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A Portfolio View of the U.S. Current Account Deficit

FROM 1971 TO 1982 THE U.S. current account balance as a share of U.S. GNP averaged roughly zero.[1] Starting in 1983, however, the United States experienced increasingly large current account deficits, which reached 3.3 percent and 3.4 percent of GNP in 1986 and 1987, respectively. This tendency toward larger deficits was reversed gradually during the rest of the decade, and by 1991 the current account was near zero again. But starting in 1993 the current account again began to record increasingly large deficits, which grew to 3.6 percent of GNP in 1999 and 4.4 percent in 2000. This history of the current account prompts several questions: What is the source of the large current account deficits of the 1990s? Are they likely to remain with us indefinitely? If not, should we expect them to fade away slowly as they did in the 1980s? Or should we expect instead a sharp reversal in the near future?

In this essay I interpret these trends in the U.S. current account from a perspective that focuses on the behavior of the country portfolio. The country portfolio is defined as the sum of all productive assets located in the United States, plus the U.S. net foreign asset position (that is, the sum of all claims on foreign assets held by U.S. residents), minus the sum of all claims on U.S. assets owned by foreign residents. By the composition of the U.S. portfolio I mean the share of the net foreign asset position

1. The appendix describes the data sources used in this paper.

in it.[2] According to the portfolio view, it is useful to separate changes in the current account into two components: changes in the size of the country portfolio, which I call portfolio growth effects, and changes in the composition of the country portfolio, or portfolio rebalancing effects. A simple application of this approach reveals a clear picture: the recent current account deficits are mostly the manifestation of the spectacular increase in U.S. wealth experienced in the 1990s. Contrary to a widely held belief, these deficits do not reflect a rebalancing of portfolios toward U.S. assets and away from foreign assets.

A natural question follows: Why did U.S. wealth increase so much in the 1990s? I explore two alternative hypotheses. The first views the increase in wealth as reflecting a rapid accumulation of an intangible form of capital. The second is based on the notion that the 1990s were characterized by the appearance and growth of a bubble in the U.S. stock market. Although both explanations exhibit interesting elements, neither is fully satisfactory. Our inability to account for the growth in wealth makes the task of predicting the future direction of the U.S. current account quite difficult, if not impossible. Nevertheless, each of these stories has a different ending, and I discuss them below.[3]

2. A simple example helps in understanding the implications of this definition. Suppose that Daimler buys Chrysler and pays Chrysler shareholders in cash, which they then use to build a new hotel in Las Vegas. This transaction does not affect U.S. net worth or the size of the U.S. portfolio. But it does change its composition, according to my definition. In particular, there is an increase in U.S. productive assets (since Chrysler's facilities are still in the United States, and so is the hotel), which is financed by a sale of claims on U.S. productive assets (since the United States must now pay the German owners of Daimler a return on the Chrysler facilities). In my view, the fact that the claim that the United States has sold is a contingent one does not invalidate the proposition that the United States has leveraged itself in order to buy more U.S. productive assets. If the Chrysler shareholders had instead used the cash to buy German public bonds instead of a Las Vegas hotel, neither the size nor the composition of the U.S. portfolio would have changed, in my definition. There would have been an increase in claims on foreign assets held by the United States (since Germany must now use part of its productive assets to pay interest to U.S. bondholders), financed by a sale of claims on U.S. productive assets.

3. A third story is provided by McGrattan and Prescott (2001), who argue that the increase in wealth is due to changes in taxes and regulations and, in particular, to a reduction in the dividend tax.

A Portfolio View of the Current Account

The point of departure for a portfolio view of the current account is the celebrated mean-variance theory of Harry Markowitz and James Tobin.[4] According to this theory, investors choose their portfolios by optimally trading off risk and return. The optimal or mean-variance efficient portfolio contains the risk-free asset and an optimal combination of risky assets (OCRA). A strong result of the theory is that the OCRA is the same for all investors with access to the same menu of assets, regardless of their attitudes toward risk and their level of wealth. That is, the share of each asset in the OCRA depends only on the distribution of asset returns. Another strong result of the theory is that the weights that mean-variance investors assign to the risk-free asset and the OCRA depend only their risk aversion and the distribution of asset returns. They do not depend on the investors' wealth.[5]

Moving from the optimal investor portfolio to the average or country portfolio requires an additional assumption, namely, that the average risk aversion and the distribution of asset returns are both independent of wealth. This is a strong assumption, and its validity is an empirical issue that is far from settled. I shall nevertheless adopt it. This assumption is useful here because it ensures that the properties of individual investors' portfolios also apply to the average or country portfolio. Thus, changes in wealth affect only the size of the country portfolio but do not influence its composition or asset shares. The latter changes only with changes in risk aversion or in the distribution of asset returns.

This portfolio view leads to a sharp and simple rule to predict the response of the current account to changes in wealth. Define W_t and NFA_t as the wealth and the net foreign asset position of the country, respectively. Let X_t be the share of net foreign assets in the country portfolio, $X_t = NFA_t/W_t$. Since X_t is not affected by changes in wealth, the fraction of any change in wealth that is allocated to net foreign assets equals the share of foreign assets in the country portfolio:

(1) $$\Delta NFA_t = X_t \Delta W_t.$$

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4. Markowitz (1952); Tobin (1958).
5. These results apply in more general models if preferences are homothetic and returns are log-normally distributed. See, for instance, Merton (1971).

Or, alternatively, the country invests the marginal unit of wealth in the same way as the average unit. This is a simple rule for predicting the effects of changes in wealth on the net foreign asset position, in the absence of changes in the distribution of asset returns. That is, equation 1 measures the extent to which a change in the net foreign asset position is a manifestation of changes in the size of the country portfolio, or *portfolio growth*.

A useful approximation to equation 1 applies if asset price revaluations are not too large. Let S_t and CA_t denote gross national saving and the current account, respectively. If asset price revaluations (which are included in (W_t and (NFA_t but not in S_t and CA_t) are not too large, gross national saving and the current account are good measures of actual changes in wealth and net foreign assets. As a result, we can approximate equation 1 as follows:

$$(2) \qquad\qquad\qquad CA_t \approx X_t S_t.$$

This relationship should hold in samples of countries where there is substantial cross-sectional and time variation in saving rates but the distribution of asset returns is quite stable over time. Perhaps surprisingly, Aart Kraay and I found that this is the case in a sample of thirteen industrial countries from 1973 to 1995.[6] Since the share of foreign assets in the portfolios of these countries is typically small, this simple rule is also consistent with the celebrated finding of Martin Feldstein and Charles Horioka that saving and investment move almost one to one in a cross section of countries.[7]

Although the theoretical foundations of this portfolio view of the current account are quite standard, its implications are somewhat surprising and even counterintuitive compared with those of existing theories. To see this, consider the effects on an increase in saving due to, say, a production boom, diminished expectations about the future, a reduction in taxes, or an increase in population growth. The standard view is that at least part of this additional saving should be invested abroad, leading to an increase in the current account surplus. Instead, the new view embed-

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6. Kraay and Ventura (2000). The sample consists of Australia, Austria, Canada, Finland, France, Germany, Italy, Japan, the Netherlands, Spain, Sweden, the United Kingdom, and the United States.

7. Feldstein and Horioka (1980).

ded in equation 2 suggests that this saving should be invested in the same proportions as in the existing country portfolio, leading to an increase in the current account surplus in creditor countries ($X_t > 0$) and a decrease in debtor countries ($X_t < 0$).

Equation 2 describes the response of the current account to movements in saving, but these are not the only source of variation in the current account. Changes in the distribution of asset returns constitute another important source of current account movements. To see this, consider an increase in the expected return to domestic capital due to, say, a techno-logical breakthrough, a change in political leadership, or a reduction in capital income taxes. Both the standard and the portfolio views of the current account would predict that investors will react to this change by rebalancing their portfolios toward domestic capital and away from for-eign assets. Since equation 2 describes the current account surplus that keeps the share of foreign assets in the country portfolio constant, this rebalancing can only be achieved by running a smaller current account sur-plus than predicted by this equation. Therefore deviations between the actual current account and the current account predicted by equation 2 can be interpreted as a manifestation of changes in the composition of the country portfolio, or *portfolio rebalancing*.

Portfolio Growth or Portfolio Rebalancing?

A common view is that the large U.S. current account deficits of the 1990s reflected a favorable shift in the distribution of returns to U.S. assets relative to foreign assets. This shift is attributed to various causes. Some argue that increased total factor productivity (TFP) growth has raised the expected return to U.S. capital. Others argue that financial turmoil in emerging markets has made relatively safe U.S. assets look more attrac-tive. Whether it is productivity growth or the increased need for a safe haven, there is a growing perception that the recent behavior of the U.S. current account reflects mostly portfolio rebalancing.

A straightforward application of equation 2 seems to confirm this per-ception. Figure 1 plots the actual current account and the current account predicted by equation 2. Over the last thirty years there have been two episodes in which the predicted current account surplus grossly overesti-mates the actual one. The first episode is centered in the mid-1980s, and

Figure 1. Actual and Predicted U.S. Current Account Balance, 1970–99

Percent of GNP
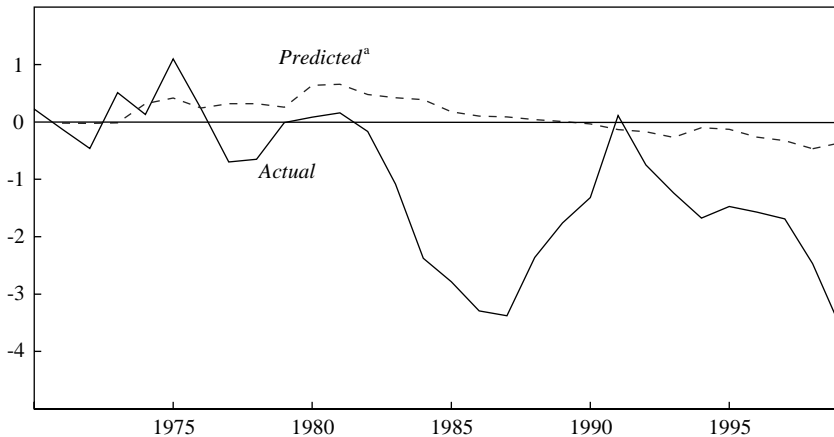
Source: Author's calculations based on data from Bureau of Economic Analysis, National Income and Product Accounts.
a. Using equation 2.

the second episode started a bit before the mid-1990s and still has not con-
cluded. The 1980s episode is not a surprise at all. We can easily attribute
it to the high U.S. interest rates that resulted from combining tight mone-
tary policy with large fiscal deficits. The international debt crisis that
erupted in 1982 must also have contributed to increased demand for U.S.
assets in this period. One is tempted to conclude that the 1990s episode is
nothing but a repetition of that of the 1980s. Instead of high U.S. interest
rates, in the 1990s we had rapid TFP growth in the United States. Instead
of a developing country debt crisis, in the 1990s we had a flurry of cur-
rency crises in emerging markets. The parallels are too obvious to be
missed.

But this sensation of déjà vu is just an illusion. Remember that equa-
tion 2 was shown to be a valid approximation to the theory if and only if
asset price revaluations are not too large. This is certainly not a good
assumption for the 1990s episode. From the end of 1992 to the end of
1999, cumulative gross national saving was $8.7 trillion, whereas the
increase in the market value of the U.S. capital stock was roughly $40 tril-
lion. That is, gross national saving captured slightly over 20 percent of
the actual increase in wealth. It follows that equation 2 is underpredicting

the portfolio growth component of the current account by a factor of almost five. Nothing of the sort happened during the 1980s.[8]

A natural way to correct for this disconnect between saving and wealth changes is to go back to equation 1. Figure 2 plots the actual change in net foreign assets and the change in net foreign assets predicted by equation 1. The 1980s episode of portfolio rebalancing is clearly visible. From 1980 to 1992 the change in net foreign assets was consistently below the level required to keep the share of foreign assets constant. But the 1990s episode has all but disappeared. In fact, in 1998 and 1999 there seems to have been a rebalancing of portfolios *away* from U.S. assets, as can be seen in figure 3. Whereas the share of foreign assets declined roughly by 4.8 percentage points from 1980 to 1992, it declined by less than 0.5 percentage point from 1992 to 1999.

The picture that emerges from the portfolio view of the current account is slowly coming into focus. In the 1990s U.S. investors enjoyed very large returns to their wealth in the form of asset price revaluation. Rather than spend these returns, U.S. investors largely decided to keep them and buy domestic and foreign assets roughly in the same proportions as their average portfolio. Since the average portfolio is short in foreign assets, this means that the United States leveraged itself more, so that it could invest in domestic assets beyond the increase in wealth. Hence the large current account deficits.

At best, this picture can be interpreted as a partial explanation. At worst, we can think of it as posing a set of still-unanswered questions: Why were the returns to U.S. wealth in the 1990s so high? Why did these returns take the form of asset price revaluation rather than increased production? (Or, in other words, why did the wealth-to-output ratio increase so much?) Why did U.S. investors save most of these returns rather than use them to increase their consumption? Why did they choose not to rebalance their portfolios toward U.S. assets at a time when the latter were yielding such high returns? I do not claim to have foolproof answers to these questions. Nobody really does. But I am willing to speculate.

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8. Note that the portfolio view of the current account explains how a large increase in saving can lead to a large current account deficit. This is a major difference with the traditional view, which predicts that an increase in saving of this magnitude should have generated large current account surpluses. See Kraay and Ventura (1997) for a comparison of the traditional view and the new, portfolio view of the current account.

Figure 2. Actual and Predicted Change in U.S. Net Foreign Assets, 1970–99

Percent of GNP
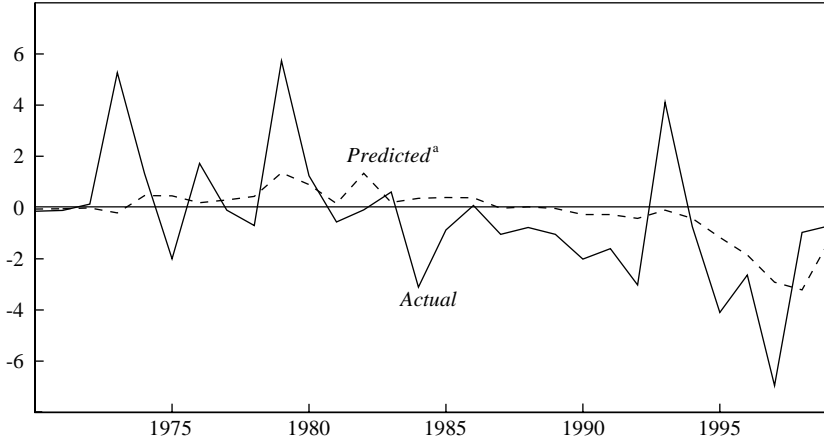
Source: Author's calculations based on data from Bureau of Economic Analysis, *Survey of Current Business*, April 2000.
a. Using equation 1.

Figure 3. Share of U.S. Net Foreign Assets in the Country Portfolio, 1970–99

Percent of national wealth[a]
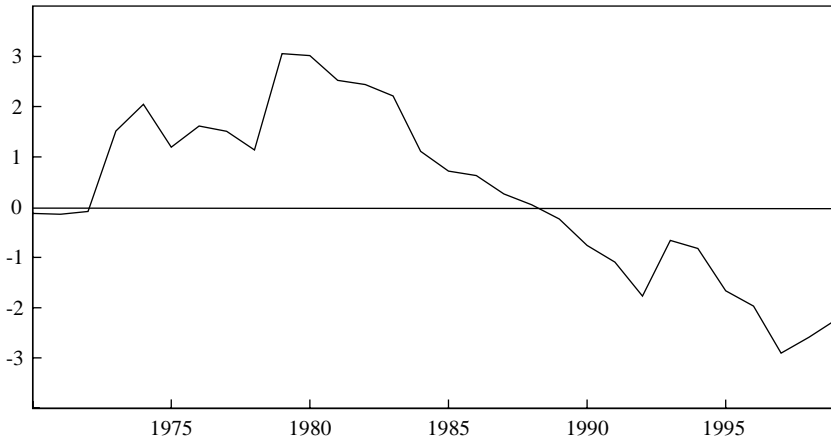
Source: Author's calculations based on data from Bureau of Economic Analysis, *Survey of Current Business*, April 2000.
a. National wealth is the value of the domestic capital stock (adjusted for depreciation and price revaluation) plus the net international investment position.

Accumulating E-Capital

A first explanation for the increase in the wealth-to-output ratio relies on improved expectations of the future of the U.S. economy. According to this view, the increase in asset prices measures upward revisions of future production based on economic fundamentals. One might immediately counter that the measured capital stock (and hence the productive capacity of the U.S. economy) has increased at roughly the same rate as production and at a much slower pace than wealth. Nevertheless, it is also possible that in the 1990s the United States accumulated intangible or organizational capital. This type of capital might not increase production immediately but can be expected to raise the productive capacity of the U.S. economy in the near future. Robert Hall has forcefully argued this view and has coined the term *e-capital* to refer to this form of intangible asset.[9]

One difficulty with this story is linked to the behavior of saving and interest rates. If the future looks so rosy, Americans should start consuming more right now. Since the additional goods to be consumed will not come until later, however, attempts to consume right now should drive interest rates up, lowering asset prices and curbing the growth in wealth. The accumulation of e-capital can affect wealth if and only if investors are willing to save more at given interest rates. The e-capital story must therefore be complemented by an explanation of the factors that led to an increase in saving during the 1990s.[10] One could argue that the increase in saving is due to the arrival of baby-boomers at that stage of the life cycle (late thirties and early forties) when people typically start saving for retirement. One could also point out that much of the increase in wealth has gone into the hands of rich investors, who are likely to have a lower than average propensity to consume out of their wealth.[11] Or it could be that

9. Hall (2000).

10. It is a well-publicized fact that U.S. household saving has declined to the point that it is now negative. This should not, however, obscure the fact that was been a large increase in total saving (by a couple of percentage points of GDP) during the 1990s, as increases in corporate and government saving more than offset the decline in household saving. But these measures of saving do not take into account the income that comes from asset price revaluations. When this is done, one cannot escape the conclusion that saving increased substantially during the 1990s.

11. I thank Kenneth Rogoff for pointing this out to me.

habit persistence is quite strong and that it is rational for investors to raise their consumption very slowly. In any case, whether some combination of these factors can explain the increase in saving in the 1990s remains to be determined.

A second difficulty with the e-capital story is how to reconcile the view that investments in e-capital are highly productive with the absence of a strong rebalancing of the U.S. country portfolio. If e-capital is so productive, the expected return to U.S. capital should have increased, convincing investors to rebalance their portfolios toward U.S. assets and away from foreign assets. As figure 2 shows, this has not happened, and the e-capital story must come to grips with this observation. There are various ways to do this. One possible argument is that there are strong diminishing returns to e-capital. In this view the first wave of investments in e-capital yielded rich rewards. The second wave is unlikely to yield such high returns, and as a result there is no incentive to rebalance portfolios toward U.S. capital. A second possible argument would recognize that e-capital has indeed raised the expected return to U.S. capital, but would then point out that it has also increased the expected return to foreign capital. This suggests, too, there is no incentive to rebalance portfolios toward U.S. capital.

Subject to these caveats, the e-capital story provides a consistent account of the main macroeconomic events of the 1990s. If the story is correct, the future of the current account is intimately linked to the pattern of saving in the United States and the time it takes for production to increase. If the factors behind the increase in saving remain in force until expectations of increased future production are realized, we should expect a continuation of the current pattern of high saving and corresponding current account deficits. If instead the factors behind the increase in saving weaken before the expectations of increased future production are realized, we should expect an increase in interest rates, a contraction in wealth, and current account surpluses.

At the end of the day, however, the most damaging evidence against the e-capital story is the recent decline in the U.S. stock market. It is difficult to justify this decline by citing the increase in interest rates of around 1 percentage point (which, in any case, has been recently reversed). It is still more difficult to justify this increase in interest rates by a decline in aggregate saving. Still, one could argue that the recent decline in stock prices reflects a large negative revision of the value of

e-capital based on news about economic fundamentals. But I would not want to be in the position of having to explain what this news and these fundamentals might be.

The Dot-Com Bubble

A second explanation of the increase in the wealth-to-output ratio is based on the idea that the 1990s witnessed the appearance of a bubble or Ponzi scheme in the U.S. stock market. In such an environment, investors buy stocks because they expect to resell them later at a higher price, rather than because they have revised upward their expectations of firms' profits. The price appreciation must be high enough to compensate for the possibility of not finding a buyer. In other words, the higher the risk of a crash, the higher is the growth rate of stock prices. During this episode the link between changes in asset prices and those of their fundamental value is broken. Eventually, buyers are no longer found and the bubble bursts. Since this bubble has been more evident for high-technology and Internet-related firms, I refer to it as the dot-com bubble.

At first sight, the notion of a bubble underlying the fast growth of the 1990s might seem counterintuitive to economists. In existing models,[12] bubbles (or unproductive assets) provide investors with an alternative savings vehicle that competes with productive capital. These models therefore predict that the appearance of a bubble should be associated with a reduction in the stock of capital and production. This description stands in stark contrast with the experience of the 1990s, where both the capital stock and production increased at a rapid pace. If we want to attribute the developments of the 1990s to the appearance of a bubble, we must first explain how this bubble can foster capital accumulation rather than hinder it, as it does in existing models.

A key assumption of the classic models of bubbles is that investors are risk-neutral and, consequently, that bubbles must offer the same expected return as productive capital. Since there is a probability that a bubble will burst, this return must exceed that of productive capital for as long as the bubble does not burst. The return on the bubble must also exceed the return on the investor's overall portfolio (which is a combination of bubble and

12. Such as that of Tirole (1985).

productive capital). Since this return comes in the form of price appreciation, the bubble grows continuously and crowds out productive capital in the investor's portfolio. Investors are willing to accept this change in the composition of their portfolios because they are risk-neutral and perceive the bubble and productive capital as perfect substitutes.

Assume instead that investors are risk-averse and choose to hold mean-variance efficient portfolios. Remember that a key characteristic of these portfolios is that asset shares are independent of wealth. This has important implications for the relationship between the bubble and productive capital. As the bubble grows, so does the wealth of the investor. This induces investors to buy more productive capital so as to keep the shares of their portfolios constant. This means more productive investment and higher growth in the stock of capital and output. In a world of mean-variance investors, bubbles and the stock of capital are complements rather than substitutes. In such a world, the appearance of a bubble can generate a boom in productive investment and output.[13]

This dot-com bubble story easily gets around the problems of the e-capital story. It can explain why U.S. investors saved most of their increase in wealth, and why they decided not to rebalance their portfolios toward U.S. assets. Both choices are nothing but natural reactions to the increased risk generated by the possibility of the bubble bursting. High risk encourages investors to save as a precautionary measure and can therefore explain the shift in saving behavior. High risk also induces investors to require higher rates of return on U.S. assets and can therefore explain why there has not been a rebalancing of investor portfolios toward U.S. assets.

The dot-com bubble story is harder to rule out than the e-capital story. But I do not regard this as a merit. To the contrary, it mostly reflects how vague the theory still is regarding its implications. For instance, should we expect the whole bubble to burst in a single installment, or gradually over time? As the bubble bursts, what will happen to the market value of productive firms? What sort of events would trigger the birth and the death

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13. I have recently formalized this model of "expansionary" bubbles (Ventura, 2001). Caballero and Hammour (2001) have simultaneously developed two alternative models of "expansionary" bubbles. In their first model, the bubble arises in the stock of capital itself, and hence productive investment is pulled upward by the bubble. In their second model, the complementarity between the bubble and conventional capital arises from externalities in production.

of a bubble? To be honest, we simply know very little about the answers to these questions.

Despite this ignorance, it is still relatively straightforward to predict the effects of a bursting of the bubble on the current account. Remember that this event would generate a reduction in aggregate wealth and saving. Since the United States is a debtor country, this would in turn generate a reduction in the current account deficit. If the burst is quick and violent, the United States might experience a sharp reversal, in which the current account goes into surplus. If the crash is slow and protracted, the current account deficit will simply decline and remain close to zero. In the aftermath I would expect the current account to register moderate deficits as the growth rate of wealth returns to prebubble levels.

APPENDIX

Data Sources

I OBTAINED DATA for the U.S. current account, international investment position (or net foreign asset position), gross national product, and gross domestic investment from the World Wide Web site of the Bureau of Economic Analysis (BEA). I computed gross national saving as the current account plus gross domestic investment.

To obtain estimates of U.S. wealth, I took an initial value for the capital stock in 1950.[14] This source is also available on the BEA website. This initial stock is divided into three components: private nonresidential, private residential, and government. I then cumulated flows of investment, assuming a rate of depreciation of 4 percent and revaluating existing stocks using the appropriate investment deflator for private residential and government components, but a share price index for the private nonresidential component. This procedure generated a series for the U.S. stock of capital. Then U.S. wealth is obtained as the sum of the domestic stock of capital plus the international investment position.

14. The source of this initial value is Herman (2000).