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THE TRADE DEFICIT TRAP

How it got so big, why it persists, and what to do about it

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The United States experienced episodes of increased trade deficits from the 1970s through the 1990s, but in the first decade of the twenty-first century the U.S. trade deficit reached truly prodigious proportions never before seen in American economic history. By 2006, the trade deficit climbed to about $800 billion dollars, representing roughly 6% of the gross domestic product (GDP) at that time (see **Figure A**).[1] This meant that the United States had to borrow an equivalent amount from other nations to finance the excess of its imports over its exports, thereby increasing the nation's net debt position with the rest of the world (which rose to $3.5 trillion, or 24.3% of GDP by the end of 2008).[2] The results were a significant loss of good-paying industrial jobs and a depressing effect on workers' wages and middle-class living standards in the U.S. domestic economy.[3]

The trade deficit moderated slightly in the next two years, coming down to "only" about $700 billion or 5% of GDP in 2008, before falling to a $400 billion annual rate in the first quarter of 2009 during the depths of the worst recession since World War II.[4] This last dip occurred due to the fall in import demand that resulted from the high unemployment and low consumer demand during the recession. Nevertheless, the trade deficit is expected to rebound quickly when the United States recovers from the recession. Overall, the trade deficit has remained at historically high levels in spite of massive gyrations in the variables that are supposed to determine it during the past several years. The dollar fell for six years from early 2002 to early 2008, before recovering partly in late 2008; the price of oil soared up to mid-2008 and then collapsed in late 2008. The U.S. economy went through an economic boom largely led by a housing bubble that was followed by a severe recession mainly induced by the collapse of that bubble and the consequent financial crisis. Yet, through all of these changes, the trade deficit rose to and remained at unprecedented heights until the worst global crisis since the Great Depression, and the willingness of foreigners to lend the United States hundreds of billions of dollars a year to finance its external deficit has not yet abated.

Taking a longer historical view, it is clear that—in spite of large cyclical swings—the U.S. trade balance has trended downward during the entire period since the abandonment of the Bretton Woods system of fixed exchange rates and capital controls in 1973. Contrary to what was predicted by the advocates of flexible exchange rates and financial market deregulation (e.g., Friedman, 1953), floating rates and financial liberalization have led to greater, not smaller, global trade imbalances (see Eatwell and Taylor, 2000).

Why has the trade deficit grown so enormous, and why has it persisted at such high levels in spite of adjustments (such as the fall in the dollar and the slowing of U.S. growth) that are supposed to reduce it? Why did it take the deepest recession in seventy years to lower the trade deficit significantly, and why is the latter expected to rebound as soon as the economy recovers? Why have the worries that foreigners would eventually refuse to finance the U.S. trade deficit, thereby precipitating a more draconian crisis (dollar collapse, interest rate hikes, etc.), not yet come to pass? And, if the traditional adjustment mechanisms are not working, what can be done to reverse this tide of red ink?

This paper provides evidence that the United States is now caught in a "trade deficit trap," in which the trade deficit is supported by a web of interconnected and self-reinforcing mechanisms that make it very difficult to reduce the deficit through conventional policies. Historically, the U.S. trade deficit originated (in the 1970s and 1980s) through a loss of competitiveness of U.S. industries relative to their foreign rivals combined with periodic bouts of dollar overvaluation (see Blecker, 1992a). Over time, so many industries moved offshore or began to outsource their inputs that, even when the dollar later depreciated, many products continued to be imported and prior levels of domestic production were never restored. This is an example of what economists call "hysteresis," or long-lasting effects of a temporary cause.[5]

At the same time, a complex set of financial linkages developed that sustained and further widened the trade deficit. A trade deficit must always be financed by a net sale of assets to (or net borrowing from) other countries, and in the U.S. case other countries were eager to lend due to their own excess of saving and suppression of domestic consumption (see Bernanke, 2005, 2007). The surplus countries (such as Germany, Japan, and China) essentially lent the United States the money required to pay for the excess of U.S. imports over U.S. exports, thereby in effect transferring employment from the U.S. to other countries. In the meantime, the huge influx of foreign saving allowed American consumers and businesses to finance expenditures beyond what U.S. national income and domestic saving would otherwise have permitted. One factor depressing the U.S. household saving rate was the slow growth of middle-class incomes that was due, in part, to the disappearance of good-paying industrial jobs in industries battered by imports. The household saving rate (measured as a percentage of current income) was also depressed at the upper end of the income distribution by wealthy households spending out of the inflated value of their assets (equity, housing, etc.) during the various financial market bubbles.

In some periods (for example, 1997-2002), large financial inflows into the United States helped to boost the value of the dollar, thereby disadvantaging U.S. producers. However, even when the dollar fell (for example, from 2002 to early 2008), although U.S. exports did increase significantly, so many U.S. industries had moved offshore that it was difficult to replace many imported goods with domestic ones. Meanwhile, the private lending that had sustained the trade deficit was replaced by official lending (foreign central banks buying dollar assets) that accomplished the same result. The official intervention was largely concentrated in China and other East Asian countries, with the effect that their currencies did not appreciate as much as the major western currencies (euro, British pound, and Canadian dollar) did after 2002. This growing discrepancy in the value of the dollar vis-à-vis different currencies became another obstacle to trade deficit adjustment, since the value of the dollar relative to major currencies like the euro gave a misleading impression of how much it depreciated relative to the currencies of the developing countries that supplied a majority of U.S. imports. At the end of 2008, the dollar recovered partially but rapidly in value as a somewhat perverse result of the financial crisis. Even though the crisis was centered in U.S. financial markets for securitized mortgages and derivative instruments, the global loss of confidence led to a "flight to safety" in what is still perceived as the world's safest asset, U.S. Treasury Bills, thus increasing the demand for dollars. Although this rise in the dollar may or may not persist beyond 2009, it temporarily interrupted even the limited benefits of a lower dollar for the U.S. trade position.

In all of this, the one factor that has played at most only a small and transitory role is the U.S. budget deficit. Since the 1980s, some economists and pundits have promoted the "twin deficit hypothesis," which claims that the federal budget deficit is the main cause of the large trade deficit. Although the two deficits were positively correlated during a few brief episodes of tax-cutting fervor (mainly 1981-83 and 2001-3), the two deficits have been *inversely* related during most of the past 35 years, and the large improvement in the budget balance under President Clinton failed to prevent a growing trade deficit in the late 1990s. Moreover, the statistical analysis in this paper shows that, during the last three decades, the fiscal balance has had a strong impact on the private saving-investment balance, but *not* on the trade balance. Rather, the worsening trade deficit has been driven primarily by deteriorations in U.S. competitiveness, increases in the value of the dollar, fluctuations in the private saving-investment gap, and sharply increased financial inflows (foreign purchases of U.S. assets).

Based on this analysis, this paper concludes that budget deficit reduction would do little if anything to improve the trade balance, while dollar depreciation is a necessary but not a sufficient means for restoring more balanced trade—especially if not accompanied by other measures both at home and abroad. U.S. trading partners need to be coaxed or pushed into rechanneling their excess saving into domestic investments, instead of pouring them into U.S. financial assets, or better yet raising their workers' wages and families' consumption levels so that they have less excess saving to begin with. At the same time, the U.S. government needs to think about bold, emergency measures that could help to give the country a "big push" out of its "trade deficit trap." In this paper, we consider two proposals for requiring importers to purchase "import certificates" that would restrict the value of imports (the original proposal by Warren Buffett and an alternative version by economists at the Levy Economics Institute of Bard College) as well as the alternative of an across-the-board tariff surcharge. Each of these three proposals has its pros and cons, but in the absence of some such bold policy initiative the trade deficit problem will continue to fester, with possibly severe long-term consequences as the United States continues to lose industrial jobs and increase its net external debt.

The impact of the dollar's exchange rate

During the first two decades after the dollar began to float in value in 1973, there was a close correlation between the value of the U.S. dollar and the trade deficit. **Figure B** shows this by plotting the trade *deficit* (i.e., the current account balance with the sign reversed, so that a positive number indicates a deficit) versus the Fed's index of the "real" (inflation-adjusted) value of the dollar.[6] Although the correlation is far from perfect—since other factors also affect the trade deficit, as discussed below—it is clear that, up to about 2003, increases in the dollar's value normally led to increases in the trade deficit and conversely, with time lags that generally averaged about 1-2 years. This is perfectly understandable, since a higher dollar makes U.S. goods relatively more expensive and foreign goods cheaper, so it tends to reduce U.S. exports while increasing U.S. imports, while a lower dollar does the opposite. The lags are explained by the time it takes to order, produce, and ship goods in response to changed international prices.[7]

However, the last five years (2003-8) were unusual because the dollar fell for most of this time period, but the trade deficit did not begin to improve until 2007 and then improved only slightly. Since the dollar peaked in the first quarter of 2002, we should have observed a notable

improvement in the trade balance by late 2004 or early 2005, according to previous patterns. Instead, the deficit continued to widen until 2006 and remained very high through 2007-8. The mystery lies in the fact that the fall in the dollar after 2002 did not have the same impact as the earlier dollar adjustments in the late 1970s and late 1980s, when dollar depreciations were followed (with lags of only about 1-2 years) by reductions in the trade deficit.

One reason for the disappointing trade benefits from the falling value of the dollar in 2003-8 is the uneven degree to which the dollar fell relative to different currencies at that time. **Figure C** compares the degree to which the dollar fell versus several other major currencies between the time when the dollar peaked in February 2002 and its trough in March 2008. This figure shows that China and several other southeast Asian countries (Hong Kong, Malaysia, and Taiwan) prevented the dollar from falling as much relative to their currencies, as it did relative to the euro and the major floating rate currencies (including the Canadian dollar, Swiss franc, and U.K. pound) as well as a few other Asian currencies (the Thai baht and South Korean won).[8] The countries that resisted appreciation of their currencies (and depreciation of the dollar) did so by buying large amounts of dollars each year to prop up the dollar's value. During the same period, the dollar actually appreciated relative to the currency of another major trading partner, the Mexican peso.

This divergence in the behavior of the dollar compared with different currencies is one of the prime reasons why the lower *average* value of the dollar has not had a bigger impact in reducing the trade deficit in the past several years. The Fed's "broad" index of the real (inflation-adjusted) value of the dollar declined by about 24% between February 2002 and March 2008 (this is the "average" for all currencies shown in Figure C).[9] However, this average decline masks important differences between the dollar's performance in relation to different groups of currencies. During the same period, the dollar fell 32% in real terms relative to the "major" currencies (the euro, British pound, Canadian dollar, Japanese yen, and a few other floating rate currencies), but only 14% relative to the currencies of "other important trading partners," i.e., the developing countries and transition economies, many of which have fixed or managed exchange rates. Yet, the "other" countries (which include major exporters such as China and Mexico) account for more than half of total U.S. imports and two-thirds of the trade deficit.[10] It is very difficult for an exchange rate adjustment to eliminate a large trade deficit when most of the imports are coming from precisely those countries whose currencies are not adjusting.

Nevertheless, the drop in the dollar vis-à-vis the currencies of the major industrialized countries has done some good, mostly in regard to exports. Since U.S. export products compete in global markets mainly with the products of other industrialized nations, the lower dollar relative to the euro, pound, and Canadian dollar (and, to a lesser extent, the Japanese yen) helped to stimulate strong growth of U.S. exports from 2003 to 2008 (see **Figure D**, which shows real U.S. imports and exports, quarterly from 2000Q1 through 2008Q3, at chained 2000 prices). Unfortunately, however, this strong export growth has been reversed in 2009, as the deepening global recession is dampening demand for U.S. exports.

Furthermore, real imports also grew strongly from 2002 through early 2007, thus negating most of the benefits of rising exports. This occurred in spite of the fall in the dollar since, as noted above, the dollar fell so much less relative to the countries from which the U.S. buys most of its imports. Only during the last two years shown (2007-8) did the volume of imports finally begin to fall, mainly because of the slowing U.S. economy (and also in response to the rising price of oil up to the summer of 2008, which induced a reduction in the real volume of oil imports). This decrease in imports, coupled with continued strong export growth through mid-2008, finally led to the small reduction in the trade deficit observed in the last year. However, since the dollar rose again in value in late 2008 (as nervous global investors decided to park their money in safe U.S. Treasury bills during the financial crisis) and both the U.S. and global economies were falling into deeper recessions in early 2009, the near-term future trend of the trade deficit is difficult to predict.

Why the trade and budget deficits are not twins

Since dollar depreciation has not sufficed to reduce the trade deficit, some economists and policy analysts have sought to revive the twin deficits hypothesis that was popular in the 1980s.[11] This hypothesis blames the rise in (and persistence of) the trade deficit on the federal government budget deficit, and it claims that the only way to reduce the former deficit is by lowering the latter one. For example, one economist has claimed that "the enormous increases in the current account deficit" after 2000 "largely resulted from the return of the government's budget deficit," and asserted that these "twin deficits ... [a]fter becoming estranged during the late 1990s, ... have recently reconciled" (Chinn, 2005, p. 1).[12] Following this line of reasoning, a *Washington Post* (2007) editorial proclaimed that if Congress wanted to reduce the U.S. trade deficit, the most

"effective measure" it could take would be to legislate "a reduction in the federal budget deficit."

The primary motivation behind the twin deficits argument is to absolve international trade policies and industrial competitiveness factors from any responsibility for the burgeoning U.S. external deficit, so as to weaken the case for "protectionist" responses. The fault, it is claimed, lies strictly in ourselves, in that we (the American public) have been unwilling to make the "hard choices" (tax increases or spending cuts) required to reduce the budget deficit, and this unwillingness forces us to borrow money from abroad, thereby leading to a large trade (current account) deficit—which is the flip side of a financial account surplus in the balance of payments.

Unfortunately for this renewed outbreak of economic Calvinism, the data simply do not support the twin deficit hypothesis. **Figure E** shows the two deficits, measured as percentages of GDP to scale for the size of the economy, using quarterly data from 1973Q1 to 2008Q3.[13] During most of the period shown, the two deficits generally move in *opposite* directions, exactly the opposite of what the twin deficit hypothesis suggests. One of the most notable instances of such an episode occurred during the prolonged rise in the budget balance from 1992 to 2000, when the fiscal balance increased from a deficit of –6% of GDP to a surplus of +2%. Contrary to what one would expect from the twin deficit view, the trade balance (measured by the current account in the balance of payments) did not improve, but rather worsened during this same period from about –1% of GDP to –4%. This pattern largely reflects the natural operation of the business cycle: the strong economic expansion of the late 1990s increased government tax revenue, thereby reducing the budget deficit, while also increasing import demand, thus worsening the trade deficit. The fiscal improvement of the 1990s was also aided by president Clinton's tax increases of 1993 and strict budgetary rules that limited spending increases. However, these fiscal belt-tightening measures had no perceptible positive impact on the trade deficit, which continued to worsen.

There were two exceptional periods when large tax cuts under presidents Ronald Reagan and George W. Bush helped to spark higher trade deficits (see the highlighted areas in Figure E). In the more recent of these periods, the budget reversed gears and plummeted from the +2% of GDP surplus recorded in 2000 to a –5% of GDP deficit in 2003, and during this brief period the two deficits did move in the same direction (although the trade balance actually went down much *less* than the fiscal balance at that time). However, this temporary coincidence hardly proves the twin deficit view. After all, the trade deficit was merely continuing its long-term downward

trend, and if anything its rate of deterioration *slowed down* during 2000-3 while the budget balance was dropping more rapidly than ever (this, of course, is explained by the recession and sluggish recovery during that period, which amplified the worsening of the budget deficit caused by Bush's tax cuts and war spending, but also slowed the growth of import demand). Furthermore, the budget balance improved significantly from 2003 to 2006, while the trade balance continued to worsen during those years. Then, in 2007-8, the budget balance worsened (mostly as a result of the economy's slowing and descent into a recession, which reduced tax revenue), while the trade balance improved slightly. Thus, in the last several years, the two deficits have reverted to their normal pattern of moving in opposite directions.

Thus, in terms of short-run, cyclical movements, the two deficits are more like mirror images of each other, rather than look-alike twins. But what about the longer-term relationship between them: do rising budget deficits since the 1980s explain the larger trade deficits that we observe today? Here again, the evidence is completely contrary to the twin deficits hypothesis. Although the budget deficits of the 2000s look worse than earlier deficits in nominal terms (current dollars), they were actually (on average) smaller than the budget deficits of the preceding two decades when measured in a more economically meaningful way as percentages of GDP (prior to the huge financial bailouts and fiscal stimulus policies of late 2008 and early 2009). In contrast, the trade deficits of the 2000s were larger than past trade deficits not only in current dollars, but also in proportion to GDP.

To make this point more clearly, **Figure F** shows the (simple, linear) trends in the two deficits for the entire post-Bretton Woods period, 1973Q1 to 2008Q3 (note that this excludes the period after the U.S. financial crisis and recession worsened in 2008Q4, data for which were not available at the time of this analysis). The current account (trade) balance shows a clear downward trend for this entire period, while the budget balance—in spite of exhibiting many cyclical ups and downs—has no clear long-run trend. Thus, in the long run as well as the short run, the deterioration in the trade balance cannot be explained by changes in the budget balance.

Saving, investment, and net financial inflows

Economists who support the twin deficit view have rested their case on the famous "national income identity," which is an accounting relationship between the two deficits and the gap

between domestic (private) saving and investment. This identity can be written as follows:

Current account balance = (Saving – Investment) + Government budget balance

This accounting identity is very important in the analysis of the two deficits: it implies that changes in any one of the three balances (fiscal, trade, and saving-investment) must be accompanied by offsetting changes in the other two combined. However, there are two problems with the way in which this identity is often employed. First, *an accounting identity is not a causal relationship*: there is no implication that causality has to flow in any particular direction between the variables linked by this identity.[14] Rather than the fiscal balance always driving the trade balance, any other direction of causality among the three variables is also possible, and it is also possible (indeed, likely) that common underlying factors (such as the business cycle) may account for the coincident movements in all of these variables that together keep the identity holding. Second, the identity includes the private saving-investment balance as well as the government budget balance, so there is no automatic link between the latter and the trade (current account) balance. Although, as we have seen, there is little support for a fiscal-trade deficit connection outside of a few exceptional episodes, there is more evidence that changes in the private saving-investment balance are related to the widening of the trade gap in the 2000s.

As **Figure G** shows, the saving-investment balance was normally positive in the U.S. economy until the late 1990s. This meant that private, domestic saving was generally more than sufficient to finance private, domestic investment—and the private sector usually had excess funds to lend out, either to the government (if it had a budget deficit) or to foreign countries (at times when the United States had a trade surplus). The saving-investment balance behaved counter-cyclically, that is, it rose in recessions and fell in recoveries, because investment is typically more cyclically sensitive than saving (i.e., investment rises more than saving in a boom, and falls more than saving in a recession).

However, the saving-investment balance exhibited an unprecedented drop into negative territory during the 1996-2000 period, and, after rising (predictably) in the recession of 2000-1, fell back to (more moderately) negative rates in the subsequent recovery (especially in 2004-7). Only in mid-2008, as the U.S. economy was tumbling into a recession led by a severe drop in residential investment, did the saving-investment balance return to about zero, but this "improvement" was offset by a concomitant fall in the budget balance so as to maintain a roughly constant trade balance of –5% of GDP. The unusual drop in the saving-investment gap

into negative territory between the late 1990s and 2007 meant that, for the first time, the U.S. private sector was chronically unable to finance its own domestic investment for most of the past decade. The negative saving-investment gap is thus another prime suspect in the mystery of what led to the larger trade deficit. At least in an accounting sense, the fall in saving relative to investment "explains" how the trade deficit could continue to worsen in the late 1990s in spite of the big improvement in the fiscal balance.

At first blush, it seems plausible that the notable drop in the private saving rate since the mid-1990s could be an independent causal factor in explaining the rise in the trade deficit. As **Figure H** shows, the entire decline in the private sector saving rate has come from personal or household saving, not corporate or business saving. The personal saving rate has declined since the late 1990s for several well-known reasons. For wealthy households, rising stock market and real estate values permitted increased spending on luxury consumption beyond even the disproportionate increases in current income that the richest households received during this period (see Mishel et al., 2009, pp. 57-71). For middle class families, rising home values allowed substantial increases in home equity debt, while for both middle class and working class families, credit card debt became ever more widespread. Thus, even if government profligacy is not to blame for the trade deficit, perhaps the consumption spending binge of the past decade, which pulled the personal saving rate down to historic lows, is a culprit.

Although this argument seems plausible, there are two problems with it. First, as can be seen in Figure G, for the past several years (roughly 2003-8) changes in the private saving-investment balance and the government budget balance largely offset each other, while the current account deficit remained relatively steady at about 5-6% of GDP. This suggests that *changes in the other two balances are mostly impacting each other, not the trade balance*. In particular, the saving-investment balance rose in 2007-8 because of the collapse of residential investment after the bursting of the housing bubble; the consequent recession caused a significant reduction in tax revenue, but only had a moderate impact in reducing imports. Second, it must be remembered that the variable that matters in the national income identity is the *difference* between saving and investment, not saving *per se*. Thus, the decline in saving alone cannot explain the rise in the trade deficit; rather, the interesting question is why private investment was able to remain relatively robust in the late 1990s and early 2000s (i.e., before the housing bubble burst in 2007-8) in spite of the decrease in private saving.

Foreign financial inflows

The answer to this last question varies between the late 1990s and the early 2000s. During the late 1990s, the shift in federal government finance from a large deficit to a significant surplus meant that the federal government changed from being a net borrower to a net lender in U.S. capital markets, thereby making more domestic funds available to finance private investment. However, this source of funds for the private sector disappeared starting in 2001, when the federal government under George W. Bush reverted to running budget deficits and once again became a net borrower rather than a net lender. In addition, and especially since the reversion to budget deficits in 2001, the country's openness to international financial flows has meant that the extra saving needed to finance domestic investment could be borrowed from other countries. In other words, international borrowing (which is the flip side of the trade deficit in the balance of payments) is as much a cause of the falling private saving-investment balance, as the latter is a cause of the former. Thus, trying to explain the rising trade deficit by a falling private saving-investment balance is a bit like a "chicken-and-egg" argument: without a large trade deficit and the concomitant large inflows of foreign funds, it would have been impossible for the saving-investment balance to fall as far as it did (especially with the budget balance reverting to a deficit after 2001).[15]

Indeed, foreign funds did pour into U.S. financial markets in the late 1990s and early 2000s. **Figure I** shows the enormous boom in foreign purchases of U.S. financial assets during the late 1990s and early 2000s, until they collapsed during the financial crisis of 2008. These unprecedented purchases of U.S. assets—in some recent quarters approaching 5% of U.S. GDP—explain several of the other trends we have already observed. For one thing, the increase in these purchases pushed up the value of the dollar between 1995 and 2002, and subsequently slowed its decline until 2007-8 (when these purchases fell off sharply). Also, these purchases constituted a gigantic loan to the U.S. economy that enabled the private sector to invest more than it saved—and, after 2001, to do so while once again financing a government deficit. Finally, these purchases have contributed to the surpluses in the financial account of the U.S. balance of payments, which are the mirror image of the deficits on the current account.

What factors drew so much foreign money into U.S. financial markets since the mid-1990s? One important factor was the Federal Reserve's interest rate increases in 1994-95, 2000, and 2004-6, when the Fed was launching pre-emptive strikes against possible higher inflation

during periods of economic recovery or boom. Another factor that became important in the late 1990s was the boom or bubble in the U.S. stock market, which attracted speculators betting on further increases in equity prices (and another equity price bubble popped up in the mid-2000s). Yet another factor was the financial crises of the late 1990s in Asia and other developing regions, which induced risk-averse investors to park their funds in the "safe haven" of U.S. assets.[16] Finally, as we will discuss in more depth in the next section, an increasing portion of the net purchases of U.S. assets after the dollar began to fall in 2002 were "official" purchases by foreign central banks attempting to resist market pressures toward appreciation of their countries' currencies.

As a result, these huge financial inflows pushed the U.S. balance of payments simultaneously into a surplus in the financial account and a corresponding deficit on the current account (trade balance, broadly defined), while at the same time lending U.S. residents the funds needed to pay for the growing excess of U.S. imports over U.S. exports (and the parallel excess of investment over saving, plus the budget deficit). All of this occurred largely independently of the ups and downs in the federal government budget balance *per se*, although (as noted earlier) the financial inflows enabled the private sector to continue investing at historically normal levels (until the crisis of 2008) in spite of decreased private saving (especially by households). However, it is important to note that *private* financial inflows ceased to be a significant causal factor in after a sharp increase in policy intervention by foreign governments starting around 2000-1.

Policy interventions and structural factors

All of the borrowing that covered the large trade deficits of the past two decades has transformed the United States from being the world's largest creditor nation into the world's largest large debtor. **Figure J** shows the somewhat misleadingly named "net international investment position" of the United States from yearend 1976 to yearend 2007 (yearend 2008 data are not yet available). This should really be called the net international asset position (because it counts stocks of assets rather than flows of investment), and a negative value represents a net debt. While the United States switched from an overall net creditor position to net debtor status in 1986, the net debt really ballooned after 2000 when it passed the $1 trillion threshold and rapidly climbed to $2.4 trillion at the end of 2007.[17]

Although the U.S. net debtor position has been much commented on, the degree to which this now reflects the impact of foreign governments' official intervention in global currency markets has not received the same attention.[18] Figure J shows that foreign *official* assets in the United States—which are essentially U.S. obligations to foreign central banks (U.S. Treasury bills and other government-issued securities[19] owned by the latter)—also skyrocketed in the 2000s. In fact, by the end of 2007 (2008 data are not yet available), foreign official assets in the U.S. of $3.3 trillion *exceeded* the overall U.S. net debtor position of $2.4 trillion. In other words, *excluding this enormous debt to foreign central banks, the United States is actually still a net creditor country* to the tune of about $900 billion in all of its other (unofficial, i.e., non-central bank) international asset transactions.[20] Moreover, the increase in foreign official assets in the U.S. more than accounts for the entire deterioration in the overall net investment position in the 2000s.

Thus, the growing foreign accumulation of U.S. assets after 2000 was *not* the result of increased confidence in the U.S. economy or U.S. assets by private-sector agents.[21] On the contrary, it was mainly foreign central bank intervention that continued to finance the U.S. current account deficits and allowed the United States to build up such an enormous foreign debt in the last decade. The countries whose central banks have bought large volumes of U.S. assets (principally Treasury securities, and more recently, securities issued by other government sponsored enterprises such as Fannie Mae and Freddie Mac) as foreign exchange reserves have done so for two main reasons. First, these countries learned the lesson from the emerging market financial crises of 1997-99 in East Asia, Russia, and Brazil that having large volumes of reserves is essential for countries to be able to defend their currencies from speculative attacks. Second, many of these same countries have deliberately sought to prevent their currencies from appreciating as much as they might have otherwise under a freely floating system in the market, thereby maintaining their trade surpluses with the United States.

The leading offender in this respect is China, with which (not coincidentally) the United States has its largest bilateral trade deficit.[22] It is true that China allowed its currency to appreciate somewhat after 2005, although it appreciated much less than other currencies as shown in Figure C above (and it was much less than would be needed to correct the previous undervaluations).[23] Notwithstanding this appreciation, China increased its foreign exchange reserves *tenfold*, from $166 *billion* at the end of 2000 to $1.68 *trillion* at the end of the first

quarter of 2008 (thus China's reserves alone account for *half* of the $3.3 billion of total foreign official assets in the U.S.).[24] Cline and Williamson (2009) estimate that the yuan would have to rise another 40% relative to the dollar just to reduce China's current account surplus from an estimated 10% of its GDP in 2009 to a more sustainable 4%.[25] **Figure K** shows the especially large imbalance between U.S. imports from China and U.S. exports to China that has opened up in the last decade, largely (though not entirely) as a result of this currency market intervention. The huge excess of imports from China has also been driven by other factors, including China's accession to the WTO, favoritism toward local suppliers, closed markets for imports of goods for domestic consumption, lack of enforcement of intellectual property rights, ability to combine low wages with high productivity, and suppression of free labor unions.

Foreign central bank intervention operates in two ways to widen or sustain the U.S. trade deficit. On the one hand, by keeping foreign currencies (like the Chinese yuan) undervalued, these policies keep foreign-produced goods artificially cheap. These policies also kept capital artificially cheap in the United States, helping to fuel the housing bubble and keep unemployment low (until 2008) despite the collapse of U.S. manufacturing. On the other hand, by buying U.S. assets, these policies supply the United States with the funds it needs to pay for the excess of its imports over its exports (and the corresponding excess of investment and the budget deficit combined over domestic saving). Moreover, since currency undervaluation makes imported consumption goods artificially *expensive* in the countries conducting this sort of intervention, it helps to suppress consumption spending and encourage excessively high saving rates in those nations—thereby giving them the funds they need to keep acquiring U.S. assets. Fed Chairman Ben Bernanke highlighted this "global saving glut" in a series of speeches (Bernanke, 2005, 2007), and there is no question that it is a significant cause of global trade imbalances, including the U.S. deficit. What Bernanke did not comment on, however, is the need to allow foreign workers to increase their wages in line with their productivity so that they can create more of a mass consumer market in exporting nations (that is, those with substantial and sustained trade surpluses), thereby relieving those countries of the necessity of relying so heavily on exports markets to find demand for their products.

In addition to the financial factors discussed above, changes in global trade patterns and U.S. trade policies can have an independent impact on the trade balance.[26] One factor that has played into rising trade deficits is the uneven impact of recent trade agreements, starting with the

North American Free Trade Agreement (NAFTA) in 1994, the World Trade Organization (WTO) in 1995, and—perhaps most significantly—the extension of "permanent normal trade relations" (formerly known as most-favored nation status) to China and China joining the WTO in 2001. While ostensibly these trade agreements have reciprocally opened markets both in the U.S. and abroad—and foreign tariff reductions have sometimes exceeded those of the United States—the actual impact has been a disproportionate opening of the U.S. market to imports from other countries. The main reason for this outcome is that these so-called "trade agreements" also include "deep integration" provisions protecting the rights of foreign investors and extending trade liberalization into services[27]—and these provisions have largely operated to make other countries more attractive locations for U.S.-based companies. Combined with the undervaluation of currencies and the suppression of wages and consumer demand in many other countries (especially in East Asia), the foreign market-opening provisions of the trade agreements have thus taken a back seat to their impact in encouraging outsourcing by U.S. companies (either directly through multinational production or by contracting with local exporting firms abroad).

Finally, it is important to note that the hollowing-out of the U.S. industrial structure in the past decade had a lasting impact in terms of making it more difficult for the United States to replace imports with domestic products, in spite of a lower-valued dollar. Blecker (2007) estimates that the rise in the value of the dollar after 1995 had the cumulative effect of reducing the capital stock of the U.S. manufacturing sector by 17% by yearend 2004, compared with what it would have been if the dollar had remained at its 1995 level. His estimates also show that annual investment in manufacturing was 61% lower in 2004 than it would have been if the dollar had remained at its 1995 value. What has happened is not only that significant portions of manufacturing capacity have been "offshored," but also that the remaining manufacturing industries have become increasingly dependent on imports of intermediate goods (parts and components) that are no longer made at home—along with many finished goods, for which domestic capacity no longer exists (or is significantly reduced). Since manufacturing remains the chief sector that produces tradable goods, accounting for about 80% of U.S. trade in goods and goods trade made up about 80% of total U.S. trade in 2008, it is difficult for the U.S. to engineer a reduction in its overall trade imbalance while the manufacturing sector has been restructured in ways that make it more dependent on imports.

Summary of econometric estimates

As the above discussion makes clear, disentangling the effects of variables that are related by various channels of causation as well as by accounting identities is not an easy task. The appendix to this paper describes an econometric model that has been used to try to identify these separate causal effects. The model includes the three balances in the national income identity (the trade, fiscal, and saving-investment balances) plus, in an extended version, the real value of the dollar. The reader who is interested in the technical aspects of these estimates is referred to the appendix (and the reader who is not interested in these estimates at all can skip this section).

As explained in the appendix, the main results of the model are summarized in what are called "impulse responses" and "variance decompositions." The impulse responses show how each variable is affected over a period of time by a "shock" to (or "innovation" in) a given variable (including "own-effects," i.e., the effects of shocks to a given variable on its own subsequent evolution), while the variance decompositions show the portion of the variation in each variable that is attributable to innovations in each other variable and its own innovations. What follows here is an intuitive summary of the results and their implications:

- In the complete model including the exchange rate, shocks to the value of the dollar explain about 24% of the variation in the current account after 10 quarters (i.e., 2½ years).[28]
    - The effects of variations in the dollar's value on the current account do go in the expected direction: a higher dollar worsens the current account, while a lower dollar improves it. This result implies that maintaining a lower value for the dollar can be a helpful part of a strategy for reducing the trade deficit, even if it is unlikely to be sufficient for that purpose by itself.
    - Still, about 40% of the variation in the current account is explained by its own innovations even after exchange rate effects are controlled for. The own-innovations in the current account undoubtedly stem from a combination of the net financial inflows (including central bank interventions) and underlying trade factors (such as competitiveness and trade agreements) discussed earlier.[29]
- The value of the dollar in turn is largely independent of the other variables in the model, since over 70% of the variation in the dollar is "explained" by own innovations (i.e., shocks to the dollar's value) even after 10 quarters.

    - The dollar's value is determined mainly by financial factors such as interest rates, currency speculation, and exchange market intervention by foreign governments, which are not included in our VEC model; these variables would have to be included in a more complete model of the exchange rate, which would be beyond the scope of this paper.
- Shocks to the government budget balance have virtually no effects on the trade balance (current account), with both variables measured as shares of GDP. What little effects there are tend to go in the "wrong" direction (negative, i.e., a higher budget surplus causes a slight decrease in the current account balance), but these are negligible in magnitude.
- In contrast to the budget balance, shocks to the private saving-investment balance do have positive effects on the current account balance. For example, when investment falls in a recession (implying that saving *minus* investment *rises*), demand for imports slackens and the current account improves.
    - To a large extent, these shocks reflect normal business cycle effects: in a boom, growing demand induces both investment and imports to rise, so that the saving-investment and foreign trade balances both decrease; in a recession, the opposite occurs.
    - Moreover, *the shocks to the saving-investment balance explain only about one-third of the variation in the current account*. Therefore, while the saving-investment balance does have some causal impact on the trade balance, it is by no means the most important causal factor.
- Although shocks to the budget balance have little impact on the current account, they have large, positive effects on the private saving-investment balance. Thus, an increased fiscal surplus causes a reduction in the saving-investment balance (for example, because higher taxes reduce disposable income and thereby depress saving). Innovations in the budget balance explain between about 60% and 70% of the variations in the saving-investment balance.
    - One implication of this finding is that the huge shift from budget deficits to surpluses during the 1990s contributed significantly to the fall in the private saving-investment balance observed at that time (see Figure G above), with little

or no impact on the current account (trade balance).[30]

- This finding also implies that a lot of the variation in the saving-investment balance does *not* reflect autonomous behavior of the private sector, but rather is induced by changes in fiscal policy.

- Finally, the impulse responses reveal positive effects of the saving-investment balance and negative effects of the current account balance on the value of the dollar. The latter result shows that there is no automatic tendency of the dollar to adjust in the "right" direction to cure a trade deficit—which would require a positive effect of the current account, so that a lower trade balance (higher deficit) would cause the dollar to depreciate.
    - We should recall that a higher trade balance means less financial inflows, which is probably why the effect goes in the direction of dollar depreciation.
    - The failure of the dollar to adjust automatically to cure a trade deficit is also due to speculative pressures on the dollar that can carry it in the "wrong" direction (for example, during the "bubbles" in the dollar's value that erupted around 1984-85 and again around 1998-2002) and to the intervention of China and other surplus countries to prevent their currencies from adjusting, as discussed earlier.
    - Although it is not reflected in this econometric exercise, for which the data end in 2008Q3,[31] the jump in the value of the dollar in 2008Q4 (see Figure B, above) shows once again how financial market forces can pull the dollar's exchange rate in the wrong direction for curing the trade deficit, in this case because investors fled riskier assets overseas and bought large amounts of U.S. Treasury bills during a financial crisis.

Conclusions and Policy Responses

As the preceding analysis makes clear, the U.S. trade deficit is now sustained by a set of self-reinforcing, mutually supportive mechanisms that are difficult to break out of. No single policy lever that the United States can pull will quickly or painlessly get the country out of the "trade deficit trap" that it has fallen into. Traditional remedies, such as reducing the budget deficit or depreciating the dollar, will not be sufficient (although the latter is much more likely to be beneficial than the former). Moreover, Bernanke (2005, 2007) makes an important point: the

U.S. trade deficit is not only the result of U.S. actions and policies, but also depends on events and policies in the rest of the world—especially those that have led to a global saving glut and massive currency market intervention. For the United States to be weaned off of its reliance on imports of cheap consumer goods and outsourced intermediate goods and its dependency on external borrowing, the rest of the world needs to be weaned off of its reliance on U.S. markets for manufactured products and U.S. assets as repositories for national saving. Furthermore, to the extent that net foreign acquisitions of U.S. assets are now driven by foreign government intervention in currency markets rather than private sector purchases, action is required to dissuade foreign governments from pursuing those interventionist policies.

Contrary to the conventional wisdom among some economists and editorialists, reducing the federal budget deficit—whatever its merits on other grounds—would do little if anything to reduce the nation's trade deficit. Based on the experience of the last two decades as well as the econometric estimates in this paper, it is likely that reductions in the budget deficit would mainly result in offsetting reductions in the nation's saving-investment balance without having much impact on the current account.[32] The two deficits are at most distant cousins, certainly not twins, and sensible policy discussion needs to begin by separating the two. There may be good reasons to curb U.S. budget deficits in the long run—especially after they soar far in excess of $1 trillion per year as a result of the bank bailouts and stimulus policies used to address the financial crisis and recession in 2008-9—but those reasons have more to do with the long-run sustainability of the government's financial position than with solving the trade deficit.

There is more reason to believe that maintaining a lower, stable, and sustainable value of the dollar should be an important part of a strategy for trade deficit reduction. As we have seen, the fall in the dollar from 2002 through mid-2008 did help to boost U.S. exports, even though it did relatively little to curb the U.S. appetite for imports until the very end of that period. The fact that so many industrial activities were "offshored" during the previous period of dollar appreciation implies that the dollar would have to stay at a lower value for a prolonged period of time in order to induce a new bout of reinvestment in U.S. tradable goods production (including the many intermediate goods that are now outsourced). In the summer of 2008, just before the worst of the financial crisis and recession broke out the following autumn, there was growing evidence that the low value of the dollar combined with the then-high prices of energy (which implied high transportation costs) were starting to bring some industries (especially producers of

heavy goods, such as steel and furniture) back to the United States.[33] However, this favorable trend was soon interrupted by the financial crisis and recession, which—among other things—led to a significant recovery of the dollar (due to U.S. government assets being perceived as a "safe haven") and a collapse of global industrial production and trade flows in the fall of 2008. This episode reminds us that it is perilously difficult to control or predict the path of the dollar, since it is so subject to the vicissitudes of global financial markets and so unresponsive to the needs of balancing U.S. trade.

Thus, while a sustained lower dollar would eventually help to restore more balanced trade, we cannot count on global financial markets in a world of floating exchange rates to keep the dollar at an appropriately low level for rebalancing U.S. trade. The U.S. dollar is valued chiefly because of its still-preeminent role in global financial markets (including its use for currency manipulation by countries such as China), and because other U.S. financial assets are denominated in dollars. The dollar's exchange rate is determined mainly by the relative demand for dollar-denominated assets versus assets denominated in other currencies, not by the requisites of balancing U.S. trade. In the long term, replacing the dollar with a global currency or currency basket as the world's main reserve asset would help to eliminate the dollar's recurrent overvaluation due to financial market factors, but the political prospects for such a new global monetary system seem dim at present.

For dollar depreciation to work, it would have to be more broad-based than it was in the early 2000s and not so concentrated with the major floating rate currencies such as the euro, British pound, and Canadian dollar. Most importantly—and on this we concur with Chinn (2005)—concerted action is required to press China and other surplus countries with managed exchange rates to let their currencies rise more in value (whether they do so by floating or by revaluing their managed rates, is something that should be left up to them).

Ultimately, what is needed is a cooperative rebalancing of the entire global economy, with foreign countries doing more to stimulate their own demand and foreswearing the kind of intervention in currency markets that currently sustains global trade imbalances. In addition to facilitating a reduction in global trade imbalances, this would, together with appropriate domestic policies, enable the surplus countries to maintain their own prosperity while reducing exports to the U.S. market and would help to achieve a recovery from the current global downturn. It is possible that the severity of the current worldwide economic crisis will give the Obama

administration an opening to negotiate a new global economic order, in which all the major countries (including the leading developing nations) would agree to a more cooperative set of arrangements to replace the current neo-mercantilist fixation on trade surpluses with the United States. But, the prospects for such an ideal outcome are at best uncertain.

In the meantime—though not until after the world economy recovers from the present crisis—the United States may also need to consider adopting more dramatic measures to break out of the trade deficit trap and force the rest of the world to come to grips with the need for a (hopefully cooperative) rebalancing of global trade and financial flows. Or, to put it another way, it may take a "big push" to get the U.S. economy out of the "trade deficit trap" in which it has become stuck.[34] Several proposals have been advanced for what form such a big push might take, and here we consider three: the Buffett plan for import certificates (ICs), the Levy Institute alternative plan for ICs, and an across-the-board tariff surcharge. The following is a brief discussion of each proposal and its pros and cons:

- Billionaire investor Warren Buffett (2003) proposed a plan for the U.S. government to issue ICs in order to restrict the value of U.S. imports and keep it in line with the value of U.S. exports. Essentially, all U.S. importers would have to obtain ICs in order to purchase imported goods (excluding oil or other strategic commodities, in some versions of the plan), and the ICs would be obtained (directly or indirectly) from exporters who would receive the ICs in proportion to the value of their exports. Thus, for example, a company that exported $1 million of goods would receive $1 million worth of ICs, which it could use to import goods, or else resell either directly to other importers or via intermediaries. Although the amount of imports allowed would be fixed by the face value of the ICs, the sale price of the ICs would fluctuate in the marketplace—thereby rewarding the exporters who could sell them at a premium, but also potentially rewarding intermediaries and speculators who could buy them up, hoard them, and resell them.
    - There are a number of advantages to Buffett's plan. First, it would reward exporters, thereby giving incentives to increase export production (which itself would help to reduce the trade deficit). Second, it would allow the market to determine which goods would be imported, rather than protecting particular industries or products. Third, it would put pressure on foreign countries to find ways to reduce their exports, including allowing their currencies to appreciate

where appropriate. And fourth, as long as the IC requirement is strictly enforced, it would quickly bring the trade deficit down to the targeted range (for example, 2% of GDP, if that is the level of oil imports).[35]

- Nevertheless, there are a number of difficulties with Buffet's proposal. Like any plan for trade deficit reduction, the IC plan would of course make imported goods more expensive for businesses and consumers (since importers would presumably have to pay more than $1 for ICs to purchase each $1 of imports). However, as highlighted by Papadimitriou et al. (2008), the prices of the ICs might be likely to fluctuate wildly in the markets that would be created for them (similar to the prices of other assets that are traded in financial markets), and this price instability could create tremendous uncertainty for businesses that need imports for their operations. While it may be necessary to make imports more expensive, it is not desirable to make their prices volatile and unpredictable. Given the recent bubbles and busts we have seen in financial markets, this constitutes a significant downside to the Buffett plan.[36]
- Also, the Buffett plan would have perverse effects if U.S. exports fell (for example, because of a foreign growth slowdown or foreign retaliation against U.S. exports). If exports fell, so would the volume of the ICs issued, and the U.S. would be forced to cut back its imports. This could lead to a shrinkage of trade *per se*, with adverse consequences for industries that truly need imports. Finally, the Buffett plan would result in windfall gains for current exporters, which may or may not invest them in increased export production, and which could skew the U.S. income distribution in unintended ways.

- To address some of these and other concerns, a group of scholars at the Levy Economics Institute proposed an alternative IC plan (Papadimitriou et al., 2008). In the Levy plan, ICs would be auctioned by the U.S. government instead of given for free to exporters. The quantity of ICs would still be limited so as to achieve a targeted level of the trade balance. Instead of exporters reaping a windfall profit, the government would receive the revenue from selling the ICs at auction (presumably, at prices higher than their face values, since the supply of ICs would deliberately be held below the demand for imports at present prices and exchange rates). The government could then use this revenue to

reduce the budget deficit or cut other taxes (Papadimitriou et al. propose reducing payroll taxes by an equivalent amount. Although this particular use of the IC revenue is not essential for reducing the trade deficit, it is a key component of the Levy plan because of the positive boost it could give to U.S. employment.

- Papadimitriou et al. report that their plan (including the reduced payroll taxes) has macroeconomic advantages over the Buffett plan, especially in regard to lessening the "severity of the growth recession expected in our base projection" (p. 1). This result is highly sensitive to the assumptions of the Levy model of the U.S. economy, especially the assumption that the auction revenue would be offset by a reduction in payroll taxes (which would stimulate middle-class consumption). It does not necessarily follow from the auctioning of the ICs *per se*. However, one of the reasons why Papadimitriou et al. favor auctioning of the ICs by the government is precisely because the auction revenue could be devoted to a good public purpose instead of captured by exporters as in the original Buffett plan.
- Papadimitriou et al. (2008) claim that government-auctioned ICs would have certain advantages, such as lower administrative costs and less susceptibility to fraud, compared to ICs issued to exporting companies. They also claim that their plan would reduce volatility in IC prices. However, the latter claim is not entirely credible. Papadimitriou et al. assume that importers would "simply buy certificates at an auction—much like today's Treasury bond auctions—rather than going to a market akin to a stock exchange" (p. 32). However, there is no reason why a secondary market in ICs could not develop for government-auctioned ICs, just as there is a secondary market for Treasury bonds, and such a market could be highly volatile regardless of how the ICs were initially issued. Perhaps the government could try to prohibit resale of the auctioned ICs, thereby forcing actual importers to purchase them directly from the government, but such a prohibition would seem ripe for evasion and fraud (imagine the legal battles over which corporate entity is an "importing firm"!), and thus would exacerbate the enforcement costs that the proposal is intended to avoid.
- The Levy plan would require the government to estimate in advance the value of U.S. exports in a given year (and to make adjustments during each year), since the

value of the ICs issued would have to be calibrated to equal the expected value of exports (plus any desired extra allowances, such as for oil imports or gradual implementation). The value of exports can be difficult to predict, since it depends on foreign economic conditions and the value of the dollar. In contrast, the original Buffett plan links the value of the ICs issued to the value of U.S. exports, thereby providing an automatic calibration of allowed imports to actual exports.

    - In both plans—as long as the ICs can be saved and resold—there is a risk of purchasers hoarding them in the hope of obtaining higher prices later, thereby creating difficulties for importers who need the certificates at any point in time (and exacerbating price volatility). See Garr (2009) for suggestions on how to avoid these problems.

- One major advantage of the Levy plan is that it would generate significant government revenue that could be used to reduce either the budget deficit or other taxes, such as payroll taxes. However, if the goal is to raise government revenue while reducing the trade deficit, there is a much simpler and less administratively complex alternative: an across-the-board tariff surcharge. An across-the-board tariff is admittedly an blunt instrument, but it could easily be implemented through existing Customs Bureau operations without a need to create an additional administrative mechanism, as would be required for any sort of IC plan. Like the two IC plans described above, an across-the-board tariff would not discriminate against any particular countries or protect any particular industries; it would also let market forces determine which goods would be imported and from which countries. Since there would be no re-sellable ICs, the problem of price volatility for importers would be avoided. Importers would of course have to pay more for their imports, but the tariff rates would be widely known and predictable. As Papadimitriou et al. (2008, p. 28) acknowledge, "a tariff program would essentially be a certificate plan in which an unlimited amount of certificates would be available at a fixed price"—but in effect, the cost of these certificates limits the demand.
    - However, an across-the-board tariff surcharge also has its downsides. Unlike the original Buffett plan (and more like the Levy plan), a tariff does nothing (at least directly) to stimulate exports. There is a long history of countries being disappointed in the use of tariffs for balance of payments purposes, mostly for this

reason. Tariffs give incentives to produce for the domestic market, but not for export, yet many U.S. export industries are among the most technologically dynamic industries that we should want to promote. Although the Buffett plan does not guarantee that all of the windfall gains to export producers would be invested in expanding export capacity, it does provide an incentive structure to exporters, and therefore provides is a greater opportunity for boosting exports than either of the other two plans. However, both the tariff and the Levy plan would be more effective in improving the trade balance if accompanied by a low-valued dollar, which is especially beneficial on the export side as discussed earlier.

- The government would have to estimate a tariff surcharge rate that would achieve a targeted amount of trade deficit reduction. The tariff would also have to be adjusted often to correct for errors and to respond to changing economic conditions in order to meet targets for the trade deficit. This could be even more complex to calculate and more prone to error than the estimation of the ICs needed under the Levy plan. This is potentially another drawback of using a tariff instead of an IC system. However, there are well-known advantages to the use of a tax rather than a quantitative restriction on imports. For example, if exports fall in a given year (say, because of a foreign recession), the United States would not be forced to reduce its imports at the same time. This would mean less disruption for U.S. businesses and consumers, and it could also lessen the negative repercussion for the global economy that would occur if the United States was forced to cut its imports in the midst of a foreign recession.
- Finally, one criticism of a tariff surcharge is that it could be offset, entirely or partially, by foreign exporters reducing their prices so as to absorb some of the impact of the tariff and preserve market share in the United States. This is a phenomenon known as “partial pass-through” of a tariff. However, partial pass-through can also occur in response to other means of making imports more expensive, such as currency depreciation or an IC system. Under the latter, foreign exporters could reduce their prices so that their goods could be purchased in the United States with fewer ICs. Therefore, this problem is not unique to a

tariff. Moreover, when foreign exporters cut their profit margins (as they must when they reduce export prices), this diminishes their incentives to sell in the U.S. market and may induce them to seek other outlets. In addition, there is a limit to such price-cutting. If the tariff is set high enough, foreign exporters may not want to cut profit margins to zero or suffer operating losses (unless they are subsidized or willing to dump, in which case there are other legal remedies available).

It could be argued that any of these proposals would have severe beggar-thy-neighbor consequences for U.S. trading partners that are highly dependent on exports to the U.S. market, as well as for the global economy as a whole. This is a valid concern during a period of global crisis and recession, when a further cut in foreign exports to the United States could worsen or prolong the downturn in the short run. However, it is not a valid argument in the long run, when the surplus countries (from Germany to China) have the capacity to expand domestic demand to make up for any shortfall of exports to the U.S., and concomitantly to reduce the excess savings that they currently invest in sustaining the U.S. deficit. It would make sense, therefore, to announce that an IC or tariff surcharge plan would go into effect after the economy recovers from the present recession, when the U.S. trade deficit would otherwise worsen again.

Indeed, an important motive of these plans is, as discussed earlier, to push the surplus countries to shift toward greater reliance on domestic demand instead of export demand. Provided that the IC or tariff surcharge plan is announced well in advance, countries will have time to plan their adjustment—and if they make the adjustments in time, actual implementation of the plan may not be necessary after all. Indeed, the pre-announcement of an IC or tariff surcharge plan by the United States in advance of a global recovery could convince other nations that they need to focus more on domestic stimulus policies, and not wait for the United States to pull them out of their own slumps.

Aside from the economic issues, any of these three measures would raise international legal concerns given U.S. obligations under its trade agreements—especially the General Agreement on Tariffs and Trade (GATT), which today is administered by the World Trade Organization (WTO). It would be beyond the scope of this paper to fully address the question of GATT legality, but a few points are relevant here in regard to economists' natural concern about the possibility of foreign countries retaliating against U.S. import restrictions by imposing restrictions of their own. First, Article XII of the GATT permits a country to impose temporary

import restrictions in response to a balance of payments problem under certain circumstances. This provision could be cited to justify either an IC scheme or a tariff surcharge, as argued by Stewart and Drake (2009). The United States would be required to consult with other countries if it put any type of import restriction (IC or tariff surcharge) into effect, and such consultations could lead to negotiations over the deeper issues discussed earlier (such as foreign intervention in currency markets and excessive saving rates).

Foreign countries could file a complaint against the IC or tariff surcharge system through the WTO dispute settlement process, and they could not impose retaliatory tariffs of their own unless they won the WTO decision. The chances of foreign complainants winning at the WTO would probably be greatest under the original Buffett plan, since the allocation of ICs to exporting firms could be interpreted as a GATT-illegal subsidy. However, this problem would not arise under either the Levy IC plan or an across-the-board tariff surcharge, neither of which subsidizes exports. The fact that all three plans do not discriminate by product or country helps to make them legal under GATT Article XII, and making any one of them temporary would also help in this regard.

The United States also has options in how it could design any IC or tariff surcharge plan to make it more palatable to its trading partners by creating incentives for them to cooperate rather than to retaliate. For example, the implementation of either an IC or tariff surcharge system could be made contingent on the continuation of the trade deficit at a certain level, and if it fell below some threshold (such as the frequently cited 2% of GDP) the IC program or tariff surcharge could be suspended. This would hopefully motivate the surplus countries to find other ways to reduce their trade surpluses with the United States, such as by letting their currencies appreciate or purchasing more U.S. exports. For legal and political reasons, members of free trade areas with the United States (such as Canada and Mexico) might have to be exempted.

Importantly, it should be noted (and, indeed, hoped) that the mere threat of the imposition of an IC system or a tariff surcharge might induce other countries to seek to negotiate a more cooperative set of arrangements, rather than risk the system actually being put in place (though there would have to be a “credible threat” of this actually being done, as well as an openness to alternative solutions, in order to elicit the desired response). After all, other countries depend on their access to the U.S. market for their exports, and would therefore have incentives to find a negotiated solution rather than to seek confrontation. My own view is that the main purpose of

proposing an IC or surcharge plan should be mainly to put pressure on the surplus countries to adjust their economies by shifting to greater reliance on domestic demand, and that it would be preferable if such a system need not actually be put in place.

Clearly, each of the plans discussed above has its advantages and disadvantages, and my purpose here is not to endorse any particular one, but rather to evaluate their respective advantages and disadvantages. In the absence of any such measure being adopted, it is possible that the United States could continue to muddle through with a large trade deficit, a depressed industrial sector, and a growing external debt for a long time, with at best very slow and gradual reduction of the trade deficit if the dollar falls again and remains low. However, while one does not want to "cry wolf," the recent collapse of the U.S. housing bubble and the ensuing financial crisis remind us that unsustainable situations sometimes end very abruptly and unexpectedly, with often dire consequences when they do. The much-feared "hard-landing" scenario for the trade deficit envisions a dramatic loss of foreign investors' confidence in the U.S. economy (or a sudden end to foreign official intervention to purchase U.S. assets), leading to a massive withdrawal of foreign funds, a precipitous further drop in the dollar, interest rate hikes by the Fed to try to rescue the greenback, and a deep recession or possibly a prolonged depression. Such a crisis would reduce the trade deficit simply because under these circumstances Americans would not be able to afford their accustomed levels of imports. Given that such a U.S. crisis would inevitably drag down other countries, one would think that other nations, as well as the United States, would have an interest in finding a way to avoid the hard-landing scenario.

Appendix: VEC model

The econometric method of unrestricted vector autoregression (VAR), which was invented by Sims (1980), is especially useful for situations in which one does not want to bias the estimates by assuming a structural model that, by its nature, would allow for some causal relationships but not others. The VAR method allows the data to speak, by identifying to what degree "shocks" or "innovations" in each variable (i.e., changes not explained by any other variable in the system) explain subsequent movements in the other variables. For reasons explained below, the estimates presented here were generated using a special type of VAR model called a vector error correction (VEC) model, which must be used because the data have certain properties (known as "unit roots" and "cointegration") that invalidate plain VARs.

Our model consists of four variables: the three balances (government budget, current account, and private saving-investment, all measured as percentages of GDP) shown in Figure G and the index of the real value of the dollar shown in Figure B. In addition, as a sensitivity test, we also used an alternative measure of the trade balance: net exports of goods and services (also expressed as a percentage of GDP), which was shown (along with the current account balance) in Figure A. Very similar results were obtained using either the current account balance or net exports of goods and services, and only the former results are reported here (results using net exports are available from the author on request). The sample period is 1973Q1 to 2008Q3, the longest period for which quarterly data on all four variables could be obtained. In addition, current account imbalances were generally very small and mostly positive (on the order of about 1% of GDP or less) in the United States prior to the shift to a floating exchange rate for the dollar in 1973, so it is unlikely that the same model would apply to earlier years.

The first step in estimating any VAR-type model is to determine if the individual data series have "unit roots," i.e., do they persistently deviate away from their mean values? We used two alternative procedures for testing for unit roots: the Phillips-Peron (PP) and Kwiatkowski-Phillips-Schmidt-Shin (KPSS) tests, respectively.[37] The PP tests show unambiguously that all of the variables have unit roots: the null hypothesis of a unit root is accepted when each variable is measured in levels (either with an intercept only or an intercept plus a trend), but rejected (at the 0.1% level of significance) when the variables is measured in first differences (with an intercept). Using KPSS, the null hypothesis is that the variable is stationary, i.e., does not have a unit root. With the variables measured in levels, this null hypothesis is accepted for two variables (the real

dollar index and the budget balance) but is rejected for the other variables (current account, saving-investment, and net exports of goods and services). Overall, the preponderance of evidence suggests that most of the variables have unit roots.

When the variables have unit roots, the next step is to test for cointegration, i.e., do there exist any *linear combinations* of the data series that are stationary, even if the individual series are nonstationary? Using Johansen tests for cointegration, we find that the system consisting of only the three balances and omitting the real dollar index has one significant cointegrating vector at the 5% levels using both the trace and maximum eigenvalue tests, with a lag length of 4. The system consisting of all four variables has one significant cointegrating vector at the 5% significance level using the trace test and at the 10% level using the maximum eigenvalue test, using a lag length of 6.[38] Since the variables are cointegrated, the proper procedure to use is a VEC model, which is a type of VAR that controls for the dynamic adjustments between the variables.[39]

The VEC estimates are not biased by the fact that the three balances are contemporaneously related through an identity, because *only the lags of the variables are used as regressors in estimating the model*. This is another advantage of using the unrestricted VAR/VEC approach. The most informative way of portraying the results of the VEC model for present purposes is through the "impulse responses" and "variance decompositions."[40] Impulse responses are simulations of the dynamic movements in each variable caused by "shocks" or "innovations" in one of the other variables (i.e., exogenous changes in the latter that are not accounted for by the other variables in the model) or by its own shocks (innovations). Variance decompositions show the portion of the variation in each variable that is accounted for, at each step (time period) in the simulation, by the innovations in each of the variables in the system (both other variables and the given variable's own innovations). These simulations were run using the standard Cholesky decomposition method, in which the results are sensitive to the ordering of the variables. Therefore, to bias the results most in favor of the twin deficit hypothesis (and against our own critique of that hypothesis), we put the government budget balance *first* in the ordering, followed by the saving-investment balance, then the real dollar index (when included), and lastly the current account balance (or net exports of goods and services, when that was used as an alternative measure of the trade balance). Experiments showed that this ordering had little impact on the qualitative results.

The impulse responses (run for 10 quarters) are graphed in **Figures L** and **M**, while the variance decompositions are shown in **Tables 1** and **2** (in each case, the partial model excluding the real dollar index is shown in the first figure or table, and the complete model including the real dollar index is shown in the second one). Unfortunately, confidence intervals are not available in the software used (EViews version 6) for VEC estimates. However, confidence intervals are available for plain VARs, and they support the qualitative conclusions drawn here (VAR results are available from the author on request).

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Endnotes

[1] Figure A shows two alternative measures of the trade balance: the goods and services balance and the current account balance. The latter, which includes goods, services, investment income, and transfers, is a broader measure that more accurately reflects U.S. net lending to other countries (or net borrowing from other countries, if negative). Although these two measures have sometimes shown different patterns in the past, in recent years they have been very close to each other as the small surplus on net investment income has just about offset the small deficit on current unilateral transfers.

[2] This figure is the excess of foreign assets in the United States (i.e., U.S. liabilities to foreigners) over U.S. assets abroad (foreign liabilities to the U.S.). See U.S. Bureau of Economic Analysis (BEA, 2009b).

[3] Scott (2008) estimates that 5.6 million jobs were lost or displaced by the trade deficit as of 2007. Mishel et al. (2009, pp. 186-200) analyze how trade pressures (not just the deficit, but low-wage competition and globalization generally) have contributed to rising inequality and stagnant incomes for most U.S. families. See also Bivens (2008) for a masterful survey of the empirical literature on how trade has affected U.S. wages and income distribution.

[4] Data are from U.S. Bureau of Economic Analysis (BEA) (2009a).

[5] One reference that is of special relevance in this regard is Baldwin (1988), who analyzed how a temporary but large appreciation of a currency could induce foreign firms to enter the domestic market by making it profitable for them to pay the fixed, sunk costs of market entry. Even if the currency later depreciates, the foreign firms can remain in the domestic market as long as the price (at the lower exchange rate) still covers their operating costs. By the same logic, if a U.S. firm moves certain operations abroad (or begins to outsource certain products or components) when the dollar is high, because this enables the firm to pay the fixed costs of starting up the foreign sourcing, it may still be profitable to continue producing or sourcing abroad after the dollar falls since those fixed costs have already been paid. (The preceding discussion draws upon Blecker, 1992a, pp. 48-49.)

[6] This is the Fed's broad, price-adjusted index, which covers virtually all U.S. trading partners and controls for differences in inflation between the United States and other countries. The real value of the dollar is the relative price of foreign *goods* in terms of domestic *goods*, whereas the nominal value of the dollar is the monetary price of

foreign currency in terms of U.S. dollars. A higher real value of the dollar indicates that U.S. goods are relatively more expensive and, therefore, less internationally competitive either in export markets or vis-à-vis imports.

[7] This is the famous "J-curve" pattern, named for the tendency of the trade balance to worsen in the first year or two after a currency devaluation and then to improve subsequently.

[8] For an earlier comparison of the degree to which other currencies had or had not appreciated versus the dollar, see Bivens (2003).

[9] All percentages in this paragraph were calculated from data in U.S. Federal Reserve Board (2008b).

[10] The exact percentages are 57% for imports and 67% for the trade deficit; calculated from annual data for 2006 from BEA (2007). Developing countries and transition economies are defined as all countries except Canada, Australia, Japan, and western Europe (separate data for New Zealand were not available in this table, but are likely to be very small).

[11] For retrospectives on the twin deficits debate of the 1980s and early 1990s, see Blecker (1992a, 1996) and Feldstein (1992).

[12] Although he says that reducing the budget deficit is of "primary importance" for reducing the trade deficit, Chinn (2005, pp. 5-6) also endorses two other measures: lessening U.S. dependency on imported oil and negotiating a revaluation of the Chinese currency (with the hope that other undervalued currencies would follow suit). This suggests that, in spite of the rhetoric to the contrary, he does not really believe that the two deficits are truly twins.

[13] The trade balance is measured in all of the figures and tables in this paper by the broadest measure, which is the current account in the balance of payments (which, in turn, is measured by U.S. net lending to other countries in the national income and product (GDP) accounts). This is the measure that is supposed to be most closely aligned with the budget balance (and the domestic saving-investment gap) according to economic theory (i.e., the identity referred to above). However, none of the results in this paper depend on using the current account balance, since the other common measures (for example, the trade balance for goods and services or the merchandise balance) show very similar trends.

[14] For further elucidations of this point see Blecker (1992a, 1996) and Cohen et al. (2003, chapter 4).

[15] To be perfectly clear, the argument is *not* that, in the absence of the increasing trade deficit, the fall in the saving rate would have raised interest rates and "crowded out" investment, as in a standard closed economy macro model. Rather, the argument is that, in the absence of the trade deficit and the associated financial inflows, the saving rate could never have fallen so much to begin with. I am indebted to Robert Scott for inducing me to clarify this point.

[16] Data showing similar inflows during the global financial crisis in the fourth quarter of 2008 are not yet available. The U.S. financial assets sold to foreigners between 2001 and 2007 included significant amounts of securitized mortgages, including the so-called "sub-prime" loans, whose values were artificially inflated compared to their true worth, as well as derivative instruments based on the value of these securities. The collapse in the market value of these securities and derivatives in 2008 helped to spread the contagion of the U.S. financial crisis around the world.

[17] The NIIP would be much larger but for the effects of the declining value of the dollar since 2002, which has increased the dollar value of U.S. holdings in foreign currency assets, and changes in the market value of portfolio and foreign direct investments, which have tended to benefit U.S. foreign investors more than foreign investors in the United States (both because, until very recently, foreign stock prices rose more rapidly than those in the United States, and because U.S. foreign investors tend to hold a much larger share of their portfolios in such assets, as compared to foreign investors in the U.S., including foreign central banks, who allocate a much larger share of their holdings to fixed-return assets such as U.S. treasury securities).

[18] One notable exception is Mann (2004), who spotted early on the increasing role of foreign official purchases of U.S. assets in sustaining foreign trade surpluses and the U.S. trade deficit in the early 2000s.

[19] These other securities include U.S. Treasury and Export-Import Bank obligations, not included elsewhere, and debt securities of U.S. government corporations and agencies (e.g. TVA bonds and etc), and U.S. government liabilities associated with military agency sales contracts and other transactions arranged with or through foreign

official agencies, according to the BEA's quarterly balance of payments report, Table 1, footnotes 10 and 11, at www.bea.gov.

[20] These other, unofficial assets include U.S. government bonds held by non-official foreign entities (e.g., private investors rather than central banks) as well as private U.S. assets held by foreign investors, net of foreign assets held by U.S. residents.

[21] Caballero et al. (2008) construct a clever theoretical model of how increased demand for U.S. assets by private agents in other countries (due to a decrease in the perceived soundness of foreign assets, for example as a result of an overseas financial crisis) can lead to the observed pattern of behavior in the U.S. external financial position over the past decade (i.e., a persistent increase in U.S. current account deficit, a fall in the U.S. interest rate, and a rise followed by a fall in the value of the dollar). While this model could be very relevant to the effects of the Japanese and East Asian financial crises of the 1990s, it would seem to have little relevance to the rise in the U.S. current account during the 2000s, which was mostly sustained by official purchases of U.S. assets rather than the "private sector capital flows" emphasized by Caballero et al. (p. 361).

[22] In 2007, the last year for which complete balance of payments data were available at the time of this writing, the U.S. goods deficit with China reached $256.6 billion, which accounted for 31.3% of the total goods deficit of $819.4 billion in that year. Data are from BEA (2008b).

[23] From 1994 until early 2005, China maintained a strict fixed exchange rate policy with the yuan (also known as the renminbi) set at 8.27 per U.S. dollar. Starting in July 2005, China adopted a more "flexible" policy, which has turned out to be effectively a crawling peg in which the yuan is allowed to appreciate very gradually versus the dollar, but much less so than if the exchange rate were determined by market forces. All of the depreciation of the dollar relative to the yuan shown in Figure C has occurred since July 2005. See Blecker (2003) and Bivens (2003) on China's earlier exchange rate policy.

[24] Data were downloaded on January 17, 2009 from the International Monetary Fund (various years); the first quarter of 2008 was the most recent quarter available for this data series at that time.

[25] Some analysts believe that if China floated its exchange rate *and* liberalized financial outflows at the same time, the yuan could actually fall instead of rise (at least initially) as many Chinese residents would be likely to send their pent-up savings abroad to diversify their portfolios. While the outcome of a complete Chinese financial liberalization is indeed difficult to predict, the focus here is on what the yuan would have to do in order for China to reduce its current account surplus under presently foreseeable circumstances.

[26] An earlier literature in the 1980s and 1990s identified a declining long-run trend in U.S. competitiveness, conceptualized as a tendency to run steadily increasing trade deficits unless there are offsetting changes in exchange rates and growth rates—i.e., unless the dollar falls and U.S. growth is restrained, relative to its trading partners. Numerous previous studies documented the existence of a U.S. competitiveness problem in this sense. See Blecker 1992a, 1992b, 1996, 1998) for discussion, citations, and analysis.

[27] See, for example, Gallagher (2008a, 2008b), who documents that recent regional trade agreements and U.S. proposals for the Doha Round of the GATT/WTO have tended to diminish (although not completely eliminate) developing countries' "policy space" for promoting their own national economic interests. Although it is not Gallagher's focus, his research identifies the aspects of recent trade agreements and U.S. proposals for future ones that effectively act to encourage overseas production and outsourcing by U.S. multinational firms.

[28] When the model is estimated without the exchange rate, the current account balance appears to be largely (more than 60%) determined by its own innovations, i.e., shocks to international trade and financial flows. Clearly, however, this is an overestimate because it ignores exchange rate shocks.

[29] Since the current account is, by definition, equal to the financial account balance with the sign reversed (aside from the statistical discrepancy and other small adjustments), it is impossible to distinguish which of these factors (trade or financial) accounts for the statistical "innovations" in the current account, but in all likelihood it is a combination of the two.

[30] A number of scholars from the Levy Economics Institute (www. levy.org) have emphasized the role of the private saving-investment balance (what they call "private sector balance") in the analysis of the U.S. external deficit. See, for example, Godley (2000), Godley and Izurieta (2001), Godley et al. (2005), and Papadimitriou et al. (2006).

[31] Although the index of the value of the dollar was available through 2008Q4, the other variables used were available only through 2008Q3 at the time of this writing.

[32] For example, if the budget deficit is reduced through higher taxes, this would reduce households' disposable income and thereby decrease saving. Bernanke (2005) concurs with the conclusion that there would be little impact on the current account balance. He cites a Fed study (Erceg et al., 2005) which found that, for every dollar of budget deficit reduction, the current account deficit would fall by less than 20 cents.

[33] See, for example, Rubin and Tal (2008) and Mui (2008).

[34] The term "big push" is deliberately borrowed from the literature on economic development, in which it has frequently been argued that poor countries need dramatic policy changes to escape from "poverty traps" (or similar terms for an equilibrium at very low income levels). The term "big push" was originally due to Rosenstein-Rodan (1943).

[35] In a version of the Buffett plan that was introduced in the U.S. Senate by Senator Byron Dorgan (D-ND) on September 14, 2006, the IC restriction is gradually phased in so as to give industries that depend on imports a chance to adjust (and, consequently, the trade deficit would be reduced more gradually). Specifically, the bill (109th Congress, 2nd Session, S.3899) provides that, in its first year of operation, the ICs would allow imports in the amount of 140% of the value of the exports for which they were issued, and this amount would fall by 10 percentage points per year until it would reach 100% in the fifth year of operation.

[36] For ideas on how to mitigate the volatility of IC prices based on experiences in trading carbon caps, see Garr (2009).

[37] Detailed results are available from the author on request. Both of these tests are better than the more frequently used augmented Dickey-Fuller test (ADF), which does not have adequate power to reject the null hypothesis of a unit root especially in short samples.

[38] Detailed results are available on request. It makes sense to have longer lags when the exchange rate is included, given its delayed effects on trade as noted earlier.

[39] However, qualitatively similar results are obtained if we run the model as a plain VAR, which we also tried as a sensitivity test, and those results show that the effects discussed in this paper are significant, i.e., the confidence intervals are bounded away from zero (detailed results are available on request).

[40] The VEC procedure also yields "cointegrating equations," which are estimates of the long-run relationships between the variables. Not surprisingly, the first cointegrating equation for each model—which can be seen in Tables A.3 and A.4—essentially reproduces the national income identity, written in the form

budget balance + (saving – investment) – current account balance = 0.

With the equations normalized on the first variable in the ordering (TGGDP = budget balance as a percentage of GDP), the coefficients on the other two variables (SIGDP = saving minus investment as a percentage of GDP and CAGDP = current account balance as a percentage of GDP) are not significantly different from 1 and –1, respectively. Although this confirms the validity of the national income identity (and reassures us that our model is consistent with it), this finding does not tell us anything about the direction of causality among these variables, for which the impulse responses and variance decompositions give more information.

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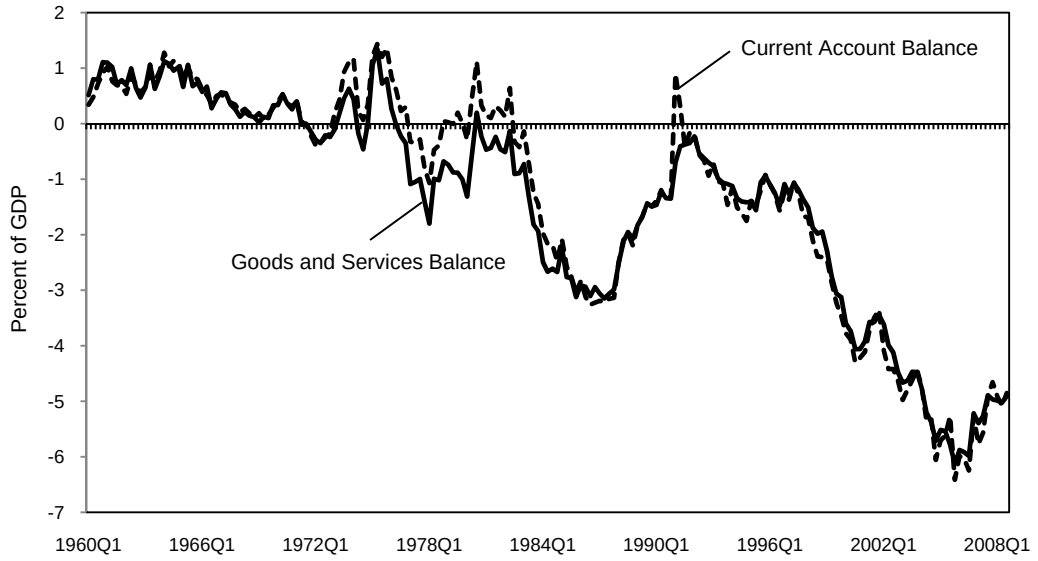
FIGURE A

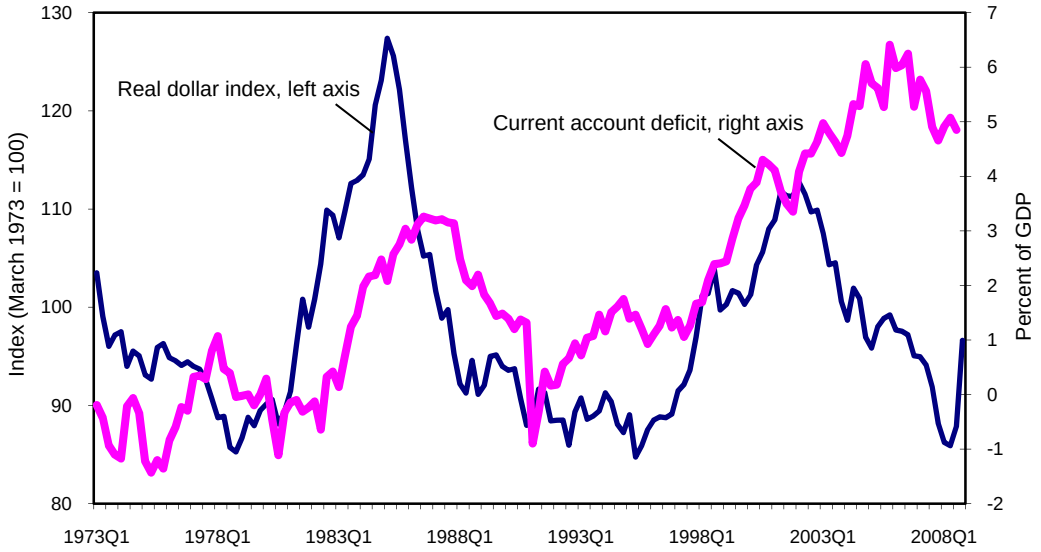
U.S. trade balance as a percentage of GDP, quarterly 1960Q1 to 2008Q3



SOURCE: U.S. Bureau of Economic Analysis (BEA, 2008a), Tables 1.1.5 and 5.1, and author's calculations.

FIGURE B

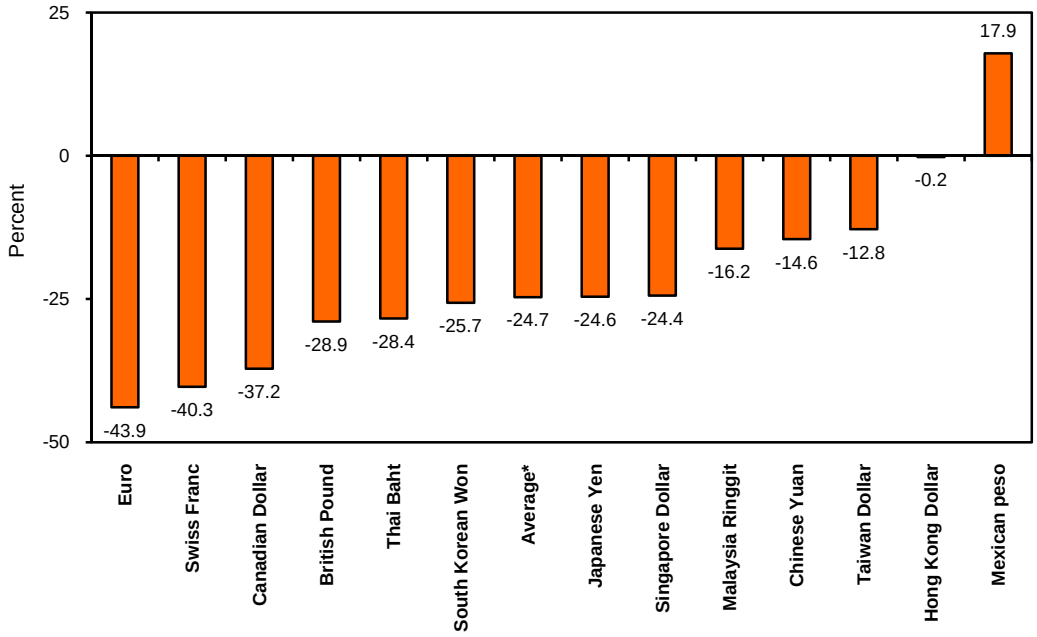
The value of the U.S. dollar and the trade deficit, quarterly 1973Q1 to 2008Q4



SOURCE: BEA (2008a), Tables 1.1.5 and 5.1; U.S. Federal Reserve Board (2008b); and author's calculations.

FIGURE C

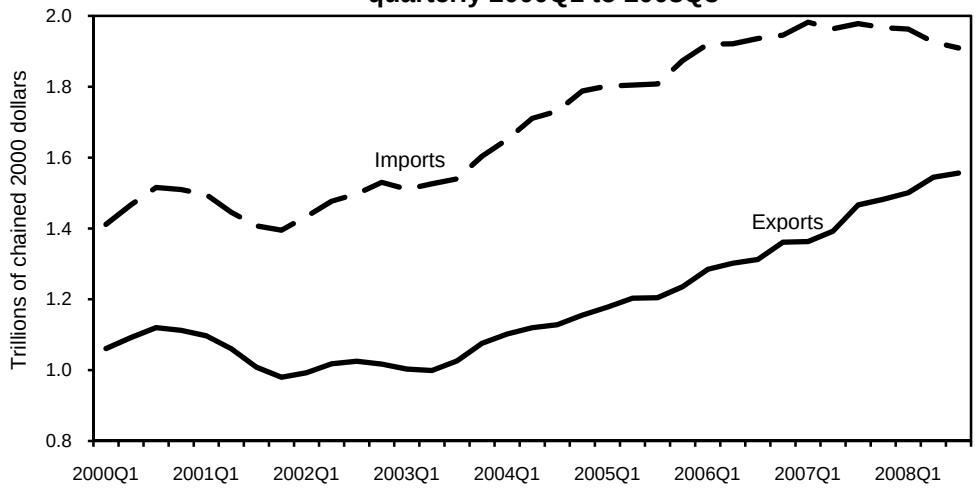
Percentage change in the value of the U.S. dollar in foreign currency, February 2002 to March 2008



*Real broad index for all currencies, trade-weighted and inflation-adjusted.
SOURCE: U.S. Federal Reserve Board (2008a, 2008b) and author's calculations.

FIGURE D

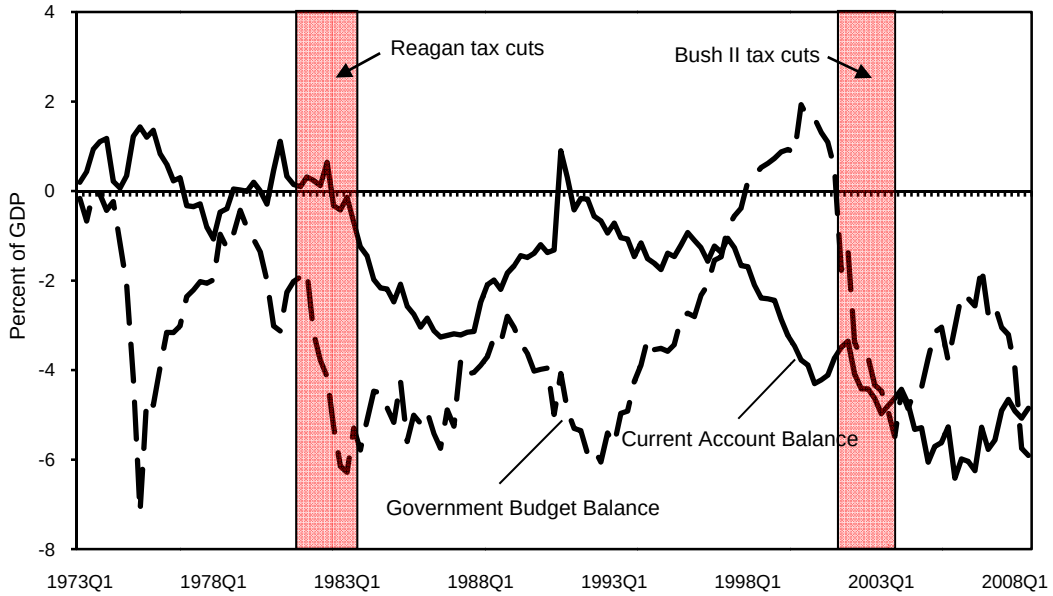
Real imports and exports of goods and services, quarterly 2000Q1 to 2008Q3



SOURCE: BEA (2008a), Table 1.1.6.

FIGURE E

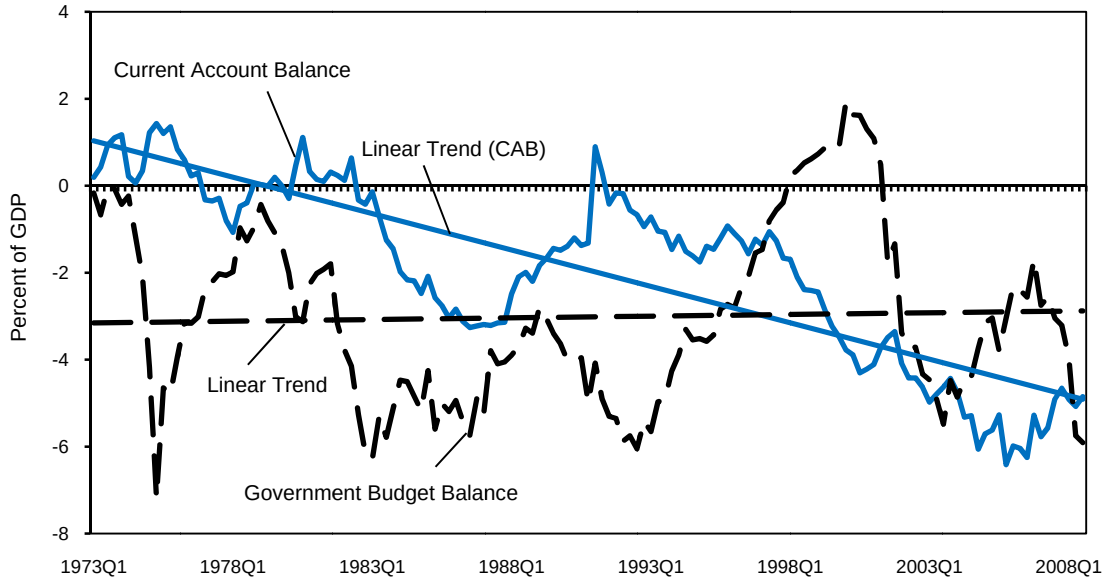
The budget and trade deficits are not twins, quarterly 1973Q1 to 2008Q3



SOURCE: BEA (2008a), Tables 1.1.5, 3.1, and 5.1, and author's calculations.

FIGURE F

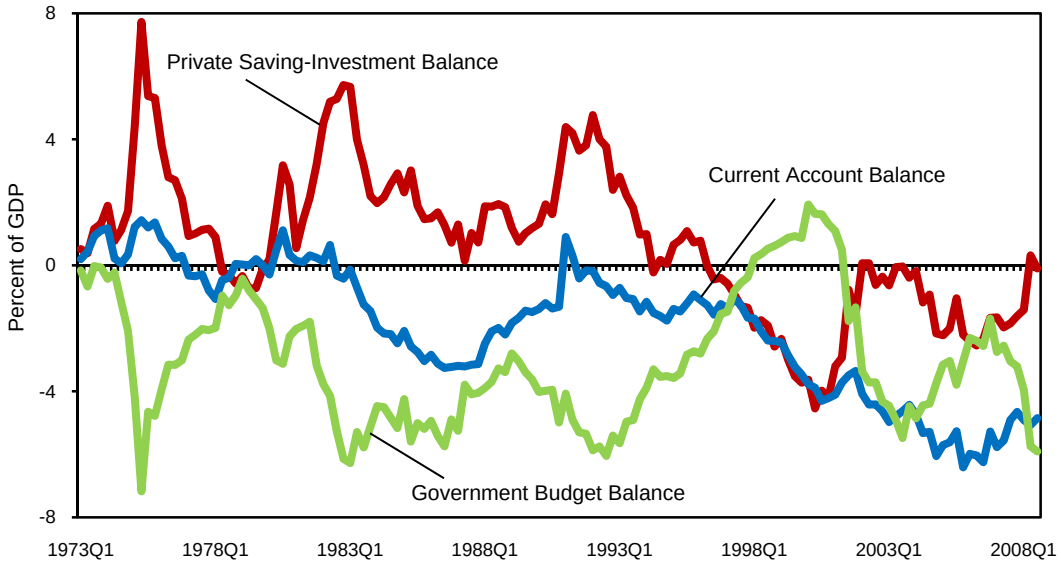
The long-run trends in the two deficits don't match, linear trends from 1973Q1 to 2008Q3



SOURCE: BEA (2008a), Tables 1.1.5, 3.1, and 5.1, and author's calculations.

FIGURE G

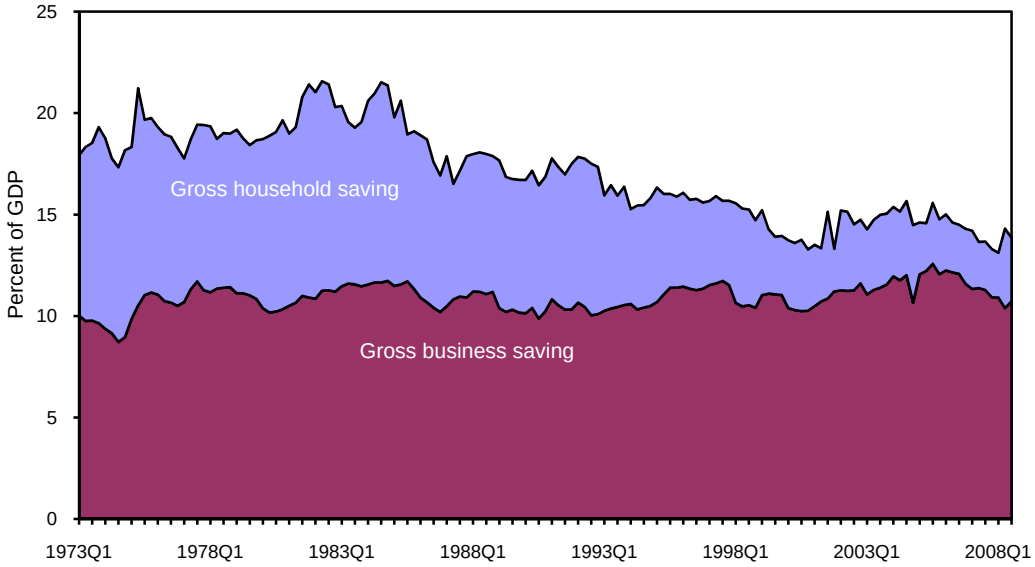
Including the private saving-investment balance along with the trade and budget balances, quarterly 1973Q1 to 2008Q3



SOURCE: BEA (2008a), Tables 1.1.5, 3.1, and 5.1, and author's calculations.

FIGURE H

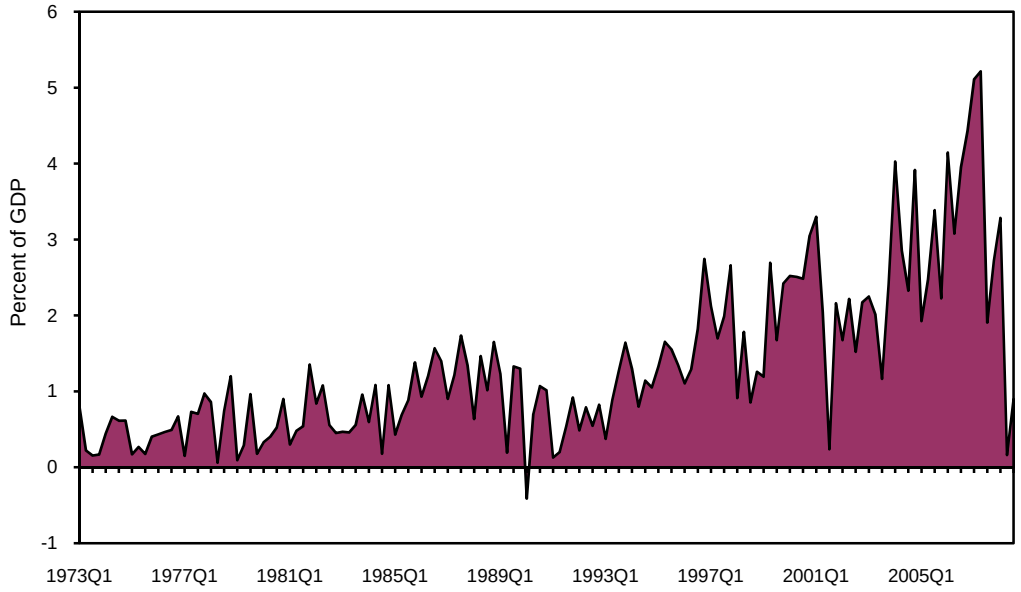
Gross private saving rates, business and household sectors, quarterly 1973Q1 to 2008Q3



SOURCE: BEA (2008a), Tables 1.1.5 and 5.1, and author's calculations. Gross saving includes depreciation allowances ("consumption of fixed capital") for each sector.

FIGURE I

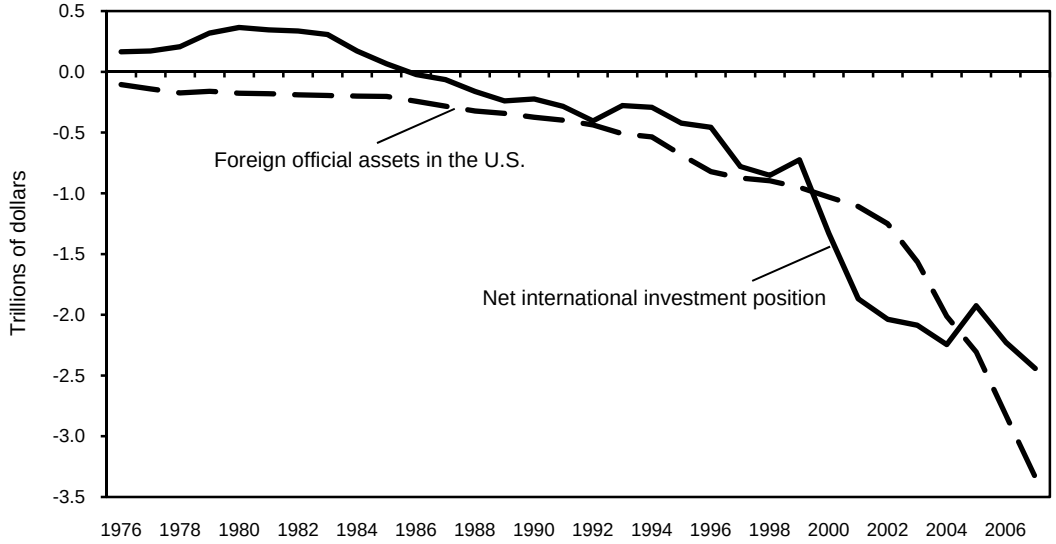
Net increases in foreign assets in the United States, quarterly, 1973Q1 to 2008Q3



SOURCE: BEA (2008a), Table 1.1.5; BEA (2008b), Table 1; and author's calculations.

FIGURE J

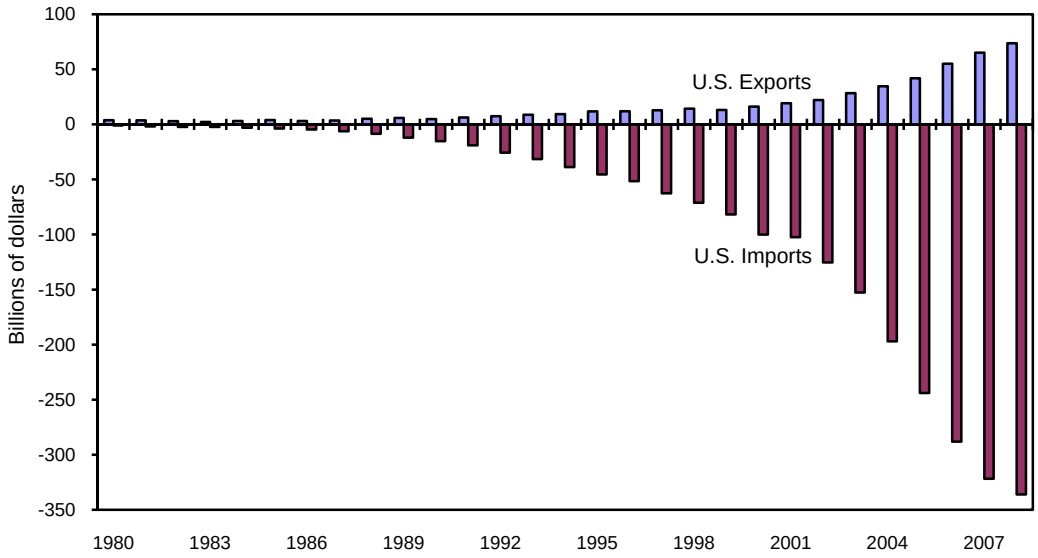
Net international investment position of the United States and foreign official assets in the United States, yearend 1976 to 2007



SOURCE: BEA (2008c) and author's calculations.

FIGURE K

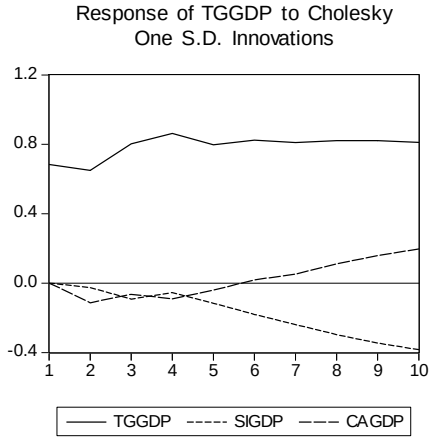
U.S.-Chinese trade in goods, annually 1980-2008*

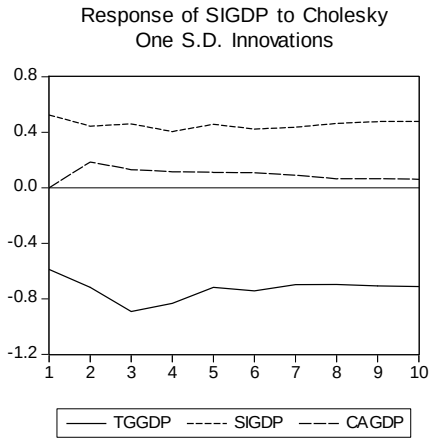


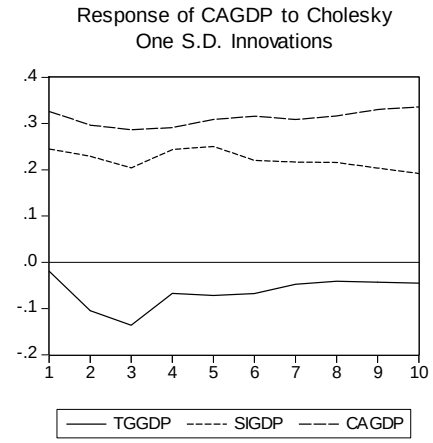
*Data for 2008 are for the first three quarters (seasonally adjusted) at an annual rate.

SOURCE: BEA (2008b), Table 2.

FIGURE L
Impulse response functions for the VEC model excluding the exchange rate, 10-Quarter Horizon

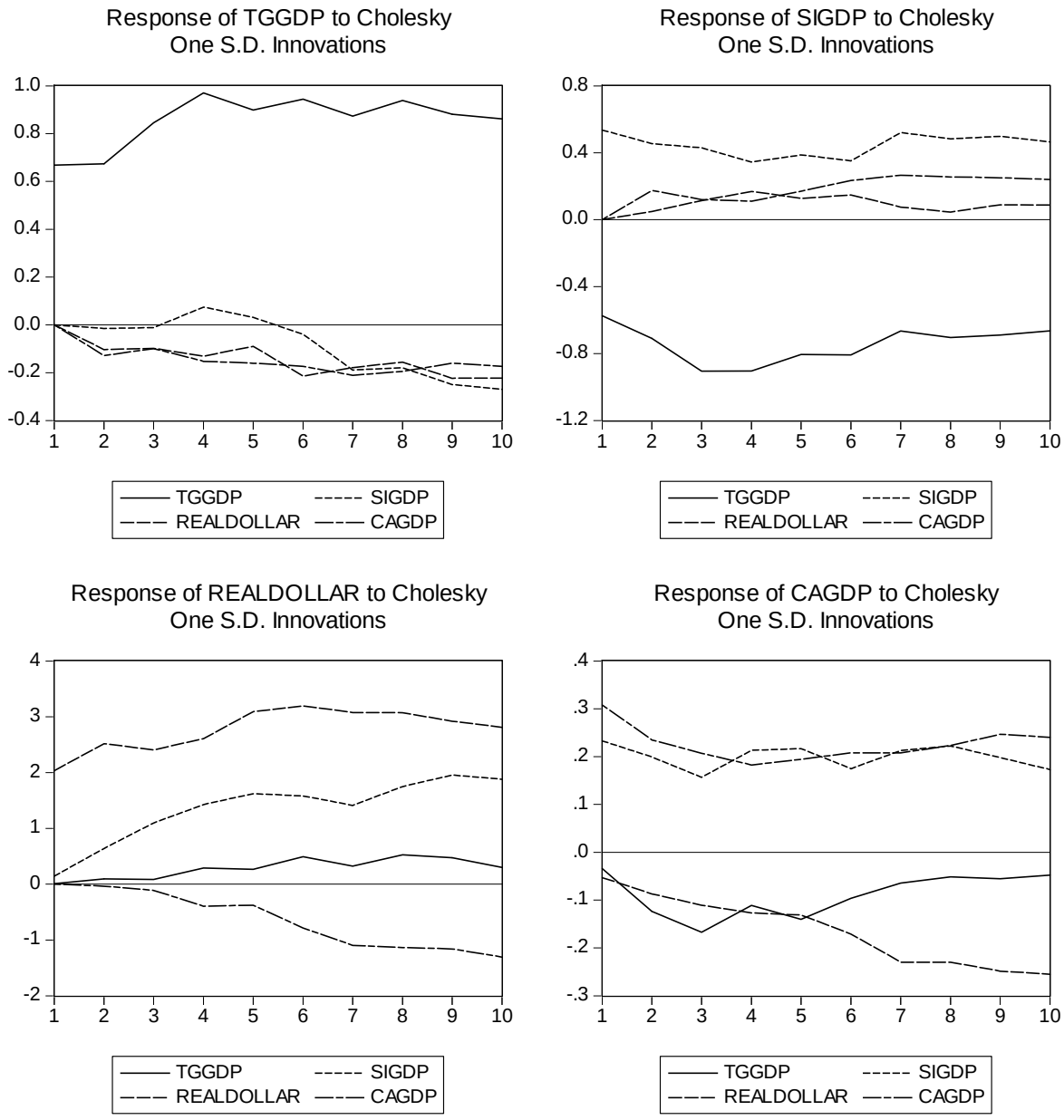






Note: TGGDP = Government budget balance (government net lending); SIGDP = Saving – Investment; CAGDP = Current account balance (U.S. net international lending), all measured as percentages of GDP.

FIGURE M
Impulse response functions for VEC model including the exchange rate, 10-quarter horizon



Note: TGGDP = Government budget balance (government net lending); SIGDP = Saving – Investment; CAGDP = Current account balance (U.S. net international lending), all measured as percentages of GDP. REALDOLLAR is the Fed's broad, inflation-adjusted index of the dollar's value.

TABLE 1
Variance Decompositions for VEC Model Omitting the Real Dollar Index

Variance Decomposition of TGGDP:

Period	S.E.	TGGDP	SIGDP	CAGDP
1	0.683570	100.0000	0.000000	0.000000
2	0.949684	98.48675	0.079440	1.433807
3	1.248522	98.31219	0.591626	1.096180
4	1.521179	98.37267	0.528786	1.098540
5	1.721728	98.21303	0.871943	0.915027
6	1.917397	97.65960	1.593525	0.746872
7	2.095657	96.67610	2.639002	0.684899
8	2.273056	95.22743	3.956574	0.815994
9	2.446641	93.45716	5.423677	1.119159
10	2.613557	91.53232	6.923626	1.544055

Variance Decomposition of SIGDP:

Period	S.E.	TGGDP	SIGDP	CAGDP
1	0.788448	55.90959	44.09041	0.000000
2	1.169168	63.12473	34.37873	2.496531
3	1.546276	69.37155	28.49477	2.133678
4	1.805665	72.15355	25.88060	1.965852
5	1.999136	71.77493	26.31569	1.909389
6	2.176848	72.19315	25.95571	1.851137
7	2.328968	72.06714	26.16920	1.763662
8	2.475481	71.72274	26.65149	1.625770
9	2.619325	71.37601	27.10857	1.515416
10	2.756781	71.11964	27.46485	1.415506

Variance Decomposition of CAGDP:

Period	S.E.	TGGDP	SIGDP	CAGDP
1	0.408201	0.222378	35.89894	63.87869
2	0.563809	3.550157	35.30469	61.14515
3	0.678002	6.485809	33.43137	60.08283
4	0.779873	5.646157	35.00895	59.34489
5	0.878097	5.122466	35.73555	59.14198
6	0.961124	4.773025	35.05848	60.16849
7	1.033433	4.340723	34.70405	60.95523
8	1.102711	3.952075	34.29798	61.74995
9	1.169726	3.648220	33.50221	62.84957
10	1.232756	3.419753	32.57931	64.00094

Cholesky Ordering: TGGDP SIGDP CAGDP

Note: See note to Figure L for definitions of variables.

TABLE 2
Variance Decompositions for VEC Model Including the Real Dollar Index

Variance Decomposition of TGGDP:

Period	S.E.	TGGDP	SIGDP	REALDOLLAR	CAGDP
1	0.668939	100.0000	0.000000	0.000000	0.000000
2	0.963721	97.03227	0.026202	1.156583	1.784942
3	1.289847	97.15574	0.023007	1.232137	1.589117
4	1.628350	96.47336	0.219556	1.427226	1.879858
5	1.869122	96.32746	0.195282	1.314313	2.162944
6	2.112682	95.38181	0.187528	2.060352	2.370310
7	2.310488	94.03109	0.830012	2.320528	2.818373
8	2.512819	93.45789	1.212556	2.348655	2.980900
9	2.688702	92.37118	1.924820	2.743659	2.960345
10	2.850410	91.33317	2.610734	3.052494	3.003604

Variance Decomposition of SIGDP:

Period	S.E.	TGGDP	SIGDP	REALDOLLAR	CAGDP
1	0.785326	53.42016	46.57984	0.000000	0.000000
2	1.165379	61.28338	36.30097	0.171877	2.243777
3	1.545511	69.14955	28.33347	0.641084	1.875895
4	1.834706	73.37343	23.62770	1.308267	1.690601
5	2.051627	74.07463	22.45153	1.429169	2.044671
6	2.249996	74.48853	21.10620	1.619135	2.786140
7	2.418971	71.99549	22.88821	1.498664	3.617641
8	2.578573	70.82330	23.65810	1.350341	4.168264
9	2.728056	69.66041	24.46111	1.314038	4.564443
10	2.857260	68.91251	24.93189	1.288706	4.866900

Variance Decomposition of REALDOLLAR:

Period	S.E.	TGGDP	SIGDP	REALDOLLAR	CAGDP
1	2.039710	0.001202	0.484029	99.51477	0.000000
2	3.303102	0.083291	3.908883	95.99546	0.012363
3	4.232713	0.088004	9.079893	90.75597	0.076129
4	5.194354	0.372563	13.54591	85.44302	0.638516
5	6.274393	0.436648	15.94399	82.81578	0.803585
6	7.274336	0.782616	16.58035	80.87027	1.766766
7	8.103387	0.788310	16.38743	79.57039	3.253876
8	8.929165	0.996484	17.33423	77.37606	4.293225
9	9.676072	1.088630	18.83555	74.97848	5.097348
10	10.33652	1.039157	19.80665	73.08428	6.069910

Table 2, c*ontinued*

Variance Decomposition of CAGDP:

Period	S.E.	TGGDP	SIGDP	REALDOLLAR	CAGDP
1	0.391096	0.764626	35.43350	1.839251	61.96263
2	0.520125	6.059766	34.64238	3.841512	55.45634
3	0.614858	11.72171	31.28325	5.998565	50.99648
4	0.696549	11.68901	33.72229	8.004939	46.58376
5	0.778840	12.58805	34.69208	9.245389	43.47448
6	0.847825	11.91930	33.51674	11.86775	42.69620
7	0.929548	10.39285	33.11966	15.98239	40.50510
8	1.009257	9.072422	32.93722	18.74367	39.24669
9	1.087837	8.066082	31.65488	21.35152	38.92752
10	1.156761	7.304576	30.22201	23.74110	38.73231

Cholesky Ordering: TGGDP SIGDP REALDOLLAR CAGDP

Note: See note to Figure M for definitions of variables.