

Goodfriend Memorial Lecture: The U.S. Current Account Deficit and the Global Capital Market Revisited

By *Maurice Obstfeld*

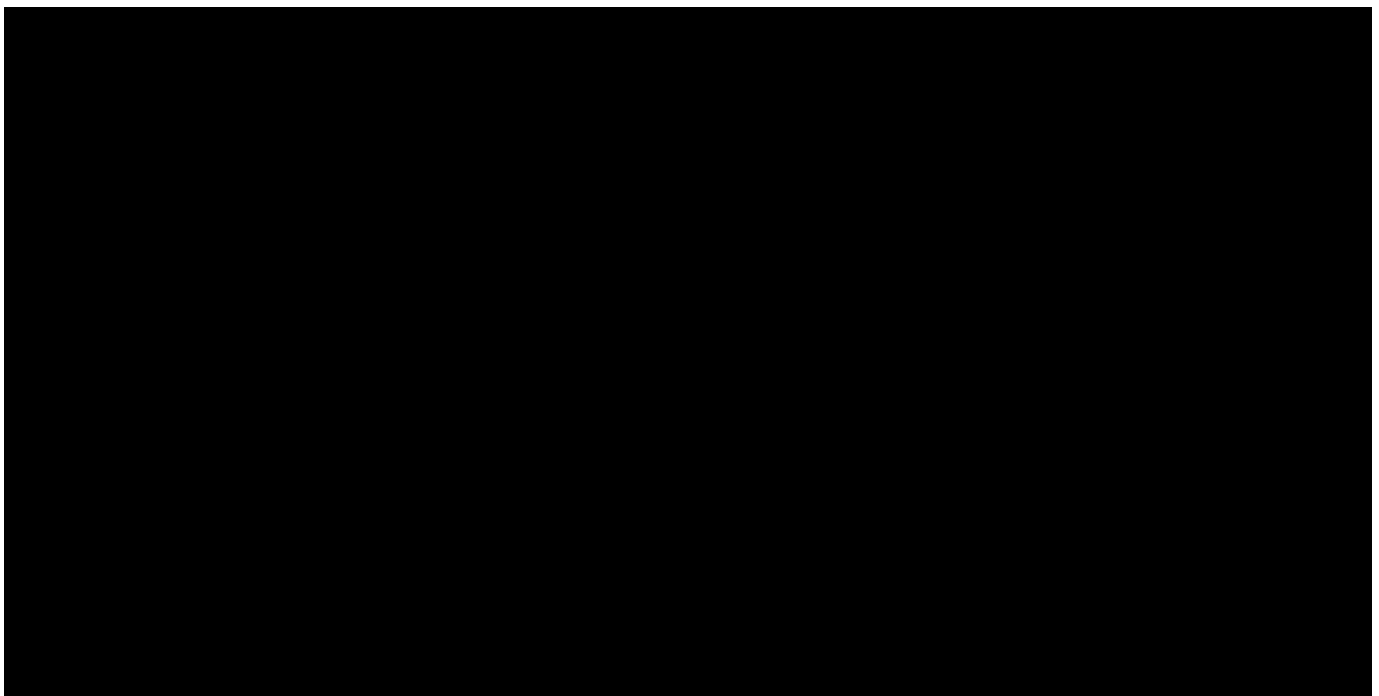
Economic Brief

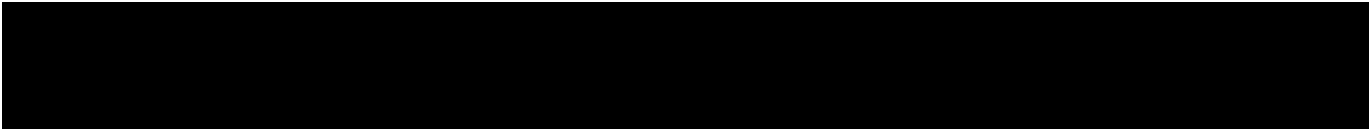
November 2024, No. 24-37

Introduced in 2023, the Goodfriend Memorial Lecture series honors the legacy of Marvin Goodfriend, long-time Richmond Fed economist, research director and senior policy advisor. The lecture was delivered as part of the Richmond Fed's [Collaboration of Research Economists \(CORE\) Week](#) model, which brings together Richmond Fed economists and visiting economists from a range of disciplines for seminars, conferences, networking and collaboration.

On Sept. 26, 2024, Maurice Obstfeld delivered the Marvin Goodfriend Memorial Lecture with a presentation of his paper "The U.S. Current Account Deficit and the Global Capital Market Revisited." Obstfeld is a senior fellow at the Peterson Institute for International Economics and professor of economics emeritus at the University of California, Berkeley.

The following is a lightly edited transcript of the lecture.





When I was invited to give the Marvin Goodfriend Lecture, I really couldn't say no. Marvin and I were more or less the same age. I think he got out of graduate school one year before I did, and we overlapped at the Bank of Japan as honorary advisers to the Institute of Monetary and Economic Studies.

The Bank of Japan always has two of these honorary advisors, and the first two were Milton Friedman and James Tobin. The idea was that they were going to get this one monetarist guy and this one Keynesian guy. Actually, unfortunately, now that I think of it, they've all been guys, which does not reflect well on the Bank of Japan, but the idea was to have these two contrasting views and let them fight it out. And they tried to continue this tradition of a saltwater and a freshwater person. And I guess I was the freshwater person, and Marvin was the saltwater person, although you're pretty close to saltwater here. So we overlapped, and Marvin succeeded Ben McCallum in that role, who is also a terrific partner.

For me, it was a great experience. Every year, the Bank of Japan would have a conference, a research conference, which they still have. And Marvin and I would give them advice about who to invite and what the topics should be. But a highlight for us was the keynotes. Every year, either Marvin would give a keynote, or I would give a keynote, and we alternated. And I always learned so much from these interactions with Marvin and from his keynotes and the one he published at my last conference — I had to resign to go to the Council of Economic Advisers — was this one on monetary policy as a carry trade. What Marvin was concerned about was the effects of QE on the Fed's fiscal position vis-a-vis the Treasury. The idea is if the Fed is holding high-interest-rate, long-term bonds as a result of QE and issuing interest paying reserves at a very low rate, and it's making money, it's a carry trade. And he argued that the Fed should actually not be turning this all over to the Treasury. It should be keeping it because there would come a day when interest rates would rise and the value of this portfolio would fall, and it would look as if the Treasury was, as if the Fed was booking losses. And if it had this store of cash, its political position would be stronger.

This is very characteristic of Marvin, the ability to talk about these very nitty gritty issues of Fed policymaking and Fed credibility and the institutional structure of the Fed, but also do theory at the highest levels. I mean, I think of the paper with Bob King and the neoclassical synthesis, which I first heard when Marvin and I coincided at the Bank of England in 1997. And Marvin presented that paper in a seminar. These Bank of Japan papers have the attributes that nobody ever read them, as far as I know. And I think that's a shame, because I think some of them were actually quite good. Ben McCallum had some

very good papers. Alan Meltzer before him, who I overlapped with, Marvin's papers. And I actually even think that a couple of mine were pretty good. I mean, I put a lot of work into them for apparently a low return.

But there's one I want to focus on a little bit today, which is from 2005, and this is called "[America's Deficit, The World's Problem](#)." And the reason I focus on it is that's going to be the theme of my talk today, revisiting the deficit of the first decade of this millennium.

I'll explain why I think this is relevant today and why it's worth doing. I think there's policy relevance, and I think there's theoretical relevance. But the basic backdrop for those of you who may be too young to remember is that in the mid-2000s, the U.S. current account deficit rate reached an unprecedented level of around 6 percent relative to U.S. GDP. There was actually a lot of discussion at the time about the sustainability of this deficit, the consequences of this deficit, the causes of this deficit. And in fact, the *Brookings Papers on Economic Activity* in the spring of 2005 did an issue in which there are no less than four or five Brookings papers on the U.S. current account deficit.

In my paper, I talked about various theories of the deficit culled from work at the time. One view is that of Chairman [Alan] Greenspan, who basically said world financial markets have become so efficient, so deep that there's no problem with the U.S. running a big deficit. We just shouldn't think of it as something that requires urgent policy intervention.

Another view came from Ben Bernanke, who a couple of months before my paper had given his Sandridge lecture in March of 2005. And this is the famous global savings glut speech. Oh, he did. I did not know it. It was right at the Federal Reserve Bank. Okay, so, some of you may have heard it.

Basically, this was the idea — and I'll talk much more about this because I'm going to push back on it today — is that there was a glut of global savings. This was pushing down global interest rates. The U.S. basically had no choice but to accommodate this. And we shouldn't think of this as really an efficiency of U.S. saving because it would have a globally deflationary effect to try to raise U.S. saving.

This was occurring against the backdrop of a recovery from the dot.com crash that was rather jobless. You know, there wasn't very job intensive and worries about what was going on in Japan. And whether that could happen in the U.S. and know — bringing me back to — what Marvin and I were doing with the Bank of Japan, which, by the way, was also Ben and also Alan Meltzer giving advice about monetary policy that they did not seem inclined to take my take on this — which I would argue was somewhat right, but probably for the wrong reasons — was that the current account deficit was associated with huge risks in capital markets and that the structure of regulation, the organized structure of global regulation, made it a dangerous situation in which there was the possibility of a

financial meltdown. Now, in this quote, I tie it to a precipitous fall in the dollar. That turned out to be totally wrong, because we had a financial meltdown coupled with a precipitous rise in the dollar. But, we can come back to that later, perhaps over the drinks.

The big U.S. deficit didn't escape notice from the public sector at all. There was commentary from the ECB, from financial officials abroad and also from the Bush White House: The 2006 report, economic report of the president, addresses this issue. And I should mention that 2006 was the one year — when Ben Bernanke chaired the Council of Economic Advisers — the senior trade economist on the CEA, the member in charge of international trade and international finance was Matt Slaughter from Dartmouth. And the lore at the Council of Economic Advisers has it that Ben and Matt wanted to do a chapter on the U.S. current account deficit, and the communications department and the White House said, well, we don't really want to talk about the deficit, so don't call it that.

So they did this chapter, the U.S. capital account surplus, but it basically covered the same sets of issues. And the argument that I would make is that the attitude toward the current account deficit or capital account surplus at the time was far too complacent given what else was going on in financial markets. And so I think this bird was probably a more appropriate bird than the one they put on the cover of the economic report of the president.

Now, why should we care about this 20 years later? I would argue that these narratives that come out of the 2000s experience are very influential today. This experience was associated with the China shock, which has been written about by David Autor and co-authors and many other people. It's very much on people's minds today because it drives proposals from presidential candidate [Donald] Trump. It drives narratives that have become prevalent in the Democratic Party as well. And, it drives narratives coming from other sources that I think would be pretty injurious in terms of economic growth and stability.

Are we worried about unfair trade and China's policies? And the solution that people propose is tariffs and decoupling from China. Do we think the dollar is too strong now and that we are therefore running big trade deficits for that reason? The answer some give is more presidential guidance on monetary policy. I'm not going to try to argue against that in this building.

Is foreign saving excessive? Do we still have a savings glut? Well, some say, "Well, yes." And therefore, we should tax capital inflows into the United States. So, these are all elements of the current government debate. Now, I think all of these views are erroneous and lead to erroneous policy approaches. Trade policy — as theory indicates, as I think experience shows — has a small and at best indirect effect on external imbalance, which are macroeconomic in nature.

In fact, some of the biggest increases in the deficit in 2000 occurred when U.S. monetary policy and financial conditions were loose and the dollar was falling. And those point to me — and I'll try to make the case — to domestic U.S. sources of the deficit during those periods. Capital wasn't so much pushing in as being pulled in.

And I'm going to argue that Bernanke went too far when he wrote in the lecture he gave here, quote, that you can locate the principal causes of the U.S. current account deficit outside the U.S. borders. And that's a direct quote from his speech. But this narrative remains compelling to many today. And I would say it's the prevailing narrative in the January issue of *Foreign Affairs* this year, which is not one of the leading economics journals, but sometimes has very interesting stuff in it.

Gordon Hanson wrote a review of a book by Robert Lighthizer from last year. Lighthizer was the trade representative in the Trump administration. If Trump is reelected, he'll likely be Secretary of Commerce. And he makes a very strong case — although I think a misguided case — that the U.S. deficit problem over many decades is due to unfair trade practices.

Gordon Hanson — who was one of the co-authors of the original China shock paper, by the way — says no, no, trade deficits are macroeconomic in nature. That's the part I agree with. But he basically ties them to lots of foreign saving, which strengthens the dollar and, through that mechanism, lead to trade deficits. So I think that's something that is partially true but is inadequate as a full explanation and also leads to misleading policy conclusions.

So let me talk about the savings glut model in a nutshell. This is well-known sort of undergraduate stuff. The model originates with a paper of Lloyd Metzler in 1960, never published in a journal. But the basic idea is that we can think of an integrated global capital market where in two regions or the two parts of this market — the home region and the foreign region — there are savings and investment schedules that depend on the real interest rate.

Global capital mobility equalizes real interest rates. If the home country were forced to live in autarky, then its savings and investment schedules would intersect at home autarky rate of interest, which is above the hypothetical autarky rate of interest in the foreign country, which is either richer in savings or more impoverished in terms of demand for investment.

If you allow these countries to borrow and lend in an integrated market, the home country will run a deficit. The foreign country will run a surplus. The world interest rate will be intermediate between the two autarky rates and, in particular, in the Bernanke scenario. If you imagine that in the surplus region, saving rises. In other words, there's a rightward shift of the savings schedule. Then global interest rates come down. The surplus of the foreign country rises. The deficit of the home country increases. And that, in a nutshell, is what Bernanke argued.

This model is incomplete in some serious ways. And I'll talk about some of those. First of all, real interest rates are not the same internationally. This can be because of deviations from purchasing power parity, risk premia, liquidity premia of the sort. We just talked about balance sheet constraints. I'm not even going to put in here barriers to capital movement, but these are actually important in practice as well. And I believe that over a significant horizon, central bank policies affect real interest rates.

These frictions in the global capital market give room for central bank policies to do so if, like, exchange rates or flexible general financial conditions also matter. Saving and investment are not governed entirely by the real rate of interest, and effecting the latter are not just the net capital flows that I showed you in the nutshell diagram but also gross capital flows.

Just to look at one of these sources of friction dispersions in advanced economy, long-term real interest rates are plotted here. It's the maximum less the minimum in a sample of 12 advanced economies. And you can see that the deviations are actually pretty big and pretty persistent. Now these rates do tend to trend together.

All advanced country interest rates have tended to fall over the last few decades. But the differences can be very big. Also, financial conditions matter. And if we go back to this period of the 2000s, they were very, very weak, notably weak in that period. That's not the only period in which they were weak, but that is a period of notable looseness in financial conditions.

So what is the global saving narrative? In a nutshell, the Asian financial crisis — which occurred in over 1997-1998 — set off precautionary saving and reserve accumulation in emerging markets, especially in East Asia. China was also involved in this, but not because it was hit by the crisis, for its own reasons.

Saving by energy exporters added to the world glut. Global interest rates fell, igniting housing bubbles around the world, and global portfolio funds flowed to the U.S., causing the dollar to appreciate and leading to a large and growing U.S. trade deficit and current account deficit.

What about China? Well, there's a whole strand of literature from the 2000s that I don't want to review here on what China was doing. Prominent in this was work by Mike Dooley, David Folkerts-Landau and Peter Garber on what they called the revived Bretton Woods system. Bretton Woods 2.0, I don't know if they called it that. I think that was too early in the computer age for them to talk about Bretton Woods 2.0, but, you know, China had been liberalizing its external sector.

It was admitted to permanent normalized trading relations status with the U.S. and to the WTO at the beginning of this decade. There were Chinese exports supposedly flooding into the U.S., causing this China shock that I referred to. There was talk of a negative effect

on U.S. inflation, which may have driven the Fed to keep policy interest rates lower for longer.

According to the idea that China was critical to this, this helped drive the housing boom, which in turn worsened the external deficit. You can view it as either part of the GSG narrative in which China's surpluses is a main driver or is a complement to that narrative.

So I want to ask, how well does the theory of the global savings glut actually fit the data? So I'm going to look at a few different sorts of pieces of evidence. First of all, I want to look at reserves of international, of central banks, foreign exchange reserves, but mainly the pattern of global imbalances broadly. I also want to look at interest rates. And I'll point out that there's no sharp fall in global interest rates immediately after the Asian crisis. It just doesn't happen. Real rates do fall starting in 2000, in 2002, but then they stall before reversing. And one interesting factoid in evaluating to what extent was the external deficit foisted on the U.S. — in the sense of the Metzler/Bernanke model — is that U.S. policy rates actually, in this period, at least up until the Fed began to tighten in 2004, were much lower than rates abroad by a lot, real policy rates and even by more so than the dispersions I showed you for long-term real rates would indicate.

And if everyone in the advanced economies is responding to a global saving glut, why are U.S. interest rates so particularly low? Maybe something else is going on. Another big piece of evidence to my mind is the dollar's behavior. The dollar strengthens up until 2002 or so, and then it drops precipitously. So all during a long part of the period when the U.S. deficit is rising, when manufacturing employment is plummeting throughout the United States, supposedly due to the strong dollar, actually, the dollar is dropping like a stone.

And that seems like a puzzling fact. And I'll present some hypotheses and a little model for how we might understand that. Reserve accumulation is often pointed to as a key part of the narrative of the saving glut. And I just want to get you to look at this picture of global reserve growth. Blue is advanced economy reserves. Brown is emerging and developing economy reserves in 2005, is when Ben comes to this building and gives the talk. Some of what we think about reserve growth is clearly retrospective, because it really took off later and, in particular, after the global financial crisis. It's certainly a factor leading up to it, but hard to say. It's really a dominant factor in what's happening to interest rates. And the, Krishnamurthy, the Vincent Jorgensen work that was referred to earlier somewhat addresses the interest rate effects of foreign reserve purchases, but they're just not as big, nearly as big as they became.

What about world saving? Well, this is a breakdown of world saving, and I want to not spend a lot of time on the breakdown, but look at the totals. So it's true that it rises a bit in the early 2000, but there's also a fall in world saving as the dot.com collapse happens and investment falls throughout the world. The biggest increases actually occur later, toward the later 2000s. And in connection with the global financial crisis, just the extent of the

increase in world saving is just not that impressive to me. But of course, what we need to look at is saving relative to investment. And for that, we need to look at global current account imbalances, which do equal saving minus investment in principle.

So this chart is one that we like to use at the IMF quite a bit because it encapsulates the entire pattern of global imbalances, and the dark blue lines down here are the U.S. So I want you to keep those in focus. Then up here is Japan. China is yellow, and oil-exporting developing countries are in green.

And unfortunately, the data are imperfect. So ideally, the sum of global current account surpluses would equal the sum of deficits, which is the same as saying that global saving equals global investment. But there are serious gaps in the data. And in this early period, these black bars — which measure that discrepancy — suggests that there's a significant missing surplus in the world. In other words, the counterparts of the deficits that we can measure in terms of surpluses are not fully known. This switches around the mid-2000s to become a missing current account deficit. In other words, the sum of surpluses is greater than the sum of deficits that we can actually measure. And unfortunately, we don't have a great idea for why these discrepancies appear, why they switch from surplus to deficit. But they're big.

So any attempt to look at this period in the early 2000s is bedeviled by the fact that for some of that time, there are these big black bars which indicate that we don't even know where the surpluses are that are behind or that are counterparts of the U.S. deficits.

With that being said, in terms of what we can measure, you can see the enormous growth in the U.S. deficit. You can see that the China surpluses don't really become that great as a proportion of global GDP. And these numbers are, by the way, all percentage of global GDP just don't become that great until around the global financial crisis. The oil-exporting countries' surpluses grow quicker. But this is in a context where world interest rates and liquidity are driving, helping to drive, commodity prices higher.

There's pretty buoyant global growth, particularly in emerging markets. And the East Asian crisis countries other than China, other East Asia are these light blue bars, which are kind of not that big. So it could be that really all these unmeasured holes in our current account data are due to developing countries saving, global saving glut.

But we can't really say that. We can't really say much, given that the data are so imperfect. So the way we should approach the data is to say, this makes me a little bit skeptical about saying, oh boy, it's all emerging market saving when we don't really have the direct smoking gun evidence.

The evidence on real interest rates is kind of mixed. Here, I'm showing the U.S. long-term real rate and the average real rate for a sample of 12 industrial countries in this period. You know, what this sort of shows is immediately after the Asian crisis, global rates rise,

and they fall. And to my mind, a large part of the fall is the collapse of the dot.com boom. Then they drift down somewhat before rising later in the 2000s, just before the global financial crisis. But it's not a super impressive drop to my mind.

What about short-term rates? The pattern is similar, but here I want to point to something I alluded to before which is notable, which is the U.S. short-term real rate. These are three-month Treasury bill rates just so much lower than the average of other industrial countries. It's kind of remarkably, remarkably lower, and it's low relative to other benchmarks.

Well, I'm not going to linger on the TIPS, but another benchmark is the estimates of r^* . So here I'm showing the local home team Lubik-Matthes estimates in gray but also estimates derived from the term structure of index bonds, from some Fed researchers and also Holston, Laubach and Williams. And these are all saying — if you believe them — that r^* was at worst around 1 percent yet. Going back to this, real policy rates are really, really low. Now that, I think, was not something that had obvious consequences for inflation right away but could have had consequences for financial stability.

U.S. dollar, this is something I'm going to put a lot of weight on. You can see that in the late 90s, the U.S. dollar became very strong. And then around 2002, it started to fall, and it falls all the way through just before the global financial crisis, and the global financial crisis is a sharp depreciation. But then with the onset of various rounds of QE and zero policy rates, the dollar falls. And in fact, that reaches a what's basically an — in real terms — all time post-Bretton Woods low, and around 2011. So if we think that what's going on in the 2000s leading to a larger U.S. deficit is a global savings glut, which pushes up the value of the dollar.

How do we reconcile that with the fact that, in the period when the dollar is falling the most, the deficit rises the most, you could say lags, but this occurs over a period of several years. And I don't think the lag explanation is really plausible for that period. So part of what I want to do is try to build a narrative where we can understand what is going on with the current account and what is going on with the dollar.

It's helpful in thinking about this narrative and how conditions change over the course of the 2000s to actually look kind of forensically at the U.S. trade balance and how that behaves. So I just want to stay a little bit mindful of the time. I mean, I thankfully have been given more time, but I don't want to abuse you because of that fact. So I'm not going to talk about the current account. That's actually a fascinating topic in itself, because the current account, of course, is you take these net exports — which is exports of goods and services minus imports of goods and services and net transfers, which are small — and then add the net investment income from the U.S. as external portfolio and you get the current account. The current account net exports are pretty close to each other for most of the period I'm talking about. After the financial crisis, the U.S. net investment income flow becomes very, very positive, even though the U.S. is a debtor.

And that in itself is fascinating. That's another talk someday. I'm not going to go into that. So I'm going to just focus on the trade balance. And I'm going to do a decomposition of the trade balance in a particular way. And this is the trade balance relative to nominal GDP. So that's basically nominal exports over nominal GDP minus nominal imports over nominal GDP.

And if I take the first difference here, I can represent the change in net exports in terms of the change in four quantities. One is the ratio of the export price deflator to the GDP deflator and the ratio of the real export volume to real output. The same for the ratio of the import price deflator to GDP deflator and then real imports relative to real output.

These are weighted by initial ratio levels. And there's a bunch of interaction terms, which are a second order that I'll show you but that are very small. One thing I want to caution you about in interpreting what I'm going to show you is that the results on imports are a little counterintuitive if you don't listen closely about what this decomposition means. So in this decomposition, when import prices rise relative to the GDP deflator, the trade balance worsens, and your intuition might say, "Wait, I thought that when import prices rise, imports go down, and that should improve the trade balance." Well, it does if the elasticity of demand for imports is greater than 1.

But for this decomposition, I'm assuming it's zero, because I'm not taking into account the behavioral response of imports. So this is like purely mechanical accounting for what makes the data add up to what the data are. Okay, so here's what you get when you look at the numbers, and I find this interesting because there are all these narratives about what happened in this decade, and people don't actually look at what the data did in the decades.

So just to give you two examples import prices, flood of cheap imports the Fed had to keep monetary policy loose to keep inflation on target because the flood of imports was coming in, if I look at the data. So let me focus on the period, this period here, which is sort of right after the Asian crisis to around 2002, import prices are contributing to a larger surplus. That means import prices are falling. Okay. Because I'm not looking at the behavioral response. I'm just looking at the valuation effect. But once we get to 2002, import prices are actually rising in total for the rest of the of the decade. We actually have rising import prices, which is sensible because the dollar is depreciating a lot.

Okay. So import prices were rising. So this whole flood of cheap imports is true up until around 2002. But then it's it stops. Also, you would think that if the dollar's depreciating exports will do well and that would help the trade deficit. Well, you know, coming to this period when the dollar starts depreciating, which is about 2002, you see that exports — this is the blue bars — exports begin to contribute very positively to the trade balance.

So we're exporting a lot. We're pretty competitive in global markets. The problem is that imports rise so much more than exports. So why is that happening? Well, it can happen if we spend a lot. And if we spend a lot on imports, imports will rise. And that's what's going

on in the U.S. It's not that there's a foreign saving glut; it's that there's a shortage of U.S. savings. And the U.S. is importing a lot, and we're getting a big deficit. So this is basically, you know, conclusions that you can get from this story.

So I have four takeaways. I've given you two of them. But rather than looking at that chart, let's just look at the behavior of import prices relative to GDP deflator. Well, sure enough, they're falling until around 2002. In other words, import prices are falling, though, again, it's not monotonic, but generally, this is the case. And that's partially because the dollar's strengthening. And then afterwards we get rising import prices. And what happens here, this spike comes from the fact that in 2008 there's a global spike in commodity prices, particularly food prices.

And that drives up inflation in the U.S. and, in fact, globally. This is actually sort of a mini version of what we saw after COVID. But it is this immediately followed by the global financial crisis. So, it's definitely a transitory shock because we had a much bigger shock in the other direction. Now, notwithstanding this, if you break out Chinese import prices, so you say, "Well, if import prices are rising, why is there a China shock?"

It's because Chinese import prices are falling like the prices of Chinese goods are falling, even though other import prices are rising. This is enough to harm industries that compete directly with Chinese imports. You can see that on the left-hand side. But on the other hand, even in 2003, Chinese imports were only 10 percent of all U.S. imports.

So, and here you can see the path again, it's after the mid-2000s that Chinese imports really grow, either as a share of total Chinese imports or U.S. imports. And it's kind of notable what has happened to Chinese imports since the onset of the Trump administration. They fall really remarkably, but that's a topic for another day.

So let me try to persuade you of a different narrative. And that's going to be this: If you look at the years 1998 to 2002 — which is the immediate aftermath of the Asian crisis — you can make a case that the global saving glut story has some legs. Again, it's not completely consistent with the data to my mind. But of course, it's three years later that Ben Bernanke gives this speech. And by that point, the current account deficit has grown even bigger. Unfortunately, we have these big data gaps and inconsistencies that make it impossible to be fully confident of what's going on. But I would argue that, starting in 2002, foreign capital gets mostly pulled in and not pushed in.

And this is the reason for the dollar's depreciation. If the world is demanding dollar assets and capital is pushing in, then the dollar's going to strengthen. If instead the U.S. is throwing debt onto world markets and trying to borrow abroad, the dollar's going to depreciate. This is not independent of monetary policy, but I think it's related to monetary policy. There's a lot of U.S. consumption, a lot of U.S. debt issuance. There's strong residential investment. This is fueled by low U.S. interest rates and loose financial conditions. And the loose financial conditions notably include innovations in housing

finance, which also fueled gross capital inflows. This is consistent with a paper that Ken Rogoff and I wrote in 2009 looking at this issue from a much closer perspective. But I think we have a lot more data and theory now to think about these issues. You know, why inflation didn't rear its head before it did, before the Fed felt compelled to tighten in mid-2004 is a good question to which I don't have an answer.

I don't think blaming it on China really holds water, given the quantitative importance of Chinese imports in the U.S. CPI at the time. So that's a topic for research. It's instructive to my mind to look at the U.S. current account through the lens of saving and investment. Now, again, even within our national income and product accounts, there's a discrepancy.

And NIPA's measure of the trade balance differs from the Census measure. But generally, the difference between saving and investment is closely correlated, at least with the current account balance and the mix closely correlated enough to make it sensible to look at saving and investment. And if you look at what the counterparts are of these variables for the period of interest, here, what you can see is that U.S. saving fell a lot through 2005 or so.

Now, part of this is the government. Part of this is George W. Bush coming in and deciding that the proper response to his predecessor having obtained budget balance was to give money back to people. So we do see that as a factor. Then we see a fall in net private saving, and that's part of the story.

And the other story is the behavior of investment. Now, what I'll draw your attention here to is that there is a period of rising investment up until around 2000, which helps fuel the U.S. deficit. That's no doubt somewhat related to the dot.com boom and the appreciation in the U.S. equity market. And investment falls for a while after the dot.com collapse.

But then later in the 2000, it rises: private nonresidential investment. Residential investment is the biggest driver of investment and, therefore, the current account deficit. And one point that others have made is that it's really what's going on. And in this period here is global saving glut. Why did investment fall? I mean what's, you know, if there's a global saving glut lowers global interest rates. It raises world investment. What's going on? So there are some inconsistencies with the story. So part of what's inspired me to revisit this is, as I said, some more recent academic work post what Ken Rogoff and I did many, many years ago. And, there's some very good studies, but they're not actually very many studies, surprisingly.

So, one that I think has been undernoticed is a story by Jane, Daco, et al, in economic policy and a large team of resources of researchers from the Board of Governors. And I think part of the purpose of this paper was to say, well, you know, that policy in the early 2000s wasn't really that expansionary. And they tried to make that case, but they also — which doesn't totally convince me — but they do conclude that the federal funds rate entered previously rarely navigated waters and was at the low end of the historical range of the

previous five decades. And that's kind of an understatement to my mind. But they also conclude that low interest rates may not have been the biggest driver of the housing market compared to loose financial conditions. And I think that's an important conclusion. There's a paper by Jack Favilukis and some co-authors — including one of Mindy's co-authors — that, as far as I know, has gotten very little notice. They had a related *JEP* paper that got more notice, but this is an NBER volume edited by Glaeser and Sinai.

And it's a really interesting analysis. They point out that capital inflows to the U.S., such as foreign official purchases of Treasury securities, may not have had a big effect on the housing market. And the reason is because while they lowered risk-free interest rates, boosting the housing market by changing the available supply to U.S. residents of very low-risk Treasury securities and pushing them into riskier securities, they may have raised the risk premium on home prices, on housing assets.

And they conclude that, capital flows. And then they have a battery of empirical estimates did not have much of an effect that you can detect on housing prices, capital inflows themselves. There's also a paper by Andrea Ferrero in the *JMBCB*, an excellent paper which has some similar conclusions about the importance of financial innovation in driving the events in the mid-2000s.

And then more recently there's a paper in the *Journal of Economic Dynamics and Control* by Peter Lihn Jorgensen, where he actually builds a dynamic stochastic general equilibrium model with frictions in the housing market. And he basically shows that you can explain housing appreciation in 2000 to 2002. It's a product of a global saving glut within that model.

But, the subsequent appreciation would have to be attributed to lower financial constraints in the housing sector to liberalization. And he identifies the dollar's behavior as part of that pattern. So reading his paper, it wasn't transparent to me how this was all working, although it made sense. I tried to put together a very small toy model of how this might work.

So this is very partial equilibrium. It's work in progress, but it'll give you an idea of what I think would be a model that might work. So, imagine a model with three categories of agents. There is a financial sector of financiers. Or you can think of these as nonliquidity constrained people who play in the financial markets. There's also households, and there are also foreign investors who invest in the home economy. And they hold home bonds, and they lend in foreign currency home households. All they do is they issue domestic currency mortgages, debt. MH , they hold a housing stock H valued at FX , where P is the price of housing assets, and they hold some other assets, A_h .

And basically, there's some very crude portfolio balance relationships. These, I think, can be justified in a model of financial frictions, such as have become popular now in the exchange rate literature pretty easily. But basically the household derives some fraction of

its wealth W_h to housing wealth. That depends on the interest rate available on bonds, domestic currency, bonds and π , which is the rate of housing appreciation.

Now here I'm basically not going to endogenous expectations. I think that can be done, but I don't think it adds that much. And I'm assuming that central banks stabilize the price level and peg nominal interest rates. The household also has some level of desired mortgage debt that's related to its wealth. And its mortgage debt is related to its housing equity by the housing collateral constraints, which is getting very messed up here, which is this last equation. Basically, there's a fraction Θ of your housing wealth that you can borrow against. It's the loan to value ratio, and it's less than 1. And then two years, they hold home in foreign bonds, subject to the constraints that I have below. It's basically a wealth constraint. So there's some demand for foreign bonds. Some demand for domestic bonds is the exchange rate, which is the domestic currency price of foreign exchange. So that's obviously going to play a key role in this analysis.

Finally, foreign investors issue foreign currency debt to the home finance financiers. They hold home currency bonds subject to portfolio demand function, which looks kind of like what I had for the other agents. There's some fraction, foreign wealth w^* that they want to hold in foreign bonds. Total wealth w^* is basically the amount of bonds, basically b^* is they're foreigners holdings of domestic bonds valued in domestic currency. So if I divide that by the exchange rate, I get the foreign value of the claims of foreigners on the home country.

Finally, d_g is the outstanding stock of home government debt. I'm assuming this is all outside debt. So forget about Ricardian equivalence. And finally if we assume that housing collateral constraint is absolutely binding and there's a global equilibrium condition for domestic currency bonds, which is that basically the stock of government debt issued by the home country has to equal the domestic currency bonds held by domestic financiers, less the borrowing of the households in the home country that issue mortgages plus the holdings of foreigners.

And, there's also a relationship determining the price of housing, which looks like this one, taking into account of the fact that the homeowners, the household sector is actually constrained. So what we want to think about is what happens when data goes up. In other words, when we increase the loan to value ratio — which I would view as a stand in for financial liberalization — well, you can see that basically the world has to absorb this higher stock of bonds because the households in the U.S., say, are issuing dollar securities. These are getting securitized. These bonds are going out into the world and in order for that to happen, it has to rise. For example, if he rises, it means that foreign wealth is worth more in terms of domestic bonds, and that increases the foreign demand for these bonds. It's also the case that if you raise $\Theta_1 - \Theta$ gets closer to 1, and that pushes up the value of the housing stock at home.

So this is a basic framework that I think can justify — and it needs more work — but can justify this idea that, in this period after 2002, when we have all this financial innovation in the U.S., a lot of debt in dollars is getting issued and that is helping the dollar to depreciate again, with an assist from very low interest rates from the Fed.

What about the evidence, direct evidence on financial conditions and the dollar? There are two things I want to show you. In some earlier work with Haonan Zhou — who's now at Hongkong University and the business school in Brookings — we demonstrated that one correlate of the dollar's strength is the Gilchrist and zero excess bond premium, which is related to the tightness of financial conditions.

It's actually a very good recession predictor for the United States. And it's also a good predictor of certain developments globally, such as stress and global sovereign debt markets. Basically, when this indicator indicates tight financial conditions, the dollar is strong. That's the correlation. And when I look at that correlation without any other controls, it's positive. It's 0.14, which is not super impressive. But you can see in the picture the positive correlation.

Another indicator — which is one that is used by in the Favilukas et al. work — is the results of the senior loan officer opinion survey that the Federal Reserve carries out. It measures the percentage of banks tightening standards on industrial loans. And here the correlation is 0.39, much higher. So basically a tightening of financial conditions is associated with a stronger dollar.

Let me conclude, because I want to leave some time for questions at least. The U.S. discourse on trade deficits is very much a "blame the foreigners" narrative of American victimhood. And I would argue that it's very much influenced by events in the 2000s, which are associated with the China shock. They're associated with a very dramatic global financial crisis. And some of the current recommendations for tariffs, capital inflow taxes, targeting trade deficits, I think, draw on that experience. In fact, there is a there's an active discussion now of China shock 2.0: the fear that Chinese exports driven by subsidies and industrial policy — for example, in electric vehicles — will, with overcapacity, have similar effects to what happened in the in the 2000s.

But these discussions rarely acknowledge that U.S. macro conditions play a leading role in U.S. trade deficits. And you certainly can't argue today that low global interest rates are the cause of U.S. deficits, which remain considerable. My opinion would be that if we want to counter trade abuses, we should use trade policy, not macro policy. And macro problems require macro remedies.

And the biggest obvious macro remedy for our trade deficit would be for the U.S. to get its fiscal house in better order. I just have extended to the present one of the earlier charts I showed you on saving and investment to kind of drive this point home. But if you come to

the right-hand side of the chart, you can see that U.S. total net saving — which had risen after the global financial crisis — is now in negative territory.

Private saving has fallen, but net government saving is also becoming very negative again after the big shocks of COVID. And until that situation is rectified, we're going to continue to see large U.S. deficits irrespective of what happens with tariffs.

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*To cite this Economic Brief, please use the following format: Obstfeld, Maurice. (November 2024) "Goodfriend Memorial Lecture: The U.S. Current Account Deficit and the Global Capital Market Revisited." *Federal Reserve Bank of Richmond Economic Brief*, No. 24-37.*

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