# Chapter 4

# Fiscal Deficits and the Current Account

## 4.1 The Twin Deficits of the 1980s

### 4.1.1 The Facts

The early 1980s were a turning point for the U.S. current account. Until 1982, the U.S. run current account surpluses. After 1982, a string of large current account deficits led to a substantial deterioration of the country's net international investment position (see table 4.1). Indeed, the US turned from a net foreign creditor in 1980 to the world's largest foreign debtor by the end of the decade. As dramatic as it may seem, the current account experience of the 1980s is not historically unprecedented. Throughout the 19th century the United States was a net foreign debtor country. It was only after the first World War that the U.S. became a net foreign creditor.

Nevertheless, the question of what factors were responsible for the enormous current account deficits of the 1980s has generated a lot of attention, and a number of alternative explanations have been offered.

### 4.1.2 Explanations of the current account deficits of the 1980s

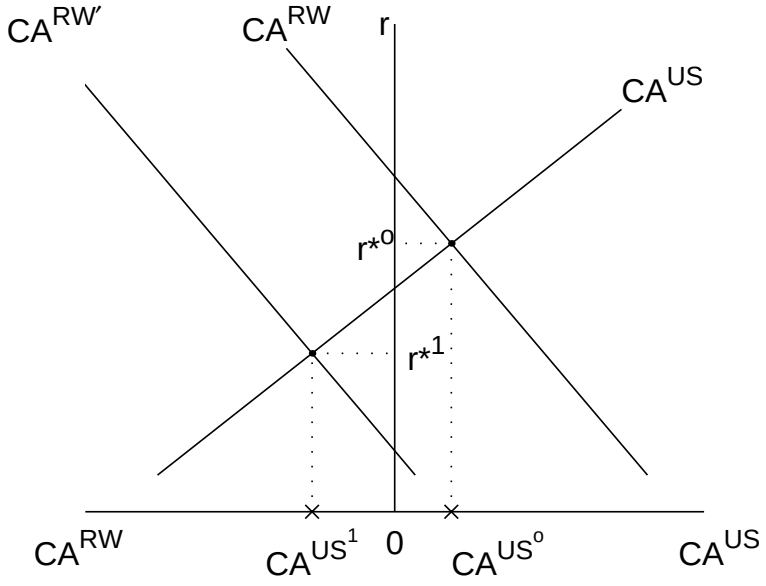
One view of what caused the current account deficits of the 1980s is that in those years the rest of the world wanted to send their savings to the U.S., so the U.S. had to run a current account deficit. This view is illustrated in figure 4.1. The increase in the rest of the world's demand for U.S. assets is reflected in a shift to the left of the current account schedule of the rest of the world. As a result, in the new equilibrium position, the current account

Table 4.1: U.S. current account balance and net international investment position at market value. In billions of dollars, 1979-97.

| Year | Current Account Balance | Net International Investment Position |
|---|---|---|
| 1979 | -1.0 | 94.5 |
| 1980 | 1.1 | 106.3 |
| 1981 | 6.9 | 140.9 |
| 1982 | -6.2 | 258.5 |
| 1983 | -39.2 | 224.1 |
| 1984 | -94.8 | 111.0 |
| 1985 | -119.1 | 64.5 |
| 1986 | -149.2 | 14.6 |
| 1987 | -162.6 | -42.2 |
| 1988 | -123.0 | -150.6 |
| 1989 | -98.9 | -267.7 |
| 1990 | -79.3 | -360.6 |
| 1991 | 4.3 | -263.1 |
| 1992 | -50.6 | -454.6 |
| 1993 | -85.3 | -180.4 |
| 1994 | -121.7 | -232.9 |
| 1995 | -113.6 | -537.1 |
| 1996 | -129.3 | -743.7 |
| 1997 | -143.5 | -1322.5 |

Source: For 1979 to 1981 N. Fieleke, "The USA in Debt," in Dilip Das, *International Finance,* Routledge, 1993, chapter 27. For 1982 to 1997, Economic Report of the President, 1998 and Survey of Current Business, July 1999. Note: the change in the net international investment position is not equal to the current account balance. This discrepancy is due to the fact that valuation changes also affect the net international asset position.

Figure 4.1: The U.S. current account in the 1980s: view 1



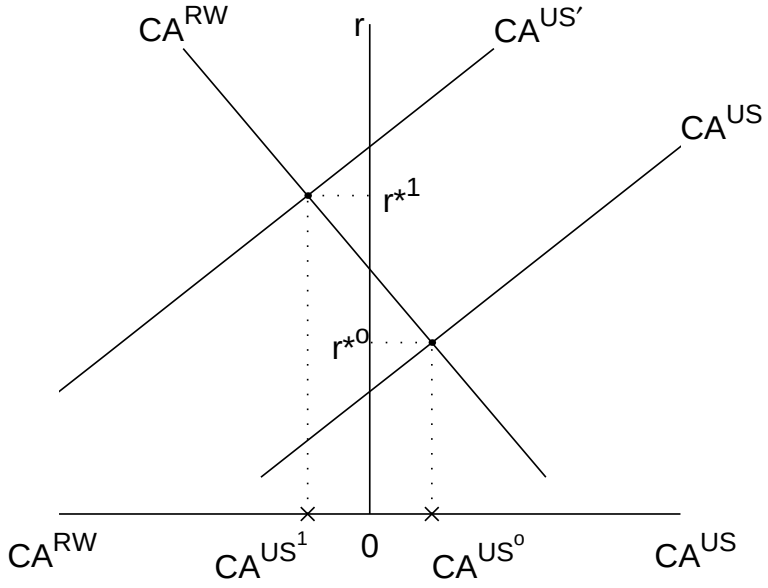

in the U.S. deteriorates from $CA^{US0}$ to $CA^{US1}$ and the world interest rate falls from $r^{*0}$ to $r^{*1}$.

What could have triggered such an increase in the desire of the rest of the world to redirect savings to the U.S.? A number of explanations have been offered. First, in the early 1980s, the U.S. was perceived as a "safe heaven," that is, as a safer place to invest. This perception triggered an increase in the supply of foreign lending. For example, it has been argued that international investors were increasingly willing to hold U.S. assets due to instability in Latin America; in the jargon of that time, the U.S. was the recipient of the "capital flight" from Latin America. Second, as a consequence of the debt crisis of the early 1980s, international credit dried up, forcing developing countries, particularly in Latin America, to reduce current account deficits. Third, financial deregulation in several countries made it easier for foreign investors to hold U.S. assets. An example is Japan in the late 1980s.[1]

A second view of what caused the U.S. current account deficit is that in the 1980s the U.S. wanted to save less and spend more at any level of the interest rate. As a result, the American economy had to draw savings from the rest of the world. Thus, U.S. foreign borrowing went up and the

[1]See J. Frankel, *"US Borrowing from Japan,"* in Dilip Das, *International Finance,* Routledge, 1993, chapter 28.

Figure 4.2: The U.S. current account in the 1980s: view 2




current account deteriorated. Figure 4.2 illustrates this view. As a result of the increase in desired spending relative to income in the U.S., the CA schedule for the U.S. shifts to the left, causing a deterioration in the U.S. current account from $CA^{US^0}$ to $CA^{US^1}$ and an increase in the world interest rate from $r^{*0}$ to $r^{*1}$. Under this view, the deterioration of the U.S. current account is the consequence of a decline in U.S. national savings or an increase in U.S. investment or a combination of the two.

Clearly, the two views have different implications for the behavior of the interest rate in the U.S. Under view 1, the interest rate falls as the foreign supply of savings increases, whereas under view 2 the interest rate rises as the U.S. demand for funds goes up. What does the data show? In the early 1980s, the U.S. experienced a big increase in real interest rates (see figure 4.3). The same pattern, although not so dramatic, arises in the rest of the world. This evidence seems to vindicate view 2. We will therefore explore this view further.

As already mentioned, view 2 requires that either the U.S. saving schedule shifts to the left, or that the U.S. investment schedule shifts to the right or both (see figure 4.4). Before looking at actual data on U.S. savings and investment a comment about national savings is in order. National savings is the sum of private sector savings, which we will denote by $S^p$, and gov-

Figure 4.3: Real interest rates in the United States 1970-1999


Source: Economic Report of the President, 2000. Note: The real interest rate is measured as the difference between the 3-month Treasury bill rate and consumer price inflation. (Thus, this is an *ex post* real interest rate.)

ernment savings, which we will denote by $S^g$. Letting $S$ denote national savings, we have

$$S = S^p + S^g.$$

Thus far we have analyzed a model economy without a public sector. In an economy without a government, national savings is simply equal to private savings, that is, $S = S^p$. However, in actual economies government savings accounts for a non-negligible fraction of national savings. To understand what happened to U.S. savings in the 1980s the distinction between private savings and government savings is important. With this comment in mind, let us now turn to the data. The evidence presented in table 4.2 shows that there was a strong decline in public savings starting in the early 1980s and in private savings starting in the mid 1980s. The increase in the fiscal deficit in the early 1980s arose due to, among other factors, a tax reform, which

Figure 4.4: View 2 requires shifts in the U.S. savings or investment schedules

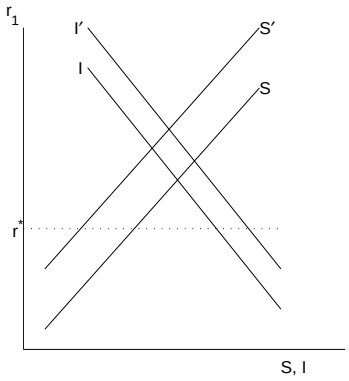



Table 4.2: U.S. saving and investment as percentage of GNP, 1979-89.

| Year | Private Saving | Government Saving | National Saving | Private Investment |
|---|---|---|---|---|
| 1979 | 17.8 | 0.5 | 18.3 | 18.1 |
| 1980 | 17.5 | -1.3 | 16.2 | 16.0 |
| 1981 | 18.0 | -1.0 | 17.0 | 16.9 |
| 1982 | 17.6 | -2.5 | 14.1 | 14.1 |
| 1983 | 17.4 | -3.8 | 13.6 | 14.7 |
| 1984 | 17.9 | -2.8 | 15.1 | 17.6 |
| 1985 | 16.6 | -3.3 | 13.3 | 16.0 |
| 1986 | 15.8 | -3.4 | 12.4 | 15.6 |
| 1987 | 14.7 | -2.4 | 12.3 | 15.5 |
| 1988 | 15.1 | -2.0 | 13.1 | 15.4 |
| 1989 | 15.4 | -2.0 | 13.4 | 14.8 |

Source: N. Fieleke, "The USA in Debt," in Dilip Das, *International Finance,* Routledge, 1993, chapter 27 (especially, table 27-11).

reduced tax revenues, and an increase in defense spending. Fieleke (*op. cit.*) in his account of the U.S. current account deficit puts great emphasis on the fact that the decline in the current account balance is roughly equal to the decline in government savings (see Figure 27.2 of the Fieleke article). He therefore concludes that the increase in the fiscal deficit caused the decline in the current account. The story advocated by Fieleke that the increase in the government deficit, that is, a decline in government savings, shifted the U.S. savings schedule to the left is not necessarily correct because changes in fiscal policy that cause the fiscal deficit to increase may also induce offsetting increases in private savings, leaving total savings—and thus the current account—unchanged. In order to understand the relation between fiscal deficits and private savings, in the next section, we extend our theoretical model to incorporate the government.

## 4.2 The government sector in the open economy

Consider the two-period endowment economy studied in chapter 2, but assume the existence of a government that purchases goods $G_1$ and $G_2$ in periods 1 and 2, respectively, and levies lump-sum taxes $T_1$ and $T_2$. In addition, the government starts with initial financial assets, including interest, in the amount of $B_0^g(1+r_0)$. The government faces the following budget constraints in periods 1 and 2:

$$G_1 + (B_1^g - B_0^g) = r_0 B_0^g + T_1$$

$$G_2 + (B_2^g - B_1^g) = r_1 B_1^g + T_2$$

where $B_1^g$ and $B_2^g$ denote the amount of government asset holdings at the end of periods 1 and 2, respectively. The left-hand side of the first constraint represents the government's outlays in period 1, which consist of government purchases of goods and financial assets. The right-hand side represents the government's sources of funds in period 1, namely, tax revenues and the issuance of new debt. The budget constraint in period 2 has a similar interpretation.

Like households, the government is not allowed to leave outstanding debt at the end of period 2 and is not willing to end period 2 with positive asset holdings. Thus,

$$B_2^g = 0.$$

Combining the above three constraints, we obtain the following intertemporal government budget constraint:

$$G_1 + \frac{G_2}{1+r_1} = (1+r_0)B_0^g + T_1 + \frac{T_2}{1+r_1} \tag{4.1}$$

This constraint says that the present discounted value of government consumption (on the left-hand side) must be equal to the present discounted value of tax revenues and initial asset holdings including interest (on the right-hand side). Note that there exist many (in fact a continuum of) tax policies $T_1$ and $T_2$ that finance a given path of government consumption, $G_1$ and $G_2$. However, all other things equal, given taxes in one period, the above intertemporal constraint uniquely pins down taxes in the other period. In particular, a tax cut in period 1 must be offset by a tax increase in period 2. Similarly, an expected tax cut in period 2 must be accompanied by a tax increase in period 1.

The household's budget constraints are similar to the ones we derived earlier in chapter 2, but must be modified to reflect the fact that now households must pay taxes in each of the two periods. Specifically, the household's budget constraints in periods 1 and 2 are given by

$$C_1 + T_1 + B_1^p - B_0^p = r_0 B_0^p + Q_1$$

$$C_2 + T_2 + B_2^p - B_1^p = r_1 B_1^p + Q_2$$

We also impose the no-Ponzi-game condition

$$B_2^p = 0.$$

Combining these three constraints yields the following intertemporal budget constraint:

$$C_1 + \frac{C_2}{1+r_1} = (1+r_0)B_0^p + Q_1 - T_1 + \frac{Q_2 - T_2}{1+r_1} \tag{4.2}$$

This expression says that the present discounted value of lifetime consumption, the left-hand side, must equal the sum of initial wealth, $(1+r_0)B_0^p$, and the present discounted value of *disposable* endowment, $(Q_1 - T_1) + (Q_2 - T_2)/(1+r_1)$. Note that the only difference between the above intertemporal budget constraint and the one given in equation (2.4) is that now $Q_i - T_i$ takes the place of $Q_i$, $i = 1, 2$.

As in the economy without a government, the assumption of a small open economy implies that in equilibrium the domestic interest rate must equal the world interest rate, $r^*$, that is,

$$r_1 = r^* \tag{4.3}$$

The country's net foreign asset position at the beginning of period 1, which we denote by $B_0^*$, is given by the sum of private and public asset holdings, that is,

$$B_0^* = B_0^p + B_0^g.$$

We will assume for simplicity that the country's initial net foreign asset position is zero:

$$B_0^* = 0 \tag{4.4}$$

Combining (4.1), (4.2), (4.3), and (4.4) yields,

$$C_1 + G_1 + \frac{C_2 + G_2}{1 + r^*} = Q_1 + \frac{Q_2}{1 + r^*}.$$

This intertemporal resource constraint represents the consumption possibility frontier of the economy. It has a clear economic interpretation. The left-hand side is the present discounted value of domestic absorption, which consists of private and government consumption in each period.[2] The right-hand side of the consumption possibility frontier is the present discounted value of domestic output. Thus, the consumption possibility frontier states that the present discounted value of domestic absorption must equal the present discounted value of domestic output.

Solving for $C_2$, the consumption possibility frontier can be written as

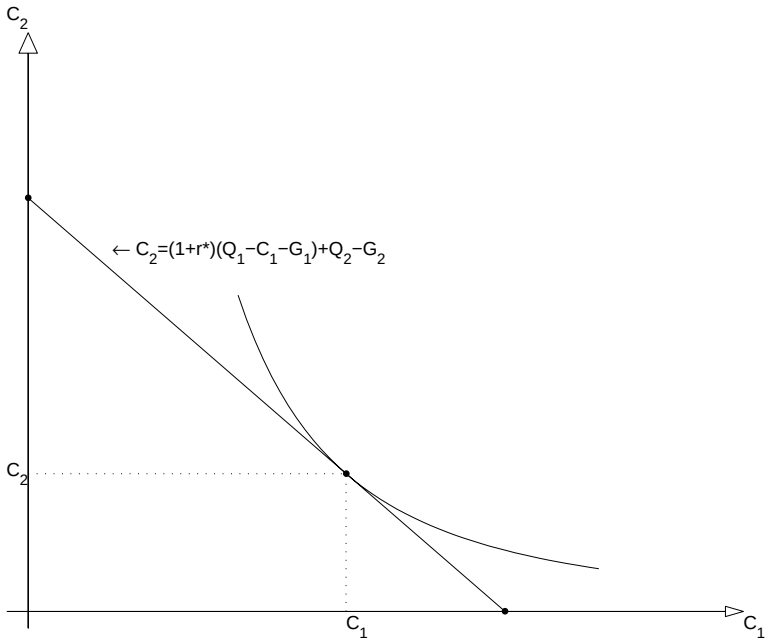
$$C_2 = (1 + r^*)(Q_1 - C_1 - G_1) + Q_2 - G_2. \tag{4.5}$$

Figure 4.5 depicts the relationship between $C_1$ and $C_2$ implied by the consumption possibility frontier. It is a downward sloping line with slope equal to $-(1 + r^*)$. Consumption in each period is determined by the tangency of the consumption possibility frontier with an indifference curve.

Note that neither $T_1$ nor $T_2$ appear in the consumption possibility frontier. This means that, given $G_1$ and $G_2$, any combination of taxes $T_1$ and $T_2$ satisfying the government's budget constraint (4.1) will be associated with the same consumption levels in periods 1 and 2.

[2] As noted in chapter 1, domestic absorption is the sum of consumption and investment. However, in the endowment economy under analysis investment is identically equal to zero.

Figure 4.5: Optimal consumption choice




### 4.2.1 Ricardian Equivalence

In order to understand the merits of the view that attributes the large current account deficits of the 1980s to fiscal deficits generated in part by the tax cuts implemented by the Reagan administration, we must determine how a reduction in taxes affects the current account in our model economy. Because the current account is the difference between national savings and investment, and because investment is by assumption nil in our endowment economy, it is sufficient to characterize the effect of tax cuts on national savings.[3] As mentioned earlier, national savings equals the sum of government savings and private savings.

Private savings in period 1, which we denote by $S_1^p$, is defined as the difference between disposable income (i.e., domestic output plus interest on net bond holdings by the private sector minus taxes) and private consumption:

$$S_1^p = Q_1 + r_0 B_0^p - T_1 - C_1.$$

[3]It is worth noting, however, that if the government levies only lump-sum taxes, as assumed in the present analysis, then the results of this section apply not only to an endowment economy but alson to an economy with investment.

Because, as we just showed, for a given time path of government purchases, private consumption is unaffected by changes in the timing of taxes and because $r_0 B_0^p$ is predetermined in period 1, it follows that changes in lump-sum taxes in period 1 induce changes in private savings of equal size and opposite sign:

$$\Delta S_1^p = -\Delta T_1. \tag{4.6}$$

The intuition behind this result is the following: Suppose, for example, that the government cuts lump-sum taxes in period 1, keeping government purchases constant in both periods. This policy obliges the government to increase public debt by $\Delta T_1$ in period 1. In order to service and retire this additional debt, in period 2 the government must raise taxes by $(1+r_1)\Delta T_1$. Rational households anticipate this future increase in taxes and therefore choose to save the current tax cut (rather than spend it in consumption goods) so as to be able to pay the higher taxes in period 2 without having to reduce consumption in that period. Put differently, a change in the timing of lump-sum taxes does no alter the household's lifetime wealth.

Government savings, also known as secondary fiscal surplus, is defined as the difference between revenues (taxes plus interest on asset holdings) and government purchases. Formally,

$$S_1^g = T_1 + r_0 B_0^g - G_1$$

Given an exogenous path for government purchases and given the initial condition $r_0 B_0^g$, any change in taxes in period 1 must be reflected one-for-one in a change in government saving, that is,

$$\Delta S_1^g = \Delta T_1. \tag{4.7}$$

National saving, which we denote by $S$, is the sum of private and government saving, that is,

$$S_1 = S_1^p + S_1^g,$$

which implies that changes in national savings are equal to the sum of changes in private savings and changes in government savings,

$$\Delta S_1 = \Delta S_1^p + \Delta S_1^g$$

Combining this expression with equations (4.7) and (4.6), we have that

$$\Delta S_1 = -\Delta T_1 + \Delta T_1 = 0$$

This result, namely, that national savings is unaffected by the timing of lump-sum taxes, is known as **Ricardian Equivalence**.[4]

Recalling that the current account is the difference between national saving and investment, it follows that the change in the current account in response to a change in taxes, holding constant government expenditure, is given by

$$\Delta CA_1 = \Delta S_1 - \Delta I_1.$$

Therefore, an increase in the fiscal deficit due to a decline in current lump-sum taxes (leaving current and expected future government spending unchanged) has *no* effect on the current account, that is,

$$\Delta CA_1 = 0.$$

Clearly, because of Ricardian equivalence, a story of government deficits being caused by changes in the timing of lump-sum taxes implies a behavior of the current account that does not line up with the explanation given by Fieleke for the U.S. current account deficits of the 1980s.

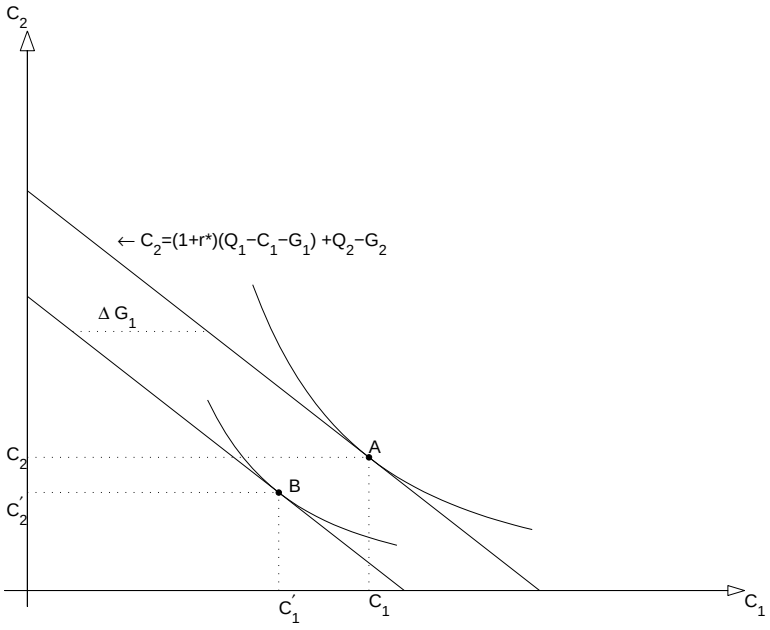
### 4.2.2 Then what was it?

What are other possible interpretations of the view according to which the large current account deficits of the 1980s were due to a decline in desired savings and/or an increase in desired spending? One is that the increase in the U.S. government deficit coincided by accident with a reduced desire for private savings for reasons other than the tax cut. Another possible interpretation is that the increase in the U.S. fiscal deficit of the 1980s was not solely a deferral of taxes, but instead government purchases were increased temporarily, particularly military spending. In our model, an increase in government purchases in period 1 of $\Delta G_1$, with government purchases in period 2 unchanged, is equivalent to a temporary decline in output. In response to the increase in government spending, households will smooth consumption by reducing consumption spending in period 1 by less than the increase in government purchases ($\Delta C_1 + \Delta G_1 > 0$). Because neither output in period 1 nor investment in period 1 are affected by the increase in government purchases, the trade balance in period 1, which is given by $Q_1 - C_1 - G_1 - I_1$, deteriorates ($\Delta TB_1 = -\Delta C_1 - \Delta G_1 < 0$). The current

[4]This important insight was first formalized by Robert Barro of Harvard University in "Are Government Bonds Net Wealth," *Journal of Political Economy,* 1974, volume 82, pages 1095-1117.

account, given by $r_0 B_0^* + TB_1$, declines by the same amount as the trade balance ($\Delta CA_1 = \Delta TB_1$; recall that net investment income is predetermined in period 1). The key behind this result is that consumption falls by less than the increase in government purchases. The effect of the increase in government purchases on consumption is illustrated in figure 4.6. The initial

Figure 4.6: Adjustment to a temporary increase in government purchases




consumption allocation is point A. The increase in $G_1$ produces a parallel shift in the economy's resource constraint to the left by $\Delta G_1$. If consumption in both periods is normal, then both $C_1$ and $C_2$ decline. Therefore, the new optimal allocation, point B, is located southwest of point A. Clearly, the decline in $C_1$ is less in absolute value than $\Delta G_1$.

Is this explanation empirically plausible? There exists evidence that government spending went up in the early 1980s due to an increase in national defense spending as a percentage of GNP. Table 4.3 indicates that military purchases increased by about 1.5% of GNP from 1978 to 1985. But according to our model, this increase in government purchases (if temporary) must be associated with a decline in consumption. Thus, the decline in national savings triggered by the Reagan military build up is at most 1.5% of GNP, which is too small to explain all of the observed decline in national savings of 3% of GNP that occurred during that period (see table 4.2).

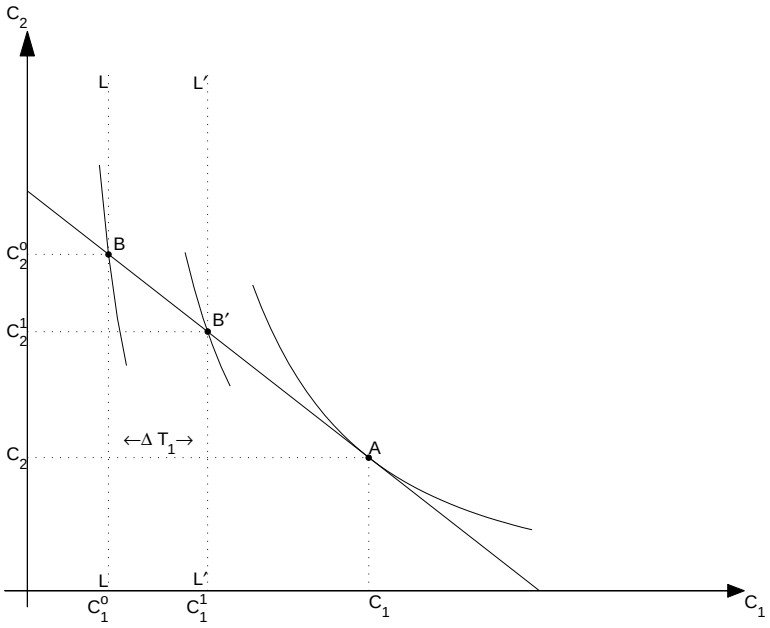
Table 4.3: U.S. military spending as a percentage of GNP: 1978-1987

| Year | Military Spending (% of GNP) |
|---|---|
| 1978-79 | 5.1-5.2 |
| 1980-81 | 5.4-5.5 |
| 1982-84 | 6.1-6.3 |
| 1985-87 | 6.7-6.9 |

A third possible interpretation of the view that the US external imbalances of the 1980s were the result of a decline in domestic savings is that Ricardian Equivalence may not be right. Three reasons why Ricardian Equivalence may fail to hold are that households are liquidity constrained, that the people that benefit from the tax cut are not the same as those that pay for the tax increase in the next period, and that taxes are not lump-sum.

Consider first the case of borrowing constraints. Suppose households have initial wealth equal to zero ($B_0^p = 0$) and that they are precluded from borrowing in financial markets, that is, they are constrained to choose $B_1^p \geq 0$. Assume further that neither firms nor the government are liquidity constrained, so that they can borrow at the world interest rate $r^*$. Figure 4.7 illustrates this case. Suppose that in the absence of borrowing constraints, the consumption allocation is given by point A, at which households in period 1 consume more than their after-tax income, that is, $C_1^0 > Q_1 - T_1$. This excess of consumption over disposable income is financed by borrowing in the financial market ($B_1^p < 0$). In this case the borrowing constraint is binding, and households are forced to choose the consumption allocation B, where $C_1 = Q_1 - T_1$. It is easy to see why, under these circumstances, a tax cut produces an increase in consumption and a deficit in the current account. The tax cut relaxes the household's borrowing constraint. The increase in consumption is given by the size of the tax cut ($-\Delta T_1$), which in figure 4.7 is measured by the distance between the vertical lines L and L'. . The new consumption allocation is given by point B', which lies on the economy's resource constraint and to the right of point B. Consumption in period 1 increases by the same amount as the tax cut. Because neither investment nor government purchases are affected by the tax cut, the trade balance and hence the current account deteriorate by the same amount as the increase in consumption. Thus, in the presence of borrowing constraints

Figure 4.7: Adjustment to a temporary tax cut when households are liquidity constrained




the increase in the fiscal deficit leads to a one-for-one increase in the current account deficit.

A second reason Ricardian Equivalence could fail is that those who benefit from the tax cut are not the ones that pay for the tax increase later. To illustrate this idea, consider an endowment economy in which households live for only one period. Then, the budget constraint of the generation alive in period 1 is given by $C_1 + T_1 = Q_1$, and similarly, the budget constraint of the generation alive in period 2 is $C_2 + T_2 = Q_2$. Suppose that the government implements a tax cut in period 1 that is financed with a tax increase in period 2. Clearly, $\Delta C_1 = -\Delta T_1$ and $\Delta C_2 = -\Delta T_2$. Thus, the tax cut produces an increase in consumption in period 1 and a decrease in consumption in period 2. As a result, the trade balance and the current account in period 1 decline one-for-one with the decline in taxes. The intuition for this result is that in response to a decline in taxes in period 1, the generation alive in period 1 does not increase savings in anticipation of the tax increase in period 2 because it will not be around when the tax increase is implemented. What percentage of the population must be 1-period lived in order for this hypothesis to be able to explain the observed 3% of GNP decline

in the U.S. current account balance, given the 3% decline in government savings? Obviously, everybody must be 1-period lived. A similar reasoning leads to the conclusion that in order for the liquidity constraint hypothesis alone to explain the behavior of the current account in the 1980s, 100% of the population must be borrowing constrained.

Finally, Ricardian equivalence may also breakdown if taxes are not lump sum. Lump-sum taxes are those that do not depend on agents' decicions. In the economy described in section 4.2, households are taxed $T_1$ in period 1 and $T_2$ in period 2 regardless of their consumption, income, or savings. Thus, in that economy lump-sum taxes do not distort any of the decisions of the households. In reality, however, taxes are rarely lump sum. Rather, they are typically specified as a fraction of consumption, income, firms' profits etc. Thus, changes in tax rates will tend to distort consumption, savings, and investment decisions. Suppose, for example, that the government levies a proportional tax on consumption, with a tax rate equal to $\tau_1$ in period 1 and $\tau_2$ in period 2. Then the after-tax cost of consumption is $(1+\tau_1)C_1$ in period 1 and $(1+\tau_2)C_2$ in period 2. In this case, the relative price of period-1 consumption in terms of period-2 consumption faced by households is not simply $1+r_1$, as in the economy with lump-sum taxes, but $(1+r_1)\frac{1+\tau_1}{1+\tau_2}$. Suppose now that the goverment implements a reduction in the tax rate in period 1. By virtue of the intertemporal budget constraint of the government, the public expects, all other things equal, an increase in the consumption tax rate in period 2. Thus, the relative price of current consumption in terms of future consumption falls. This change in the relative price of consumption induces households to substitute current for future consumption. Because firms are not being taxed, investment is not affected by the tax cut. As a result, the trade balance, given by $TB_1 = Q_1 - C_1 - G_1 - I_1$, and the current account, given by $CA_1 = TB_1 + r_0 B_0^*$, both deteriorate by the same amount.

We conclude that if the current account deficit of the 1980s is to be explained by the fiscal imbalances of the Reagan administration, then this explanation will have to rely on a combination of an increase in government expenditure and multiple factors leading to the failure of Ricardian equivalence.