policies.<sup>22</sup> It is also reasonable to expect the net private saving rate to remain at its postwar average (about 7.3 percent of GNP) since past U.S. experience suggests it is both stable and not significantly affected by budget deficits.<sup>23</sup> Assessing our future investment rate is more difficult, since it will depend on how profit opportunities here compare with those abroad. Given that recent U.S. business tax cuts have significantly raised the after-tax return to business, the U.S. share of world investment might conservatively be projected to remain (at least) at its past average. This would

## Box 2 How Large the Deficit?

If financing from abroad will not be an impediment to an ongoing U.S. current account deficit, how large will that deficit likely get? The answer clearly depends upon how large government deficits will be on an ongoing basis, as well as on how private domestic saving and investment are affected. Without pretending to give any precise answer to this question, we can nonetheless make a rough estimate of the magnitude of the ongoing current account deficits implied by current budget policies (see table below).

Most projections suggest that federal budget deficits will settle in the range of 4.5–5.0 percent of U.S. GNP in the absence of any policy changes beyond those already enacted. However, these projections also suggest that state and local governments will run a combined *surplus* of about 1.5 percent of GNP. This suggests an ongoing deficit of

the entire government sector of 3.0–3.5 percent of GNP in the absence of further policy changes.

Furthermore, the private savings rate (as a share of GNP) has been remarkably stable historically, averaging about 7.3 percent of GNP on a net basis. More formal evidence suggests this rate has *not* been significantly altered by government fiscal policies in the past. (And despite some predictions that the 1980–1983 tax cuts would stimulate private savings, the private savings rate has actually remained below the historical average over the last several years.) Hence it is not unreasonable to project that private saving will continue at its historical average of about 7.3 percent of GNP in net terms.

Finally, our arguments imply that the deficit's long-term impact on U.S. investment will depend critically on how government policies affect the profitability of that investment relative to invest-

### Estimated Ongoing Current Account Deficit (Share of GNP: “-” indicates surplus)

Projected Government Deficit	3.0–3.5%
Federal	4.5–5.0%
State and Local	-1.5%
Less:	
Projected “Surplus” Domestic Saving (Net of depreciation)	1.3%
Private Domestic Saving	7.3%
Domestic Investment <sup>1</sup>	6.0%
Equals:	
Projected Current Account Deficit	1.7–2.2%
Memo Item:	
Current Account Deficit with Investment Rate Equal to Historical Average (6.7%)	2.4–2.9%

<sup>1</sup>The domestic investment rate is calculated assuming a constant U.S. share of world investment and a constant foreign (public *plus* private) saving rate. The change in the world investment rate resulting from the U.S. budget deficit is then:

$$\Delta \frac{\text{World investment}}{\text{World GNP}} = \Delta \frac{\text{U.S. budget deficit}}{\text{U.S. GNP}} \times \frac{\text{U.S. GNP}}{\text{World GNP}}$$

The change in the U.S. investment rate is then:

$$\Delta \frac{\text{U.S. Investment}}{\text{U.S. GNP}} = \Delta \frac{\text{World Investment}}{\text{World GNP}} \times \frac{\text{U.S. Investment}}{\text{World Investment}} \div \frac{\text{U.S. GNP}}{\text{World GNP}}$$

Here the “world” means all *industrial* nations. The U.S. share of world GNP and world net investment (35 and 23 percent, respectively) represents averages for 1979–1981, calculated from the *National Accounts: Main Aggregates, 1953–1982*, published by the OECD (Paris, 1984).

ments abroad. If those policies have increased the yield (after-tax) to investments here compared to elsewhere, the U.S. share of *world* investment is apt to rise. Given that federal taxes on corporate earnings have been substantially reduced over 1980–1981, it seems likely that, overall, the policies underlying the deficit have raised the relative return to investing in the U.S., or at least, have not lowered it. On this basis, the U.S. share of world investment may be (very) conservatively projected to remain as high in coming years as it has been historically. If so, however, our investment as a share of our *GNP* will drop somewhat from its historical average because our budget deficits almost certainly will reduce the investment funds available to the world as a whole. (There is no “abroad” for the *world* to borrow from.)

On this basis, net private U.S. investment would average about 6.0 percent of our GNP (compared to about 6.7 percent over 1950–1979). Together with the other projections, this implies an ongoing U.S. current account deficit of 1.7–2.2 percent of GNP (this represents \$55–70 billion in 1984 prices and GNP). At this rate, over half the U.S. public-sector deficit would be effectively financed with foreign funds.

Needless to say, this estimate is very rough. If the private saving rate were to rise significantly from its historic norm, the current account deficit could be substantially lower. However, if the U.S. share of world investment were to rise, the deficit could be larger than indicated above. For example, if investment as a share of our GNP were to remain at its historical average (this implies an increase in the U.S. share of world investment), the ongoing U.S. current account deficit would be 2.5–3.0 percent of GNP.

Despite these uncertainties, there can be little doubt that ongoing U.S. budget deficits of the size now projected are likely to imply unprecedentedly large and sustained U.S. current account deficits.

imply (see box) a net investment rate of approximately 6.0 percent of our GNP.

Together, these (very) rough projections imply an ongoing U.S. current account deficit of 1.7–2.2 percent of GNP, representing \$55–70 billion at 1984 prices and GNP. Foreigners would then be financing over half of our public sector deficit, leaving less than half to be financed from domestic sources. Of course, if domestic saving were to rise (as supply-siders expect), the current account deficit could be significantly less. Alternatively, if the U.S. share of world investment were to rise, the deficit could be much greater. Despite these uncertainties, this exercise does indicate that the persistence of budget deficits at current rates almost certainly will lead to unprecedentedly large ongoing U.S. current account deficits. Still, as we now argue, such deficits, shocking as they may seem, are not, *of themselves*, necessarily harmful to our economy.

*Where's the Burden?* Government budget deficits are thought to impose burdens, or economic costs, on the nation incurring them. Of course, these costs must be weighed against the benefits the policies underlying the deficits may bring. In this sense, the costs of budget deficits reflect the *reallocation* of society's resources—from future to present expenditure and between public and private spending—rather than any misallocation of those resources, or burden to the nation *as a whole* (that is, present plus future generations). Nonetheless, conventional theory suggests that deficits will impose costs on certain sectors and individuals—manifest in terms of higher real interest rates, lower domestic investment, and lower private consumption for future generations.<sup>24</sup>

We have argued here that by borrowing from abroad through current account deficits, the U.S. may not ultimately suffer much increase in real interest rates and may be able to maintain its past investment levels. This does not mean that by borrowing from abroad our nation can entirely escape the budget deficit burden, however. By borrowing from abroad the deficit's costs may be reduced (compared to the cost if we could not borrow), but a significant burden is likely to remain.

As noted earlier, the deficits have temporarily raised real interest rates. Even if this increase is not permanent, housing and other interest-rate-sensitive



sectors of our economy certainly have suffered in the interim. Furthermore, the high real value of the dollar brought about by increased real interest rates has sharply reduced the demand for the output of our traded-goods sectors.

Admittedly, by borrowing from abroad over the last several years, the U.S. has probably been able to maintain real interest rates at a lower level than would otherwise have been possible in the face of the budget deficits. But this does not necessarily mean that the burden has been avoided—only that it has been shifted from interest-sensitive to tradeable goods industries. That is, in order for the U.S. to borrow from abroad (during the transition to the long-term), our exports must shrink relative to our imports, and this implies a reduction in the output of our tradeable goods industries. In effect, budget deficits do “crowd-out” certain domestic industries, even in an open economy—and tradeable goods industries may suffer as much or more than interest-sensitive sectors.

Ultimately, the burden of a budget deficit is apt to be manifest in lower (private) consumption for future generations. In a closed economy, this burden comes about as the lower investment resulting from the deficit reduces the future capital stock, and hence future output available to meet the nation’s needs.

An open economy like the U.S. may be able to avoid this reduction in its capital stock, and long-term output, by borrowing from abroad. However, the U.S. must still pay foreigners a portion of that output to service its external debt. In effect, the portion of our capital stock owned by U.S. citizens can be expected to fall, even if the stock itself does not. Alternatively, the level of future U.S. output may not be reduced much, but the income from that output earned by our citizens almost certainly will be. In this sense, deficits do impose a long-term burden, one that is qualitatively the same as would occur in a closed economy.

Despite these burdens, there can be little doubt that our nation does benefit by its ability to draw on foreign funds to help finance our budget deficits. As indicated earlier, our domestic real interest rates almost certainly will ultimately be lower as a result. Furthermore, to the extent that foreign borrowing allows the U.S. to maintain its investment and future output capacity, the productivity and wages of our workers will be higher than they would be if we could not borrow from abroad. In this sense, the current account deficits resulting from U.S. budget deficits are beneficial to our nation because they help to reduce, although not eliminate, the budget’s ultimate burden.

## IV. Conclusion

Over the last several years, the U.S. has experienced unprecedentedly high real interest rates, real dollar values, budget deficits and current account deficits. We have argued in this article that these conditions are closely related and largely the result of the increase in U.S. budget deficits that threaten to remain at extraordinarily high levels for many years.

Our budget deficits represent a demand for funds by the government that must be met from an excess of domestic saving over investment, or by borrowing from abroad, or both. In an open economy, an increased budget deficit may be met partially through an increase in borrowing from abroad; its counterpart is an increase in the current account deficit. In contrast to the textbook closed economy case, the channels transmitting the effects of budget deficits to the open economy include exchange rates as well

as interest rates. This is particularly evident during the transition period before the current account has fully adjusted to a budget deficit. Initially, an increased budget deficit is likely to raise domestic real interest rates which, in turn, raise the real exchange rate. The higher real exchange rate then induces a current account deterioration that effects the transfer of foreign saving to help finance the budget deficit. After several years, however, when the current account has fully adjusted to the budget deficit rise, the initial pressures on interest rates are likely to subside substantially, and real interest rates and the real dollar should then fall back toward lower levels.

In a growing world economy, ongoing U.S. current account deficits can in principle be financed from foreign savings, and there is no theoretical reason and, in the absence of a shift in Federal Reserve policy toward monetizing federal deficits,

few practical reasons why the United States could not borrow from foreigners for many years to come. The U.S. current account may therefore remain in substantial deficit as long as budget deficits of the present magnitude persist.

Our analysis has direct implications for policymakers concerned about our growing trade deficits. First, attempts to eliminate our current account and trade deficits by imposing trade barriers (for example, quotas, "voluntary" export agreements, tariffs, legislation of domestic content ratios for imports, and other measures), are likely to do more harm than good to the economy. These measures will raise costs to consumers and, by encouraging an inefficient and distorted allocation of our resources, may make U.S. industry *less*, not more, competitive in international markets. In addition, to the extent that trade barriers are effective in reducing our current account deficits and, hence, in reducing foreign capital inflows, U.S. interest rates are likely to be higher than would otherwise be the case. This would both lower domestic private investment and raise the overall cost of our budget deficits.

Similarly, a more expansionary monetary policy designed specifically to reduce real interest rates and the value of the dollar in the foreign exchanges

also would most likely prove counter-productive over the longer term. In particular, a more expansionary U.S. monetary policy probably would cause the dollar to depreciate and eventually narrow the U.S. current and trade account deficits. Not only would this policy reversal undermine our hard-won gains against inflation, it could greatly undermine foreigners' willingness to lend to the U.S., and hence reduce the extent to which we could finance our budget deficits by borrowing from them. For this reason, expansionary monetary policy could ultimately lead to higher real interest rates and lower domestic investment (greater crowding out) than we would otherwise suffer.

Thus, our analysis implies that if a reduction in our current account and trade deficits is deemed an important policy objective, the most effective and efficient measure for doing so is through a major reduction in the U.S. federal budget deficit. Only in this way will our external deficits be reduced without creating either serious distortions in our liberal trade environment or a resurgence of U.S. inflation. Conversely, in the absence of a federal deficit reduction, the benefits derived from continued foreign savings inflows—the counterpart of our large current account deficits—are likely to outweigh their costs.

FOOTNOTES

1. A recent empirical study by Laney (1984) finds only in a few cases a positive (statistically significant) link in the postwar period between the external balance and the fiscal balance for the major industrial economies. The empirical investigation of the study showed a much tighter linkage for the smaller developing countries than for the industrial countries, however, presumably because of the lack of domestic capital markets and inelastic private domestic savings in developing nations.

2. In national income accounting terms, the value of national output (Y) equals the sum of private consumption (C) and investment (I), government expenditures (G), and exports (X), less the amount spent on imports (M). National income—which equals the value of national output less net transfers to abroad (R)—is divided into private consumption and savings (S), and taxes (T). Hence,

$$C + I + G + (X - M) - R = C + S + T$$

from which the relation (1) in the text follows immediately.

3. Note again that our analysis assumes a floating exchange rate regime. The dynamic adjustment to a budget deficit under fixed exchange rates is very different from that traced in the text.

4. A large and growing literature exists on the relations between budget deficits and real interest rates and output in closed economies. Some have argued that deficits bear no relation to real interest rates in either a setting with less than full employment of resources or a full employment situation. This view is often termed the Ricardian equivalence proposition. Its central tenet is that the private sector is indifferent between tax- and deficit-finance of government expenditures, and that interest rates will not be affected by the division between the two forms of financing the government. (See J. Bisignano, 1984 for a complete discussion of this issue). The discussion in the text assumes the received macroeconomic theory holds, however, and that government budget deficits are likely to exert upward pressure on real interest rates when the economy is at full employment.

5. A "risk premium" or equilibrium real interest differential also is included in this equation. We have subsumed this premium within our "risk adjusted" real interest rate measure for simplicity of exposition. See Hutchison (1984) for a more detailed discussion of risk premium determinants and references to the literature on the subject.

6. The text relation follows directly from the parity condition for nominal interest rates,

$$i^* = i + (s^e - s)$$

This says that the foreign nominal interest rate ( $i^*$  — expressed as the percentage yield to maturity) must equal the domestic nominal interest ( $i$ — for the same maturity and expressed similarly) plus the expected appreciation (to maturity) of the nominal exchange rate ( $s$ — expressed as the logarithm of the foreign currency price of domestic currency). Defining the logarithm of the domestic and foreign price levels as  $p$  and  $p^*$  respectively, while 'e' refers to expected future values,

$$i^* - (p^{*e} - p^*) = [i - (p^e - p)] + [s^e - (p^{*e} - p^e)] - [s - (p^* - p)]$$

The left-hand expression and the first term on the right are simply the foreign and domestic real interest rates, respectively; the second bracketed terms are the logarithms of the expected future and current real exchange rate. These relations apply, in principle, to all maturities. For further discussion, see Hutchison (1984).

7. This adjustment process is termed exchange rate "overshooting". See Dornbusch (1976) for an original contribution on overshooting in a simple monetary model of exchange rate determination with sluggish price adjustment in the goods market.

Note that the proportionality described in the text between the exchange rate impact of an interest rate change and the maturity is strictly valid only for pure discount instruments. For coupon instruments, the impact is proportional to the *duration* rather than the nominal maturity.

8. See Michael Keran, "Budget Deficits and Foreign Savings," FRBSF *Weekly Letter*, July 6, 1984, for a discussion of the recent U.S. experience using an analytical framework similar to that presented here.

9. The determinants of this lag can be fairly complex. The lag could be very long if, for example, the policies underlying the budget deficit were to raise substantially the return to domestic investment. As explained later in the text, this could lead to an increase in the domestic share of the world capital stock to bring domestic and foreign returns to capital back toward equality. Such a process is apt to take many years to be completed, however. The lag could also be very short, particularly if the policies generating the deficit directly and immediately alter export and import demands.

10. The size of a nation's external debt in relation to its GNP, and the share of foreign wealth that debt represents, can be related to the long-term current account/GNP ratio. To illustrate, suppose that the domestic and foreign economies are growing at the same rate, "g" (allowing these rates to be different does not significantly alter the conclusions). Then,

$$D/Y = (CA/Y)/g$$

where  $D/Y$  is the long-term external debt (D) to GNP (Y) ratio and  $CA/Y$  is the long-term current account deficit (CA/GNP) ratio. This condition follows immediately from the observation that a constant  $D/Y$  over time implies that the growth of external debt equals the growth rate of GNP. Similarly, it is easy to show that:

$$D/W^* = (CA/Y)(Y/Y^*) \div (W^*/Y^*)g$$

where  $D/W^*$  is the long-term external debt/foreign wealth ( $W^*$ ) ratio,  $Y/Y^*$  is the ratio of home to foreign income ( $Y^*$ ), and  $W^*/Y^*$  is the foreign wealth/GNP ratio. Thus, for a given constant current account/GNP ratio, there is a constant debt/GNP and debt/foreign wealth ratio in the long-run (admittedly, this conclusion is somewhat altered if domestic and foreign growth rates differ). Conversely, the external

debt/foreign wealth ratio can grow *continually* over time only if the CA/Y is also growing, that is, does not level off.

11. Turnovsky (1976) and Sachs and Wyplosz (1984) analyze budget policies for open economies in a static context, while Hodrick (1980) considers their impact on growing economies. Comparison of their results demonstrates graphically that the implication of a given budget policy can depend critically upon whether there is growth or not. Consider, for example, a policy that initially increases both current government expenditure and the deficit, but leaves taxes unchanged in both the short- and long-run. In a static context, the government's budget (and the current account) must ultimately balance. This implies that in the long-run, the level of government expenditure must actually *fall* from its original level to allow the increased government interest payments resulting from the initial deficit to be financed. When there is growth, expenditure need only fall back to its original level, since an ongoing deficit to meet the increased interest payments is feasible. Thus, the nature of the government's budget constraint is radically different in a growth context from that applying in a static context. For this reason alone (and there are others), the implications of static models can be very misleading for actual experience.

12. The risk that a government will prevent its citizens from repaying foreign debts, either by defaulting or denying them access to foreign currency, is also known as "political" risk. Risks in lending to a country arising from unexpected exchange rate changes, which we include among our macroeconomic risks, are commonly known as "exchange risks". Note also that the risks associated with lending to a given country are not always the same as those incurred by lending in its currency. Sovereign risk generally does not depend on the currency in which the loan is extended, while transfer (and exchange) risk does.

13. Applying relation (1) to "long-term" real interest rates (again expressed as percentage yield to maturity rather than on an annualized basis),

$$r_L = r_L^* + (q - q_e^e)$$

where  $q_e^e$  is the expected "long-run" real exchange rate. Suppose that there is no long-term secular trend in domestic relative to foreign prices and hence in the real exchange rate. Then, since (by definition) the real exchange rate must ultimately come to equal its long-run value, the domestic long-term real interest rate must settle to a level equal to that of its foreign counterpart. (At this point, short- and long-term real interest rates are equalized internationally). More generally, the domestic real interest rate must ultimately equal the foreign real rate plus the long-term, or secular, rate of change of the real exchange rate. In either case, it is evident that the equalization of domestic and foreign real interest rates—as conventionally defined in terms of domestic and foreign price indices—is *not* dependent upon the speed of arbitrage in financial markets, but on the adjustment of prices in goods markets to their long-term values, a process which can take many years (see, for example, the discussion in Niehans, 1984, Chapter 6).

14. The fact that the long-term real exchange rate impact of budget policies depends on how they affect (excess) demand for foreign versus domestic goods is discussed in detail in Sachs and Wyplosz (1984). See also Blanchard

and Dornbusch (1984). Hodrick's (1980) growth model of budget policies assumes foreign and domestic economies produce a single identical good and so does not consider real exchange rate impacts.

15. For example, a recent study by Robert Feldman (1982) suggests that the nearly 30 percent real appreciation of the dollar over 1980–1983 reduced the U.S. trade balance by as much as \$60 billion. See also Peter Hooper and Ralph Tryon (1984).

16. See, for example, a recent study by Peter Hooper (1983). See also Fielke (1984).

17. For a survey of this literature, see the recent U.S. Treasury study, *The Effect of Deficits on the Prices of Financial Assets: Theory and Evidence* (1984). This study concludes that there is no empirical support for a systematic real interest rate-budget deficit link for the United States. Other researchers, however, do present evidence of a systematic linkage. (See Sinai and Rathjens, 1983 and Friedman, 1982.) In addition, Hutchison and Pyle, in an accompanying article in this *Review*, find support for this linkage by looking at international evidence.

18. This view has been expressed in a recent article by Arthur Laffer in the *Los Angeles Times*, (January 24, 1984).

19. As this argument suggests, changes in fiscal policies can have implications for interest rates, exchange rates, and the current account very similar to those discussed in the text, even if they do not lead to a budget deficit. The converse is that our real interest rates and the dollar could remain high even if our budget deficit were eliminated, provided that fiscal policy continued to encourage investment in the U.S. (for example, if the deficit were reduced by raising taxes on consumption). Note also that to the extent that investment incentives are responsible for recent developments, the "adjustment" period required to bring our interest rates back to world levels may be very long, perhaps considerably longer than if budget deficits themselves were the main cause. The reason is that changes in the after-tax yield to investment relative to abroad will ultimately have to be offset by a "redistribution" of the world capital stock toward the U.S. (to the point where the marginal revenue-product of capital falls enough to offset our more favorable tax treatment). This process could take many years.

20. Our current account's deficit's (CA) share of foreign saving ( $S^*$ ) can be written as:

$$CA/S^* = (CA/Y)(Y/Y^*) \div (S^*/Y^*)$$

where  $Y/Y^*$  is the U.S./foreign GNP ratio, which is roughly 55 percent, while  $S^*/Y^*$  is the foreign industrial country (net) saving rate, whose average is about 11 percent. These figures were derived from the OECD *National Accounts: Main Aggregates, 1953-1982*. They represent averages for 1979–1981.

In the long-term "steady state", the current account deficit will largely, if not entirely, consist of interest payments to abroad while the budget deficit consists of interest payments on the national debt. More precisely, if the long-term (U.S.) real interest and growth rates were the same, then the long-term current account deficit would exactly equal the net interest payments of the U.S. on its foreign debt, while the budget deficit equaled the interest payments on the

national debt. Thus, when the interest and growth rates are the same, net exports of goods and services (that is, the portion of the current account excluding net interest payments to abroad) must be in *balance*, while government expenditures *net* of interest payments must equal government revenues. When the interest rate exceeds the growth rate, the current account and budget deficits are ultimately less than the respective interest payments. Government revenues must then exceed non-interest expenditures and net exports of goods and services must be in surplus in the steady state. In general, then, a permanent deficit in the non-interest portion of the budget is *not* possible in the long-run, at least not without some financing from money creation, unless the interest rate is below the growth rate. This has been pointed out by T. Sargent and N. Wallace, "Some Unpleasant Monetarist Arithmetic," *Federal Bank of Minneapolis Quarterly Review*, Fall, 1981, p. 1-17. Conversely, when the interest rate is below the growth rate, the current account deficit exceeds foreign interest payments, allowing the borrower to maintain a long-term *trade* deficit.

21. In making this argument, we are relying as much, or more, on theoretical plausibility as actual evidence. There remains considerable controversy about the degree of international capital mobility. While several studies suggest there are country/currency risk premiums in short-term interest rates for the major industrial nations (Meese and Singleton, 1980 and Hodrick and Hansen, 1980), there is very little evidence to suggest they are very large, or systematically related to a nation's external debt (Frankel, 1982; Blanchard and Dornbusch, 1984).

Several other studies have found that current account deficits have not historically contributed much to domestic investment (Feldstein and Horioka, 1980 and Dooley and

Pennati, 1984). This finding is consistent with the hypothesis that international capital mobility is very low, but this pattern can also be explained in terms of other factors. Furthermore, there is some evidence that international capital mobility has increased over the last decade; if so relations among current account deficits and investment may have changed.

22. See McElhattan, 1984, as well as the references cited there.

23. See David and Scadding, 1974.

24. In effect, fiscal policies represent choices in the way society's resources, present and future, will be allocated. Deficits can be viewed as one among many types of "tax policies" available to finance a given level of expenditure, present and future. They, in effect, represent taxes on future, rather than present, generations. Thus, deficits themselves have no clear-cut welfare implications. Furthermore, the "costs" of deficits will generally be borne partly by those abroad (when the nation incurring the deficit can borrow from abroad). Again, as with any tax policy in an open economy, a portion of the burden may be "exported."

25. Recent work that suggests long-term interest rates differ from the average of future short-term rates (without a risk premium) has cast doubt on the simple rational expectations model of the term structure. Campbell and Shiller (1983) modify the "simple" expectations theory to include time-varying risk premia, however, and appear better able to reconcile actual movements in long-term and short-term interest rates with the methodology. Nevertheless, under our assumed condition of perfect foresight (that is, no uncertainty), the simple expectations theory would hold as an arbitrage condition.

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