Comments on "Foreign Effects of Higher U.S. Interest Rates"

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This is a very interesting and ambitious paper. The authors are trying to determine not just what are the effects of U.S. monetary policy on other countries, but also what are the channels whereby those effects occur. How do they propose to identify those channels? Figure 5 in their paper shows the variables they use to try to measure the contributions of three different channels. The left-most panels refer to the exchange rate channel. The idea is if the U.S. Federal Reserve contracts by raising interest rates, that could lead to an appreciation of the dollar and an appreciation of the currency of other countries that peg to the dollar. Countries that are pegging to the dollar would see a bigger drop in output when there's a U.S. monetary contraction relative to others. For example, the orange line in the top left panel of their Figure 5 indicates that Canada was essentially pegging to the U.S. dollar up until 2002. If the exchange rate transmission mechanism is important, we would see for most of the sample a strong response of Canada to a U.S. monetary contraction, with the response diminishing a little at the end of the sample. The green and gray curves in this panel refer to Japan and the United Kingdom. If the transmission of monetary policy runs through exchange rates, for those countries we'd see a big response to U.S. monetary policy shocks at

the very beginning of the sample and a more modest response later on.

The middle panels in their Figure 5 are the observations they're going to use to look for evidence of the importance of the trade channel. The idea is that if the U.S. economy is contracting, we're buying fewer imports, and that's going to be a bigger shock for countries that are selling more to us. In the top middle panel, the orange is again Canada. Through this sample Canada should be very vulnerable to the U.S. monetary policy shock according to the trade channel. So if we saw the response of Canada to a U.S. monetary contraction bigger in the first part of the sample, that suggests an exchange rate channel, whereas if it were uniform through the sample, that suggests a trade channel. In the bottom middle panel of their Figure 5, the orange is Mexico. Mexico is a much bigger trading partner with the U.S. toward the end of the sample compared to the beginning. And so, if the trade channel is important we should see Mexico having a bigger response to U.S. monetary policy shock later in the sample compared to the beginning.

The right-most panels in their Figure 5 display their vulnerability index. I share some of Andy Rose's concerns about this, and we might want to look at some alternative measures. But the basic idea is that if an economy is more fragile, for example, if there are more concerns about the current account deficit, a little hiccup from the U.S. might have a bigger effect on that economy.

A key part of their identification strategy is thus to look at how different countries' sensitivity to U.S. monetary policy shocks changed over time. But

here's my big concern: it's not just other economies that may have different sensitivities to a U.S. monetary policy shock over time-- the U.S. seems to have different sensitivities to a U.S. monetary policy shock over time. In the top panel of my Figure 1, I've reproduced the calculations behind the left panel of the authors' Figure 4, calculating the response of U.S. GDP to a U.S. monetary shock. The horizontal axis shows the number of quarters after the monetary policy shock and the vertical axis shows the Jorda local projection estimate of the response of U.S. GDP, with 68% Newey West confidence intervals in dashed lines. But I've made one change from what they did. In the top panel, I've only used U.S. data up until 1990. This top panel shows a result that we're all pretty familiar with-- when there's a hike in U.S. interest rates we see slower U.S. GDP growth over an extended period of time. The bottom panel of my Figure 1 is that same regression estimated for the U.S. over the second half of the sample from 1991 onward. What we see in that second panel is that when there's a U.S. monetary contraction, U.S. GDP if anything grows faster. We're familiar hearing about a price puzzle, which is the observation that when the Fed contracts, sometimes U.S. inflation goes up. Here for this specification there's an output puzzle-- the Fed contracts and U.S. GDP grows faster.

The point I'm making is that whatever it is that explains why the U.S. is less sensitive to a U.S. monetary policy shock in the second half of the sample compared to the first, it's not because the U.S. has a different exchange rate policy relative to the dollar in the second half than the first. It's not because

the U.S. has a different volume of trade with the U.S. in the second half of the sample than the first. It's something else. And whatever that something else is, it might also be figuring into why we might see Canada or Mexico having a different response to U.S. monetary policy shock in the second half compared to the first.

So what is going on? My Figure 2 takes a look at the raw data. The top panel is the Iacoviello-Navarro measure of U.S. monetary policy shocks and the shaded regions indicate U.S. recessions. In the first half of the sample there is a pretty striking correspondence. Virtually all of those earlier recessions were preceded a few quarters earlier by a big contractionary monetary policy shock. But we don't see this correspondence in the second half of the sample at all. That's why we find that these monetary shocks seem to have some statistical correspondence with U.S. GDP in the first part of the sample, but substantially less so in the second half.

I don't think that this is unique in any way to the particular measure that they use for the monetary policy shock. The reason I say that is partly revealed in that bottom panel of my Figure 2. This simply plots the raw data for the fed funds rate. We see the same basic pattern in this bottom panel. In the first half of the sample, the Fed is raising interest rates, often very quickly, prior to the recession. But that pattern is a lot less clear in the second part of the sample.

One interpretation of that is there was this stop-go monetary policy that

was prevalent in the 1960s and 1970s. The Fed would try to stimulate the economy, but would end up overstimulating. Inflation would climb up, the Fed would respond to that higher inflation by raising interest rates, and that monetary contraction was one of the factors that contributed to the subsequent recession. Maybe we've learned since then a little bit better about how to conduct monetary policy to avoid some of that stop-go policy. That may be part of why there are changes over time in the U.S. sensitivity to these shocks. And it might explain why there are changes over time in the sensitivity of the rest of the world to U.S. monetary policy shocks as well.

I should also comment that one example that looks a little different in the top and bottom panels of Figure 2 is the Great Recession. Towards the end of the Great Recession, the top panel indicates there was actually a contractionary monetary shock. But at this point in time, the fed funds rate was stuck at zero. I think what's going on here is that the authors are using the shadow rate in place of the fed funds rate once we get to that point in the sample. You have to do something like this. The fed funds rate was zero for a long period. The authors have an equation that's essentially an augmented Taylor Rule, regressing the shadow rate on U.S. GDP, inflation and some lagged variables. And they're interpreting the residual of that as a U.S. monetary shock. I'm guessing that the story is that by the Spring of 2009, that specification of a Taylor Rule would have said the Fed should have picked an even more negative shadow rate than they did. The Fed wasn't as

expansionary as their traditional rule would say it should have been when the economy is doing so poorly. That ends up being counted as a contractionary monetary shock here.

Now, I don't think that's a bad idea. That's maybe a reasonable way of thinking about things. But it's another reason why this measure of a monetary policy shock at the end of their sample may mean something different from what it signals early on.

But I want to emphasize again that I don't think it's the way they measure the monetary shock that accounts for their results. In my Figure 3, I do the same exercise as in Figure 1, replacing the monetary policy shock with the simple change in the fed funds rate. The top panel shows the Jorda projection coefficients in the first half of the sample. It's telling the same basic story as the top panel of Figure 1-- when the fed funds rate goes up, in the first half of the sample that would lead us to expect slower GDP growth in subsequent quarters. The bottom panel shows the coefficients for the second half of the sample. Again, you get this output puzzle. We have even bigger standard errors there because there's very little movement in the fed funds rate for much of this sample. But it's the same basic conclusion we came away with from the bottom panel of Figure 1.

So I don't think this is a matter of picking the right monetary shock. The authors do a number of robustness exercises that also support that conclusion. Sometimes we get a little preoccupied with this whole

identification issue. And reasonably so, of course we need to worry about identification. But let me remind you that in the plain vanilla structural VAR, the whole identification question about what is a monetary policy shock boils down to asking which linear combination of residuals is it that we're going to call a monetary policy shock. One person says I want to take this linear combination, another person says they want to take some other linear combination. But in the end, we're just using some linear combination of residuals from a VAR, and debating which one we ought to use. My point is, in these data it's the reduced-form nonorthogonalized impulse-response functions that differ across subsamples. It's that raw correlation that we're seeing in Figure 3. The simple correlation in the data between U.S. GDP today and the fed funds rate a couple quarters ago is different in the second part of the sample than the first. That's not a matter of measuring the monetary shock, it is simply a feature of the data.

Overall, I am positive about this paper. It's an ambitious paper, and an important question. I'm not sure I would do it a whole lot differently. But the bottom line is I still am not entirely certain about why it is that the effects of monetary policy seem to have changed over time. That uncertainty complicates the interpretation we might give to the findings in this paper.

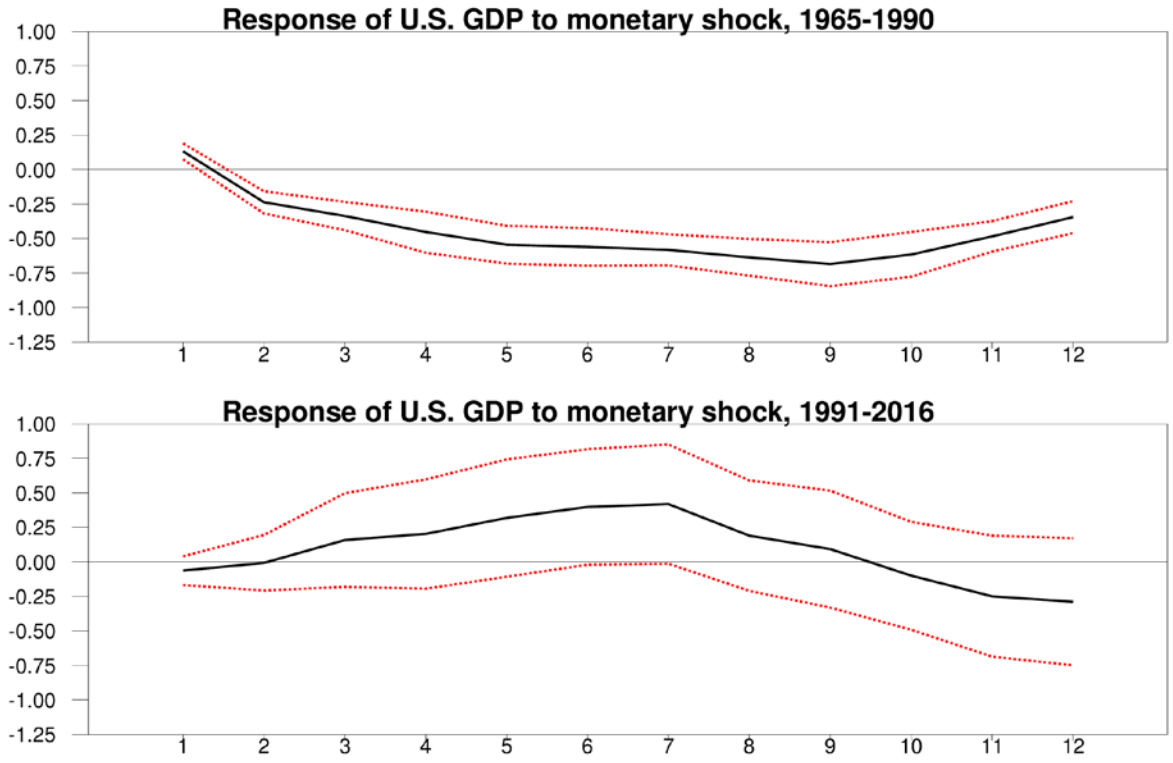

Figure 1. Response of U.S. GDP to U.S. monetary policy shock over two subsamples.

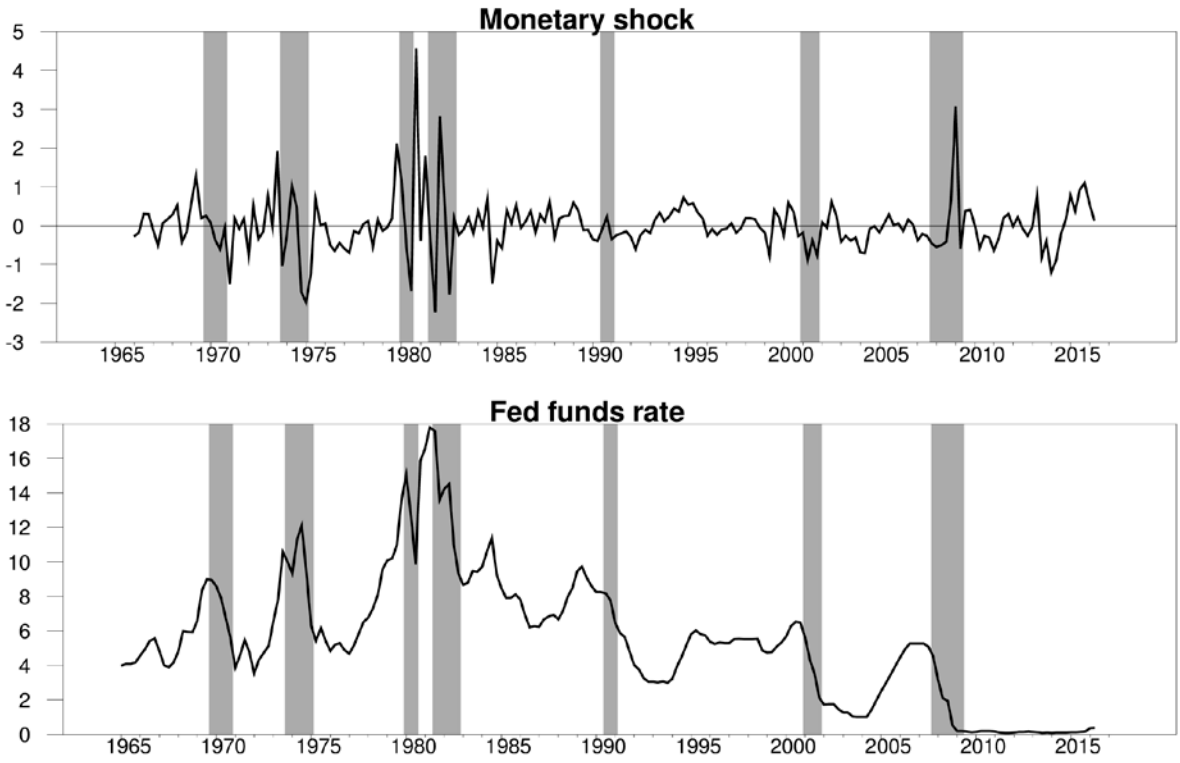

Figure 2. Iacoviello-Navarro monetary policy shock, fed funds rate, and U.S. recessions.

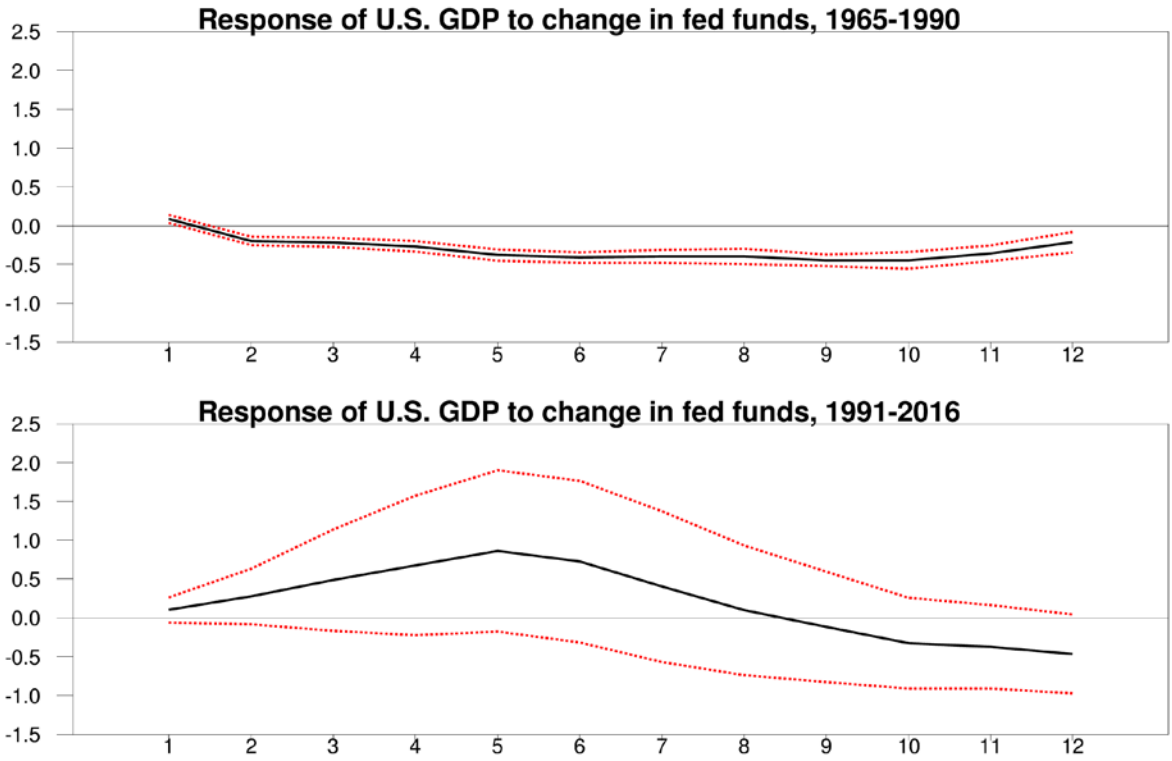

Figure 3. Response of U.S. GDP to changes in the fed funds rate over two subsamples.