The Future of the Zero Lower Bound Problem[1]

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Introduction

Thanks for the generous introduction. I also want to thank the organizers for their invitation to address you tonight. I view it as a huge honor to give a keynote address at this prestigious conference at one of my favorite research institutions.

My subject is a natural one given our venue. In August 2016, John Williams, President of the Federal Reserve Bank of San Francisco, released a public statement[2] emphasizing, and I quote, "the need to study and consider new approaches to fiscal and monetary policy." My speech today is entitled, "The Future of the Zero Lower Bound Problem," and should be viewed as a response to John's call to action. During the first part of my speech, I'll answer John's call much as a policymaker would – viewing the zero lower bound problem as a largely technical consideration that the Fed and others must try to surmount as

[1] There is some overlap between these remarks and a keynote address about negative interest rates that I gave at the Asian Development Bank Institute in 2016.
[2] http://www.frbsf.org/economic-research/publications/economic-letter/2016/august/monetary-policy-and-low-r-star-natural-rate-of-interest/.

best they can. During the second part of my speech, I'll answer John's call more as an academic: by describing a simple and direct, but largely politically infeasible, approach to solving the problem.

The Zero Lower Bound Problem Has Been, And Will Continue to Be, A Big Deal

I'll begin by motivating why I see the zero lower bound problem as likely to be central to future macroeconomic policy-making.

If we go back a decade in time, the zero lower bound problem was still viewed as largely a curiosum in macroeconomics. Yes, the Bank of Japan had kept short-term nominal interest rates at the zero lower bound for many years. But this experience, and the associated macroeconomic outcomes, was viewed by many experts in the policy and academic community outside of Japan as largely reflecting factors peculiar to that country.

Of course, if we fast forward to 2017, the situation has changed tremendously. Central banks in the West have spent much of the past decade at their own effective lower bounds. For example, in the US, the Fed kept the interest rate on excess reserves at a quarter percent for seven years between December 2008 and December 2015. Indeed, I've been a macroeconomist for thirty years, and the Fed has been at or near its effective lower bound for about a quarter of that time.

The recent stays at the effective lower bound have been associated with truly horrific macroeconomic outcomes throughout the West. But even in the US, where the recovery was relatively stronger, the civilian unemployment rate was over 7% for nearly five years, and did not return to its pre-crisis low for

over a decade. Yearly core PCE inflation has been below the Fed's target of 2% for most of the past nine years. These outcomes are certainly suggestive that Fed was significantly constrained in the past decade in its pursuit of its dual mandate.

Are central banks and their economies likely to endure similar experiences going forward? Forecasting is hard, especially about the future. But I believe that there are two good reasons why, in the absence of large changes in the policy regimes, we should anticipate even longer stays at the zero longer bound than we've seen in the recent past.

My first reason is empirical, and will come as no surprise to followers of the research produced at this institution. Roughly speaking, central banks hit the zero lower bound when the neutral real rate of interest – so-called r* - falls to -2% or lower. Of course, r* isn't observable. But Thomas Laubach and John Williams have provided a simple but compelling approach to impute long-run measures of r* from observables like real GDP growth, inflation, and nominal interest rates. Their approach suggests that long-run r* has fallen by over 200 basis points in the US over the past ten years and, as of the end of the second quarter of 2017, remains close to zero.[3] This estimate suggests it will take significantly smaller adverse shocks to the neutral real rate of interest than in the past to push the Fed into the zero lower bound.[4]

My second reason is related to the "fear of fear" about which Franklin Roosevelt warned in his first inaugural address. Suppose that the economy were to experience a sharp decline in the neutral real rate of interest – possibly due to a new financial crisis

[3] See www.frbsf.org/economic-research/files/Laubach_Williams_updated_estimates.xlsx for details.
[4] See Kiley and Roberts, BPEA 2017.

– over a one to two year period. Given how low r* is, the central bank would be unable to insulate the macroeconomy against the shock. As a result, aggregate economic activity could fall by a lot in response to this kind of shock.

In my hypothetical, I've posited that the decline in the neutral real rate of interest was only transitory. It might seem that the economy should recover rapidly after this shock. The problem is that after a short, but sharp, decrease in economic activity, people are likely to believe that they face a significant near-term risk of another big recession. That belief increases their precautionary demand for savings and lowers their demand for current consumption. The central bank can and should offset this decline in consumption demand by lowering its target interest rate. However, if this fear-generated decline in demand is sufficiently large, then the central bank could be constrained by the effective lower bound. In this way, even a short decline in the neutral real rate of interest can lead to protracted stays at the effective lower bound.

To summarize: in the past decade, many central banks have spent extremely long periods of time at their effective lower bounds. The decline in long-run r*, combined with plausible feedback effects of deep recessions on household uncertainty and fear, is likely to make future stays even longer. In the absence of a significant change in the US macroeconomic policy regime, we face a considerable risk that the economy could endure damaging decade-long spells at the Fed's effective lower bound.

Forward Guidance

So, in my view, the effective lower bound is going to be a key issue in future policymaking in the US and the developed world more generally. How should central banks deal with this prospect? During its recent time at the effective lower bound, the Fed used two kinds of unconventional monetary policy interventions to provide support to the economy: forward guidance and asset purchases. I have concerns about the effectiveness of both, especially during long stays at the effective lower bound.

Let me start with forward guidance. "Forward guidance" refers to communication that is intended to change the public's beliefs about future central bank actions. In the Fed's case, it used two kinds of forward guidance. The first was "lower for longer", as the Fed announced that the fed funds rate would stay at or near a quarter percent longer than currently anticipated by investors. The second was "more gradual for longer", as the Fed announced that the fed funds rate would rise from its current low level more gradually than currently anticipated by investors.

Both types of Fed communication were intended to shift investors' beliefs about the path of the interest rate target after the date at which they expect interest rates to lift off from the effective lower bound. That's no accident. The whole point of forward guidance to provide further stimulus today. But it can't provide additional stimulus in any state of the world in which the central bank is constrained by the effective lower bound. It follows that, if it is to be in fact stimulative, forward guidance has to be about the actions of the central bank ***after*** it is currently anticipated to raise rates.

In my view, this aspect of forward guidance would be a big restriction on its usefulness in situations in which the public expects the effective lower bound is going to bind for a decade or more. The term of a Fed chair is only four years. A President of the United States can serve no more than eight years. Can a current chair and her monetary policy committee credibly communicate about how the committee will behave a decade hence? In my view, few would deem such information to be credible.

Recently, former Fed chair Ben Bernanke has suggested an interesting way[5] to solve this credibility issue through what he terms "temporary price level targeting". Under Bernanke's proposal, the Fed would keep its target interest rate at the effective lower bound until the ***average*** inflation rate rises back to 2% per year. (Here, by "average inflation", I'm referring to an average calculated after the Fed hits the effective lower bound.) As I understand it, Bernanke's proposal is intended to tie the hands of future chairs (and future elected Presidents who appoint those chairs) about their policy choices after the economy has reached full employment.

Bernanke's proposal is an intriguing one. But it serves to highlight the kind of duration that forward guidance requires to be effective. Inflation has averaged under 1.5% per year since the Fed hit its effective lower bound in December 2008. To make up for the current price level shortfall, inflation would have to average over 3% per year for the next five years or over 2.5% per year for the next 10 years. Despite Bernanke's optimistic language, these kinds of commitments don't strike me as all that "temporary".

[5] https://www.brookings.edu/wp-content/uploads/2017/10/bernanke_rethinking_macro_final.pdf

Why Not Asset Purchases?

So, it seems unlikely to me that forward guidance will be an effective tool during decade-long stays at the effective lower bound. Let me turn instead to asset purchases. I have two distinct concerns about them. The first is that I remain uncertain about their ultimate impact on the real economy. Some authors – notably Arvind Krishnamurthy and Annette Vissing-Jorgensen - have argued that these purchases are a drag on the macroeconomy, because they remove needed liquidity from the private sector. As far as I know, there is no empirical evidence that clearly contravenes their view.

The second concern is that asset purchases may not be all that helpful during long stays at the effective lower bound. The Fed's view is that the amount of economic stimulus is connected to the stock of assets that it was expected to purchase (and the period of time over which it was expected to hold that stock). However, many market participants believe that it is in fact the flow of purchases that affects the economy, as opposed to the stock. If they are in fact correct, the Fed would have to keep purchasing a large flow of assets for many years. Such a program should be expected to eventually fail, as the Fed runs out of available assets or creates liquidity strains in key government debt markets.

Why Not Raise the Inflation Target?

I've argued that the Fed's conventional unconventional tools – forward guidance and asset purchases – are likely to be limited in their effectiveness during protracted stays at the zero lower bound. What else can be done? One common suggestion is that central banks should raise their inflation targets. The goal of such an announcement is to raise inflation expectations. In this

way, the central bank can implement a lower real interest rate given the effective lower bound on nominal interest rates.

Unfortunately, I see such an announcement as having two kinds of credibility problems. The first kind of credibility problem is what one might term the orthodox one: the public could see an increase in the inflation target as simply being the first of many such steps. Their inflation expectations could rise to 3% or 4% or even 6%, instead of staying at 2.5% as is desired.

You will still hear this orthodox concern from many observers. But my bigger concern is that the opposite will occur: the public's inflation expectations could rise by a lot less than one for one with the increase in the inflation target. For example, in Japan, despite what many would consider to be extraordinary interventions over the past four plus years, the central bank does not seem to have been able to raise longer-term inflation expectations[6] close to its declared inflation target of 2%.

Basically, I have little confidence in the ability of the central bank to lower the real interest rate in a controlled fashion by changing its announced intentions for the inflation target.

The Benefits of (Slightly) Negative Yields

I've discussed and critiqued three possible approaches – forward guidance, asset purchases, and increases in the inflation target - to dealing with long-term stays at the effective lower bound. Let

[6] https://www.federalreserve.gov/econresdata/ifdp/2016/files/ifdp1168.pdf

me turn to a fourth about which I'm more optimistic: (slightly) negative interest rates.

Negative interest rates would have seemed like a nonsensical idea to most economists a decade ago. They would have viewed negative interest rates as creating an unsustainable arbitrage opportunity with currency. But we've seen in Europe and in Japan that central banks can influence financial market prices and returns by reducing bank deposit rates slightly below zero.

Some research that I've done[7] suggests that these seemingly slight reductions could have potentially big benefits if the households believe that the central bank is likely to be constrained by that lower bound for many years. The key is that the decision to spend or save today is shaped by the relative price between current consumption and *post-liftoff* consumption. That relative price is governed by households' projections of the amount of interest that they can accumulate between today and liftoff. If households see liftoff as being ten years away, reducing the lower bound by even fifty basis points has a large effect on their projection of the interest that they can cumulate before liftoff by foregoing consumption today.

I mentioned before that central banks in Europe and Japan have employed (slightly) negative interest rates. (The Fed has not.) But these central banks have typically emphasized that they view negative interest rates as an emergency measure that will be used for only a short period of time. In my view, this communication approach is vitiating the effectiveness of negative rates. Instead, I would recommend that the Fed and other central banks should, when faced with severe shocks, be willing to

[7] Kocherlakota (2016), NBER WP 22009

commit to keeping interest rates at -0.25% or -0.5% for years. That commitment could have a lot of stimulative force.

There is a risk that these long-term commitments could incentivize banks to dump their reserves in favor of large-scale storage of currency. But I suspect that central banks could deter these attempts to sidestep negative interest rates through taxation or regulation of "undue" levels of currency-holdings.

The Zero Lower Bound: An Academic Economist's Perspective

So far, I've discussed the zero lower bound problem as a policymaker might – that is, by constructing somewhat complicated workarounds that are largely respectful of current political and institutional constraints. Let me conclude my talk by discussing the problem more as an academic - that is, by zooming on its essence in a way that largely ignores current political and institutional constraints. My remarks will be a stronger version of sentiments expressed over the past few years by Ruchir Agarwal and Miles Kimball[8], Ken Rogoff[9], and Larry Summers[10].

The zero lower bound problem is not an intrinsic constraint on the economy. Rather, it is created by a particular government intervention: the provision of physical currency - a store of value with a zero nominal interest rate. Like many government interventions, this one has documentable social welfare costs.

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[8] https://www.imf.org/en/Publications/WP/Issues/2016/12/31/Breaking-Through-the-Zero-Lower-Bound-43358.

[9] https://press.princeton.edu/titles/10798.html

[10] https://www.washingtonpost.com/news/wonk/wp/2016/02/16/its-time-to-kill-the-100-bill/?utm_term=.c29e0f49fa04

But this intervention seems somewhat remarkable in terms of the magnitude of those costs: it is arguably responsible for the loss of trillions of dollars of output around the world in the past decade.

The answer to this problem is a simple one: the government should eliminate physical currency. Instead, people could have an account with their central bank. The central bank could then implement monetary policy directly by varying the interest rate on that account, including by making it arbitrarily negative.

The elimination of cash would seemingly undercut the ability of households to engage in anonymous transactions. But Bitcoin and its even more anonymous descendants (like Zcash) have demonstrated that it is now technologically possible for people to engage in anonymous transactions in the absence of physical currency. It seems to me that the right approach to giving households a way to make anonymous transactions is not simply to keep cash, with its large attendant welfare losses. Rather, the right approach is to figure out how to regulate private sector technologies like Bitcoin so that households are able to engage in transactions with a socially desirable level of anonymity.

Conclusions

Let me wrap up. My goal today has been to convince you of three points.

1. The zero lower bound has been a huge influence on global macroeconomic policymaking over the past three decades. It is likely to be even more material going forward.

2. Forward guidance, asset purchases, and inflation target increases are unlikely to be effective mitigants to the zero

lower bound problem. Small but persistent reductions of the lower bound below zero seem to me to offer more promise.

3. The zero lower bound problem is created by the existence of government-provided physical currency. The solution to this enormously costly problem is simple: eliminate the barbarous relic of government-provided physical currency.

Thank you for listening and I look forward to taking your questions.