Chapter 4 Simulation of the Sustainability of the U.S. Current Account Deficit

In this chapter, we examine the trend of the U.S. current account including the simulation of the current account in the near future using VAR model[15]. First, we simulate future trend of the U.S. current account under several assumed scenarios including the one that is considered a realistic case. We then examine the conditions that could secure the sustainability of the U.S. current account.

Under our simulation based on a VAR model, we did not explicitly take account of such factors as mechanism of investment-saving balance and ripple process mechanism in which the U.S. cumulative current account deficit is to cause the U.S. external debt balance to increase, which then is to cause the U.S. income account to deteriorate, which in turn is to cause the U.S. current account deficit to grow further. Therefore, we would like to emphasize that the observation hereunder should be interpreted as simulated result by one approach out of possible various simulations.

1. Framework of Analysis

In this chapter, we examine the sustainability of the U.S. current account by using a VAR (Vector Autoregressive) model to simulate several cases[16]. The sustainability of current account (which means current account is sustainable) is defined as the stationary state (i.e., convergence to a fixed number) of current account series derived from the simulation. In other words, the sustainability is defined as a state in which the current account is managed to stay at certain level that will neither increase nor decrease in the future. Defining the sustainability of current account as such does not give any information as to the level of the current account. The current account even in a negative number is considered sustainable as long as the negative level is maintained and managed. The simulation hereunder therefore includes examination as to the conditions in which the U.S. current account is to show any improvement in the future.

In this chapter, we make analysis focusing on the future trend of the rate of return of U.S. outward and inward investments. While the current account deficit of the U.S. has reached approximately 5% of its GDP, its income account has maintained positive figures or at least above zero. If the U.S income account had shown a deficit on top of the deficit of the U.S. trade and services account, the U.S. would have recorded larger deficit in its current account. The main reason for the U.S. income account keeps positive level is that the rate of return of the U.S. investment abroad exceeds that of foreign investment in the U.S. In our analysis, we assumed several scenarios, and simulated the future trend of current account for each scenario. The analysis should also give us some clue as to the level of income account that would enable the U.S. to secure the sustainability of its current account.

Our analysis uses the following VAR model, with 2 variables and 4 quarter lags.

$$\mathrm{T}\tau = \mu 01 + \sum_{i=1}^{4} \alpha 11(i)\mathrm{T}t - i + \sum_{i=1}^{4} a12(i)It - i + eTt$$

$$It = \mu 02 + \sum_{i=1}^{4} a21(i)Tt - i + \sum_{i=1}^{4} a22(i)It - i + eIt$$

Where: T, I, μ, a, e represent respectively trade and services account (as percent of GDP), income account (as percent of GDP), estimated constant, estimated coefficient, and estimated residual error. In a VAR model, we can simulate by estimating parameters μ, a . The merit of using VAR model is that we can treat all variables endogenously. Each variable is estimated by taking account of time series in the past and relative movements between relevant variables, thereby reducing the risk of the variables being determined endogenously or exogenously in an arbitrary way. However, VAR model approach has a weak point in that it has little grounding of economic theory, which needs to be noted. Nonetheless, we believe the simulation results of the VAR model are reliable to some extent, as the ex-post forecast using the model is able to demonstrate a certain amount of explanation to the actual serial trend.

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[15] On the analysis of current account, see Ogawa and Kudo (2004).

[16] Data in this section are from website of the Bureau of Economic Analysis (http://www.bea.doc.gov/).

2. Baseline Scenario

We assumed here as a baseline for the analysis a simple extrapolation for the above-mentioned VAR model. Simulated U.S. current account series based on simple extrapolation showed an unsteady trend, diverging to larger deficit (Figures 4-1 to 4-3). This indicates that, should the U.S. trade and services account and income account maintain respective current trend, the both accounts are likely to diverge to larger deficits, resulting in a more growing current account deficit than it is now. The simulated result under this scenario therefore suggests that it would make sense if we approach this issue with several other possible scenarios as to future trend of the U.S. income account.

Figure 4-1 Trade and Services Account under Baseline Scenario

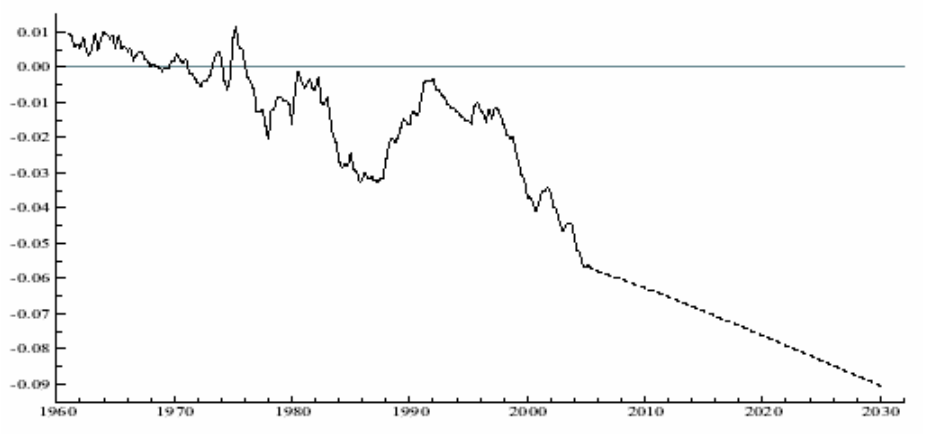


Figure 4-2 Income Account under Baseline Scenario

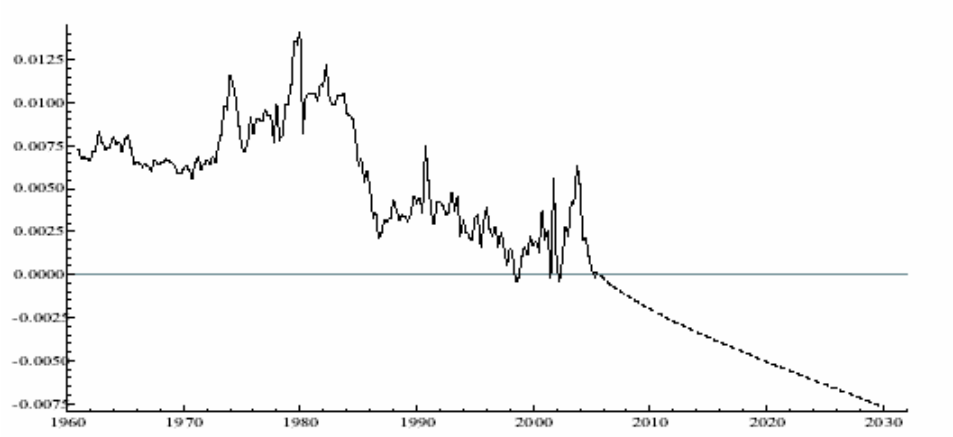
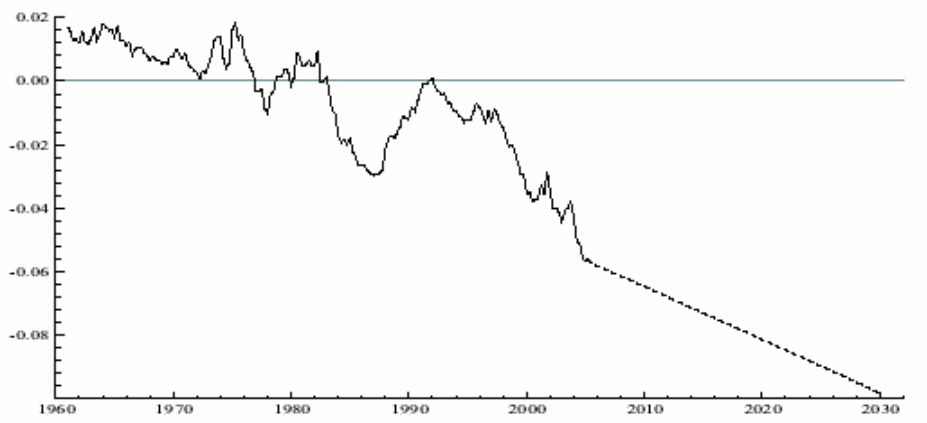


Figure 4-3 Current Account under Baseline Scenario



3. Alternative Scenarios

(1) Pessimistic Scenario

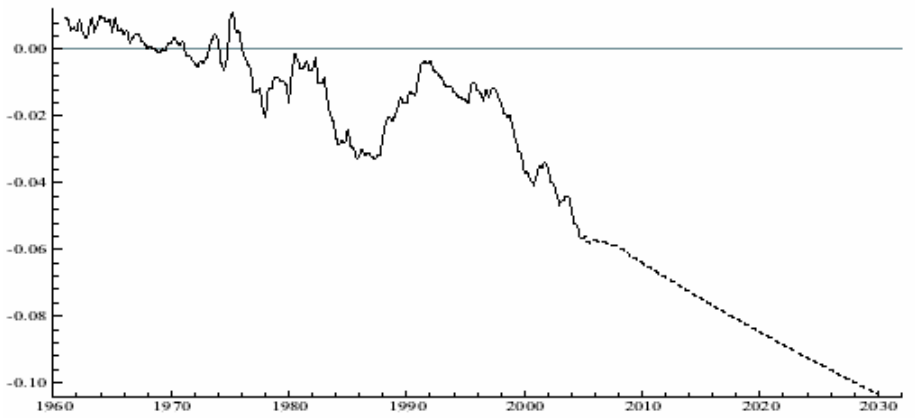
The U.S. income account shows surplus mainly because the rate of return of the U.S. outward investment exceeds that of foreign investment in the U.S.[17]. However, there is a possibility that the U.S. advantage in this regard may diminish in the future. This is obviously an undesirable scenario for the U.S., but it cannot yet be ruled out as an unrealistically pessimistic scenario if we look at the current trend of the rate of return of the U.S. outward and inward investments.

The average rate of return of the U.S. outward investment for the period from 1993 to 2003 is 4.43% while that of foreign investment to the U.S. is 3.42% (investment positions for the calculation are on a current price basis). The latter basically has remained unchanged for the period while the former has been in a slightly declining trend. Based on these trends, we assumed here a scenario in which the rate of return of U.S. outward investment is to decline annually by approximately 0.34%, to converge in 2007 to 3.42%, the same level as the rate of return of foreign investment to the U.S., and to stay at the level beyond 2007. We are aware, however, that the above assumption on the trend of rate of return is not sufficient, as the positions of U.S. outward investment and foreign investment in the U.S. are evidently in increasing trend at present. We take account of this point as well in our simulation. More specifically, we conducted serial forecast based on the tend for the both investment positions, then determined the trend of income account by using the series of the investment positions together with the assumed trend of rate of return, and finally forecasted the current account with the VAR model we initially estimated.

Simulation result is more or less the same as the baseline scenario (Figures 4-4, 4-5 and 4-6). This indicates the baseline scenario reflects realistic movements of income account. In other words, economic developments assumed in the pessimistic scenario have been captured to some extent in the movements of each series assumed in the VAR model.

Should the above realistic scenario come out in reality, the U.S. current account could not be considered sustainable. This begs a new question. Is there any possible scenario for the income account to secure the sustainability of the U.S. current account?

Figure 4-4 Trade and Services Account under Pessimistic Scenario



[17] Hung and Macaro (2004) conducted an analysis on the background to the difference of such rate of returns.

Figure 4-5 Income Account under Pessimistic Scenario

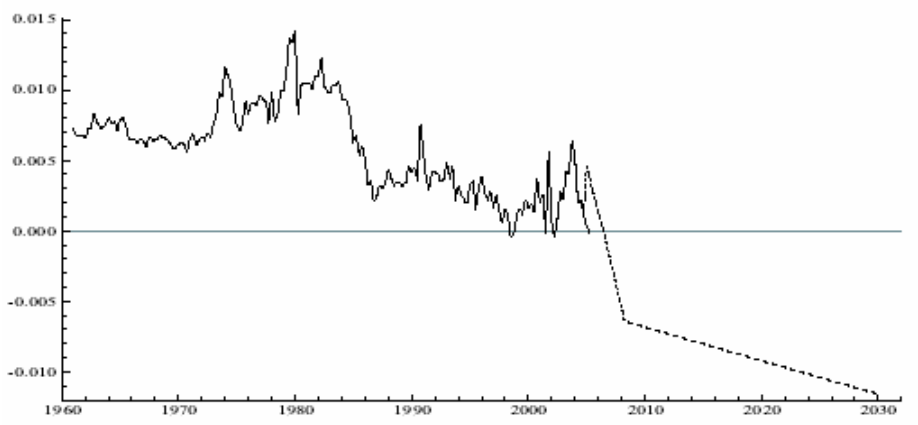
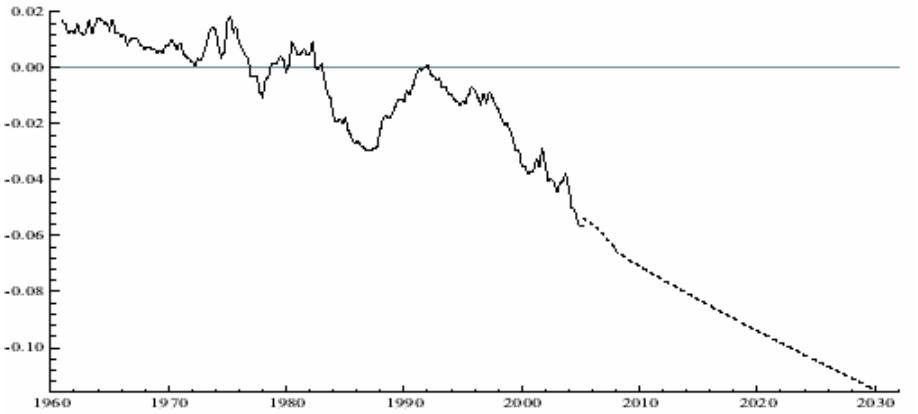


Figure 4-6 Current Account under Pessimistic Scenario



(2) Scenario to Secure the Sustainability of the U.S. Current Account

This section examines the level of the U.S. income account that can secure the sustainability of the current account. We will conduct simulation in accordance with the following three scenarios.

i. The income account is to improve from a deficit of 0.01% of GDP in 2005 IIQ (actual base) by 0.036% of GDP quarterly to a surplus of 0.25% of GDP in 2007 IQ and to stabilize at this level thereafter.

ii. Likewise, the income account is to improve by 0.071% quarterly to a surplus of 0.5% of GDP in 2007 IQ and to stabilize at this level thereafter.

iii. Likewise, the income account is to improve by 0.143% quarterly to a surplus of 1.0% of GDP in 2007 IQ and to stabilize at this level thereafter.

Simulation results of each scenario are shown in Figures 4-7, 4-8, 4-9, 4-10, 4-11, 4-12, 4-13, 4-14 and 4-15. Simulated current account trend for each scenario is shown in Figures 4-9, 4-12 and 4-15. Under scenario *i*, the current account is to diverge to a larger deficit (Figure 4-9). This indicates that the income account surplus is not sufficient to secure the sustainability of the current account. Under scenario *ii*, the current account is to stabilize with horizontal time series data (Figure 4-12). Under scenario *iii*, the current account is to converge to a smaller deficit (Figure 4-15). The simulation indicates that, provided that there continues to exist time-serial relationship between trade and services account and income account, the sustainability of the U.S. current account is secured if the income account surplus is to stabilize at a level of 0.5% of GDP. Furthermore, the simulation indicates that the U.S. current account deficit is to decrease if the income account surplus is maintained steadily at a level exceeding 0.5% of GDP.

Figure 4-7 Trade and Services Account under Scenario *i*

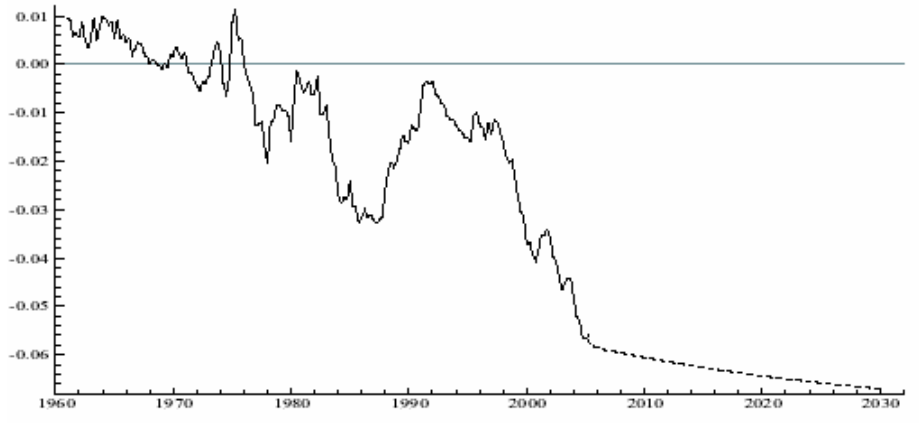


Figure 4-8 Income Account under Scenario *i*

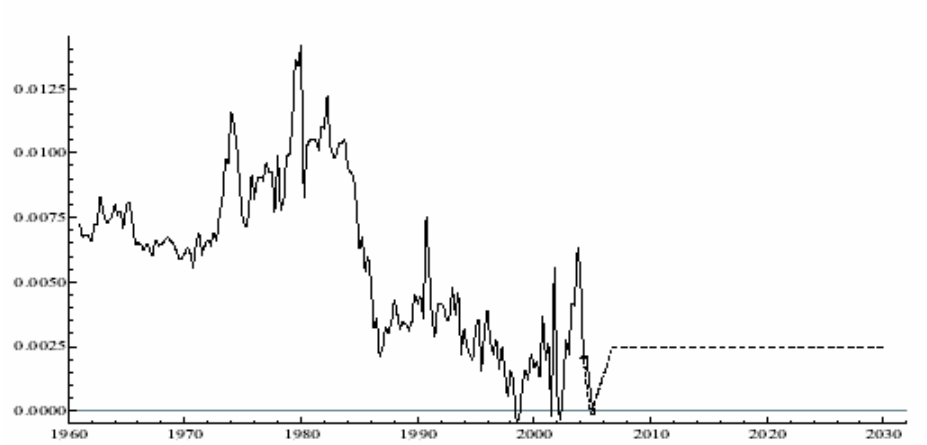


Figure 4-9 Current Account under Scenario *i*

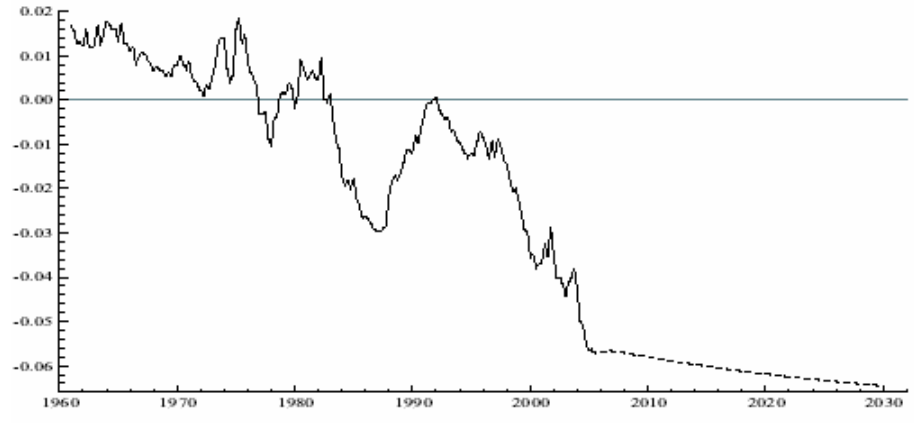


Figure 4-10 Trade and Services Account under Scenario *ii*

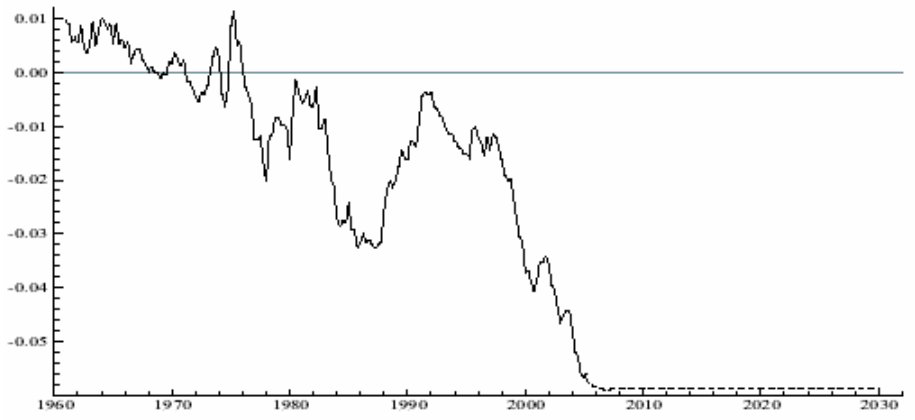


Figure 4-11 Income Account under Scenario *ii*

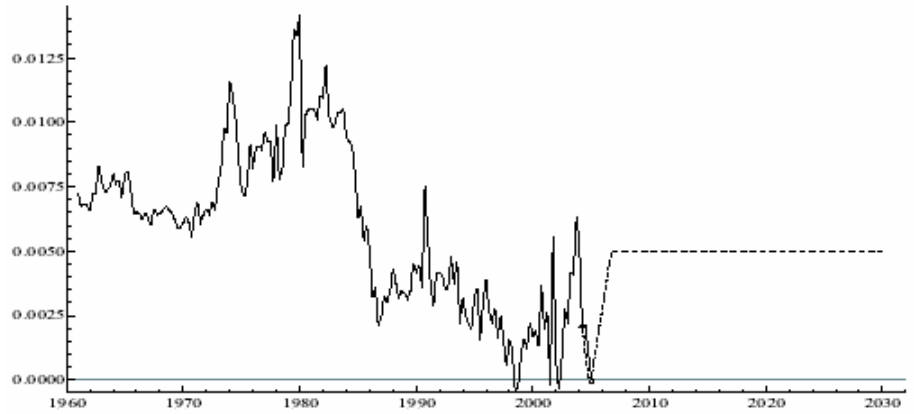


Figure 4-12 Current Account under Scenario *ii*

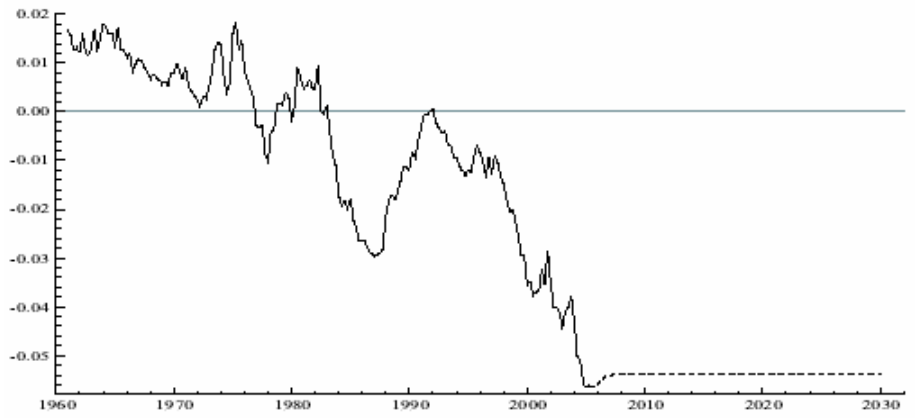


Figure 4-13 Trade and Services Account under Scenario *iii*

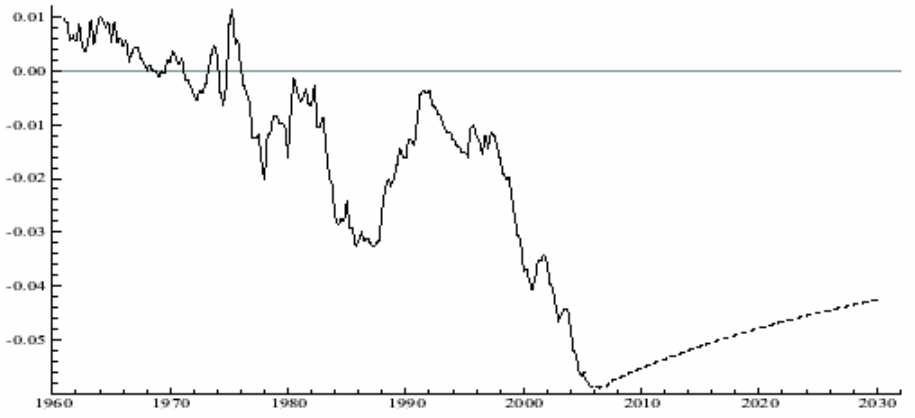


Figure 4-14 Income Account under Scenario *iii*

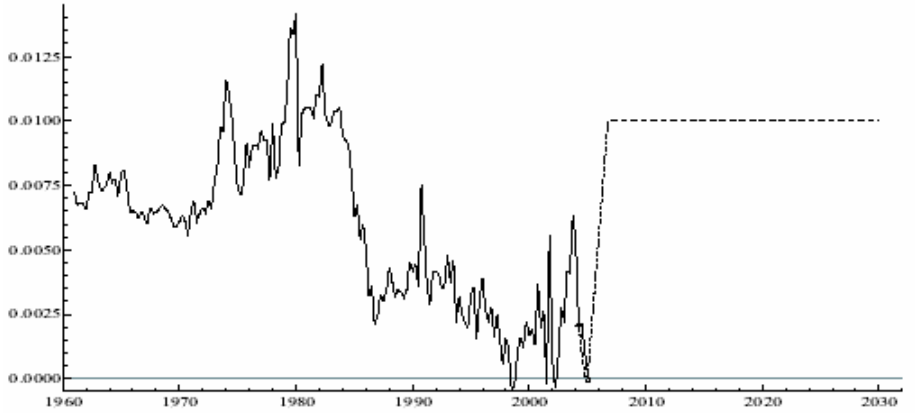
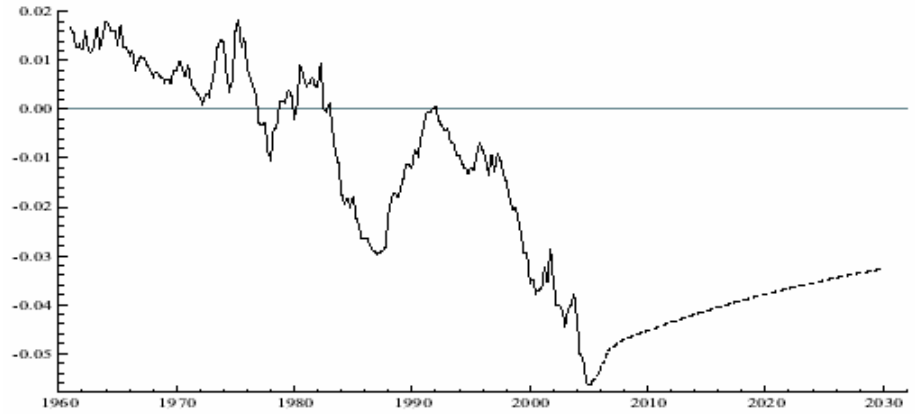


Figure 4-15 Current Account under Scenario *iii*



4. Summary of Chapter 4

Summarized below are the conclusions of the analyses in this chapter.

(1) Should the current trend of the trade and services account and income account continue, the sustainability of the current account would not be secured, and the deficit thereof would widen.
(2) Should the income account be maintained at a level of 0.5% of GDP or higher in the near future, the sustainability of current account would be secured.

Is scenario *ii* considered realistic? According to the income account data of 2004, the receipts is US$379,527 million (3.2% of GDP) while the payments US$349,088 million (3.0% of GDP), hence the income account surplus being 0.2% of GDP. Given the level of the surplus at present, scenario *ii* can be considered realistically possible.

Admittedly, the analysis of this chapter is not sufficient, as it focuses only on future trend of income account. Moreover, the framework of the analysis is far from perfect in that it does not include explicitly the mechanism between U.S. cumulative current account deficit and its resultant external debt balance. Given that the U.S. trade and services account is the ultimate cause of its current account deficit, future trend of the former account should definitely affect the actual events and the above simulation on the latter account might turn out to be irrelevant. Nonetheless, we believe the result obtained from the simulation focusing on the future trend of the income account provides us with a certain degree of perspective, even if it uses the past trend of the trade and services account.

The following points should be noted in this chapter.

(1) There are a variety of methods for simulation. We employed here a VAR model.
(2) There are various factors of which we have not explicitly taken account in our VAR model. For example, those factors such as investment-saving balance mechanism and the ripple process mechanism in which the U.S. cumulative current account deficit is to cause the U.S. external debt balance to increase, which then is to cause the U.S. income balance to deteriorate, which in turn is to cause the U.S. current account deficit to grow further, have not been explicitly taken into account in the present study.
(3) Therefore, we would like to emphasize that the observations herein should be interpreted as simulated result by one approach out of possible various simulations.