

INTEREST ON RESERVES AND THE FED'S BALANCE SHEET

HEARING BEFORE THE SUBCOMMITTEE ON MONETARY POLICY AND TRADE OF THE COMMITTEE ON FINANCIAL SERVICES U.S. HOUSE OF REPRESENTATIVES ONE HUNDRED FOURTEENTH CONGRESS SECOND SESSION

MAY 17, 2016

Printed for the use of the Committee on Financial Services

Serial No. 114-87



U.S. GOVERNMENT PUBLISHING OFFICE

24-067 PDF

WASHINGTON : 2017

For sale by the Superintendent of Documents, U.S. Government Publishing Office
Internet: bookstore.gpo.gov Phone: toll free (866) 512-1800; DC area (202) 512-1800
Fax: (202) 512-2104 Mail: Stop IDCC, Washington, DC 20402-0001

HOUSE COMMITTEE ON FINANCIAL SERVICES

JEB HENSARLING, Texas, *Chairman*

PATRICK T. MCHENRY, North Carolina,
Vice Chairman

PETER T. KING, New York
EDWARD R. ROYCE, California
FRANK D. LUCAS, Oklahoma
SCOTT GARRETT, New Jersey
RANDY NEUGEBAUER, Texas
STEVAN PEARCE, New Mexico
BILL POSEY, Florida
MICHAEL G. FITZPATRICK, Pennsylvania
LYNN A. WESTMORELAND, Georgia
BLAINE LUETKEMEYER, Missouri
BILL HUIZENGA, Michigan
SEAN P. DUFFY, Wisconsin
ROBERT HURT, Virginia
STEVE STIVERS, Ohio
STEPHEN LEE FINCHER, Tennessee
MARLIN A. STUTZMAN, Indiana
MICK MULVANEY, South Carolina
RANDY HULTGREN, Illinois
DENNIS A. ROSS, Florida
ROBERT PITTENGER, North Carolina
ANN WAGNER, Missouri
ANDY BARR, Kentucky
KEITH J. ROTHFUS, Pennsylvania
LUKE MESSER, Indiana
DAVID SCHWEIKERT, Arizona
FRANK GUINTA, New Hampshire
SCOTT TIPTON, Colorado
ROGER WILLIAMS, Texas
BRUCE POLIQUIN, Maine
MIA LOVE, Utah
FRENCH HILL, Arkansas
TOM EMMER, Minnesota

MAXINE WATERS, California, *Ranking
Member*

CAROLYN B. MALONEY, New York
NYDIA M. VELÁZQUEZ, New York
BRAD SHERMAN, California
GREGORY W. MEEKS, New York
MICHAEL E. CAPUANO, Massachusetts
RUBEN HINOJOSA, Texas
WM. LACY CLAY, Missouri
STEPHEN F. LYNCH, Massachusetts
DAVID SCOTT, Georgia
AL GREEN, Texas
EMANUEL CLEAVER, Missouri
GWEN MOORE, Wisconsin
KEITH ELLISON, Minnesota
ED PERLMUTTER, Colorado
JAMES A. HIMES, Connecticut
JOHN C. CARNEY, Jr., Delaware
TERRI A. SEWELL, Alabama
BILL FOSTER, Illinois
DANIEL T. KILDEE, Michigan
PATRICK MURPHY, Florida
JOHN K. DELANEY, Maryland
KYRSTEN SINEMA, Arizona
JOYCE BEATTY, Ohio
DENNY HECK, Washington
JUAN VARGAS, California

SHANNON MCGAHN, *Staff Director*
JAMES H. CLINGER, *Chief Counsel*

SUBCOMMITTEE ON MONETARY POLICY AND TRADE

BILL HUIZENGA, Michigan, *Chairman*

MICK MULVANEY, South Carolina, *Vice
Chairman*

FRANK D. LUCAS, Oklahoma

STEVAN PEARCE, New Mexico

LYNN A. WESTMORELAND, Georgia

MARLIN A. STUTZMAN, Indiana

ROBERT PITTENGER, North Carolina

LUKE MESSER, Indiana

DAVID SCHWEIKERT, Arizona

FRANK GUINTA, New Hampshire

MIA LOVE, Utah

TOM EMMER, Minnesota

GWEN MOORE, Wisconsin, *Ranking Member*

BILL FOSTER, Illinois

ED PERLMUTTER, Colorado

JAMES A. HIMES, Connecticut

JOHN C. CARNEY, Jr., Delaware

TERRI A. SEWELL, Alabama

PATRICK MURPHY, Florida

DANIEL T. KILDEE, Michigan

DENNY HECK, Washington

CONTENTS

	Page
Hearing held on:	
May 17, 2016	1
Appendix:	
May 17, 2016	41

WITNESSES

TUESDAY, MAY 17, 2016

Eisenbeis, Robert A., Vice Chairman, Cumberland Advisors	5
Keister, Todd, Professor of Economics, Rutgers University	7
Selgin, George, Director, Center for Monetary and Financial Alternatives, Cato Institute	9
Taylor, John B., Mary and Robert Raymond Professor of Economics at Stan- ford University	11

APPENDIX

Prepared statements:	
Waters, Hon. Maxine	42
Eisenbeis, Robert A.	47
Keister, Todd	59
Selgin, George	67
Taylor, John B.	83

ADDITIONAL MATERIAL SUBMITTED FOR THE RECORD

Huizenga, Hon. Bill:	
Written statement of David Malpass	90

INTEREST ON RESERVES AND THE FED'S BALANCE SHEET

Tuesday, May 17, 2016

U.S. HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON MONETARY
POLICY AND TRADE,
COMMITTEE ON FINANCIAL SERVICES,
Washington, D.C.

The subcommittee met, pursuant to notice, at 10:03 a.m., in room 2128, Rayburn House Office Building, Hon. Bill Huizenga [chairman of the subcommittee] presiding.

Members present: Representatives Huizenga, Mulvaney, Pearce, Stutzman, Pittenger, Messer, Schweikert, Guinta, Love, Emmer; Moore, Foster, Himes, Murphy, Kildee, and Heck.

Ex officio present: Representatives Hensarling and Waters.

Chairman HUIZENGA. The Subcommittee on Monetary Policy and Trade will come to order. Without objection, the Chair is authorized to declare a recess of the subcommittee at any time.

Today's hearing is entitled, "Interest on Reserves and the Fed's Balance Sheet."

I now recognize myself for 5 minutes to give an opening statement.

So how did the Fed receive authorization to pay interest on reserves? At what level was it supposed to have set that interest rate?

And most importantly, how is this new and powerful tool for conducting monetary policy affecting our economy, which continues to disappoint after having 7 years to recover?

We will hear some of the answers to these questions and many others during today's important hearing. And I feel I need to address something that came to my attention a little earlier this morning.

Apparently, there are some folks on Wall Street who have sent out some alerts using that term themselves about this hearing, that somehow interest on reserves is under attack.

To the fine folks up on Wall Street, you are on notice. We are going to have a thorough complete examination of what it is. I think there is a tremendous amount of questions that surround it.

In fact, in February when Chair Yellen was here testifying in front of the full Financial Services Committee, there were a number of concerns expressed on both sides of the aisle.

In fact, as I recall, Chairman Hensarling allowed the ranking member to go long, as she was asking a line of questioning about

that. And so there are quite a few questions on both sides of the aisle about it.

And as we are looking at foreign subsidiaries and large banks being the recipients of the lion's share of this, that has a number of people very concerned of how that may also affect our small community banks and our regional banks and the liquidity in the marketplace.

So there are a tremendous number of questions that are out there, and we intend on this subcommittee to explore those.

The Financial Services Regulatory Relief Act of 2006 authorized the Federal Reserve Board to start paying interest on reserves in 2011.

In response to the financial crisis, the Emergency Economic Stabilization Act accelerated this authority to October 1, 2008. According to the New York District Bank, the Fed expected to set interest rates, interest on reserves well below the Fed's target policy rate, that is, the Federal Funds rate.

Had the Fed created such a "rate floor," it would have complied with the letter of the law, Section 201 of the Financial Services Regulatory Relief Act of 2006, which explicitly states that interest on reserves "cannot exceed the general level of short-term interest rates."

As we sit here today, however, interest on reserves is above the Federal Funds rate. This above-market rate not only appears to have gone outside the bounds of the authorizing statute, it also may be discouraging the more free flow of credit to an economy that can and should be flourishing.

Speeding up the authority to pay interest on reserves equips the Fed to expand its balance sheet to previously unimaginable heights and broaden its remit to, as University of California economist James Hamilton put it, "the decision of where credit gets allocated."

Responding to the immediate financial crisis, the balance sheet more than doubled to almost \$2 trillion. Subsequently, various rounds of quantitative easing saw the balance sheet more than double again.

Today, the Fed's balance sheet stands at \$4.5 trillion. That is about 25 percent of the total GDP of the United States. And as I say to folks back home, sometimes we lose perspective on how many zeros are in a trillion.

And I always tell them, write a one and 12 zeros behind it and start counting backwards to where it is a thousand, ten thousand, a hundred thousand, and you see how big those numbers really are.

At the same time, the average maturity of Treasury securities held by the Fed increased from about 5 years to over 10 years, which considerably increases the balance sheet's exposure to interest rate duration risk.

Almost 7 years old, the Fed's colossal and distortionary balance sheet shows no signs of shrinking. To be sure, the Fed appears to have only started thinking about an exit as described in its late 2014 Policy Normalization Principles and Plans report, but the word "principles" is nowhere to be found in this description.

Moreover, the plan simply mimics the same opaque “data-dependent strategy” for monetary policy that has left market participants scratching their heads for years wondering what data will inform the Fed’s decision-making and how will the FOMC react to that data.

We will not fully realize robust economic growth until the Fed returns to a rules-based strategy for reliable supporting of the free flow of goods and services with an efficient exchange mechanism, in my opinion.

As former Federal Reserve Board Governor Kevin Warsh observed, “Currency stability is one of growth’s best friends.” Unfortunately, monetary policy has clearly stepped outside this bound and shows little, if any, sign of returning.

This lack of a clear and prudent strategy not only puts present economic opportunity at risk, it threatens the durability of monetary policy independence itself.

Today’s hearing provides us with another opportunity to examine how the Federal Reserve conducts monetary policy and why the development of these policies is in desperate need of a more disciplined and transparent approach.

Needless to say, the Fed’s high degree of discretion and its lack of transparency in how it conducts monetary policy continue to suggest that reforms are needed.

My time has expired. The Chair now recognizes the ranking member of the subcommittee, the gentlelady from Wisconsin, Ms. Moore, for 5 minutes for an opening statement.

Ms. MOORE. Thank you so much, Mr. Chairman. And I want to welcome the witnesses. I think everyone seems to agree that the current situation is our rational and predictable way for the Fed to raise interest rates, which is what they have done.

And that is primarily to pay interest on excess reserves. I agree with it, but I certainly can understand why perhaps Dr. Taylor here and others may disagree with why or how the Fed got here.

But for those who understand the Fed’s use of the IOER and to a lesser extent, the reverse repo markets, this is the best way for increasing interest rates, because we have to return some sort of normalization.

We just can’t have close to zero interest rates. Congress voted to provide the Fed with the ability to pay interest on excess reserves in 2006 when it passed H.R. 3505, a bill sponsored by our Chairman Hensarling.

Many of us voted for this bill, myself included. So we clearly and affirmatively authorized the Fed to take these actions. We know that this is not only a tool that our central bank, our Fed, used but that many other central banks are also currently employing.

In other words, our Fed used the best tool for the job that is both well-established among central banks and authorized by our Congress. I do agree that it is horrible optics.

It is a policy debate that is raging because there is a concern about subsidizing the banks. I do feel encouraged to know that the profits, whatever profits are received from the Fed actually go back to the Treasury.

So, it is horrible optics, but I don't think in reality we are subsidizing the banks. This is a very complicated policy, so I definitely look forward to this hearing.

And I know that is true for us in liberal Milwaukee, as well as conservative Michigan Heights, Michigan. I would like to yield the rest of my time to the ranking member of the full Financial Services Committee, Ms. Waters.

Ms. WATERS. Thank you very much, Congresswoman Moore, but I would like to yield my time to Mr. Himes.

Ms. MOORE. I will yield the time to Mr. Himes.

Ms. WATERS. Thank you.

Mr. HIMES. Thank you to the ranking member and to Ms. Moore for that. I am not entirely prepared for the time, but I do feel very strongly about this. And so thank you, I really appreciate the yielding of time.

Look, the subjects don't get a lot more complicated than interest paid on excess reserves, but there are two things that are pretty uncomplicated. And those two things are why I am here.

Number one, there is a certain irony to the Congress of the United States holding the Fed up for scrutiny for their conduct of monetary policies since the crisis of 2008.

With the exception of the American Recovery Act, which was profoundly controversial and partisan here, Congress has utterly and completely abnegated its role to conduct the kind of fiscal policy that classical economics and most economists would say we should have done.

Yes, we passed the Recovery Act and that was about \$800 billion of fiscal stimulus. Most economists today, those who are driven by empirical analysis, would tell you that was too little and too heavy on tax cuts and not heavy enough on infrastructure investment and the kind of things that actually put Americans back to work.

Okay, so we had that fiscal stimulus. That was important. Since then, since 2009, the Congress has completely abdicated the role that economists across the political spectrum would say we should do, which is to continue with classic fiscal stimulus.

So, in the context of the Congress completely abnegating its fiscal role, we have had no other game in town but for the monetary policy conducted by the Federal Reserve.

And you know what, we highlight the word "innovative" around here, and we say we want them to be innovative. Yes, their policies with the Twist and with QE2 were innovative.

They were different than the conduct of monetary policy, but because of the Federal Reserve's policy, including the payment of interest on reserves we have what is without question the most robust recovery amongst industrialized OECD nations however you want to play it.

And I have asked this question of Chairman Bernanke time and time again. Now this is a complicated thing, but we need to talk more about the fact that this is a transaction with two parts.

Yes, we pay about \$7 billion, or the Fed pays about \$7 billion. Meanwhile, the Fed is returning about \$100 billion to the United States Treasury. Those are the two halves of this transaction.

And I do hope we have an opportunity to discuss that in this hearing. I thank the ranking member for the time and I yield back.

Chairman HUIZENGA. The gentlelady's time has expired. And I imagine we will get into a few of those issues today with the testimony of our panel of experts we welcome today.

First, we have Dr. Robert Eisenbeis, vice chairman of Cumberland Advisors

Second, we have Dr. Todd Keister, professor of economics at Rutgers University.

Third, we have Dr. George Selgin, director of the Center for Monetary Policy and Financial Alternatives at the Cato Institute.

And last, but certainly not least, we have Dr. John B. Taylor, the Mary and Robert Raymond professor of economics at Stanford University.

Each of you will be recognized for 5 minutes to give an oral presentation of your testimony, which we have received written copies of previously, and without objection, each of your written statements will be made a part of the record.

And before I forget, Dr. David Malpass was supposed to be part of this panel today. Unfortunately, he had a death in the family, and we wish him and his family all the best.

They are in our thoughts and prayers collectively. I would like to submit for the record, without objection, his written testimony as well, and would ask that we make that a part of the record.

With that, Dr. Eisenbeis, you are recognized for 5 minutes.

**STATEMENT OF ROBERT A. EISENBEIS, VICE CHAIRMAN,
CUMBERLAND ADVISORS**

Mr. EISENBEIS. Thank you very much. Chairman Huizenga, and Ranking Members Moore and Waters, I really appreciate the opportunity, and I am honored to be here today.

I want to address in particular certain misconceptions about the Federal Reserve's balance sheet and some of the fund flows that take place between the Fed and the Treasury and how that interplays with the interest on reserves.

Often the Fed is compared to a private sector bank, but there are really some fundamental differences between the Fed and a private sector bank.

The Fed is a government entity and when analyzing payment flows and fund flows and balance sheets, I think it is really best to look at the process and implications from the perspective of the consolidated government's balance sheet rather than separately the Federal Reserve and the Treasury.

Unlike a private bank, to purchase assets, the Fed really doesn't have to go into the marketplace and pay interest on funds in order to generate the resources to purchase government securities.

When it purchases a security, essentially what it does is it increases the reserve account of the seller's bank's reserve account. And had it paid for Treasuries by drawing down its stock of Federal Reserve notes, we would have said the Fed had printed money and monetized Treasury debt.

It is also important to understand that unlike deposits at a private sector bank, reserves never leave the Federal Reserve when one bank or one of its customers engages in a transaction. Ownership of a reserve account may change, but the funds never leave the Fed.

Now what about payment of interest on reserves? The Fed is paid interest by the Treasury on its portfolio holdings. It then extracts its operating costs, including interest payments on reserves and returns the remainder to the Treasury.

From the perspective of the consolidated Fed/Treasury/Government balance sheet, the Fed purchases higher cost Treasury debt off the market and replaces it with another form of de facto Government short-term debt paying 50 basis points.

If this intragovernmental transfer of funds between the Fed and the Treasury were settled the way interest rates swaps are settled by netting, there would always be a net payment, a transfer of funds from the Treasury to the Fed.

Furthermore, Treasury securities are effectively retired because of the fact that the government owns its own debt. The Treasury is covering the Fed's operating costs and effectively is making those interest payments on reserves.

So it is a mistake to characterize Fed remittances, as is commonly done, as a return of profits made by the Fed to the Treasury. It is only due to a flaw in government accounting that the Treasury can count such remittances from the Fed as revenue for budget purposes.

This is clearly a case of questionable accounting, and is misleading when it comes to the treatment of government revenues and resources. Our interest payments are subsidized to banks. This is a common question and concern.

In the wake of the Great Recession, interest on reserves became an essential tool for the Fed to influence short-term interest rates. For most of history, the Federal Reserve had paid no interest on reserves at all.

But requiring banks to hold a portion of their assets as non-interest-bearing reserves against their deposits effectively reduced bank earnings and functioned like a tax.

Because this tax was high and especially during inflation periods like we had in the 1970's and 1980's, many banks opted to give up their membership in the Federal Reserve.

And the Fed even resorted to providing free payment services to the equivalent of toasters, we saw in the private sector, to offset the ongoing cost of membership.

Predictably, banks sought to minimize excess reserves by expanding loans, thus converting excess reserves into required reserves. For the banking system as a whole, this practice created a money multiplier where \$1 reserves could conceptually support even a tenfold increase in the money supply and potentially trigger an explosion in inflation.

This unwelcome prospect explains why economists and some members of the FOC are and have been concerned about the need to wind down its portfolio and decrease the amount of excess reserves and return interest rates to normal.

In this context, the Fed ability to pay interest on reserves is critical to keeping interest rates, the money supply, and inflation under control, consistent with the Fed's dual mandate.

However, there is an additional issue when we recognize, as shown in Figure 1 attached to my written testimony, but a substantial portion of the excess reserves in the financial system are

actually in the U.S. subsidiaries and affiliates of foreign banks, which now account for 40 percent of the excess reserves, but only about 10 percent of U.S. domestic deposits.

Because of this imbalance, they also receive a disproportionate share of the interest payments on reserves relative to domestic institutions.

There are really two explanations for this imbalance. First, the Dobbbs Bank Act changed how deposit insurance assessments were charged. Large banks, mainly those over \$500 billion, now pay 15 basis points or more on total assets.

This means that while they currently earn 50 basis points on their reserves, their net return is 35 basis points. It was 10 basis points prior to the rate change in December of 2015.

In contrast, foreign banks aren't subject to the 15 basis point assessment. They are able to earn the full 50 basis points on their excess reserves. But for foreign institutions headquartered in Europe or Japan, for example, where policy rates are now negative, the spread is even wider.

In the case of European Bank it is now 90 basis points, and reserves at the Fed are clearly an attractive asset in earning asset.

Chairman HUIZENGA. Dr. Eisenbeis, I have to interrupt. Time has expired at this point, and we will have to return back to you during questions.

Mr. EISENBEIS. Fine.

Chairman HUIZENGA. All right, I appreciate that.

Mr. EISENBEIS. Thank you.

[The prepared statement of Dr. Eisenbeis can be found on page 47 of the appendix.]

Chairman HUIZENGA. Dr. Keister, you are recognized for a generous 5 minutes as well, so, and we thank you for that.

STATEMENT OF TODD KEISTER, PROFESSOR OF ECONOMICS, RUTGERS UNIVERSITY

Mr. KEISTER. Thank you, Mr. Chairman, Ranking Member Moore, and members of the subcommittee. The ability to pay interest on reserves is an important policy tool, and Congress' authorization of these payments in 2006 was a welcome development. In the aftermath of the financial crisis, the Fed has come to rely more heavily on this tool than was previously anticipated.

Because paying interest on reserves is still relatively new in the United States, there is naturally some uncertainty in the minds of both the public and policymakers about the implications of this tool.

In my comments today, I will argue that continuing to pay interest on both required and excess reserves is not only essential for the implementation of monetary policy, but also sound economic policy.

I will focus on four key points. First, paying interest on excess reserves has no cost to the taxpayer. To understand why, it is helpful to walk through the mechanics of how bank reserves are created using a simple example.

Imagine we start with a situation in which I personally owned a U.S. Treasury Bond. And the U.S. Government regularly pays in-

terest on that bond to me. Now suppose I decide to sell this bond and that the Fed purchases my bond.

When this transaction takes place, the Fed credits my bank with reserves equal to the value of the bond, and my bank credits my account in the same amount. In this new situation, the Treasury pays interest on the bond to the Fed.

The Fed pays interest on the reserves to my bank. And my bank pays interest on my deposit to me. In other words, the Fed paying interest on reserves is a link in a chain of payments that replaces payments the Treasury would otherwise be making directly to bondholders.

Seen this way, the operation clearly creates no cost for the taxpayer. In fact, as we have already heard, since the interest rate on excess reserves is generally lower than the interest rate on long-term Treasury bonds, the operation creates a net gain for the taxpayer.

My second point is that paying interest on excess reserves is not a subsidy to banks. Suppose I keep the money I receive from the sale of the bond in my savings account. Then my bank would be earning 50 basis points on the newly created reserves, but it would be paying me approximately 30 basis points on my new deposit.

My deposit also increases the bank's cost indirectly by raising the deposit insurance fees it must pay to the FDIC and by increasing its leverage. Overall, the bank may make a small profit on this transaction, but to a first approximation it will roughly break even.

So taking into account the cost as well as the benefits of my deposit to the bank shows that earning interest on excess reserves does not represent a subsidy.

My third point is that policy should be designed to encourage banks to hold excess reserves. Bank reserves are the life blood of our Nation's payment system. Every business day, more than \$3 trillion of payments are made over the Fed's network. Banks are making these payments on behalf of their customers using the reserves they hold on deposit at the Fed.

Prior to 2008 when no interest was paid on reserves, the Fed needed to create a scarcity of reserves to keep market interest rates positive. In fact, reserves were so scarce that our payment system could not adequately function using those reserves alone. Instead the Fed permitted banks to run overdrafts in their reserve accounts for a few hours each day solely for the purpose of allowing the payment system to function.

These overdrafts were large at times, with an average daily peak value of more than \$180 billion in 2007. One byproduct of the large expansion of bank reserves that has occurred over the last few years is that these intraday overdrafts have fallen by more than 90 percent, decreasing the risk to the Fed and ultimately to the taxpayer.

In addition, payments are on average being sent earlier in the day, eliminating bottlenecks, reducing delays, and enhancing the resilience of our payment system.

This brings me to my final point. The Fed's balance sheet should remain larger than its pre-crisis level even in the long run. While the Fed's balance sheet should and will shrink substantially from its current level, it would be a mistake to return to the precrisis

approach of creating a scarcity of bank reserves to control interest rates.

There have been substantial changes in the financial system since 2008, including a greater awareness of liquidity risks, and new regulations that are increasing banks' demand for safe liquid assets, such as reserves.

Going back to the old approach of controlling interest rates by creating a scarcity of reserves not only runs counter to the goals of these new regulations, but also would likely be less effective in achieving the desired level of market interest rates than in the past.

In contrast, the Fed holding a moderately larger balance sheet and relying primarily on the interest rate on excess reserves to steer market rates would be a more effective way to implement monetary policy going forward, while simultaneously promoting safety and efficiency in the payment network that underlies our financial system.

Thank you again for this opportunity to testify before you today. I would be happy to answer any questions.

[The prepared statement of Dr. Keister can be found on page 59 of the appendix.]

Chairman HUIZENGA. Thank you, Dr. Keister.

Dr. Selgin, you are recognized for 5 minutes.

**STATEMENT OF GEORGE SELGIN, DIRECTOR, CENTER FOR
MONETARY AND FINANCIAL ALTERNATIVES, CATO INSTITUTE**

Mr. SELGIN. Mr. Chairman, Ranking Member Moore, and distinguished subcommittee members, the original intent of the 2006 legislation granting the Fed permission to pay interest on reserves was to resolve what in retrospect was a rather minor inefficiency in the payment system related to the opportunity costs of holding non-interest earning reserves.

The accelerated deployment of that authority in 2008 was undertaken as a contractionary monetary measure. This was its avowed purpose. At the time, the Federal Reserve believed that its emergency lending would create excessive credit in the system and prevent it from reaching its monetary policy targets.

We know in retrospect that this decision was tragically mistaken. Because at the very time that the Fed began to encourage banks to hoard reserves rather than lend them, the economy's total spending was collapsing and it continued to collapse afterwards from what had been a growth rate of about 3 percent at the beginning of 2007, to a rate of minus 3 percent at the end of 2008, beginning of 2009.

The combination of interest on reserves, which is designed to prevent banks from lending either to each other or to the market in general, and massive reserve creation by the Federal Reserve resulted in a massive accumulation not just of reserves, but of excess reserves, that is reserves held without any corresponding increase in required reserves that would occur if deposits had also expanded. In fact, bank deposits did not increase despite a tremendous increase in total reserves in the system as they normally would.

Banks before 2008 seldom held more than \$1.8 billion in excess reserves. At some point after this policy was implemented, after the Federal Reserve also had engaged in its third round of quantitative easing, they held \$2.7 trillion of excess reserves, and they still hold about \$2.3 trillion.

Normally banks shed their excess reserves by trading them for higher yielding assets or lending them to other banks. Even if they don't want to incur risk, they can trade their excess reserves for higher yielding safe Treasury securities.

Interest on reserves eliminated the incentive for them to do that and to therefore contribute to a more general expansion of deposits and credit by making reserves earn more than Treasuries, as they have done for the most part ever since the policy was implemented.

The result, to use some economics jargon, is that the normal money multiplier, which gives you the relationship between total bank reserves in the system and total money supply including bank deposits, collapsed.

This caused quantitative easing to be much less effective in increasing spending, income, and employment than it would have been otherwise. Because almost all the new reserves created by the massive quantitative easing programs the Fed undertook simply piled up in banks and mainly, as Dr. Eisenbeis just explained, in foreign banks.

The large expansion of the Fed's balance sheet that has gone along with this hoarding of bank reserves, and what I mean is that has been made the accumulation of excess reserves possible, has also involved, because banks have not increased credit proportionately, a tremendous increase in the Federal Reserve's share of financial intermediation from about 10 percent of total allocation of credit in the economy, of money-based credit, to just about 30 percent.

Ladies and gentlemen, central banks have never been intended to be efficient allocators of the Nation's scarce savings. And the Fed is no exception. It was an inefficient investor of savings before the crisis.

Naturally, it was never intended to be looking for productive lending opportunities. The changes in its balance sheet since have made it a far more inefficient employer of savings. The inefficiency that results from the Feds having nationalized so many savings far exceeds those that the original Act allowing payment of interest on reserves was supposed to correct.

Ladies and gentlemen, I have very little time, but I will simply say that contrary to what some of the other speakers have said, we desperately need to return to the old-fashioned way of conducting monetary policy by having the Fed unwind its balance sheet, get rid of the assets it has accumulated, allow banks to earn interest only on required reserves, and encourage them not to hold excess reserves but instead to engage in productive lending.

I am going to yield the rest of my time to Professor Taylor, who is a lot smarter than I am. Thank you.

[The prepared statement of Dr. Selgin can be found on page 67 of the appendix.]

Chairman HUIZENGA. With that, your time has expired, Dr. Selgin, but we are very pleased to—

Mr. SELGIN. Oh, thank you, sorry.

Chairman HUIZENGA. —welcome Dr. John Taylor back to the subcommittee, and we look forward to your testimony. With that, you are recognized for 5 minutes.

STATEMENT OF JOHN B. TAYLOR, MARY AND ROBERT RAYMOND PROFESSOR OF ECONOMICS AT STANFORD UNIVERSITY

Mr. TAYLOR. Thank you, Mr. Chairman, Ranking Member Moore, and other members of the subcommittee, for inviting me to talk about this important but complicated subject, interest on reserves and the Fed's balance sheet. Since reserves are such a large part of the Fed's balance sheet, I thought maybe we should look at the balance sheet to begin. So I put a picture on the front page of my written testimony. I have simplified it a bit, but basically it is the main issues.

If you look at that, you can see that the size has increased. Measuring by assets it has gone from \$842 billion to \$4,478 billion. Part of that is because currency has increased. Currency has gone from \$758 billion to \$1,407 billion. That is not unusual; that is the growth of the currency.

What is unusual is this gigantic increase in securities, purchase of Treasury securities and mortgage bank securities by the Fed, which have gone from \$760 billion to \$4,234 billion. All those figures are in the table.

Finally, what this has led to is a literal explosion of reserves. Reserve balances is what the Fed calls it. From \$14 billion to \$2,401 billion. I have a chart on page 2 of my testimony which shows that this occurs quite dramatically. This occurred of course to finance the purchases of these securities.

In the correspondence with QE1, QE2 and QE3, each successively jumping the amount of reserves, is what shows you that close correlation between the need to finance QEs and the financing through reserve creation.

When you increase the supply of reserves so much, basic economics tells you that is going to drive the market interest rate down close to zero. And in fact it did in the fall of 2008, very rapidly, even faster than the Fed was able to adjust its target. There is another chart showing that in my testimony.

But the fact that such a gigantic increase in supply of reserves will drive the interest rate down brings us to the topic of this hearing. Because to prevent that, the Fed has instituted interest on reserves and taken the legal, the law to do that.

I think this disconnect between the interest rate set by the Fed through interest on reserves which you could see had happened in December, they want to raise the interest rate by 25 basis points so they raised interest on reserves by 25 basis points. No necessary change in the amount of reserves to do that.

So there is a disconnect between the interest rate the Fed is setting and the amount of reserves, the amount of money in the economy. I think that disconnect is necessary now because of this gigantic amount of reserves. There is no choice. Otherwise, the rate will fall to zero.

But as a long-term proposition, I do not think it is a good idea to make that disconnect. It does give the Fed another tool. But quite frankly it enables the Fed to what I would call a multipurpose discretionary institution instead of a rather limited purpose rules-based institution, that extra tool gives it the ability to do that.

In this instance, I think it is promising that the Fed in their policy normalization principles and plans said that in the longer run they will hold no more securities than necessary to implement monetary policy efficiently and effectively, and that we will hold primarily Treasury securities.

I would like the Fed to describe to us what effectively, primarily, and efficiently means, because it is not clear. I think it would be very useful if the Fed said they were going to bring that balance sheet down to a level where the supply and demand reserves determined the interest rate as in any other market, a market that determined the interest rate.

To do that, to clarify that they are not going to have to pay interest on excess reserves in that mode, and remember that gigantic increase in reserves will come down substantially. We don't know how much it will come down, but come down to the point where the interest rate is determined by the supply and demand for reserves or money as it has in the past.

And again, it is true that this gives you an additional tool. But I think that additional tool is one of the problems we have. It would be important for the Fed to say we are going to set monetary policy.

Not with this extra instrument, which enables it to do so many other things including credit allocation, things that are properly fiscal policy. It is not the job of the Fed to do fiscal policy and credit allocation, but this extra tool enables them to do that.

I say, go back to the basic way it worked before. The world is different, it is not exactly the same. I think we will have a better Fed, a better monetary policy in that situation.

Thank you, Mr. Chairman.

[The prepared statement of Dr. Taylor can be found on page 83 of the appendix.]

Chairman HUIZENGA. Thank you, Dr. Taylor.

I can see we have a lot of issues to dive into in a very short period of time. And with that, I am going to recognize myself for 5 minutes for questions.

I will point out to my colleagues that we had a similar panel of Ph.D. economists, concerning the stimulus, and I asked the question, who here on the panel believes it should have been about half the size? A few hands went up. I asked who, here believes it ought to have doubled? One hand went up.

And the simple fact is that economists are split as to whether we had spent half as much or twice as much, we would probably end up about right where we are. The question is, do you want more debt or less debt as we are moving forward.

Dr. Eisenbeis, I know you got cut off a little bit, but the Treasury is making the payments as a profit was a point made. I am curious if you would like to still continue to unpack that.

I know Dr. Keister had an opposite view of that. And I am going to quickly try to move along to Dr. Taylor. And then the main question that I have is how in the world are we going to unwind all this, and Dr. Taylor was starting to get at that. So, Dr. Eisenbeis?

Mr. EISENBEIS. I think that the proper way to view the interest payments, and what Dr. Keister was essentially addressing was from the perspective of the financial institution, how it deployed those funds once received and how it affected the customers.

I was talking more about how one should view the transfer of funds from the Treasury to the Federal Reserve, and essentially my main point was that it is the Treasury who is paying the interest on reserves.

When it comes to unwinding the balance sheet, the Fed faces a really difficult problem. Because if you just let the Treasury securities run off, it would take until about, through the normal maturing process, until about 2029 before you would return the balance sheet to something close to what I would call equilibrium, where essentially mainly you have, as Professor Taylor was talking about, sufficient excess reserves to conduct monetary policy, and then backing of the currency, which would imply a currency level somewhere around \$1.3 trillion or thereabouts.

Chairman HUIZENGA. Thank you. Sorry, I have to quickly move along. I would like to use a Bloomberg chart that used Dr. Taylor's information, but I would be remiss if I didn't take an opportunity while having Dr. Taylor here to talk about a rule-based Fed policy and sort of where the Federal funds rate was and where that dotted line is.

What the ideal rate is calculated by the Taylor Rule. It pretty much shows, it looks like the Fed was somewhere, two to maybe three or four quarters behind you, Dr. Taylor, on where they should have gone. Do you care to address this and take a stab at where we are at?

Mr. TAYLOR. Yes, thank you, Mr. Chairman. I think what this shows is in the period before the crisis, the interest rate set by the Fed was much lower than it would have set had it been operating policy as in the 1980s and 1990s. It then caused search for yields, excesses in the housing market, and eventually the bust. So, it is a real concern.

If it was closer to the rule, whatever rule, it would have been better. During the panic period, they came and brought interest rates down very rapidly. It seemed appropriate. But since then the rate has been not what I would say rule-based as in the past, hanging at around zero, and I think that has been a problem.

Chairman HUIZENGA. And I know that I had suggested that the Chair could create the Yellen rule at some point or another, that if there was any kind of rule that needed to be had, and that is part of our FORM Act, the Federal Oversight Reform and Modernization Act, that has passed the House.

I would like you to quickly, Dr. Taylor, I know you were starting to talk about that on page four and five of your written testimony, what happens when the IOER, the excessive reserves, interest on excessive, not the required but the excessive reserves declines, who benefits from that? You were starting to talk about that and Dr. Eisenbeis was a little bit, but do you care to address that please?

Mr. TAYLOR. At this point, I think the testimony by Mr. Eisenbeis makes this clear. It is necessary to do this because reserves are so high. So, if they want to raise the rates they have to. But it's as if the Fed has been borrowing instead of the Treasury, so in that sense it is a wash.

My concern is that this extra instrument really creates many other ways for the Fed to intervene in the economy, and I think people don't benefit from that. Maybe one sector will benefit, but that is not the job. The Fed is not supposed to help certain sectors. It is supposed to help the whole economy. That is why it has been successful when it has done that.

Chairman HUIZENGA. Just so we are clear, Dr. Selgin, we have 5 seconds.

Mr. SELGIN. I actually had another point.

Chairman HUIZENGA. Okay, but my time has expired. So with that, the Chair recognizes the ranking member of the subcommittee, Ms. Moore, for 5 minutes.

Ms. MOORE. Thank you so much, gentlemen, again, for appearing. I have to say that the chart you just put up, Mr. Chairman, was very confusing to the extent that it was more theoretical than anything.

I guess I am confused, and I guess I will let Dr. Taylor and Dr. Keister sort of explain this to us further. I think that the Fed has been operating under their mandate.

The Taylor Rule has been an intellectual discussion, and it is not something that the Fed has relied on. And right now, the current Fed is operating under that same mandate. And they were operating under that mandate in the period that you used to calculate your Taylor Rule. So let me start with Dr. Keister. Can you respond to the chart we saw?

Mr. KEISTER. Sure. I think it is important to remember as we focus, for example, on that period in the early 2000s when the Fed's interest rate was lower than the Taylor Rule would have suggested, that there were very real risks at that time.

After the crash of the stock market and the collapse of the dot.com stocks, there was a very real risk of falling into a deeper recession and we were worried about deflation. The fact that those risks did not materialize doesn't mean the Fed got it wrong; it could be interpreted as meaning the Fed got it exactly right.

It is by easing policy more than would have been suggested by a rule that was based on an earlier time period, the Fed mitigated those risks and helped the economy recover.

Ms. MOORE. Okay. Dr. Taylor, Dr. Keister essentially said that the Taylor Rule really didn't take into account the recession, didn't really take into account other risks to the system, and I guess I would give you an opportunity for a few seconds to respond to that.

Mr. TAYLOR. There are many reasons the Fed and people who worked at the Fed give to explain why the interest rate was so low at that point in time. You just heard one of them. There are others: that there were international effects; that we couldn't do much about interest rates.

I think the bottom line is, it is not theoretical. It is based on what worked in the 1980s and 1990s until this time. We had basi-

cally a good, stable economy. We had a few recessions, but the ones that occurred were mild.

Unemployment was much better than what happened in this Great Recession. So, that experience has led people, economists to think that kind of a policy is not rocket science; it is better than one that just ignores it. And when the Fed ignores it, it causes problems and that chart shows it big time.

Ms. MOORE. Dr. Keister?

Mr. KEISTER. Sure. My main concern about the format is that any rule that performed well in a certain time period may not perform as well in the future. I think we want the Fed to be forward-looking, not backward-looking in its policies, and we want the Fed to react as there are changes in the environment.

Recovering from the financial crisis as the Fed's balance sheets continue to normalize, I think we should expect the environment to be different than it was, particularly in the 1980s and the 1990s. And we would like the Fed to have to maintain the flexibility to react in the most appropriate way as the environment continues to evolve.

Ms. MOORE. I want to change the subject just a little bit with my remaining time.

To you, Dr. Keister, if the Fed's goal ultimately is to help our economy grow, we are suffering from low growth. The presence of these reserves theoretically, even if there is a disincentive to lend it from bank to bank, there still is an incentive to provide these resources to economic development and to businesses with what the Fed is doing. Am I correct in that?

Mr. KEISTER. Yes. That is exactly. And that is a point that I hope that my little simple example helps clarify. So, when the Fed purchases the bond from me, it is holding reserves, but it also has a new deposit from me. That doesn't in any way prevent my bank from being able to make loans and create credit for businesses and consumers.

By holding more reserves, the bank is safer, and it is sounder, but it still has every bit as much incentive to lend out to customers.

Ms. MOORE. Okay. Thank you. I yield back—

Chairman HUIZENGA. The gentlelady's time has expired. With—

Ms. MOORE. —4 seconds left.

Chairman HUIZENGA. Yes, I can grant you the 4 seconds back if you would like.

Ms. MOORE. No, no. I am just saying that I yielded back.

Chairman HUIZENGA. Okay. Point taken. So with that, the Chair recognizes the vice chairman of the subcommittee, Mr. Mulvaney of South Carolina, for 5 minutes.

Mr. MULVANEY. Thanks very much, Mr. Chairman.

I don't know where to begin. A couple of different topics. Dr. Taylor, you said something towards the tail end of your testimony that the tool, the interest rate on reserves, allowed the Fed in effect to set fiscal policy. Did I hear you correctly, sir? Could you expand on that a little bit if that—

Mr. TAYLOR. Yes. That is what I said. So, given that the interest rate can be determined by this interest on reserves, means the bal-

ance sheet can go wherever it wants to go. Just as that is the disconnect that I mentioned.

So, in that circumstance, the Fed could buy mortgages. It could even buy student loans. It could buy automobile loans. In fact, of course, it did buy mortgage-backed securities early on.

Mr. MULVANEY. But they can do that—

Mr. TAYLOR. But that is a credit allocation issue. It seems to me that is the kind of thing that Congress should be deciding, which agency should be doing that.

Mr. MULVANEY. I don't think I am disagreeing with you, but they have that ability. I asked Chair Yellen about that, and her predecessor as well. They have that ability anyway, don't they? They could buy municipal debt if they want to.

That is one of the authorities they have.

Mr. TAYLOR. I think the difference is if the balance sheet and the supply of reserves has to be at a level—the supply is at a level where it is equilibrating the interest rate. It doesn't have the ability to move it anywhere it wants.

The connection between interest and money is a classic one.

Mr. MULVANEY. Yes.

Mr. TAYLOR. They have severed that. And so, that means there is much more ability to expand the balance sheet. They could not have expanded the balance sheet to where it is now in my picture and still be able to have a positive interest rate without this tool.

Mr. MULVANEY. Dr. Selgin, do you have any thoughts on that?

Mr. SELGIN. Yes, sir. The difference that interest on reserve makes is that by encouraging banks to hold large quantities of excess reserves it effectively gives the Federal Reserve a larger share of savings to play with, and to intermediate.

And that, in turn, means that whatever assets the Fed chooses to buy and hold, that its influence on the overall allocation of credit is much greater under an interest on reserve regime than it would normally be.

Mr. MULVANEY. Have you gentlemen given any thought to why this—my understanding is that when this tool was used in December of 2015, it was the first time it had been done. Chair Yellen was here before that, and the Fed had anticipated that, hinted that they were going to use this tool.

I remember asking her at a hearing why she expected to use that tool as opposed to moving the Fed funds, right? Or some other traditional tool, shrinking the balance sheet, for example. And she said, well, you know, the answer is what we always get. Which is we have many tools available to us. We just happened to pick this one this time.

Do you gentlemen have any thoughts as to why you think this tool was used in December of 2015 and not one of the more traditional tools? Dr. Selgin?

Mr. SELGIN. The fact is that the Federal Reserve was unable to use its traditional tools. Let me go back to when they first implemented interest on reserves, just for a moment.

The original idea was that interest on reserves would put a floor on the actual effective Federal funds rate, and that would help the Fed to keep its target, which was still above zero at that time. It didn't work out that way. The effective rate at which actual

tradings were occurring continued to be below and to fall further below the Fed's target.

Subsequently, they changed how they described their target by saying, the target is now a bend, where the interest on reserves is the upper part of the bend, and the lower part is either zero or subsequently the overnight repo rate.

Frankly, it is like an archer who misses a target then moves the target, and then says, see, now we are meeting the target again.

Mr. MULVANEY. I follow that. But, again, why? Why would they use that tool and not another one? Why were the other tools ineffective?

Mr. SELGIN. The alternative would have been to raise interest rates by selling assets. And because the Fed had acquired such a large proportion of mortgage-backed securities, which it did not dare sell, and could not sell for much, and because of long-term Treasuries it held, it feared the balance sheet repercussions to itself, the capital losses, and also the consequences for the values of these securities in the market.

Mr. MULVANEY. Does the Fed have to mark the assets on its balance sheet to market occasionally or not?

Mr. SELGIN. No, it does not. And it is an interesting question because the Fed, unlike normal banks, can actually become insolvent and have negative capital without closing shop. The problem is in the income statement where, of course, it would have to go hat-in-hand to Congress if it were not able to earn enough income to cover its operating expenses.

Mr. MULVANEY. I hope we get a second round. I thank the chairman. Thank you, gentlemen.

Chairman HUIZENGA. Thank you. The gentleman's time has expired. With that, the Chair recognizes Mr. Foster of Illinois for 5 minutes.

Mr. FOSTER. Thank you. Let us say, Dr. Eisenbeis, if the Fed just let all of the assets run down, that it would be around 2029, I think you said that. And is that sort of similar what is happening over the last couple of years where, I believe, they are trending down?

Mr. EISENBEIS. No, they haven't been trying to reduce the balance sheet at all. They have been reinvesting and maturing the portfolio—

Mr. FOSTER. Then we—

Mr. EISENBEIS. So, they have not yet made the decision to stop reinvesting and let the balance sheet run off. So, my—

Mr. FOSTER. Okay.

Mr. EISENBEIS. —number assumed that they would do that now. The longer they postpone then that 2029 figure gets pushed out further.

Mr. FOSTER. Okay. And is there an understanding, an agreement on what would happen if they let it run down on the trajectory you talked about, unload things faster or slower? What effects that would have on short-term, that effect, by itself, on short-term and long-term interest rate?

Mr. EISENBEIS. In the short run, what it would do is if the Treasury in particular maintained the volume of outstanding securities, this would put more collateral into the marketplace, and relieve

some of the pressure on collateral and have an implication for interest rates.

So, right now, the argument is that size of the balance sheet because of the interest rate impacts we have been talking about is actually a tightening. This would actually free up and be a little bit more of a moderating force on interest rates as a whole.

Mr. FOSTER. Is there a limit on how rapidly you think they should unwind the balance sheet?

Mr. EISENBEIS. The problem is that they risk if they have to unwind it faster and if that is necessitated because of restrictions on interest payment on reserves or inability to sort of sterilize the excess reserves, if the money supply started to grow too rapidly, then they would have to sell assets.

And if interest rates are rising during this environment, which presumably would be the case, they would have to sell those assets at a capital loss. And rather than recognizing the capital loss on their balance sheet, they would be able to create what is called a deferred asset account or a negative asset account.

And try to get your head around what a negative asset account is.

Mr. FOSTER. I will. That is the end run guys.

Mr. EISENBEIS. But if you match that negative asset account against their capital account they could quickly go insolvent as Dr. Selgin has indicated. And how would the world respond to seeing a negative—

Mr. FOSTER. Okay. So it sounds like the default scenario here would be just to let everything run down by about 2029, and then use other tools to regulate interest rates as it, sort of, gradually. Is there anyone who believe that scenario would not work and could not be made to work?

Mr. EISENBEIS. My problem with that is 2029 is a ways away, and that the whole period is it almost becomes permanent, that particular method of controlling the interest rate. I think that it would be far better to bring the balance sheet down, bring reserves down more rapidly if it is done strategically, clearly, I don't think it should be a problem.

There is huge controversy about how much Q.E. actually did anything to interest rates. I think it sometimes surprised the market and moved rates, but if it was clear I think they could reduce that balance sheet much more rapidly than 2029.

Mr. FOSTER. Okay. Dr. Selgin, you indicated at one point that the Federal Reserve couldn't sell the MBS's that it owned. Weren't these government-backed MBS's? Was there ever a point when they could not sell them?

Mr. SELGIN. The problem isn't that they can't sell them; the problem is they can't sell them for anything like what they are valued at on their books. So it is the problem that we have been talking about, about the Fed bearing losses on those securities by selling them.

Mr. FOSTER. Did this have anything to do with the fact that they were mortgage-backed securities, or just the fact that—

Mr. SELGIN. They were mortgage-backed securities purchased—

Mr. FOSTER. But it had nothing to do with the mortgage market directly—

Mr. SELGIN. No, they were mortgage-backed securities purchased during the crises precisely because their values at the time were doubtful and they were purchased as part of an emergency effort to help the financial institutions that had been holding those assets.

Mr. FOSTER. Okay. Yes. I may have some follow-up questions. I don't completely understand that risk because I thought at the time that these were government-backed MBS's, and, in fact, it was not noticeably different than buying other government-backed assets.

Anyway, okay. Let us see. Just a final observation on the very first plot that showed the deviation from the Taylor Rule. I think if you look at point of maximum deviation, and then think about when elections were being held, I think you come up with an interesting argument for an independent Federal Reserve. And with that, I will yield back.

Chairman HUIZENGA. The gentleman yields back. Point well taken. With that, we will be going to Mr. Pittenger of North Carolina for 5 minutes.

Mr. PITTENGER. Thank you, Mr. Chairman. And I thank each of you for being with us today. Mr. Eisenbeis, if the Fed's balance sheet strategy was working, then why haven't normal market conditions returned even after 8 years of financial panic?

Mr. EISENBEIS. Could you repeat the question, sir?

Mr. PITTENGER. If the Fed's balance sheet strategy was working, then why haven't normal market conditions returned, even after 8 years?

Mr. EISENBEIS. That really depends upon how they employ the tools that they use and what the growth rate in the economy is, and how sick of it, if we are on the present path there is a chance that they could get into a normalization situation, but I think the risk is that if the economy starts to pick up growth because it is one thing if they are growing at 2 percent.

But if the economy starts to grow, that means that inflation is going to potentially start to pick up. And then, they are in a bind as to what to do.

Mr. PITTENGER. As such, what is stopping the Fed at this point from naturally winding down the balance sheet?

Mr. EISENBEIS. I think they are really in a risk adverse situation and risk management at this point in time. They are just really cautious about the fact that they have not been achieving their inflation objective.

The labor market clearly is improving and doing quite well by comparison, but they are essentially wanting to keep their foot on the throttle from their perspective to get inflation up to their 2 percent target.

Mr. PITTENGER. Thank you. Dr. Selgin, in terms of economic opportunity how much damage is being done from leaving the balance sheet too big for too long?

Mr. SELGIN. I wish I could give you an answer to that question. What we can say is that the holding of, or the allocation of so much savings to the sectors that the Fed's balance sheet is supporting certainly does not contribute to productive investment as it might

if the same savings were allocated by the commercial banks and other private lenders.

We know that none of it is supporting lending, commercial lending of any kind. It is certainly not supporting lending to small businesses that is regarded as very important to a recovery. I believe it is an important factor, by no means the only important factor in the sluggish economy.

And I believe it is one of the reasons why we have, despite the Fed's seemingly aggressive monetary expansion, we haven't really seen a very robust recovery coming out of that. The best that people can say is that it is not as bad as Europe. This doesn't seem to me to be a very clear endorsement of what the Fed has been up to.

Mr. PITTENGER. Thank you. And in terms of monetary policy independence, what damage is leaving the balance sheet too big for too long?

Mr. SELGIN. Sorry, could you repeat that?

Mr. PITTENGER. In terms of monetary policy independence, what damage is it to leave the balance sheet too big for too long?

Mr. SELGIN. That depends on how Congress responds to having such a big balance sheet and having the Fed maintain it, of course. I think that there is no reason why the Fed can't continue to be independent. But I think that Congress should limit its dependence to the extent of trying to tell it that it should not stay in this situation forever.

If it is undermining Fed independence to merely tell them to go back to business as usual and to do it as quickly as possible, well, then I say the Fed has rather too much independence to begin with.

Mr. PITTENGER. Thank you. Dr. Taylor, to what extent does the remarkable expansion of the Fed's balance sheet mitigate the financial crises?

Mr. TAYLOR. I think in the fall of 2008 when they provided lender-of-last-resort loans in the panic, in this panic period, it seems that was overall good monetary policy. And that is when the balance sheet first began to expand.

However, those liquidity facilities drew up very quickly. I think after that, certainly after early 2009 I raised big questions as to whether that did any good at all. There are lots of studies. I did an early study back in 2009 which said it was not effective. Some argue it is actually counterproductive.

Mr. PITTENGER. To what extent then did it exacerbate the problem?

Mr. TAYLOR. I think it is exacerbated the problem because it really delayed the time where the Fed could get back to the kind of policy that worked so well in the past. It has been a reason for them not to go back. And just this very discussion is they find it so difficult to reduce the balance sheet.

It shows you one of the concerns many of us had about the increase in the balance sheet in the first place. It is almost like a we-told-you-so type of thing. Although, I am not doing that right here.

Mr. PITTENGER. Thank you. My time has expired. Unless the chairman wants you to comment?

Chairman HUIZENGA. The gentleman's time has expired. With that, the Chair recognizes Mr. Himes of Connecticut for 5 minutes.

Mr. HIMES. Thank you, Mr. Chairman. And I am not sure I have a lot in the way of questions. But I am here and I am concerned about this because big picture, what we are talking about is something that maybe some of my colleagues don't appreciate, which is the profound importance of the independence of monetary policy, and of a flexible central bank.

Most Americans can understand why a strong military is important to national security, and why high taxes can affect economic vibrancy. Most of them don't necessarily get the historical fact that an independent and flexible and smart central bank is the very cornerstone of a functioning capitalist economy.

And I can't help but feel that this hearing and the ongoing Fed bashing by my Republican friends and the scaling back of authorities and the audit the Fed are all part of an effort that if they are joined, the legacy of those who join in on that effort will be to erode one of the very cornerstones of this country's vibrant economy, which is an independent monetary policy.

If we had had a Fed-caused disaster, I would understand why we would be having this conversation. But the reality is that in the last 8 years or so, the Fed was the one adult in the room. And I made this point in my opening statement.

Congress failed in its responsibility to provide enough fiscal stimulus to do what it should have done. In the absence of good fiscal policy, and I am going to come back to this because the chairman took exception to what I characterized as an economic consensus, the Fed was the only game in town.

And it is a fair thing to question what their authorities are, and to provide oversight, I have no doubt. But the reality is that their actions had results which show themselves in the fact, Mr. Selgin, that our economic recovery in combination with the decline of the deficit is the envy not just of Europe, but of every industrialized country.

So we have been—if we had gotten it wrong and we are at the bottom in that stack, I get this. But, Mr. Chairman, and I don't mean to pick on the chairman on this, holds up as his counterpoint to my contention on the stimulus that a bunch of witnesses, four or five, selected, of course, by the chairman himself and the Majority party, raised their hands to say they didn't like the stimulus.

Reality matters. I counter to the chairman the initiative of global markets, which is a survey conducted by the University of Chicago, hardly a hotbed of liberal thought, has surveyed economists across the political spectrum on the stimulus for a long time.

Its most recent survey had 36 out of 37 economists saying that the stimulus actually improved the economy and reduced unemployment. Reality matters.

And the reality is that we are criticizing the very people and eroding the monetary independence of the very people who were the one adult in the room with scare tactics. Ooh, some of this money is going to foreign banks.

Well, guess what? Toronto Dominion, T.D., they extend mortgages in my district in southwest Connecticut. I know it is scary to say that we are sending money to foreign banks, but it is actu-

ally, as a politician, a little bit, for an economist, a little bit of a cheap political trick.

The reality is that this policy has worked. Now, again, most of my constituents and most people here don't really understand what we are talking about. It is hard, this stuff. So, let me offer an analogy.

We had a major car crash. We talk about the crash a lot. Let us envision this as a car crash. What happened in 2008 was a car crash where four people are bleeding in the street. And Congress said, instead of four ambulances we are sending you two.

So, two people get taken off. This is the stimulus. And there are two people bleeding in the street. And the Federal Reserve says, geez, there are people bleeding in the street. We are going to send some helicopters, as they do from time to time. And, yes, that is extraordinary. We probably shouldn't do it for every car crash. But we didn't do what we needed to do.

And so, now you have helicopters carrying people to the hospital. Nobody says that is the right way to do it, but it was the only way to do it. And the patients all lived. And now we are saying, my God, the helicopters were expensive, and there is glass in the street. And it scared the neighbors. We shouldn't use helicopters.

Folks, it was the only game in town. Now—

Chairman HUIZENGA. Will the gentleman yield?

Mr. HIMES. I will yield when I am finished.

This was a tool that worked in literally a crash. And so, I appreciate the equanimity that Dr. Taylor is showing in particular. I don't think anybody wants this to be a standard tool, but, please, Mr. Chairman, and then I will yield, let us be very, very careful about scaling back authorities that had everything while we were negligent to do with the recovery, and that we may need, heaven forbid, but we may need in the future.

And, yes, I will yield to the chairman.

Chairman HUIZENGA. Thank you. I appreciate that. And I am assuming that if one is intellectually honest, one will also acknowledge that the drag on the recovery of the economy has oftentimes been linked to the Affordable Care Act (ACA). It has oftentimes been linked to the regulatory environment that has been created, the tax policy that even our own President has said needs to be reformulated.

Mr. HIMES. I will reclaim my time, and say, yes, those things have been linked to the recovery by my friends in the Republican Party. If you actually read, for example, the Federal Reserve, who we are talking about, they will tell you that this is a crisis of aggregate demand.

They won't mention the Affordable Care Act. They won't mention taxation. They will mention it is an issue of aggregate demand. With that, I note that I am out of time.

Chairman HUIZENGA. The gentleman's time has expired. With that, the Chair recognizes the gentlelady from Utah, Mrs. Love, for 5 minutes.

Mrs. LOVE. Thank you, Mr. Chairman. Just a few questions and then I will yield back the remainder of my time if I have some time. Thank you for being here.

As I have observed, the Fed has consistently and often badly overshot its mark in projecting economic growth, reflecting a misplaced belief that repeated rounds of quantitative easing, a \$4.5 trillion balance sheet, and low record policy rates, could reliably get our economy back on track.

Earlier this year, for instance, Forbes even mentioned that at the beginning of every year since 2008, economists have predicted its actions would produce a robust expansion. And each year has had to sharply downgrade those expectations.

I guess the first question is, do you agree with that assessment? Are you seeing the same thing, Dr. Taylor, when it comes to the Fed's predictions?

Mr. TAYLOR. Yes. They have over-forecast the growth rate consistently through this period, I think to some extent thinking that their policy would be more effective. They will punt for other reasons, but that is a big factor.

Mrs. LOVE. Okay. So, I guess the question here, the basic question for me is why, despite such sophisticated models, does the Fed consistently miss the mark? And why not use those models to fuel a robust economy, or a robust recovery, as opposed to putting the brakes on economic opportunity? Dr. Selgin?

Mr. SELGIN. If they had good models, they could do what you say the problem is that their models are not very good. And when they employ wrong models, they take wrong policy actions, like the December rate hike, which was, at best, counterproductive.

Mrs. LOVE. So, you are thinking that the models are just—

Mr. SELGIN. Yes. And—

Mrs. LOVE. —not very good models.

Mr. SELGIN. —the fact is that the Fed—the Fed can do damage when it employs bad models, and it is experimentation often backfires.

And this is why in Fed independence, to conduct monetary policy in the sense of being free to set the policy rates, which is the normal understanding of independence, to determine general monetary conditions, is not the same thing as Fed experimentation with activities and programs that it has never engaged in before. Independence isn't license.

Mrs. LOVE. Okay. So, I guess this is my final question because I think the important thing in the work that we do here, is to try and figure out how this relates to the everyday person. What does this mean for the family who is sitting at the kitchen table if we continue to have these types of practices, and these models that are not working?

What does that mean for the family? Did you have something you wanted to add, sir?

Mr. EISENBEIS. I would like to respond briefly in the sense that you have to understand that the models that were being employed did not include experiments and experience like the Great Recession that we had.

So, the data that are underlying the models, essentially mean that the current environment that we were in is out of sample forecasting, and the models didn't incorporate the kind of behavior and responses that the economy was in at this particular point in time.

Mrs. LOVE. So, you are saying it was behind, we were behind the ball?

Mr. EISENBEIS. There is no way you can generate data that would have essentially allowed the Fed on a current basis to revise the models in a way to capture the current economic environment.

So, this is a characteristic of forecasting as a whole. We know that based on experiments that I did a long time ago that showed that the Fed's models essentially are as good as anybody else's, and better than most.

But when you have an environment and an economic environment degenerating out of the normal behavior, you are going to have these kinds of errors. And there is really virtually no way to fix it.

Mrs. LOVE. Okay. I have 25 seconds. Dr. Selgin, again, what does this mean? If we continue, what does this mean for the family who is sitting at home? How does that affect regular hardworking Americans?

Mr. SELGIN. The biggest effect comes through the lack of private investment, productive investment, small business investment, as a result of the fact that the Fed, through its encouragement of banks to hold reserves, and they cannot both hold reserves and loan.

They are either holding one kind of asset on their balance sheet, or another, in real terms. This has a drag on the economy. And I would like to also add to that, with respect to what Congressman Himes said, the Fed did not add an ambulance to the batch when it paid interest on reserves. It took one away.

Interest on reserves in 2008 was a contractionary measure which took away from aggregate demand, and its avowed purpose was to keep banks from lending the new reserves that were being created at the time.

So, if you want aggregate demand to grow, and I think it desperately needed to grow at that time, if you want to have enough ambulances, you don't want the policy of interest on reserves implemented in the middle of a contraction.

This is simply getting reality, which does, indeed, matter, wrong.

Mrs. LOVE. Thank you. My time has expired.

Chairman HUIZENGA. The gentlelady's time has expired.

Mrs. LOVE. Thank you.

Chairman HUIZENGA. With that, the Chair recognizes the gentleman from Washington, Mr. Heck, for 5 minutes.

Mr. HECK. Thank you, Mr. Chairman.

When it comes to this arcane subject of the Fed's authority to pay interest rates on reserves, I will admit in all candor that I am reminded of a couple of Mark Twain's phrases, one of which was, it's better to keep my mouth shut and allow people to think me ignorant than to open my mouth and remove all doubt. This just seems to me to be a question of how many angels can dance on the head of a pin.

But I am heartened by the turn of this conversation which has become what is it that we can do to grow our economy at a faster rate than the relatively anemic growth that we have been experiencing. That fact notwithstanding that I think we are now in our 74th straight month of private sector employment addition.

Somebody used the other oft-used phrase earlier: This isn't rocket science. And when it comes to what it is that increases gross domestic product growth, I don't think it is rocket science either. If you want to increase aggregate demand, here is a real simple formula, this isn't hard: Increase employment and increase wages.

Give America a raise, and give more people jobs. And that is what we learned in undergraduate school, logic class Tautology, A equals A. Why? Because our economy is nearly 70 percent demand driven by consumers.

So, if you want to increase the rate of growth in this economy, give more people jobs and increase wages. Voila.

Now, there has been some reference here, which seems off topic to me, with all due respect, to regulatory environment and the like. Nobody has talked about the fact that the minimum wage has been stuck at \$7.25 for I don't know how many years.

I would ask every single person sitting in this room, or watching or listening, do you want to live on \$7.25 an hour? Try that out. See what it is like to try to pay your rent and buy your food and provide for your children at \$7.25 an hour.

You want to move this economy faster? How about we stop underinvesting in our Nation's public infrastructure?

In my district, fully 25 percent of the bridges are, from an engineering standpoint, deficient. Do you want to increase the economic growth in South Puget Sound and Washington State? Then complete State Road 167 into the Port of Tacoma, which will connect the largest warehouse district, the second largest warehouse district on the West Coast; to the largest container port in the Pacific Northwest.

Fortunately, the State Legislature passed a transportation improvement bill to do just that. Bipartisan, but that will increase growth.

You want to increase growth in South Puget Sound? Increase aggregate demand, increase the growth rate of the GDP? Then relieve the congestion on Interstate 5, around joint base Lewis McCord, also included in this last Transportation Improvement PAC.

Yesterday morning, I drove from Olympia, Washington to SeaTac—52 miles. It took me nearly 2 hours. No accidents. On an interstate freeway.

Ask yourself how much time people are sitting in traffic, moving at a glacial pace, not being home with their families for dinner, or not getting their goods to market, because we are under-investing in public infrastructure.

Now, if there is one thing this entire Congress—Democrats and Republicans, and Liberals and Conservatives—ought to agree on it is that 2 percent isn't cutting it. It is an aggregate-demand economy.

Let us sit around here, and talk about how many angels could dance on the head of a pin, interest rates and excess reserves. But if we want to really move this economy forward, if we want to increase the GDP, then we need to increase wages and give more people jobs.

I wish to associate myself with the remarks of the gentleman from Connecticut. With that, I yield back the balance of my time.

Chairman HUIZENGA. The gentleman yields back. With that, the Chair recognizes the gentleman from Minnesota, Mr. Emmer, for 5 minutes.

Mr. EMMER. Thank you, Mr. Chairman. And thanks to the panel for being here today.

My understanding is we are talking about the tool, as it has been referred to, that the Federal Reserve was given as part of some legislation passed in 2008, to pay interest on reserves.

And that, supposedly, was recommended many years earlier by Milton Friedman. But correct me if I am wrong, I don't think Milton Friedman suggested pay, not only on required reserves, because there is an implied tax, but I don't think Milton Friedman suggested paying interest on excess reserves. Am I incorrect about that?

Mr. SELGIN. I can't speak to what Mr. Friedman actually said on the specifics, but I am sure that he would have argued that it is the required reserves that really impose a cost on banks.

But that is mostly because banks normally hold, in this country, very few excessive reserves. And the only way you can get them to hold more than a few, is by paying them interest on reserves.

Mr. EMMER. And let us—

Mr. SELGIN. On excessive reserves.

Mr. EMMER. Thank you, Dr. Selgin. Because let us say, if you go based on the facts, in 2007 the required reserves averaged \$43 billion. Excessive reserves, at that time, averaged only \$1.9 billion. And with the exception of 2 months in our country's history, that had been the case for 50-some years.

In fact the case, as I understand it, is the excessive reserves typically accounted for about 10 percent of the total required reserves, up until this law was passed. And now, we have this huge balance sheet with \$4.5 trillion in—the panel has told us that you have some ideas of how we are going to correct this.

Before I leave it, though, Dr. Selgin, I think the important part is that the important point you made is not a partisan point.

It is when you have all of this money sitting on reserve, apparently paying more money that maybe it could get out in the marketplace. You have the government distorting the marketplace, and that money isn't being put to work for better jobs, and higher wages, and new opportunities.

Is that the point you were trying to make?

Mr. SELGIN. It is. And, again, what is relevant is not the absolute amount of reserves, which would go up necessarily. It is the amount of excess reserves, and how that has increased. And how it has increased in proportion to the overall size of banks' balance sheets. We would take the bank's balance sheet overall size as given.

The question is, what are they doing with the resources available to them? If they are devoting them to holding reserves, then the investment is channeled to the Fed, and channeled to the sectors the Fed supports.

If they don't do that, then they are channeling the investment themselves, directly, to other uses; which generally speaking, will be more productive. This is a mathematical certainty.

Mr. EMMER. Dr. Taylor, quickly. And I am sorry about the short time, cause I would like to hear this from everybody, but of the different ideas that we have heard of how you reduce this excessive balance sheet, you start to rebalance it, if you would.

By divesting assets, allowing assets to mature and run off these different ideas, which one would be the best? And do we risk, if it is done improperly, inflation or deflation circumstances?

Mr. TAYLOR. I think it requires all these things. In addition, I would say some selling, some of the securities. In a way that is made clear to the markets. So the Fed seems to be worried about doing that, but I think you want to go further than, just, let it run out to 2029. So, I think that is the most important thing.

And also, I think, having a goal, that is where they want to go. There is this statement about normalization that they have, but it is not clear about where they are going eventually. I think that is very important so then, people can plan.

If I just add an example of an analogy. Back when there was the controversy about the Taper Tantrum, that is because the then-Chair of the Fed wasn't very clear about what they were doing with the balance sheet.

As soon as they clarified, and this is with the new Chair more, it was an easy thing to start, just to have the Taper. It didn't cause disruption.

I think it is very much the same now, as if they were clear about how they would reduce the balance sheet. I long ago argued that by the time the Federal Funds rate is at 2 percent, the balance sheet should be at the level where that rate is determined by the supply and demands reserves.

I think that is kind of a goal that they could set. It is consistent with the tightening that they are planning on. It would be well-understood. I think it would work fine.

Mr. EMMER. Thank you. I see my time has expired.

Chairman HUIZENGA. The gentleman's time has expired. With that, the Chair recognizes the ranking member of the full Financial Services Committee, Ms. Waters, for 5 minutes.

Ms. WATERS. Thank you very much, Mr. Chairman. I am very pleased about this hearing today. This is just the beginning of a long-term debate that we are going to have on the Fed.

Let me just say that, when we had Federal Reserve Chair Janet Yellen here, she made it clear that allowing the Federal Reserve to pay interest on reserves as long as there is an abundance of reserves in the banking system, is absolutely critical to its ability to gradually and predictively move rates up as warranted, in the current environment.

Now, I think it is important for me to say, at this point, that I have spent considerable time with Chair Janet Yellen, wanting to make sure that I understood not only quantitative easing and what it had done, and what it had not done, but I was very interested in this payment of interest on reserves and excess reserves, as it has been alluded to here.

I have the greatest confidence in her. And I absolutely believe that she is making and has made some tremendously important decisions that have been extremely helpful.

I think there is just a basic philosophical difference between this side of the aisle and that side of the aisle on whether or not the Fed should be independent, and I absolutely believe in the independence of the Fed and I absolutely believe that what has taken place here, particularly with quantitative easing and that program, that reduce long term Treasury yields by more than a full percentage point.

It is important for us to know and understand lower, longer term rates also support a strong economic growth, help the stock market recover, allow underwater home owners to regain equity in their homes, and have positive effects on consumer spending through the wealth effect.

Lower long-term rates also make business investment more affordable and make the trade balance more favorable by lowering the value of the dollar.

So, I am going to turn to you, Dr. Keister. In your assessment, would all of these benefits associated with the Fed's quantitative easing program have been achievable if the Fed knew it wouldn't have the ability to manage short-term rates through interest on excess reserves as part of the normalization process?

Mr. KEISTER. No, absolutely not. The ability to pay interest on reserves, including on excess reserves, I think, was critical in encouraging, in allowing the Fed to know that when the time came to raise interest rates, it could raise interest rates, regardless of the size of its balance sheet.

And for that reason, it was able to undertake these large-scale asset purchases which, as you mentioned, help lower long-term interest rates and increase the flow of credit to consumers and households.

If I may, I would like to make one other point that I think has gotten a bit lost in this discussion. So, Dr. Taylor had emphasized that allowing the Fed to pay interest on excess reserves going forward gives the Fed an additional policy tool, which is absolutely correct. And then he discussed some ways the Fed could potentially misuse that tool.

But he also mentioned that the Fed's response to the early stages of the financial crisis in the fall of 2008 was proper. In response to a financial panic the Central Bank should do what it, what the Fed was chartered to do in the original Federal Reserve Act, that is provide an elastic currency, increase the supply of bank reserves with a supply of liquid assets when there is plight in the safety of the banking system.

If the Fed were to lose the ability to pay interest on reserves, we would be back in the situation we were in, in 2007. The Fed would face a conflict between being able to provide liquidity to the market in periods of financial turmoil and maintaining the interest rate that is appropriate with the stance of monetary policy.

The Congress accelerated the authorization of the Fed to pay interest on reserves precisely to allow it to arrest the crisis in the fall of 2008. But had the Fed had that authority earlier, it would have been able to provide a much stronger market-based programs of liquidity assistance which may—it is hard to know for sure—have been effective in helping to prevent the worst of the financial crisis

and thereby, make some of the stronger programs that we saw later unnecessary.

Ms. WATERS. Thank you, very much. I noticed that the word “experimentation” has been used several times here and I think I would object to calling the quantitative easing and the interest on excess reserves “experimentation.”

It is flexibility, as I see it, and understand it. And I know that Mr. Huizenga has proposed, or is proposing that, somehow, we should absolutely bow down to the Taylor Rule, and maybe if there is something extraordinary happening, like 2008, we could have flexibility.

So, I know you don’t have time to answer that, but I think that is something that should be considered in our discussion as we continue to talk about the independence of the Fed. I yield back.

Chairman HUIZENGA. The gentlelady yields back. Time has expired. I will point out that is actually not what the format says, but that is for another conversation. So with that, the gentleman from Indiana, Mr. Stutzman, is recognized for 5 minutes.

Mr. STUTZMAN. Thank you. Thank you, Mr. Chairman, and it is good to see the panel. Dr. Taylor, it’s good to see you, and I have enjoyed listening so far to the conversation.

One of the things that people back home often expect from Washington is that it not stand in the way of progress, that it not stand in the way of growth. And if you look at history that we have here in this country, and the United States has been blessed with different periods of tremendous growth but you look at what we have also seen in the past 10 years.

I am looking at an article right now that says that the United States has record 10th straight year without 3 percent GDP growth. And I think that this is only, this is only the way that things are going to feel better, be better in the, across the country.

When you talk to families in Indiana, in the 3rd District, they are wondering why things aren’t better. What is standing in front of growth?

And I think there are a variety of things to address that. I think it is an interesting thing, too, that while it may not just be Fed policy that affects growth, I think also you see the regulatory environment that we are dealing with out of Washington has slowed growth tremendously. Industries just don’t know what to do.

But I think that when you look at the facts, and if you take a macro view of where this country has been over the last 100 years with the institution of the Fed, there are two periods in history. And I think this is what we all want. We all want to figure out what gives us growth, because that is the way the country is only going to move forward. That is the way families are going to do better.

And there were two periods in Federal Reserve history when we experienced a tremendous amount of growth and that happened to be in 1923 to 1928 and then in 1985 to 2003. In the first case, the Fed operated under some form of the Gold Standard, and in the second case, under the Taylor Rule, more or less.

And those were two periods where we saw tremendous growth. And I think that is what is lost on Washington a lot of times, is

the fact that families are struggling today, that America could be doing a lot better, that we are not reaching our full capacity.

To go 10 years without 3 percent GDP growth is really remarkable. And I think we all should be asking the question, why? Why is that the case? And I know, we all want what is best for families. We want what is best for this country, for us to deal with the debt, for us to deal with increased wages.

Something is going to have to give, and I think that this hearing is particularly interesting because it deals with the Fed, which I do believe affects our economy.

Dr. Taylor, I would like to start with you about the balance sheet of the Fed. Why not just naturally wind it down? What is keeping the Fed from winding down its balance sheet and I think that the more strength we see, the more opportunity and ability in the private market is going to give.

I can feel it when I go home. There are people who want to grow, but can you talk a little bit about the Fed and just why don't they naturally wind down their balance sheet?

Mr. TAYLOR. I think they could. I think they are reluctant to, for the same reasons; they think the expansion was beneficial and we heard a couple of statements about that already. I don't think it was so beneficial.

To me, they can undo this, as long as it is gradual, certainly they can take some time to do it and be clear about it. I think that is the way to go.

I think that there are, as you say, many other things in policy and I do think this regulatory reform, I do think the fiscal reform, the tax reform, and all those things are very important. They go together, to me.

You mentioned these periods of time. Well, those are periods where you also saw good and bad other kinds of policies too, so it all goes together in my view.

Mr. STUTZMAN. I don't know if anybody else would like to comment. Go ahead.

Mr. EISENBEIS. Yes. There are really two underpinnings for growth. One is for real economic growth, and one is for population growth, which contributes to economic growth and the second is productivity.

Productivity has really slacked off and productivity growth has slacked off and to me, that is an area where policy focus should be as to what is holding back productivity growth at this point.

Because, on the one hand, we have technology and a lot of things in place that look very promising, but why isn't productivity growth expanding? The Fed can create a climate for growth but it can't deal with productivity growth and some of the key underlying determinates of real GDP growth.

Mr. STUTZMAN. Absolutely. And I agree with that, but again, a sound fiscal monetary policy is part—it has to be one of the top priorities for us, especially in this committee, but knowing energy.

Energy doesn't know what to do right now because of the policies out of Washington. Manufacturing—every time businesses turn around, they just feel another sort of regulation piling on them and that is what is slowing us down. But for these purposes, the best

thing we can do is to make sure the monetary policy is fiscally sound. Dr. Elgin?

Mr. SELGIN. Yes.

Mr. STUTZMAN. If it is okay with the chairman.

Mr. SELGIN. Let us remember that this is, you can achieve any level of monetary policy, any degree of contractionary or expansionary policy with any number of combinations of balance sheet adjustment and interest on reserve.

Unwinding the Fed's balance sheet is contractionary, other things equal. But interest on reserves or raising the rate of interest rate, of interest on excess reserves, is also contractionary. If, right now, we have a combination where banks are encouraged to hold high excess reserves and the balance sheet is very large.

Now, even if you think that the overall stance of policy is sound, that combination implements the stance of policy in a way that involves less productive investment. The alternative is for the Fed to have a smaller balance sheet and for interest on reserves to be lower so that the demand for excess reserves is lower.

You can have the same monetary policy stance but end up with much more productive activity as a result of more savings being allocated through the private sector banks and fewer through the Fed.

Mr. STUTZMAN. Absolutely. I agree with that and I just think that we have to focus on velocity in the economy and this is one thing that is slowing down our monetary policies. With that, Mr. Chairman, I will yield back.

Mr. MULVANEY [presiding]. I thank the gentleman. I will now recognize the gentleman from Michigan, Mr. Kildee, for 5 minutes.

Mr. KILDEE. Thank you, Mr. Chairman, and I thank all the witnesses for your participation.

My question is specifically for Dr. Keister. First of all, welcome, and congratulations on a wonderful commencement exercise that you had at Rutgers. It got a lot of attention and we welcome, we certainly welcome Rutgers to the Big 10. As a Michigan fan, I have to tell you, any chance we can have somebody come in to sort of slip below our ranking, we are happy to have you.

Mr. KEISTER. You are welcome.

Mr. KILDEE. Thank you, and I apologize if my question is redundant or has already been addressed. I was just able to get here to the hearing.

But if I understand the hearing, it concerns the tools currently available to the Fed in order to influence short-term rates in particular, paying interest on excess reserves and overnight reverse repurchase operations so, Doctor, in your testimony before our committee in February, in her testimony, Chair Yellen indicated that higher rates of interest paid on excess reserves would, in her words, eventually pass through to customers in the form of higher deposit rates.

My first question is, what evidence do we see that savers are actually benefitting from the increase in interest the Fed is paying on bank reserves in the form of higher deposit rates?

And I ask this because I think it is important that we take a broader view regarding the resources that can be used to invest,

particularly in distressed communities and cities, which have been the focus of a lot of my work.

I have pushed that the Fed use all of its tools to meet the obligations regarding stable prices but most importantly, I think, particularly in the areas I represent, to maximize employment. So, how do you see the Fed's influence over short-term interest rates impacting its broader goals? If you could address those two questions, I would appreciate it.

Mr. KEISTER. Sure. So first, regarding the evidence that consumers are benefitting from higher rates, the whole goal when the Fed raises interest rates, it raises the interest rate currently that it is paying on excess reserves and it drags up all market interest rates with it. I don't have specific data handy, but I do have anecdotal evidence.

I pay attention to the interest rate I receive from my bank, and when the Feds raised the interest rate on excess reserves from 25 basis points to 50 basis points, the interest rate I received went up.

As I mentioned I looked it up for preparing my testimony. It is currently 30 basis points. Okay. So, and as the Fed continues to raise, as the economy continues to recover, the Fed finds it appropriate to continue to raise the interest rate it pays on excess reserves.

Banks will compete for deposits and as they do so, that will bid up the interest rate the depositors are receiving. So raising interest rate on excess reserve is designed to benefit savers and that will happen. Could you repeat your second question?

Mr. KILDEE. The second question is, what are the implications for the Fed's broader goals, particularly regarding increased employment? In other words, what are the externalities that you see in a broader economy resulting from this practice?

Mr. KEISTER. Sure. So, the Fed is always, in normal times and now, trying to balance the competing goals of promoting full employment while keeping prices stable. Okay? And the decisions the committee makes on the interest rates are designed with those two goals in mind.

So, as has been discussed here so far, one possibility of removing accommodation and that is, restraining the economy as it continues to improve, would be for the Fed to shrink its balance sheet.

I think the Fed has chosen, and Chair Yellen has testified, that doing so by shrinking the balance sheet is a less conventional way of communicating the stance of monetary policy to markets.

The more conventional way is to do it by raising interest rates, and so the committee has chosen, at least for the time being, to normalize monetary policy by first raising interest rates and then later, shrinking its interest rate back to, sorry, shrinking its balance sheet back to a more moderate size.

And in doing so, I think it is making a judgment that is reasonable in my view, that before taking the untested path of shrinking its balance sheet, we would like to make sure the economy is on a more sound footing and to decrease the risk associated with any uncertainty or any market disruptions that could be potentially associated with that.

Mr. KILDEE. Thank you. My time is just about up. I yield back the balance of my time.

Mr. MULVANEY. Thank you. The Chair will now recognize Mr. Schweikert from Arizona for 5 minutes.

Mr. SCHWEIKERT. Thank you, Mr. Chairman. You look good in that chair. Okay. I have a dozen different questions and let us try to ramp through them and see if we can make them make sense.

Mr. Keister, I remember a conversation about 2 years ago that the RRP's sort of mechanics that we were looking at, particularly in light of deposit insurance, sort of arbitrage that a bit, that actually you would, in some ways inflate up, long term mortgage rates, because you would be, in a sense. Was that what you were telling me about your own personal experience on a home loan?

Mr. KEISTER. That is right. So if I understand correctly, you are asking so, as the Feds raised the interest rate on excess reserves, it also raised the interest on this new overnight RRP—

Mr. SCHWEIKERT. Well, yes. It is obviously more than that. You have the IOER's, a pool, take away my deposit insurance, pull that out of the market, would you then start to raise up my cost of mortgage?

Mr. KEISTER. That is right. So any time the Fed raises short-term interest rates, the goal is to be removing monetary accommodation and that should raise longer-term rates.

Mr. SCHWEIKERT. Okay. Dr. Selgin, there are a couple of things I am trying to get my head around. First off, is this sort of system we have right now with the Feds dramatically sort of growing the way they are compensating excess reserves and sort of that reverse repo mechanic?

Has it started to squeeze out private providers of repo? Because now I am competing with the Federal Reserve and I no longer have deposit insurance. Are we seeing that?

Mr. SELGIN. Yes. It is because of the way the Fed repo operations work. They actually don't, they take collateral from the marketplace that is not available even though technically you have short-term purchases.

That is, the Fed is borrowing, but it is borrowing in a way that doesn't take the collateral off its balance sheet and make it available to the private sector.

So, the result is that there is a shortage of collateral for other kinds of credit creation, including private repo operations. And this is a big problem.

Mr. SCHWEIKERT. Dr. Eisenbeis, please.

Mr. EISENBEIS. Actually, what the Fed is doing is repoing its own securities out into the marketplace. So, the securities actually become a liquid asset that can be repoed out, or used as collateral for other activities. So what is supplying liquidity in the market, in terms of—

Mr. SELGIN. Not true.

Mr. EISENBEIS. —the securities.

Mr. SELGIN. No.

Mr. SCHWEIKERT. But—

Mr. SELGIN. No.

Mr. SCHWEIKERT. —even in that case, all you are doing is functionally saying, hey, I already hold the asset. That is my pledge on the repo. You are—

Mr. EISENBEIS. What it is doing—

Mr. SCHWEIKERT. —basically just pulling that cash out.

Mr. EISENBEIS. What it is doing is sterilizing part of the excess reserves.

Mr. SCHWEIKERT. Yes, but that doesn't leave you any multiplier effect in—

Mr. EISENBEIS. No, it doesn't.

Mr. SCHWEIKERT. —in the least light.

Mr. EISENBEIS. No.

Mr. SCHWEIKERT. And that was part of the, where I was going to go with. It is this, okay, fine. I get to use my existing book, I get to pledge it up, I get my repo.

But if you are having an argument saying, okay, where is my liquidity, my expansive monetary policy, you are actually, in some ways, doing just the opposite.

Mr. EISENBEIS. No, it is designed to raise interest rates. It is the tools that sort of tighten policy, in that sense.

Mr. SELGIN. They are, if I may say—

Mr. SCHWEIKERT. No.

Mr. SELGIN. Sorry.

Mr. SCHWEIKERT. Sorry.

Mr. SELGIN. The—

Mr. SCHWEIKERT. And tell me if I was wrong in my—

Mr. SELGIN. No, you are not.

Mr. SCHWEIKERT. —feeble attempt to explain.

Mr. SELGIN. You have to understand, there are two ways interest ways can be raised. Doctor Keister referred to tightening money, as a way of raising interest rates; which it certainly will do in the short run.

But the overwhelming reason for low interest rates right now is the low level of GDP in overall nominal spending. And that has a contractionary effect and interest on reserves contributes to that.

But if we avoid spending by creating more liquidity, instead of increasing the demand for liquidity, that too will eventually put upward pressure on interest rates, but in a way that doesn't involve overall tightening of—

Mr. SCHWEIKERT. Okay.

Mr. SELGIN. —credit.

Mr. SCHWEIKERT. This is one of those moments I definitely wish I had more time.

Dr. Taylor, I need help on two things, and you have like 10 seconds to do it. If I come to you and say, the size of the book as it is today on the Federal Reserve, what does that do to lending velocity in the overall economy, when my safe yield rate is, I basically, I have a free, or safe rate with a yield.

So, my cash ends up going into the Federal Reserve, instead of multiplying in the economy. And next—no, let us do that because we are out of time. So—

Mr. TAYLOR. I think in that case, these excess reserves are, if anything, signaling that they are going to be there for a while. So there is this notion they are going to be there for a while, and therefore, we are not going to be back to normal for a while.

And I think that is a problem with its effects on the economy. That is the main thing I would say about that.

Mr. SCHWEIKERT. I couldn't find it, but somewhere I have an article about the allocation of capital argument. That one of the problems for our lack of growth is—

Mr. TAYLOR. Yes.

Mr. SCHWEIKERT. —we are not getting the allocation in—

Mr. TAYLOR. I think in the—

Mr. SCHWEIKERT. —places in the economy—

Mr. TAYLOR. —Federal. Certainly in the money markets.

Mr. SCHWEIKERT. —where, yes you might have a little risk; but you get a—

Mr. TAYLOR. Yes.

Mr. SCHWEIKERT. —multiplier.

Mr. TAYLOR. That is it.

Mr. SCHWEIKERT. Is this the—

Mr. TAYLOR. That is a—

Mr. SCHWEIKERT. —cost.

Mr. TAYLOR. Certainly in the money markets they haven't been functioning very well at all. Maybe they will as the rates come up a little bit, but that is an allocation of those funds to different banks and different parts of the economy, which is not very effective, with the near zero interest rate.

Mr. SCHWEIKERT. All right. Mr. Chairman, thank you for your patience. I yield back.

Mr. MULVANEY. I now recognize the gentleman from New Mexico, Mr. Pearce.

Mr. PEARCE. Thank you, Mr. Chairman.

If the gentleman from Arizona needs a little bit more time, I would be happy—I was going to follow right along in that line of questions if you—

Mr. SCHWEIKERT. Maybe, keep going—

Mr. PEARCE. Okay. So, this idea that we are encouraging, Dr. Keister, this is kind of at odds with your testimony. But it is something that I believe in real life that we are giving incentive for banks to hold reserves, rather than getting the money out to where it starts causing the economy to grow.

You appear to approach it from a little different point of view. Can you explain why that perception that you have been hearing is now, and is definitely rooted in my mind, is maybe incorrect?

Mr. KEISTER. Sure. So, it is important to keep in mind that when the Federal Reserve creates reserves, as Dr. Eisenbeis mentioned earlier, they don't disappear. So the quantity of reserves in the banking system is going to be there. No matter how much lending goes on, and other activity. Okay?

So when the Federal—and also when, as I testified earlier, when the Federal Reserve creates reserves, that process also creates bank deposits. So banks are getting a new source of funding, at the same time that they are getting a new asset.

So, that funding, that new asset is not crowding out other things they—other assets they could be holding. Loans to businesses, loans to consumers.

Mr. PEARCE. Yes, see I would perceive it exactly the opposite, that a bank is sitting here with its reserves, and they have to tell us what to do with them. If they don't have that return on that

investment, then they are sort of forced to do what banks are supposed to do.

But I think now then, a lot of banks are just sitting on reserves. I don't think they are out there, because I hear the small business people coming and saying, well, I have pretty good credit. I have never missed a payment, but I can't get a loan. I want to expand my business. And so, the banks are being given an incentive to stay out of the business of loaning money, and so, yes, I didn't quite—

Yes, sir, Dr. Selgin.

Mr. KEISTER. Well—

Mr. PEARCE. Selgin. The other seat, go ahead. You seem to want to make comments, so I am going to—

Mr. SELGIN. Yes I do. Thank you. It is true that when the Fed creates reserves, it creates an equal amount of deposits in the system.

But it is also true that in the absence of interest on reserves, conventionally and before the crisis, the total deposit creation, because of the lending of the extra reserves, that is of the excess; would end up being something like 10 times the initial creation associated with the Fed's own expansion.

So, what happens in the interest on reserves, on excess reserves environment, what has happened, is that multiple of 10 has gone away. And this is why, as a ratio of their total balance sheets, the banks, end up holding a much higher than they normally do.

It is the ratio that is determining the relative extent of productive investment that goes on. And that ratio of productive investment to reserves is what is down. Banks have control over that.

If they didn't have control over the ratio, why in other cases where central banks have created vast amounts of reserves, you would see reserves—excess reserves accumulating, instead of banks lending more. Every hyper-inflation we have ever seen would have been impossible, because the banks would have just sat on their reserves.

Mr. PEARCE. Okay. Wait.

Mr. SELGIN. So it is not true that banks have no choice.

Mr. PEARCE. So, if we are going to follow on, and we want to add another variable into it. So now then, you get regulators. You consider that, okay. Maybe the interest has an effect, maybe it doesn't.

But when you get regulators coming in, and looking at the bank, and saying, about fairly safe loans, that we are going to classify this loan. So now then, you have just the suggestion, says, I am better off being on the sidelines because the regulatory impact of very good loans—again, these are loans that I have heard about in our district, where people say, why would I ever lend money? When the regulators are going to say this, and they will pay me not to lend money.

And so, in a State like New Mexico, with a small economy, we have 70 days' worth of funds to lend for houses. So, it is not like the State is swimming in cash reserves.

And yet, we are giving these depressing effects. So we have not seen that dramatic economic growth that is being proclaimed here in Washington that is occurring.

Dr. Taylor, do you have an observation?

Mr. TAYLOR. Yes. I think during this period where they had a 25 basis points interest on reserve, it is really in retrospect I think. Dr. Selgin is correct about this. In retrospect, I would say, why did they do that?

I think Dr. Kiester is saying, well, they were doing that because they wanted to move to ready to move it from 50 basis, from 25; which is not clear why they had to do that.

So, I think, a lot of these questions wouldn't be there, had they just not paid interest rates on reserves. They had the right to do that, obviously. It doesn't mean they have to pay interest. They could have paid zero, starting back in 2008 until now, until December of 2015.

I think, in retrospect, it certainly would have been a better thing to do. They have given lots of answers to that to people over the time, I am sure. I think the main one is to be ready. The mechanism is there. I think it is questionable.

Mr. PEARCE. Yes, and then just then a last point that, and thanks, Mr. Chairman for a little bit of the time here, but the banks, a little bit, get out of the perfection of making good loans versus bad loans.

And so, they are uncertain because their activity has shrunk down, due to regulatory things, and cash reserves are being really encouraged. And so, I find that the banks even get a little out of practice, in determining what is a good loan and a bad loan.

And then, they are even more hesitant, at a time when we need them to be more courageous. They are more hesitant, and the economy suffers.

Thank you, Mr. Chairman for your indulgence.

Mr. MULVANEY. I thank the gentleman. And while we are not going to do a second round, Ms. Moore was very gracious in allowing me to maybe ask just a few more questions to finish up on some of our dialogue earlier, Dr. Selgin.

To refresh your recollection, we were talking about the Fed not marking to market the balance sheet implications of the value of their assets, and so forth. And then you made a comment as the time was expiring about the P & L, the profit and loss impacts of that.

And whether or not if their earnings, the net earnings, turned negative, they might have to come hat in hand to Congress. I had actually asked Dr. Bernanke that question along those lines 2 years ago.

Where in a rising interest rate environment, you can foresee a situation where the net earnings of the Fed go negative. That they will have to end up paying off much higher rates of interest, they won't be earning as much on their balance sheet, et cetera.

And I asked him, what would happen? And he did not say that they would have to come hat-in-hand to Congress to ask for money. He said they would simply take it off the balance sheet, or adjust the balance sheet.

I never really understood exactly what he was talking about. I got the impression what he meant was, they were going to conjure the money up, the same way they do to buy. Dr. Eisenbeis is saying no.

Dr. Selgin is looking at me, like, he is not sure what I am talking about. I am just curious to know, what might happen in a situation where the profit and loss turns negative for the Federal Reserve? We will start—

Mr. EISENBEIS. I have—

Mr. MULVANEY. —with Dr. Eisenbeis.

Mr. EISENBEIS. I have the answer to that.

Mr. MULVANEY. And then go to Dr. Selgin.

Mr. EISENBEIS. I have the answer to that, sir. According to the way the law is set up, when the Fed income is no longer sufficient to pay interest on reserves, they stop making remittances, and write the difference up in this negative asset account that I was talking about before.

And what that is, is an acclaim on future revenues on Treasury securities, and assets on the balance sheet that as it is received, would be used to write down that account, and when it can borrow from the—

Mr. MULVANEY. To borrow from their own future earnings—

Mr. EISENBEIS. Yes.

Mr. MULVANEY. —is what I have—and something that private business can't do, right?

Mr. EISENBEIS. No. Actually, there is the loss carryforward, but it is not really, totally analogous to this.

Mr. MULVANEY. I have never been able to monetize a loss carry forward. I have news for you, it is hard to do, but—

Mr. EISENBEIS. The Fed can do it, however. But it is really, sort of, an accounting gimmick. To sort of preserve, and enable the Fed not to have to go to the Treasury.

Mr. MULVANEY. It is not that common because it has never happened, right? The Fed is never—

Mr. EISENBEIS. No.

Mr. MULVANEY. Okay.

Dr. Selgin, are you, in general, accord with that?

Mr. SELGIN. Yes, you can do that up to a point. Remember that the interest payments that have to be made to the bank exceed the terms, then it is losing money. In that case, there has to be some monetization involved in order for—it has got to be covered somehow.

Mr. MULVANEY. It does have to be covered somehow. But my understanding is that they can—they can monetize these future earnings to this negative asset account. And, essentially, they have to have cash. Because the cash has to go out the door.

Mr. SELGIN. That is it, that's right, there is monetization involved, and that is essential, and—

Mr. MULVANEY. —and it is self-monetization, essentially conjuring the money up, correct?

Mr. SELGIN. That is right.

Mr. MULVANEY. Dr. Keister?

Mr. KEISTER. I would just like to add one point. So, this possibility we are discussing is the flip side of the larger emittances the Fed has been making to the Treasury over the past few years.

The entire problem could be avoided if the Congress authorized the Fed to hold—to create a reserve fund to hold back some of

these larger emittances, until it is able to shrink back its balance sheet, and this possibility has disappeared.

Mr. MULVANEY. That is a fascinating idea. It sounds like a great way to solve the GSE problem.

Dr. EISENBEIS, did you have one last thought on that?

Mr. EISENBEIS. Yes. In fact, the opposite has happened because the Fed surplus in the Highway Transportation bill, \$20 billion of it was taken off the Fed's balance sheet.

So, now they have only \$30 billion in equity, combination of paid-in surplus and everything. So—

Mr. MULVANEY. I think that was noted, wasn't it, on one of Ms. Moore's earlier graphs as an additional remittance during last year.

So, if there are no further follow-ups on that specific topic? Ms. Moore, do you have anything else?

Ms. MOORE. No, it was a good question.

Mr. MULVANEY. I appreciate the ability to ask that question.

Mr. EISENBEIS. Mr. Chairman, may I make just another clarification? And it has to—

Mr. MULVANEY. I will stay as long as Ms. Moore wants to.

Mr. EISENBEIS. It relates to why the Federal funds, effective Federal funds rate was below the target. And the reason was because Freddie Mac and Fannie Mae were not able to hold and earn interest on their deposits at the Fed.

So, they were accumulating large amounts of excess funds, and lending them out into the Federal funds market, willing to take a rate below the target rate because they had no other alternative.

And that is the reason the effective funds rate was below the target.

Mr. MULVANEY. Fascinating. Ms. Moore, do you have anything else to add?

Ms. MOORE. I thank all of the witnesses for your indulgence, and we learned a lot.

Mr. MULVANEY. The Chair notes that some Members may have additional questions for this panel, which they may wish to submit in writing. Without objection, the hearing record will remain open for 5 legislative days for Members to submit written questions to these witnesses and to place their responses in the record. Also, without objection, Members will have 5 legislative days to submit extraneous materials to the Chair for inclusion in the record.

Thank you. The hearing is adjourned.

[Whereupon, at 12:03 p.m., the hearing was adjourned.]

A P P E N D I X

May 17, 2016

**Ranking Member Waters Statement
Monetary Policy and Trade
Subcommittee hearing titled “Interest on
Reserves and the Fed’s Balance Sheet”
(2 Minutes)**

Thank you Chairman Huizenga and
Ranking Member Moore for organizing
today’s hearing.

As we look at the Fed’s implementation
of monetary policy in the post-crisis

environment I think it's important to look at the circumstances that have brought us to this point.

In 2008, the Federal Reserve had to take unconventional steps to stabilize the economy and temper the devastating effects of the financial crisis. Fortunately for the American people, the Fed's approach softened the severity of the crisis, shortened

its duration, and put us on the road to recovery.

Today, the Fed faces a new set of challenges. To safely return to its normal role guiding monetary policy, while being careful not to harm the US economy, the Fed must rely, again, on new tools, specifically paying interest on reserves.

While I initially raised concerns with this approach, after exploring this matter further and speaking at length with Chair Yellen, it has become abundantly clear that the net benefits to the public that result from this policy are substantial.

Without the ability to directly affect rates through the payment of interest, and unwind its interventions, the Fed would have to

engage in dangerous fire sales of the assets on its balance sheet that would threaten our recovery and cost taxpayers dearly.

I hope that as our Committee conducts its oversight, we keep these salient facts in mind.

Thank you, I yield back.

For release on delivery
10:00 AM EST
May 17, 2016

Statement by
Dr. Robert A. Eisenbeis
Vice Chairman
Cumberland Advisors
Sarasota, Florida
before the
Subcommittee on Monetary and Trade Policy
of the
Committee on Financial Services
U.S. House of Representatives
May 17, 2016

Chairman Huizenga, Ranking Member Moore, and other members of the committee, I am honored to have the opportunity to testify today and share with you my views on several issues concerning the payment of interest on reserves (IOER) by the Federal Reserve System. I will focus some of my remarks on the role that IOER has come to play in the implementation of monetary policy since the Great Recession. But first I want to address certain misconceptions about the Federal Reserve's balance sheet, the role that reserve creation has played in the expansion of that balance sheet, and the payment flows among the banks that hold reserves, the U.S. Treasury, and the Federal Reserve.

The Fed Is a Government Entity, Not a Bank

Before I get to the issue of interest on reserves, I want to address a misperception many have on the proper way to view the Fed's balance sheet. First, though the Fed is often compared to a private sector bank, that analogy simply doesn't hold up and leads to a number of faulty conclusions. There are fundamental differences between the Fed and private sector banks, because the Fed is a government entity whose liabilities are both explicitly and implicitly guaranteed by the government. As the Fed began its asset purchase program, it didn't go out into the market and pay interest on reserves to attract funds as a private sector bank would to gain deposits and other sources of funding. Instead, in order to purchase Treasuries, it paid for them by increasing the seller bank's reserve account, and it did not first have to raise the funds to do so. Had the Fed paid for those Treasuries with currency in the form of Federal Reserve notes, we would have said that the Fed printed money and monetized Treasury debt. The Fed could have made the same asset purchase if the interest rate on reserves (IOER) had been zero, and the Fed's balance sheet would be the same size that it is today.

Second, it is also important to understand that, unlike deposits at a private sector bank, reserves never leave the Fed. A bank can't withdraw its reserve deposits from the system the way a bank depositor can withdraw funds from his or her bank. When a bank or one of its customers engages in a transaction, a reserve deposit moves from one organization to another, ownership of a reserve deposit changes, but the funds never leave the Fed. This is true whether the dollar transaction is domestic or foreign. Even if a bank were to surrender a reserve deposit for currency, the Fed's balance sheet would remain unchanged in size. The Fed's liability in the form of bank reserves would go down, but its liability in the form of Federal Reserve notes outstanding would go up by the same amount – there would be no impact on the overall size of the Fed's balance sheet.

The Fed can shrink its balance sheet *only* by selling assets (which reduces the Fed's Treasury holdings and also reduces bank reserves) or by allowing its assets to mature and not replacing them. In the latter case, the Fed's assets decline, and its liabilities to the Treasury also decline.

How to Think About Interest Payments on Reserves

Now, what about those interest payments on reserves? Remember that the Fed is paid interest by the Treasury on its portfolio holdings (and by Freddie and Fannie, also essentially governmental entities at this point). The Fed extracts its operating costs, including the interest it pays on reserves, and returns the remainder to the Treasury. If this intragovernmental funds transfer between the Fed and Treasury were settled the way interest rate swaps are settled by netting, there would always be a net payment from the Treasury to the Fed.¹ Thus, since the Treasury is covering the Fed's operating costs and interest payments, it is a misnomer to suggest that the Fed is making a profit.

¹ For simplicity, I am including Freddie and Fannie and their liabilities as part of the government here as well.

From the perspective of the consolidated Fed-Treasury balance sheet, Fed asset purchases of Treasuries merely replace one form of government debt with another, extracting long-maturity Treasuries held by the public from the market and substituting a very short-duration demand liability in their place. Fed purchases take higher-cost Treasury debt off the market and replace it with another form of government short-term demand debt paying 50 basis points. This effectively retires securities that were purchased and reduces the cost of debt to the Treasury by the difference between the 50 basis points that is paid on reserves and the coupon rate of the purchased Treasury securities. This transaction also means that Treasury is currently making the 50-basis-point payment on bank reserves instead of the higher-rate payment it would have made on the Treasuries the Fed took off the market. Otherwise, Fed remittances would be higher by the amount of the interest paid on reserves, and the net transfer of funds from the Treasury to the Fed would be lower. Moreover, it is only by a quirk in government accounting that the Treasury can count remittances from the Fed as revenue for budget purposes. This is clearly a case of questionable accounting and is misleading when it comes to the treatment of government revenues.

Are Interest Payments to the Fed a Subsidy to Banks?

Is it correct to view the interest payments on reserves as a subsidy to banks? We have already established that the purchases could have been made even if the payment of interest on reserves was zero. So those interest payments surely look like a subsidy. Why not cut the rate to zero and thus reduce the financing costs to the Treasury to zero on those reserves?

The answer lies in understanding how IOER works. IOER is now one of a suite of operational tools that the Fed has adopted since the Great Recession for the conduct of monetary policy. These tools include not only the IOER but also the reverse repo rate, the term deposit

rate, the discount rate and, to a lesser extent now, the target Fed Funds rate. The target Fed Funds rate was the main tool the Fed used prior to the recent crisis to influence short-term interest rates by setting the rate banks paid to borrow and lend excess reserves in the interbank overnight market. This market has essentially dried up now because the huge volume of excess reserves has eliminated the scarcity of that asset as far as banks are concerned. The other tools, which I am sure others on the panel today will discuss in much more detail, evolved to provide secured access to short-term funds, and in the case of the reverse repo market for example, to a wider range of counterparties that were not able to access the Fed Funds market directly or could not hold reserve balances at the Fed.²

In the wake of the Great Recession, IOER has become an essential tool for the Fed to influence short-term interest rates and inflation. For most of the history of the Federal Reserve, no interest was paid on reserves. But requiring banks to hold a portion of their assets in the form of a non-interest-bearing reserve against their deposits effectively reduced bank earnings and functioned as a tax. As a result, many banks opted out of the Federal Reserve System, and the Fed even resorted to providing free payments services (the equivalent of free toasters) to offset the ongoing cost of membership.

Predictably, banks sought to minimize excess reserves, and one way to do that was to make loans, converting excess reserves into required reserves. For the banking system as a whole, this practice creates a money multiplier and expands the money supply, and during periods of rapid expansion it leads to inflation. Today, for example, one dollar of reserves could theoretically support a tenfold increase in the money supply and potentially trigger an explosion in inflation. This unwelcome prospect explains why economists and some members of the

² These counterparties include commercial banks that aren't primary dealers (both foreign and domestic), GSEs, and money market funds. Freddie and Fannie may hold reserve deposits at the Fed but may not receive interest on those funds.

FOMC are concerned that the Fed needs to wind down its portfolio, decrease the amount of excess reserves, and return interest rates to normal.

In this context, the Fed's ability to pay interest on reserves is critical to reducing the opportunity cost of holding excess reserves. Moreover, it can help significantly to keep interest rates, the money supply, and inflation under control, consistent with the Fed's dual mandate. To be sure, the payment of interest on reserves will go up as policy normalization proceeds, but what is relevant from the government's fiscal perspective is the spread between the market rate on Treasuries in the Fed's portfolio and the rate paid on reserves.

An additional complication arises when we recognize that ownership of excess reserves is not evenly distributed across the banking system according to bank size, as we might guess. A substantial portion of excess reserves are held in U.S. subsidiaries and affiliates of foreign banks. Figure 1 shows the proportions of reserves and deposits in foreign institutions and how those proportions have evolved under Dodd-Frank and as the Fed embarked upon its quantitative easing policies. These institutions now account for 40% of the excess reserves (the figure has been as high as 50%), but they account for only about 10% of deposits. Because of this imbalance, they also receive a disproportionate share of the interest payments on reserves relative to domestic institutions.

There are two explanations for the imbalance. First, the Dodd-Frank Act changed how the deposit insurance assessment is charged. Large banks (mainly those over \$500 billion) now pay more than 15 basis points on total assets. This means that, while they currently earn 50 basis points on their reserves, their net return is 35 basis points. (It was 10 basis points prior to the Fed rate change in December 2015.) In contrast, since foreign banks are not subject to the 15 basis point FDIC assessment, they are able to earn a full 50 basis points on their excess reserves. But

for foreign institutions headquartered in Europe or Japan, for example, where policy rates are negative, the spread between their domestic rate options and the holding of reserves at the Fed is even wider. For a European bank, this spread is now 90 basis points. Such a bank can potentially borrow from its central bank at 25 basis points, or lower, and deposit the funds at the Fed to earn a risk-free 50 basis points at a positive spread. As an additional bonus, reserves held at the Fed by foreign banks count towards their liquidity coverage ratio (LCR) under the Basel III requirements.

These foreign institutions are not likely to intermediate those reserves, nor are foreign banks a threat to suddenly engage in explosive lending in the U.S. This feature, while clearly providing a risk-free arbitrage to foreign institutions, helps to sterilize some 40% of excess reserves, and the impact only increases either as their central banks lower rates even further or as the Fed raises rates.

How Difficult Is the Process Facing the Fed in Reducing Its Balance Sheet?

The Fed faces a challenge managing short-term interest rates with its basket of tools and returning its balance sheet to a new equilibrium. If, as argued earlier, excess reserves are suddenly employed to support an explosion of lending, then the Fed is at risk of being behind the curve in achieving its inflation objective. The Fed has essentially only two options when it comes to reducing the size of its balance sheet. It could start the normalization process by not replenishing assets as they mature and let that process shrink the balance sheet while it simultaneously attempts to control short-term interest rates. Alternatively, it could start selling assets in addition to letting existing maturing assets run off. Each of these options involves different issues and will be considered in turn.

Option 1: Stop Reinvesting

If the Fed were to stop reinvesting, how long would it take for the balance sheet to reach equilibrium? By equilibrium I mean that the portfolio shrinks to a size that its Treasury holdings mainly backs the outstanding currency. Since nominal GDP today is much higher than it was before the onset of the crisis (when the Fed's balance sheet was \$870 billion), equilibrium portfolio size today would be about 7.25% of nominal GDP, or \$1.350 trillion. That number would grow over time at the rate the economy expands, further mitigating the extent that the portfolio needs to shrink from its present \$4.477 trillion size.

The speed with which the Fed could let the portfolio run off and the amount of excess reserves that would then have to be sterilized depends both upon the rate of growth of nominal GDP and upon the maturity structure of the portfolio, which presently consists of various maturities of Treasury obligations totaling \$2.4 trillion and largely 15-year and 30-year MBS. The maturing process is therefore heavily concentrated in Treasuries during the early years. Not rolling over maturing issues would free liquidity in the Treasury market, if the Treasury reissued securities to the public. But the shrinkage would impact the ability of the Fed to engage in reverse repo transactions unless the transactions employed agency MBS, which might or might not be as attractive as collateral. Assuming a 4.5% rate of growth in nominal GDP (2.5% real and 2% inflation), Figure 2 shows that maturing assets alone are not sufficient in the short run to quickly restore equilibrium. The volume of excess reserves that would have to be sterilized is substantial, and the portfolio would not achieve equilibrium until 2029. The scope of the challenge means

that some form of asset sales or perhaps a higher-than-desired interest rate policy would likely have to be pursued.³

Option 2: Sell Assets in Addition to Allowing Maturing Issues to Run Off

The foregoing analysis suggests that some form of asset sales will probably have to be employed as a supplemental measure while the Fed's portfolio is being restored to equilibrium. Again, this strategy raises additional consequences to consider. First, despite the Fed's reluctance to engage in sales of its MBS assets, there actually aren't sufficient assets in the portfolio that could be sold in order to achieve equilibrium. Assets in addition to Treasuries would have to be sold. Second, the problem with asset sales in general is that the Fed has booked its purchases at face value. Should interest rates rise, the market value of those assets would decline, so that asset sales would then take place at a loss, which would have to be booked. Given the duration of the Fed's assets and capital, I estimate that it would take less than a 20 basis point increase in interest rates across the board essentially to make the Fed's portfolio market value insolvent. This means that the Fed has virtually no flexibility to sell assets without wiping out its capital.

Federal Reserve accounting conventions anticipate the possibility that asset sales might give rise to losses greater than income. Normally, such losses would be recognized against capital, but Fed accounting rules state that such losses would not have to be written down against the Fed's equity. Rather, the Fed would create a deferred (or negative) asset account, similar to

³ The Fed would also have to have sufficient holdings of Treasuries to meet the statutory requirement to back outstanding currency. MBS might have to be liquidated or swapped to accommodate this requirement.

an accounting mechanism used by some companies accounting for loss carry forwards.⁴ Asset sale losses would be booked into that account, and future portfolio earnings would be used to write down those losses before remittance could be resumed.

Impending Risks

The potential costs and reputational risks that asset sale losses pose to the Fed are twofold. First, Fed insolvency becomes totally transparent when the deferred asset account exceeds the Fed's capital. While economists might argue that book insolvency is irrelevant to the Fed since it is part of the government and is ultimately backed by U.S. taxpayers, we must wonder what the world's reaction would be to the insolvency of the world's most prestigious central bank.

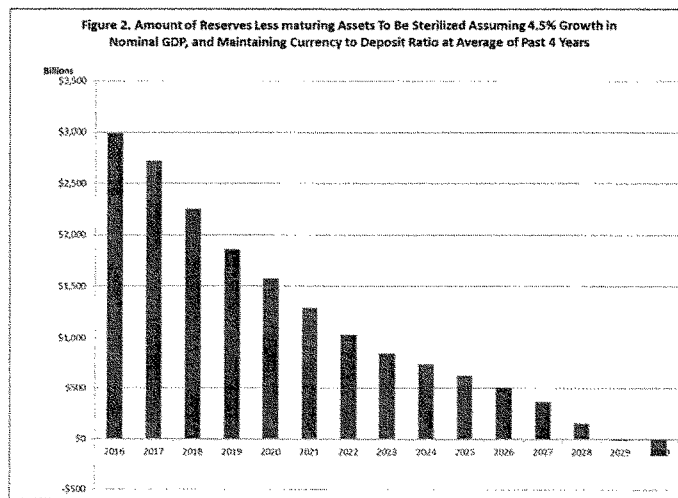
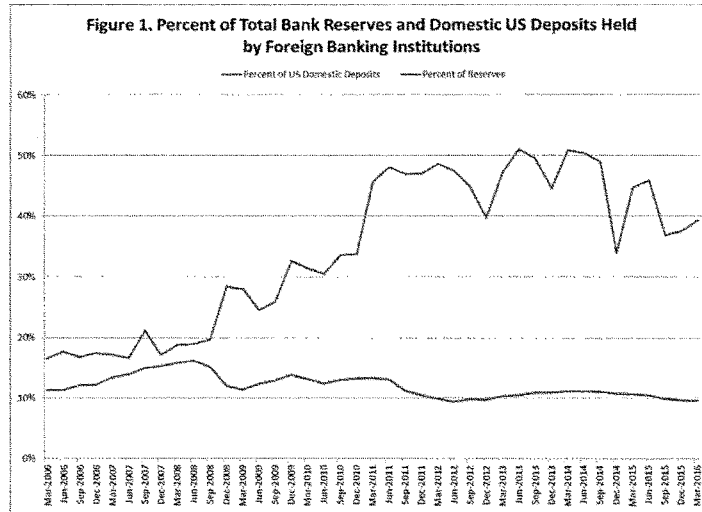
Second, Congress recently exacerbated the problem at hand when it raided the Fed's surplus account and cut dividends to regional reserve bank stockholders in the December Highway Transportation Act. Congress reduced the Fed's capital and surplus by \$20 billion and capped its future surplus at \$10 billion. Consequently, the Fed's total capital on account is now only \$30 billion. Moreover, as the economy and the Fed's balance sheet grow in tandem, Fed leverage will increase and so will its risk of insolvency. Taking the surplus amounts to printing money to finance highway construction. That is, the actual transaction involves writing down the Fed's surplus account and increasing the Treasury's balance at the Fed. When the funds are spent, a reserve account is created and the Treasury's balance declines. This amounts to printing

⁴ See Carpenter, Seth, Jane Ihrig, Elizabeth Klee, Daniel Quinn, and Alexander Boote, "The Federal Reserve's Balance Sheet and Earnings: A Primer and Projections," Board of Governors of the Federal Reserve System, January 2013. "The deferred asset is subsequently realized as a reduction of future remittances to the Treasury (which are accounted for as interest on Federal Reserve notes expense). Thus, it is an asset in the sense that it embodies a future economic benefit that will be realized as a reduction of future cash outflows. If the realization of the asset is expected to occur over several years, some valuation technique, such as net present value, would be applied to measure the value of the asset. This accounting treatment is consistent with U.S. GAAP and is similar to the way that private companies report deferred loss carry forwards as an asset."

money to finance government projects. Gimmicky accounting has conjured the illusion of providing funding for fiscal projects without paying the true costs. In the process, Congress may have damaged the Fed's ability to do its job.

Conclusion

In closing, I want to reiterate some of the key points I've made today. First, when we think about the Fed, it is important to consider it as part of the government and not a private sector entity, despite its unusual structure. Second, the Fed can't make a profit. Rather, it issues one form of government debt for another. It receives interest payments from the government, takes out its operating costs, and returns the remainder to the Treasury. On balance, there is always a net payment from the Treasury to the Fed, and it is inappropriate to consider remittances as income for budget purposes, as is the present practice. Third, it follows that interest on bank reserves is really a payment from the Treasury to the holders of bank reserves -- a demand liability. Fourth, the ability to pay interest on reserves functions as an important tool of monetary policy and should not be viewed as a mere subsidy, just as interest payments on Treasury debt are not regarded as a subsidy. IOER will be needed to play a key role in sterilizing bank reserves as the Fed begins to wind down its balance sheet. Further, IOER will be a critical tool the Fed can use to avoid having to liquidate assets at a loss. Finally, Congress should reevaluate its policy towards the Fed's surplus and capital.



Interest on Reserves

Todd Keister
Professor of Economics
Rutgers University

Testimony before the Subcommittee on Monetary Policy and Trade
Committee on Financial Services
United States House of Representatives

May 17, 2016

Chair Huizenga, Ranking Member Moore, and members of the Subcommittee on Monetary Policy and Trade, thank you for inviting me to testify at this hearing on “Interest on Reserves and the Fed’s Balance Sheet.”

The ability to pay interest on the reserve balances that banks hold on deposit at the Federal Reserve is an important policy tool, and Congress’ authorization of these payments in the Financial Services Regulatory Relief Act of 2006 was a welcome development. In the aftermath of the financial crisis of 2008 and the subsequent recession, the Fed has come to rely more heavily on this tool than was previously anticipated. At the same time, because paying interest on reserves is still relatively new in the U.S., there is naturally some uncertainty in the minds of both the public and policy makers about the implications of this policy. The issue is particularly pressing given the unprecedented level of bank reserves that have been created by the Fed’s quantitative easing policies.

In my comments today, I will focus on several points that I believe are crucial for informing policy decisions related to interest on reserves. I have chosen these points, in part, because I believe they are often either misunderstood or not fully appreciated in the discussion of these issues. I will argue that continuing to allow the Fed to pay interest on bank reserves is not only essential for the implementation of monetary policy, but also sound economic policy with no significant cost to the taxpayer.

Most of my comments will focus on the payment of interest in excess reserves, since that issue has received the most attention in previous hearings. I will also comment briefly on the payment of interest on required reserves toward the end of my testimony.

I have organized my comments around eight key points.

1) The Federal Reserve’s paying of interest on excess reserves to banks has no cost to the taxpayer.

To understand this statement, it is helpful to walk through the mechanics of how bank reserves are created. I will describe these mechanics in terms of a simple – and admittedly simplistic – example, but the main message from this example applies much more generally.

Imagine we start with a situation in which I personally own a U.S. Treasury bond. Then the U.S. government regularly pays interest on this bond to me. Now suppose that I decide to sell this bond and that the Federal Reserve, as part of its monetary policy operations, purchases my bond.¹ When this transaction takes place, the Federal Reserve credits my bank (which is USAA) with reserves equal to the value of the bond, and USAA credits my bank account with the same amount. In this new situation, the Treasury pays interest on the bond to the Fed, the Fed pays interest on the reserves to USAA, and USAA pays interest on my bank account to me.

In a broad sense, things have not changed much: the U.S. government is still paying interest on its debt and at least some of that interest is making its way to me. Instead of coming directly to me, however, the interest now passes through a chain of payments that includes the Fed and my bank. This point is important and bears repeating: The Federal Reserve paying interest on reserves is a link in a chain of payments that *replaces* interest payments the Treasury would otherwise be making directly to its bondholders.²

The situation is not exactly the same as before, of course. (If it were, there would be no point to the Fed's asset purchase programs.) In particular, the interest rates are different in each step of this new chain. For concreteness, let me use some rough numbers. If I was holding a 10-year bond, I was earning something like 1.75% from the Treasury. Now the Treasury pays that 1.75% in interest to the Fed, and the Fed pays 50 basis points to USAA. The difference between those two interest rates represents the Fed's earnings on the purchase of my bond. Since the Fed's earnings (net of expenses) are remitted back to the Treasury, this step represents a *decrease* in the Treasury's net financing costs.

After the initial transaction, I may not want to keep my money in a bank account and may choose instead to buy some other type of security. When I do this, the reserves that were created when I sold my bond may be transferred from my bank to some other bank. In fact, they may be transferred many times as various transactions (including interbank borrowing and lending) occur. However, those same reserves will still exist somewhere in the banking system, and the key points I made above are unchanged. In particular, the Fed paying interest on those reserves – wherever they are held – is a link in a chain of payments that replaces interest payments the Treasury would otherwise be making to bondholders, and hence there is no cost to the government or to the taxpayer associated with those reserves.

2) *Removing the Fed's ability to pay interest on excess reserves would **raise**, not lower, the government's financing costs.*

There has been a fair amount of discussion about how the ability to pay interest on excess reserves is a critical policy tool for allowing the Federal Reserve to raise interest rates to the level that the FOMC deems appropriate. Without the ability to pay interest on reserves, the only

¹ In practice, the Federal Reserve does not buy securities directly from individuals. Instead, the Fed purchases securities from the primary dealers, and I would sell my bond to a primary dealer either directly or indirectly through another intermediary. These intermediate steps make the accounting more complex but in no way change the message of my simple example.

² For an analysis of the fiscal implications of paying interest on reserves in a formal economic model, see Todd Keister, Antoine Martin, and James McAndrews "Floor Systems and the Friedman Rule: The Fiscal Arithmetic of Open Market Operations," Federal Reserve Bank of New York Staff Report No. 754, December 2015.

way the Fed could raise interest rates would be to quickly sell the majority of the securities in its portfolio and return its balance sheet to a much-smaller size. Chair Yellen and others have stated that they believe doing so could potentially destabilize markets and I largely agree with this assessment.

I want to make a different point, however. Even if the Fed were to stop paying interest on excess reserves and dramatically shrink its portfolio of assets, doing so would not save the government or the taxpayer any money. This policy would eliminate the Fed's interest payments to banks. At the same time, however, it forces the Fed to sell a large quantity of government bonds from its portfolio. The interest payments made by the Treasury now go directly to the bond holders rather than to the Fed, and none of that interest is remitted to the Treasury.

Thinking again about my simplistic example: suppose the Fed decides to sell the bond it purchased from me, and I decide to buy it back using the money that is still sitting in my bank account. These transactions extinguish the reserves that were created by the original purchase, so the Fed no longer pays any interest on these reserves to my bank. But to focus on the money saved at this one link in the chain is to miss the larger picture. The Treasury is now paying the 1.75% of interest to me rather than to the Fed. As a result, the net interest expense to the Treasury (and hence to the taxpayer) is now higher, not lower.

3) Paying interest on excess reserves is not a subsidy to banks.

Many people have expressed concern that the Fed's interest payments represent an unfair subsidy to banks. It is important to keep in mind, however, that while banks earn interest on their reserves, they also pay interest to their depositors. Returning again to my simple example, suppose I keep the money I received from the sale of the bond on deposit in my savings account. Then my bank would be earning 50 basis points on the newly-created reserves, but it would be paying me approximately 30 basis points on the new deposit. My deposit also increases the bank's costs indirectly, by raising the deposit insurance fees my bank must pay to the FDIC and by increasing my bank's leverage, which may require it to raise more capital. Taking all of these costs into account, my bank may make a small profit on the funds I have deposited with them, but to a first approximation they will roughly break even.

This point becomes particularly important as we look to the future. As the economy continues to recover and interest rates rise further, the Fed will make even larger interest payments on the reserves held by banks. However, focusing exclusively on the size of the interest payments the Fed makes to banks again misses the broader picture. While banks will be earning a higher interest rate on their reserve holdings, they will also be paying a higher interest rate to their depositors and other creditors. In addition, the Fed's payment of a higher interest rate on reserves is replacing the higher interest payments the Treasury would otherwise be making directly to bondholders.³

³ Asset purchases by the Fed do influence the size of the Treasury's net financing costs by changing the maturity structure of the public sector's combined liabilities (that is, Treasury securities plus reserves). But higher interest rates will raise the Treasury's cost of financing the U.S. government debt regardless of whether interest is paid directly by the Treasury to bondholders or indirectly to savers through the chain involving the Fed and interest on reserves.

- 4) *This is true even when market interest rates are lower than the interest rate on excess reserves.*

The interest rate paid on excess reserves establishes the benchmark interest rate for the entire economy: it is the rate associated with a safe, perfectly liquid asset that can be used by a bank to make payments and settle financial transactions at a moment's notice. All other interest rates in money markets effectively are priced off of this rate.⁴

Prior to 2008, when the interest rate on excess reserves in the U.S. was zero, the Fed needed to create a scarcity of reserves to keep market interest rates positive. The Fed did this by supplying just enough reserves for banks to meet their minimum reserve requirements. Because reserves were scarce and individual banks constantly faced the possibility of falling below their reserve requirement, banks were willing to pay a positive interest rate to borrow reserves from one another. By controlling precisely how scarce reserves were, the Fed could effectively control the interest rate in this federal funds market.

Currently, the Fed has created what I will call a "super-abundance" of reserves. The quantity of reserves is large enough that banks are no longer willing to pay a premium to borrow reserves from one another or from other participants in money markets.⁵ In fact, because of costs associated with increased deposit insurance fees and increased leverage, banks are currently willing to pay less than 50 basis points to borrow reserves.

This super-abundance of reserves helps explain why many money market interest rates currently lie below the interest rate paid on excess reserves. Whereas in the pre-crisis environment banks were willing to pay to hold reserves because these reserves were scarce, in the current environment banks must be compensated because holding reserves is costly at the margin. Once the FOMC decides to start shrinking the Fed's balance sheet and the level of reserve balances declines, I expect the gap between the interest rate on excess reserves and money market interest rates to narrow and eventually disappear as these costs of holding reserves decline.

I believe this logic also helps explain why the FOMC has decided to set the interest rate at its overnight reverse repurchase agreement (ONRRP) facility lower than the interest rate on excess reserves. Participants in the ONRRP facility are largely non-bank financial institutions, including money market mutual funds. These institutions do not pay deposit insurance premiums and do not face the same balance sheet costs as banks. If the Fed were to set the interest rate at the ONRRP facility equal to the interest rate on excess reserves, it would likely encourage a large flow of deposits out of banks and into money market mutual funds and other non-bank institutions that have access to the ONRRP facility.

⁴ This fact implies that it would be undesirable for the Fed to announce that it will pay the "market interest rate" on excess reserves. Market interest rates are set in reference to the Fed's policy rate. If the Fed tried to set that policy rate equal to a market rate, it would create a circular or self-referencing process that could easily prove unstable. This type of problem has long been recognized in the economics literature; see, for example, Thomas Sargent and Neil Wallace, "Interest on Reserves," *Journal of Monetary Economics* Vol. 15, No.3, May 1985.

⁵ The primary lenders in the federal funds market in recent years have been non-depository institutions that are not eligible to earn interest from the Fed, including government-sponsored enterprises (GSEs). See Gara Afonso, Alex Entz, and Eric LeSueur, "Who's Lending in the Fed Funds Market?" *Liberty Street Economics*, December 2, 2013.

In principle, this flow is not necessarily bad. It may, for example, lead to savers earning a slightly higher interest rate. However, there are also risks associated with encouraging a large flow of funds out of the regulated banking system. Such a development could, for example, leave the financial system more susceptible to future panic-like events. In addition, this plan would result in much higher usage of the Fed's ONRRP facility. Given that this facility is still relatively new and is operationally more complex than paying interest on bank reserves, the Fed might prefer to keep the size of the facility more modest.

For these reasons, my reading is that the Fed has chosen to set the interest rate at the ONRRP facility in a way that creates a "level playing field" for banks and non-bank financial institutions (including money market mutual funds) in competing for deposits. That is, the gap between the two interest rates is calibrated to roughly reflect the extra costs that banks face in taking additional deposits and holding reserves. The data on the usage of the ONRRP facility is consistent with the playing field being roughly level. If the gap between the two rates were small enough to give money market funds a clear advantage over banks in attracting deposits, we should see large flows of deposits out of banks and heavy usage of the ONRRP facility. If the gap were wide enough to give banks a decisive advantage in attracting deposits, we should see no usage of the facility. So far, there has been a positive-but-modest usage of the facility, which is consistent with the playing field being level.

5) *Reserves do not represent money that that banking system is "not lending out."*

There is a tendency at times to view the large quantity of reserves held by banks as an indication that these banks are not lending as much to businesses and consumers as they otherwise could. This view, however, is based on a fallacy of composition. While an individual bank can choose to lend out its reserves, the same is not true of the banking system as a whole. The total quantity of reserves in the banking system is determined almost entirely by the Fed's actions – how many securities it holds in its portfolio.⁶ Actions taken by individual banks change the distribution of reserves across banks, but do not change the total quantity of reserves in the banking system.

Moreover, as illustrated in my simple example above, when the Fed creates reserves by purchasing securities from the public, this action also automatically creates bank deposits for the individuals or institutions selling the securities. As a result, both the assets and the liabilities of the banking system increase. The reserves that banks hold are not displacing other assets on their balance sheets, like loans to businesses or consumers; these reserves are, in general, held *in addition to* banks' other assets. In other words, the Fed's creation of a large supply of reserves does not restrict banks' ability or incentive to lend funds to businesses and consumers.

6) *Policy makers should encourage banks to hold excess reserves, not discourage them.*

Bank reserves are the lifeblood of our nation's payments system. Every business day, more than \$3 *trillion* of payments are made over the Fedwire Funds Service, the large-value wholesale

⁶ There are exceptions to this point, such as when a bank requests to withdraw currency from the Fed and thereby decreases the total quantity of reserves, but these so-called "autonomous factors" are relatively small. For a detailed discussion of this issue, see Todd Keister and James J. McAndrews "Why Are Banks Holding So Many Excess Reserves," *Current Issues in Economics and Finance* Vol. 15, No. 8, Dec. 2009.

payments system operated by the Federal Reserve. These payments represent a wide variety of activity in the economy, including large financial transactions but also down payments on home purchases, mortgage payments, business' payments to suppliers, etc. Banks make these payments on behalf of their customers using the reserves they hold on deposit at the Fed. Given the enormous volume of payments that need to be made, the potential arises for bottlenecks, delays, and increased risks in the payments system when there are insufficient reserves available.

When the Fed did not pay interest on reserves, implementing monetary policy required the Fed to supply a relatively small quantity of reserves. In this setting, reserves were sufficiently scarce that our payments system could not adequately function using those reserves alone. Instead, the Federal Reserve provided intraday credit to banks, permitting banks to run overdrafts in their reserve accounts for a few hours each day solely for the purpose of allowing the payment system to function effectively. These overdrafts were at times large, with an average daily peak of more than \$180 billion in 2007.

One byproduct of the large expansion of bank reserves that has occurred over the past few years has been a dramatic decrease in these daylight overdrafts together with a smoother functioning of the payments system. Peak intraday overdrafts have fallen by more than 90% – to less than \$10 billion – and research shows that payments are, on average, being sent significantly earlier in the day, reducing delays and enhancing the resilience of the payments system.⁷

Paying interest on excess reserves allows the Federal Reserve to raise interest rates without creating a scarcity of bank reserves. The ability to pay this interest is thus not only critical for the conduct of monetary policy, it also enables the Fed to simultaneously promote safety and efficiency in the payment network that underlies our financial system.

7) The Fed's balance sheet should remain larger than its pre-crisis level.

The Fed's pre-crisis framework for implementing monetary policy required creating a scarcity of bank reserves and precisely controlling the level of this scarcity to achieve the desired interest rate. As the economy continues to recover, the FOMC has stated that the size of the Fed's balance sheet will shrink substantially from its current level. It would be a mistake, however, for the Fed to try to return the balance sheet to its pre-crisis size or to the pre-crisis composition of its liabilities.

There have been substantial changes in the financial system since 2008, including the new regulations that aim to promote the stability of the banking sector. These regulations, including the new Liquidity Coverage Ratio, are increasing banks' demand for safe, liquid assets, including excess reserves. A framework for implementing monetary policy that relies on a scarcity of bank reserves not only runs counter to the goals of the new regulations, but will also likely have more difficulty achieving the desired level of market interest rates than in the past.⁹

⁷ See Morten L. Bech, Antoine Martin, and James McAndrews, "Settlement Liquidity and Monetary Policy Implementation—Lessons from the Financial Crisis," FRBNY *Economic Policy Review*, Vol. 18, No. 1, March 2012.

⁸ For further discussion of this issue, see Todd Keister, Antoine Martin, and James McAndrews, "Divorcing Money from Monetary Policy," FRBNY *Economic Policy Review*, Vol. 14, No. 2, September 2008.

⁹ For a detailed analysis of this issue, see Morten Bech and Todd Keister, "Liquidity Regulation and the Implementation of Monetary Policy," Bank for International Settlements Working Paper 432, October 2013.

A more effective approach to implementing monetary policy in the future would be for the Fed to rely primarily on the interest rate on excess reserves to steer market rates while maintaining a balance sheet large enough to eliminate the scarcity value of reserves.¹⁰ This size would be substantially smaller than the Fed's current balance sheet; a super-abundance of reserves is not necessary for this purpose. But guiding the level of excess reserves down to, say, \$100-\$200 billion, while continuing to pay interest on those excess reserves, would be a more reliable and efficient way of implementing monetary policy than trying to reinstate the Fed's pre-crisis operating regime.

8) *While paying interest on **required** reserves does result in a net cost to the Treasury, it is nevertheless sound economic policy.*

When Congress first authorized the Federal Reserve to pay interest on reserves in 2006, there was extensive discussion of the fiscal implications of paying interest on **required** reserves, that is, reserve balances held by banks to meet their statutory reserve requirement. The interest rate paid on required reserves does not directly influence money market interest rates because each bank must hold these reserves regardless of the cost. For this reason, the policy discussion at that time was focused not on implementing monetary policy, but rather on removing distortions in the banking sector.

When no interest was paid on required reserves, reserve requirements effectively acted as a tax on the activity of banking. To mitigate the impact of this tax, banks had an incentive to minimize their deposits that are subject to the reserve requirement. They did this by, for example, using sweep arrangements to move funds from deposits that are subject to these requirements to ones that are not. As testified by Governor Donald Kohn at the time, these arrangements "absorb real resources and therefore diminish the efficiency of our banking institutions."¹¹ They also decreased the level of reserves in the banking system needed for monetary policy purposes, exacerbating the shortage of reserves in the payments system.

By paying interest on required reserves, the Fed removes the reserve tax and eliminates the incentive for banks to engage in these reserve avoidance activities. The resulting increase in efficiency encourages the banks to extend more credit to businesses and consumers and thereby improves economic performance. In contrast with excess reserves, however, paying interest on banks' required reserves does reduce the Federal Reserve's remittances to the Treasury. As with any tax reduction, there is a cost to the government in lost revenue. However, this reduction in revenue is proportional to banks' holdings of required reserve balances, which are relatively small. In passing the Financial Services Regulatory Relief Act of 2006, Congress decided that eliminating this tax on banking activity was desirable. In my view, that decision continues to be appropriate.

¹⁰ This approach has been advocated, for example, in Marvin Goodfriend, "Interest on Reserves and Monetary Policy," FRBNY *Economic Policy Review* Vol. 8, No. 1, May 2002.

¹¹ Testimony of Governor Donald L. Kohn before the Committee on Banking, Housing, and Urban Affairs, U.S. Senate, June 22, 2004.

Conclusion:

The ability to pay interest on reserves is a valuable policy tool for the Federal Reserve. Understanding the importance of this tool for monetary policy, as well as the fiscal implications of using it, requires looking at these interest payments in a broad context. As I have outlined above, it is particularly important to realize that when the Federal Reserve creates excess reserves and pays interest on those reserves, this action creates no cost to the government or to the taxpayer. Instead, the interest on reserves paid to banks is a part of a chain of payments that replace interest payments the U.S. Treasury would otherwise be making directly to its bondholders. Moreover, by allowing the Fed to implement monetary policy more efficiently and with a larger supply of reserves, paying interest on excess reserves helps promote a safer and more resilient payments system.

Thank you again for this opportunity to testify before you today. I would be happy to answer any questions.

Proposed Testimony
Before the U.S. House of Representatives Committee on Financial Services
Monetary Policy and Trade Subcommittee
Hearing on “Interest on Reserves and the Fed’s Balance Sheet”
Washington, D.C.

George Selgin
Director, Center for Monetary and Financial Alternatives, Cato Institute

May 17, 2016

Chairman Huizenga, Ranking Member Gwen Moore, and distinguished members of the Committee on Financial Services Monetary Policy and Trade Subcommittee, my name is George Selgin, and I am the Director of the Cato Institute’s Center for Monetary and Financial Alternatives. I am also an adjunct professor of economics at George Mason University, and Professor Emeritus of Economics at the University of Georgia. I am grateful to all of you for having granted me this opportunity to testify before you on the subject of “Interest on Reserves and the Fed’s Balance Sheet.”

The Federal Reserve was originally given the authority to pay interest on bank reserves effective October 1, 2011 by the Financial Services Regulatory Relief Act of 2006. The intent of that step was to increase commercial banks’ efficiency by reducing the opportunity cost they incurred in being required to hold reserves that bore no interest.

The Emergency Economic Stabilization Act of 2008 subsequently accelerated the effective date upon which the Fed might begin paying interest on reserves to October 1, 2008. The Fed in turn actually began paying banks interest on both required reserves and excess reserves on October 9, 2008.

The rationale behind the early deployment of the Fed’s authority to pay interest on reserves was entirely different from that behind the original, 2006 measure. Interest on reserves (henceforth IOR) was to be relied upon, not as a means for improving banks’ efficiency, but as a new Federal Reserve instrument of monetary control. Specifically, it was resorted to as a *contractionary* monetary measure, meant to prevent monetary expansion that would otherwise

have taken place as a consequence of the Fed's post-Lehman emergency lending operations. As Chairman Ben Bernanke explained at the time:

our liquidity provision had begun to run ahead of our ability to absorb excess reserves held by the banking system, leading the effective funds rate, on many days, to fall below the target set by the Federal Open Market Committee. ... Paying interest on reserves should allow us to better control the federal funds rate, as banks are unlikely to lend overnight balances at a rate lower than they can receive from the Fed; thus, the payment of interest on reserves should set a floor for the funds rate over the day. With this step, our lending facilities may be more easily expanded as necessary.¹

In his memoir Chairman Bernanke says that “by setting the interest rate we paid on reserves high enough, we could prevent the federal funds rate from falling too low, no matter how much [emergency] lending we did.”²

According to Richmond Fed economists John R. Walter and Renee Courtois, Fed officials were concerned at the time that, in pushing the fed funds rate below its target, the Fed's emergency credit injections might end up “increasing the overall supply of credit to the economy beyond a level consistent with the Fed's macroeconomic policy goals, particularly concerning price stability.... Once banks began earning interest on the excess reserves they held, they would be more willing to hold on to excess reserves instead of attempting to purge them from their balance sheets via loans made in the fed funds market, which would drive the fed funds rate below the Fed's target for that rate.”³

The Fed's decision had reflected the FOMC's belief in the days immediately following Lehman's failure that the inflation outlook was highly uncertain, and that, in the absence of interest payments on reserves, continued emergency lending could well push inflation above the Fed's 2% target. In retrospect, the Fed's fears were tragically misplaced. Instead of assisting it in achieving either its federal funds rate or its inflation target, the Fed's decision to begin paying interest on bank reserves contributed to a collapse in nominal spending that was already in progress, helping thereby to turn the subprime crisis into a more general macroeconomic downturn. That the Fed realized that the macroeconomic situation was rapidly worsening even

¹ (<http://www.federalreserve.gov/newsevents/speech/bernanke20081007a.htm>)

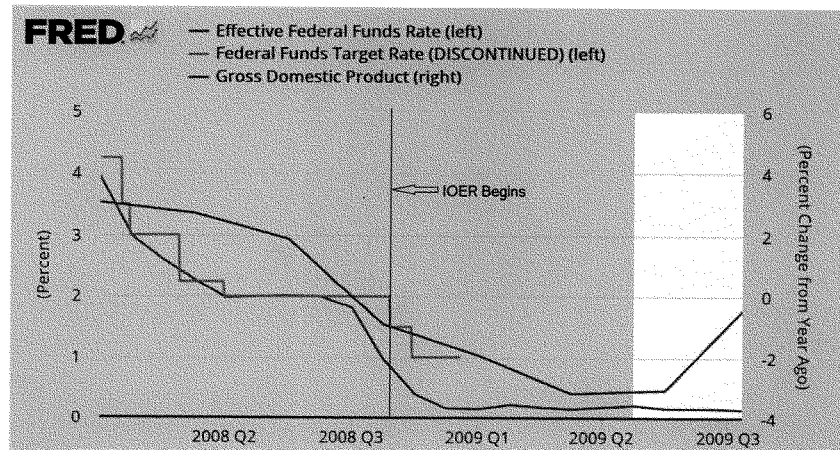
² (*Courage to Act*, pp. 325-6).

³ https://www.richmondfed.org/~media/richmondfedorg/publications/research/economic_brief/2009/pdf/e_b_09-12.pdf

before it actually began paying interest on reserves was reflected in its decision to further reduce its federal funds target, from 2% to 1.5%, on October 8, 2008. The Fed chose not to reconsider its decision to commence paying banks to hold reserves a day later.

The rapid decline in the growth rate of nominal GDP, from about 3.5% at the start of 2007 to *minus* 3.3% by the second quarter of 2009, is shown in Figure 1, which also shows the progress of adjustments to the fed funds target and the “effective” federal funds rate, which is the average rate of interest paid on actual overnight loans. The collapse in spending is ipso-facto evidence that the Fed’s stand was overly tight. The figure shows that the Fed’s rate target had become more-or-less irrelevant by the third quarter of 2008, and that this continued to be the case after it began paying interest on bank reserves. The latter policy did, however, reduce the volume of interbank lending and overall credit expansion, contributing thereby to the collapse of nominal GDP.

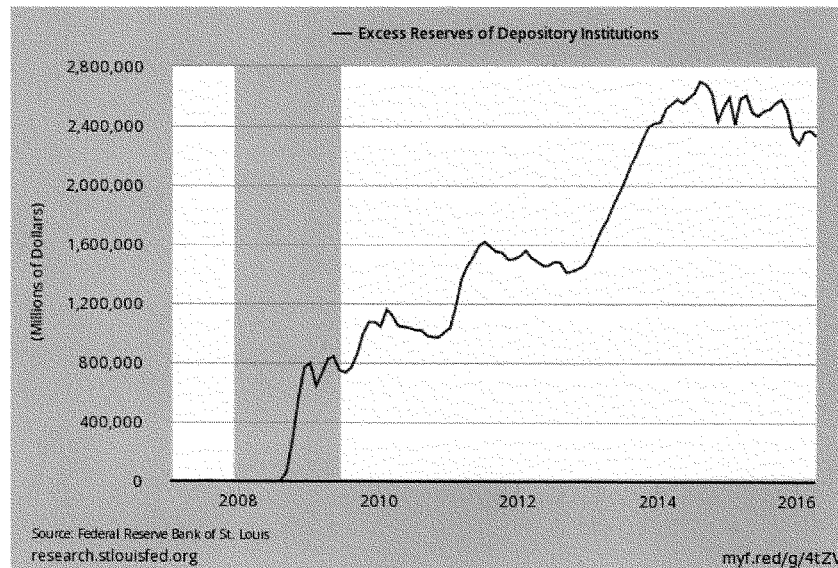
Figure 1



The Fed’s policy of paying interest on excess reserves, combined with the substantial scale of its post-Lehman emergency lending and the even greater scale of later rounds of Quantitative Easing, led to a massive accumulation of banking system excess reserves. As Figure

2 shows, excess reserves, which between 2002 and 2008 had seldom exceeded \$1.8 billion, had risen to almost \$2.7 *trillion* in August 2014, and as of this April still exceeded \$2.33 trillion.

Figure 2



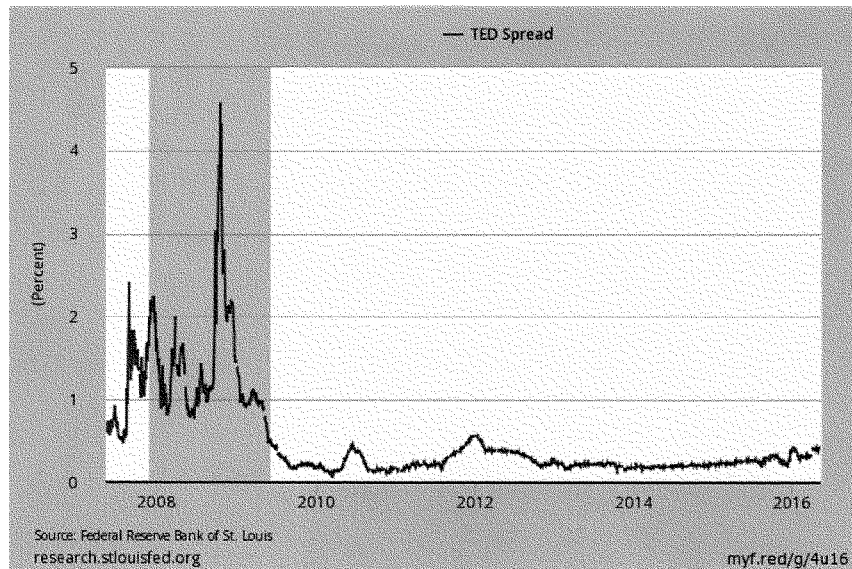
Although some authorities⁴ have claimed that the scale of the Fed's reserve creation alone made a corresponding increase in bank holdings of excess reserves inevitable, that is not correct. Although the *total* quantity of bank reserves is largely determined by the Fed's rather than commercial bankers' decisions, banks are always capable in principle of reducing their holdings of *excess* reserves by swapping them for other assets. Although the swapping does not destroy reserves, it does result in overall growth in the quantity of bank deposits, together with a corresponding increase in required reserves and a like reduction in excess reserves. Until the third quarter of 2008 this process kept bank excess reserves roughly constant despite steady growth in total Federal Reserve Bank assets and the monetary base; and it might have done the

⁴ See, for example, Todd Keister and Gaetano Antinolfi, <http://libertystreeteconomics.newyorkfed.org/2012/08/interest-on-excess-reserves-and-cash-parked-at-the-fed.html#.Vzog6ORGR2A>

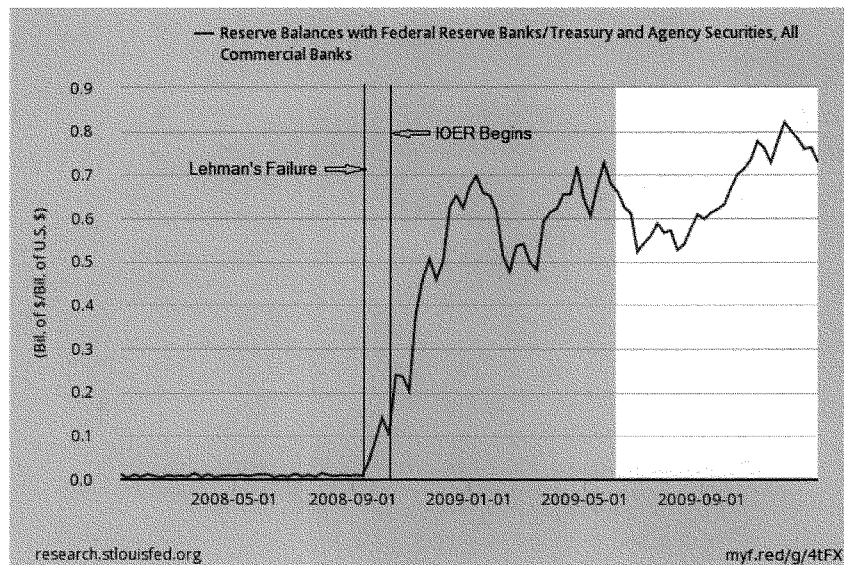
same afterwords had circumstances not been such as to encourage banks to accumulate excess reserves. Nor did the tremendous scale of the Fed's asset purchases itself matter: dDuring the notorious Weimar hyperinflation, for example, the growth in total bank reserves far exceeded that witnessed in the U.S. since Lehman's bankruptcy. Yet Germany's banks, instead of accumulating excess reserve, increased their lending and deposit creation proportionately, and eventually more than proportionately, with terrible consequences.

Nor is U.S. banks' decision to accumulate excess reserves attributable to the panic that followed the Fed's decision to allow Lehman Brothers to go bankrupt.⁵ Although banks' fear that their counterparties might be allowed to go bankrupt would make them reluctant to lend to other banks, it alone would not necessarily cause them to decisively favor reserves over low-risk Treasury securities. Furthermore, as Figure 3 shows, although the TED spread—a widely-used measure of the perceived risk of bank failures, equal the difference between the interest rate on short-term interbank lending and the interest rate on Treasury securities—spiked not long after Lehman's failure, the spread returned to normal levels afterwards, mainly in response to the Fed's decision to rescue AIG, while banks' excess reserve holdings did not. The persistent increase in bank holdings of excess reserves suggest that the payment of interest on such reserves, rather than banks' reassessment of the risk of counterparty failures, is behind the increase.

⁵ This claim has been put forward Alex Cukierman, among others. See "U.S. Banks' Behavior since Lehman's Collapse, Bailout Uncertainty and the Timing of Exit Strategies." Working paper, August 30, 2014.

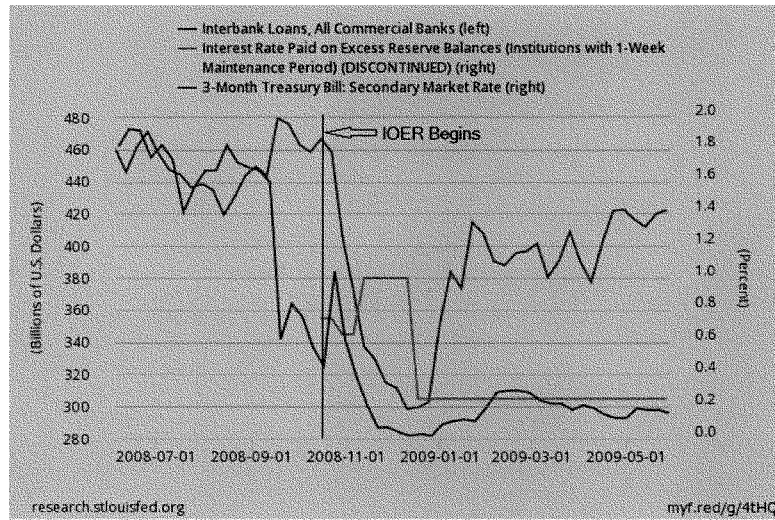
Figure 3

Finally, the timing of the substantial rise in banks' excess reserve holdings, as shown in the next chart, is also consistent with the view that the Fed's policy of paying interest on excess reserves contributed more to the increase than Lehman's failure did. As Figure 4 shows, although banks accumulated excess reserves immediately following Lehman's failure, most of the increase in excess reserves occurred after the Fed began paying interest on reserves.

Figure 4

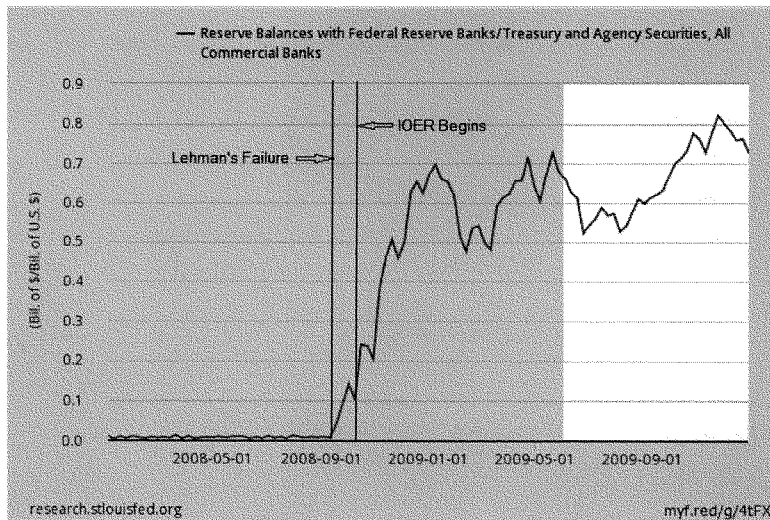
Some experts doubt that the very modest return on excess reserves—for most of the period between October 2008 and December 2015 the rate of interest on excess reserves was fixed at just 25 basis points—can have sufficed to induce banks to hoard reserves. However, banks' willingness to hold excess reserves depends, not on the absolute return on such reserves, but on how that return compares to the return on alternative liquid and risk-free assets, such as Treasury bills. As Figure 5 shows, the interest rate on excess reserves has generally exceeded the yield on Treasury bills. The same figure shows how the volume of interbank loans has tended to vary according to the difference between the rate of interest on excess reserves and the yield on Treasury securities, which can be regarded here as a proxy for market rates more generally.

Figure 5



Because reserves began to bear a higher return than safe governments securities, the demand for those securities did not increase substantially after Lehman's failure (Figure 6).

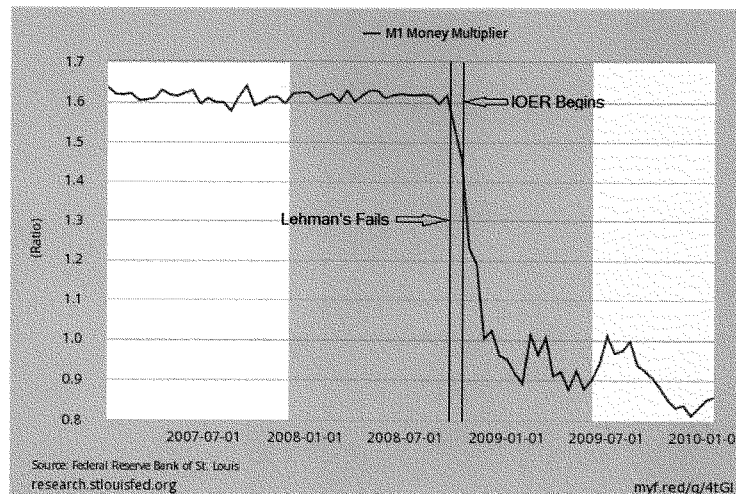
Figure 6



As I've noted, a desire to prevent its emergency lending from contributing to the availability of federal funds supplied the original inspiration for the Fed's decision to begin paying interest on bank reserves, so it is no surprise that the policy should have been responsible for the actual decline in interbank lending that took place after Lehman's failure. Once they were able to earn interest on their excess reserves exceeding the effective federal funds rate, banks (mainly smaller ones) that until the crisis had generally been net interbank lenders, withdrew from that market, while those (mainly larger ones) that had previously tended to participate as borrowers found it both necessary and no longer onerous to hold substantial quantities of excess reserves instead.

Besides contributing to the collapse in interbank lending, the Fed's decision to reward banks for holding excess reserves prevented the creation of additional reserves from giving rise to corresponding growth in other kinds of bank credit by short-circuiting of the base-money "multiplier" that normally connects growth in bank reserves to more substantial growth in bank deposits. As the Figure 7 shows, the M1 multiplier, the ratio of M1 (currency in circulation plus demand deposits) to the monetary base (currency in circulation plus total bank reserves) fell from 1.617 on September 10th to half that value by the beginning of 2010.

Figure 7

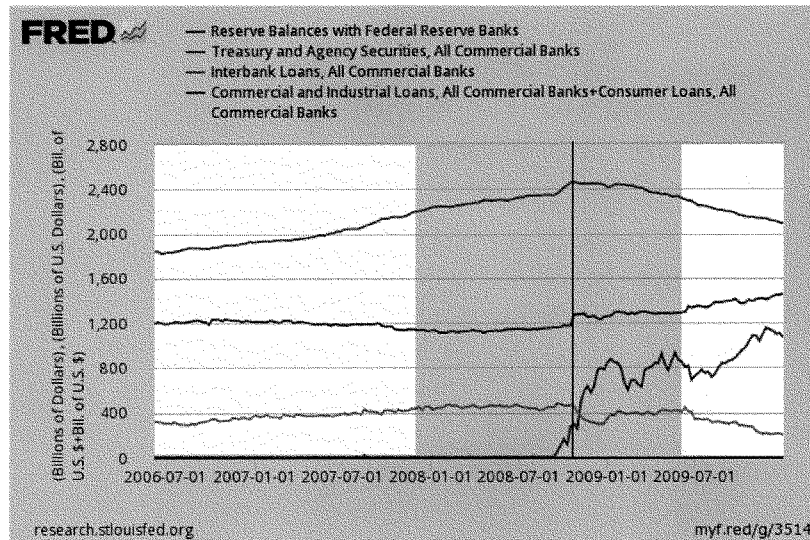


The collapse of the money multiplier was in turn responsible for the failure of the Fed's large-scale asset purchases to give rise to any corresponding increase in bank deposits, bank credit, and nominal GDP. Instead, banks' holdings of excess reserves grew almost in lock-step with the Fed's creation of new base money. Had banks not been rewarded for holding excess reserves, a much smaller program of Quantitative Easing might have given rise to a much more substantial increase in bank deposits, bank lending, and nominal GDP.

Partly owing to the repressive effect of interest on reserves on bank deposit creation, most forms of bank lending, instead of being revived by the Fed's creation of fresh bank reserves, remained stagnant or (in the case of Commercial and Industrial Loans) continued to decline long after Lehman's failure. Commercial and Financial Lending declined until the third quarter of 2010, as seen in Figure 8. And although it has made up for lost ground since, it remains well below the level consistent with its pre-boom trend. Moreover, because the crisis resulted in a large and lasting decline in net "shadow" bank lending to non-financial firms,⁶ especially by Money Market Mutual Funds, much of the revival in commercial bank lending has consisted of lending to corporate borrowers that had previously relied upon funding from shadow banks. Lending to small businesses has suffered correspondingly.

⁶ See Joshua Gallin, "Shadow Banking and the Funding of the Nonfinancial Sector." Working paper 2013:50, Federal Reserve Board.

Figure 8



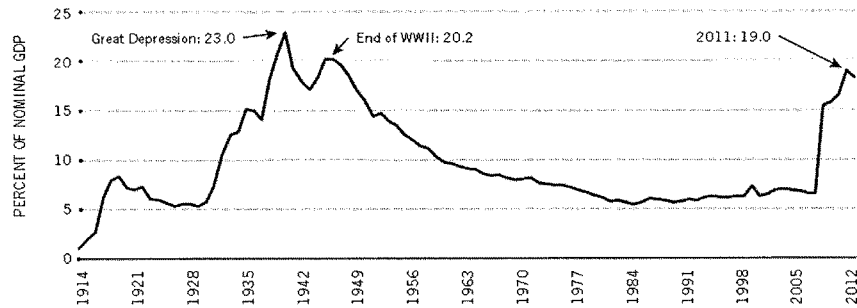
Banks' unprecedented accumulation of excess reserves has as its counterpart a very large Fed balance sheet relative to both overall economic activity and private lending. As Figure 9 shows, the increase relative to GDP is the largest since the World War II era, when the Fed was committed to setting a floor on the governments' wartime borrowing costs by serving as a "last resort" purchaser of its bonds.⁷ That commitment finally ended with the so-called "Treasury Accord" of 1951.⁸ Although the Fed's balance sheet reached its highest historical level relative to GDP during the Great Depression, that record mainly reflected that era's extreme drop in GDP, as opposed to growth in the absolute size of the Fed's balance sheet.

⁷ The chart comes from Lowell R. Ricketts and Christopher J. Waller, "The Rise and (Eventual) Fall in the Fed's Balance Sheet," *The Regional Economist*, January 2014, Federal Reserve Bank of St. Louis.

⁸ A still larger ratio during the Great Depression mainly reflected the tremendous GDP collapse of that episode rather than of absolute growth in the Fed's size.

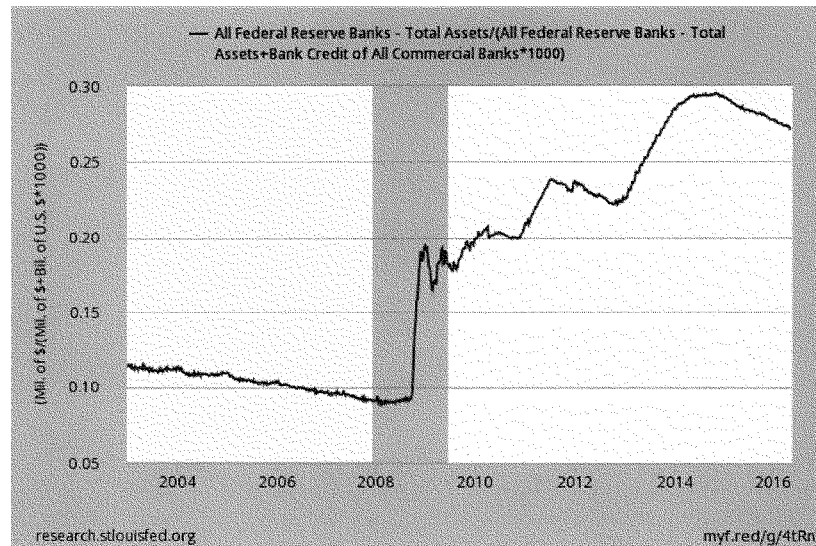
Figure 9

Historical View of Federal Reserve Balance Sheet



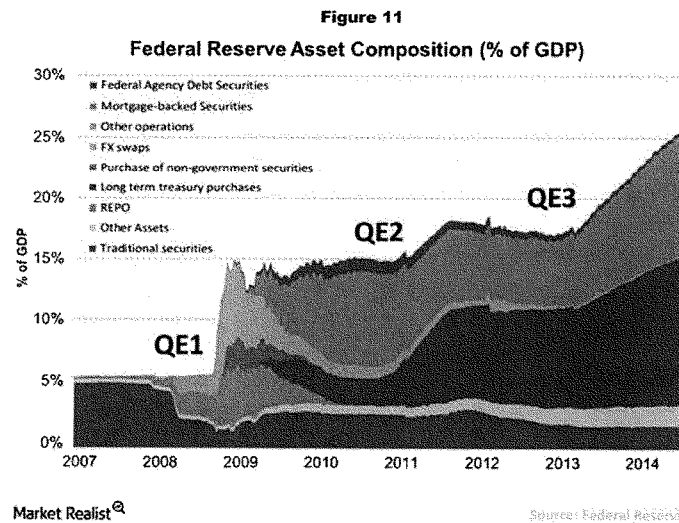
Substantial growth in the Fed's balance sheet, combined with the incomplete revival of bank lending since the crisis, has caused the Fed's overall share of money-based financial intermediation to triple, as seen in Figure 10:

Figure 10



Such a large increase in the Fed's role in the allocation of scarce savings is much to be regretted, as it almost certainly means that those savings are not being devoted to their most productive or welfare-enhancing uses. At best central banks are inefficient financial intermediaries, not the least because efficient intermediation forms no part of their official responsibilities. Instead, their acquisition of interest-earning assets is supposed to be incidental to their tasks of regulating overall monetary conditions and serving as lenders of last resort. They are, furthermore, generally supposed to avoid exposing themselves—and, indirectly, taxpayers—to loss, and are for that reason expected to fully secure their last-resort loans and to limit their outright asset purchases to safe government securities. Commercial banks, in contrast, are not similarly constrained, and cannot be if they are to take full advantage of opportunities for productive lending.

Until the recent crisis, the Fed was no exception to the general rules governing central banks. Before early 2008 Fed assets consisted overwhelmingly of U.S. Treasury bills, notes, and bonds. Since the crisis, however, the Fed's asset holdings have changed considerably, in ways that generally involve still greater departures from any efficient use of scarce funds, including a substantial increase in MBS holdings and long-term Treasury securities acquired during several rounds of Quantitative Easing (Figure 11):



Although the Fed's crisis-related asset purchases may have been instrumental in combating the panic and subsequent recession, its continued holding of non-traditional assets long afterwards constitutes a serious distortion in the allocation of scarce capital, including a perpetuation of the very misallocations of which irresponsible private lenders (encouraged in many cases by government policies⁹) were guilty in the years leading to the crisis.

Despite the counterproductive consequences of the Fed's original decision to employ interest payments on bank reserves as an instrument of monetary control, and the inefficient allocation of savings to which banks' hoarding of excess reserves contributes, the Fed continues, seven and a half years since the crisis, not only to rely on that new instrument, but to rely on it and changes in the interest rate it offers in its overnight reverse repurchase agreements (ON RRP) *exclusively* for monetary control purposes, while dispensing entirely with traditional open market operations. Its decision to do so, and more specifically, to maintain a positive rate of interest on excess reserves, and even to increase that rate (as it did in mid-December 2015), is to be regretted.

The December rate hike itself appears in retrospect to replicate the Fed's error of October 2008, when it employed interest on reserves to avoid an unwanted loosening of credit, on the grounds that such a loosening might prevent it from achieving its policy targets. In electing last December to raise the interest rate paid on excess reserves from 25 to 50 basis points, the FOMC pointed to a "considerable improvement in labor market conditions," while declaring that it was "reasonably confident that inflation will rise, over the medium term, to its 2 percent objective."¹⁰ As of this writing, both core and headline PCE inflation remain below the Fed's 2% target, while the unemployment rate is again at 5%, its level in October 2015. Many observers have since concluded that the December rate hike was a mistake.

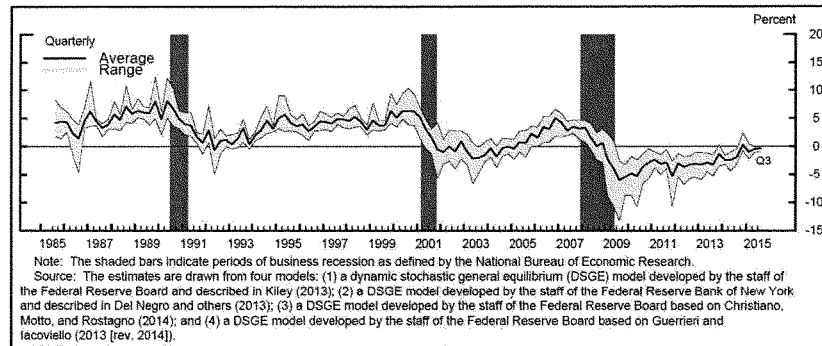
However, it would be more accurate to claim that, while the December doubling of the rate of interest paid on excess reserves was a mistake, the decision to pay 25 basis points on those reserves was a mistake as well. As David Beckworth has put it in a blogpost on the topic,

⁹ See Peter Wallison, *Hidden in Plain Sight: What Really Caused the World's Worst Financial Crisis and Why It Could Happen Again*. New York: Encounter Books, 2015.

¹⁰ <https://www.federalreserve.gov/newsevents/press/monetary/20151216a.htm>

“The Fed...got ahead of the recovery well before December.”¹¹ According to the Fed’s own estimates, as seen in Figure 12 below, the “natural” fed funds rate, which is the rate consistent with a stable level of spending growth and inflation, has been persistently *negative* since Lehman went bankrupt. Consequently, in setting a positive funds rate target band, the upper bound of which was determined by the interest rate on excess reserves, the Fed maintained an excessively tight policy.

Figure 12



It is owing to the perception that natural rates in their own struggling economies are also negative that several foreign central banks, including the ECB and the central banks of Denmark, Sweden, Switzerland, and, starting in January this year, Japan, have turned to charging rather than paying interest on bank excess reserve holdings. The step has been controversial, and its consequences have not clearly fulfilled the hopes of those central bankers that have resorted to it. However, regardless of its merits the policy turn raises obvious questions concerning the Fed’s decision to continue pursuing its opposite strategy.

Besides contributing to what may have been an excessively tight policy stance, the continuation of interest payments on excess reserves also serves to perpetuate the Fed’s unusually heavy involvement in the allocation of savings, and the consequent mal-investment of those savings.

¹¹ <http://macromarketmusings.blogspot.com/2016/02/the-fed-did-not-make-mistake-in-december.html>

The alternative to continuing the present policy is, of course, to dispense with interest payments on excess reserves while restoring conventional open market operations as the Fed's primary instrument of monetary control. Restoring efficient credit allocation in turn means reducing the size of the Federal Reserve's balance sheet both absolutely and relative to that of private intermediaries.

For the Fed to do all of these things while maintaining a proper monetary policy will be challenging. But for it to avoid taking these steps is for it to continue to contribute to the economic malaise that has made for a slow and still unsatisfactory recovery from the 2008 crisis. And although the task of normalizing monetary policy may be difficult, it is hardly impossible. The phasing-out of interest on excess reserves, together with the lowering of interest payments on ON RPPs, will help to revive the money multiplier, thereby not just allowing but necessitating a compensating unwinding of the Fed's post-crisis balance sheet. If it isn't to disrupt markets the unwinding must be both gradual and anticipated: one proposal would have the Fed begin by committing to sell \$4-\$5 billion in short-term Treasuries each week.¹² Such a sale would, incidentally, more than make up for the reduction in Fed interest payments to Money Market Funds, by returning to the marketplace securities that such funds have long been craving.

Having the Fed return to its pre-crisis policy of zero interest on excess reserves does not mean forgetting the arguments that supported the 2006 legislation that originally granted the Fed the right to pay interest on reserves. However, meeting the spirit of those arguments requires only that the Fed be able to pay interest on banks' *required*, as opposed to their excess, reserves. So long as excess reserves bear no interest, banks have little reason to accumulate them, and would therefore suffer little from the inefficiency connected to their slight holdings. Economic efficiency is in any case better enhanced by encouraging banks put excess reserves to use, than by paying them to hoard such reserves.

¹² <http://www.ft.com/cms/s/0/520377e8-037e-11e5-b55e-00144feabdc0.html#axzz48p3YArDG>. See also Norbert Michel (<http://www.heritage.org/research/reports/2014/08/quantitative-easing-the-feds-balance-sheet-and-central-bank-insolvency>), who proposes that the Fed take until 2020 to sell 75% of its long-term securities and MBS, at a rate of \$45 billion each month, while holding the other 25% until they mature.

Interest on Reserves and the Fed's Balance Sheet

John B. Taylor¹

Testimony before the Subcommittee on Monetary Policy and Trade
Committee on Financial Services
U.S. House of Representatives
May 17, 2016

Chair Huizenga, Ranking Member Moore, and members of the Subcommittee on Monetary Policy and Trade, thank you for inviting me to testify at this hearing on “Interest on Reserves and the Fed’s Balance Sheet.” Because reserves are a very large part of the Fed’s balance sheet, I will start with the balance sheet. I then consider the issue of the Fed paying interest on these reserves.

Changes in the Fed’s Balance Sheet

The best way to understand what has happened to the Fed’s balance sheet in recent years is to look at the actual balance sheet—the consolidated statement of assets and liabilities of all Federal Reserve Banks. The table below gives two snap shots of the Fed’s balance sheet, one taken in 2016 and the other in 2006.

Fed’s Balance Sheet (Billions of dollars)

May 11, 2016			
Assets		Liabilities	
Securities Held Outright	4,234	Federal Reserve Notes	1,407
Other	244	Reserve Balances	2,410
		Other	621
Total Assets	4,478	Total Liabilities	4,438

May 10, 2006			
Assets		Liabilities	
Securities Held Outright	760	Federal Reserve Notes	758
Other	82	Reserve Balances	14
		Other	41
Total Assets	842	Total Liabilities	813

Source: Federal Reserve Statistical Release H.4.1, May 12, 2016, May 11, 2006, Selected Items

¹ Mary and Robert Raymond Professor of Economics at Stanford University, George P. Shultz Senior Fellow in Economics at Stanford’s Hoover Institution, and former Under Secretary of Treasury for International Affairs, 2001-2005

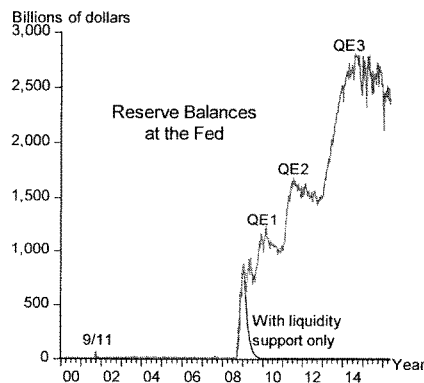
The table focusses on the Fed's major assets and liabilities, lumping everything else into "other liabilities" and "other assets" categories. The two points in time—the week ending May 11, 2016 and the corresponding week ending May 10, 2006—give before and after pictures of the major changes in size and composition of the Fed's balance sheet.

First note how the "size" of the balance sheet—measured by total assets—has expanded enormously over these years—from \$842 billion to \$4,478 billion. The table shows the two major reasons for the increase. First, currency (Federal Reserve notes) increased from \$758 billion to \$1,407 billion, or about a 6% average annual growth rate. There is nothing very unusual about this increase in currency; the annual growth rate was in this range in prior decades.

The second reason is much more unusual: Securities held outright by the Fed jumped from \$760 billion to \$4,234 billion as the Fed engaged in three bouts of large-scale purchases of Treasury securities and mortgage-backed securities—actions commonly called "unconventional" monetary policy or "quantitative easing".²

To get the funds to purchase these securities, which increased by much more than the increase in currency, the Fed credited banks with deposits on itself, and for this reason reserve balances—the deposits that banks hold at the Fed—have exploded from only \$14 billion to \$2,410 billion as shown in the table. This large increase in reserve balances is very important because it is on these reserve balances that the Fed is paying interest today.

The following chart of reserve balances each week over this period provides some important details about the increase and shows how unusual it has been.



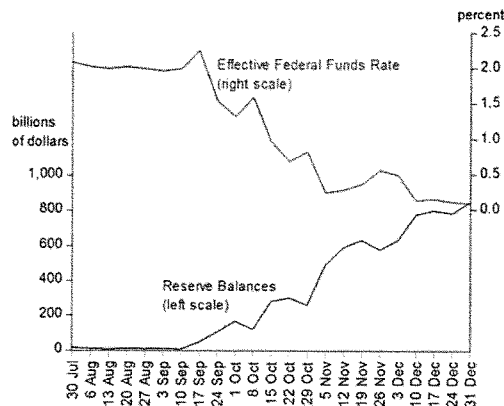
² Another term is "credit easing" because the securities purchases or loans are in part aimed at easing credit conditions in certain sectors, such as housing. I have also used the term "mondustral policy" because such sector-specific policies are a combination of monetary policy and industrial policy. (See John B. Taylor "The Need to Return to a Monetary Framework," *Business Economics*, Vol 44, No 2, 2009, pp. 63-72.

Reserve balances rose sharply at the times of QE1, QE2, and QE3 as the Fed ramped up its securities purchases and financed them by creating reserve balances for the banks at the Fed, effectively borrowing the funds from banks. Reserve balances tend to drift down after each of these surges as currency creation continues its upward march and reduces the Fed's need to create reserve balances.

The increase in reserve balances began before the onset of quantitative easing when the Fed set up liquidity facilities to provide lender of last resort loans during the panic in September 2008.³ However, the need for that liquidity support was temporary, and it dissipated soon after the panic, as illustrated in the chart by the line for reserve balances "with liquidity support only." That line represents a path for reserves that could have occurred if none of the bouts of QE had taken place. Clearly quantitative easing is the cause of the large amount of existing reserves.

Interest on Reserves

Such a large increase in the supply of reserves with no increase in the demand for reserves has clear implications for market interest rates: The increase in supply would be expected to drive down the federal funds rate, which is the rate banks charge each other for the overnight use of the reserves. In fact, this is exactly what happened, as shown in the following chart for the weeks in fall of 2008.



³ The story that the policy of increasing reserves by large amounts started when the Fed's interest rate target hit zero is incorrect. The explosion of reserves started on September 17, 2008 when the federal funds rate target was 2 percent. The Fed's interest rate target declined from 2 percent to near 0 percent over the following months.

As the supply of reserves increased, the federal funds rate was driven down. This decline in the interest rate preceded the later decisions of the Federal Open Market Committee to lower the federal funds target during this period. Of course, with the supply of reserves now many times greater than demand, the market interest rate would remain near zero, unless the Fed took some other action, and this is where the policy of paying interest on reserves enters the picture. In order to raise the short term interest rate when the supply of reserves is many times greater than demand, the Fed has to pay an interest rate on reserves to the banks that is close to the Fed's objective for the short term interest rate. That way the banks will bid up the federal funds rate (and other short term interest rates) as they see a profit opportunity in the difference between the federal funds rate and the interest rate on reserves. The federal funds rate will thereby move up close to the interest rate paid on reserves.

Recent events illustrate how this is supposed to work: When the Fed decided to raise the short term interest rate by .25 percentage points at the Federal Open Market Committee meeting in December 2015, it did so by raising the interest rate it pays on reserves (required and excess) by .25 percentage points effective December 17, 2015. The effective daily federal funds rate promptly moved up from .15 percent on December 16 to .37 percent on December 17. Looking at monthly averages, the rate moved from .12 percent in November 2015 to .37 in April 2016. This change is consistent with the Fed's "Policy Normalization Principles and Plans" released in September 2014 stating that "During normalization, the Federal Reserve intends to move the federal funds rate into the target range set by the FOMC primarily by adjusting the interest rate it pays on excess reserve balances."⁴

The Financial Services Regulatory Relief Act of 2006 authorized the Fed to pay interest on required reserves (the IORR rate) and also the interest rate on excess reserves (IOER rate) as determined by the Board of Governors of the Fed. The original effective date was October 1, 2011, but that date was changed to October 1, 2008 by the Emergency Economic Stabilization Act of 2008, so it was available to be used for the purposes described here.

The Road Ahead: Normalization

For many years, including during the period of good economic performance during the Great Moderation of the 1980s and 1990s in the United States, the Fed did not pay interest on reserves. The interest rate was determined by the supply and demand for reserves. Thus, there

⁴ The federal funds rate deviated significantly below the interest rate on reserves in late 2008, and, for this and other reasons, the Fed developed back up procedures including overnight reverse repurchase agreements to help it control the federal funds rate. However, it appears thus far that the increase in interest on reserves may have been enough to move the federal funds rate as the Fed intended. In its "Policy Normalization Principles and Plans" the FOMC said that it "will use an overnight reverse repurchase agreement facility only to the extent necessary [to help control the federal funds rate] and will phase it out when it is no longer needed to help control the federal funds rate."

was a direct connection between reserves supplied by the Fed and the interest rate. The short term interest rate was market determined once the Fed set the amount of reserves.⁵

In contrast, under the current procedures the short term interest rate is not market determined. Rather it is administered by the Fed as it makes its decision about what interest rate it will pay on reserves. The interest rate on reserves can be moved around by the Fed largely independently of the supply of reserves or the size of the balance sheet. The Fed could decide to purchase securities or make loans to a certain sector and finance these by increasing reserve balances, while not moving the interest rate at all or moving it in a countervailing direction.

For the reasons explained above, such a disconnect is unavoidable during the current period of “normalization,” as the Fed calls it. The normalization period is essentially a transition period between the discretionary era of zero interest rates with quantitative easing and a normal period when the interest rate is determined in a more rule-like fashion as it was during the 1980s and 1990s.

Getting back to a normal balance sheet will require that the Fed reduce its securities holdings substantially, unless it waits the long time period required for currency growth to create a normalization in which case the transition period will be so long it will seem permanent. In its September 2014 “Policy Normalization Principles and Plans,” the FOMC said it “intends to reduce the Federal Reserve’s securities holdings in a gradual and predictable manner...,” a statement which is an apparent reaction to the taper tantrum of the previous year when the Fed was much less clear about its exit strategy. This is an improvement over previous vague statements, such as that the Fed will keep “the size of the Federal Reserve’s balance sheet at a high level for some time,” as stated in the FOMC Minutes from the January 27-28, 2009 meeting, but it could clarify the exit strategy more specifically. For example, the Fed could indicate that it will sell securities in the open market at a pace determined by the increases in the federal funds rate. I have suggested that the balance sheet be back to normal when the federal funds rate hits 2%. In any case, after normalization, when the Fed is back to a normal interest rate policy, the interest rate should be determined by the demand and supply of reserves in the money market—in other words, by market forces.

The Road Ahead: After Normalization

As a long term policy, a disconnect between the short term interest rate and the supply of reserves, the money supply or even the size of the balance sheet is a mistake. It enables the Fed to be a multipurpose institution—helping one sector or another, taking on credit allocation,

⁵ Milton Friedman recommended the payment of interest on required reserves. According to the Fed’s statement “Interest on Required Balances and Excess Balances,” the interest rate on required reserves is “intended to eliminate effectively the implicit tax that reserve requirements used to impose on depository institutions,” which is in keeping with Friedman’s rationale. In contrast, the interest rate on excess reserves, according to the Fed, “gives the Federal Reserve an additional tool for the conduct of monetary policy.”

assuming fiscal policy roles the constitution assigned to Congress—rather than the limited purpose institution it was designed to be.

If the United States is to have a selective credit policy with inherent credit risks, it is more appropriate for the Treasury or some other agency to take on the job with the approval of the Congress with the purposes stated and debated. For the Fed to take on these responsibilities raises questions about its independence and its operations, as it may be called on to do such things as provide discretionary assistance to financial firms or to bolster the housing market or even the student loan market. The success of monetary policy during the great moderation period of long expansions and mild recessions was not due to a lot of discretion, but to following more predictable policies and guidelines.

The disconnect would be conducive to more bouts of quantitative easing. There is a great deal of uncertainty and disagreement about how effective quantitative easing has been, and it may have been counterproductive. I studied the impact of the mortgage-backed securities purchase program, which was part of QE1, in research with Johannes Stroebe; we found that the purchases were largely ineffective in changing mortgage interest rate spreads once credit and prepayment risks were taken into account. Others have found announcement effects of quantitative easing on long term interest rates, but such studies cannot trace out reversals following the announcements. Others have found that the effects are not lasting, unless quantitative easing signals future short-term interest rate policy and thus long term rates through the expectations model of the term structure.⁶

A simple comparison of 1-year versus 10-year US Treasury spreads does not show any impact: The spread was 1.3% from 2003 to 2008 before quantitative easing and 2.4% from 2009 to 2013 during quantitative easing, so other factors must be controlled for. At the least, there seems to be a wide consensus that the effect of quantitative easing has diminished over time. And there are other problems. Quantitative easing is inherently discretionary rather than rule-like and much research indicates that this feature detracts from good economic performance.⁷ An administered rate can also distort price discovery in markets and prevent money markets from

⁶ Studies include John B. Taylor and Johannes C. Stroebe, “Estimated Impact of the Federal Reserve’s Mortgage-Backed Securities Purchase Program,” *International Journal of Central Banking*, 8 (2), June 2012, pp. 1-42; Joseph Gagnon, Matthew Raskin, Julie Remache, and Brian Sack, “The Financial Market Effects of the Federal Reserve’s Large Scale Asset Purchases,” *International Journal of Central Banking* 7, 1, 3-44, 2011; Arvind Krishnamurthy and Annette Vissing-Jorgensen, “The Effects of Quantitative Easing on Long-Term Interest Rates,” *Brookings Papers on Economic Activity*, Fall 2011, pp. 215-65; Daniel L. Thornton “QE: Is There a Portfolio Balance Effect?” *Federal Reserve Bank of St. Louis Review*, 2014, 96(1), pp. 55-72; Michael D. Bauer and Glenn D. Rudebusch, “The Signaling Channel for Federal Reserve Bond Purchases,” Federal Reserve Bank of San Francisco., 2013.

⁷ John B. Taylor, “Re-Normalize, Don’t New-Normalize Monetary Policy,” *Macroeconomic Review*, Monetary Authority of Singapore, Vol. 13, October 2014, pp. 86-90

functioning normally.⁸ There are also international ramifications as central banks tend to follow others policies creating international impacts and currency fluctuations that can be destabilizing.⁹

Given all these considerations, it is promising that the FOMC says in its “Policy Normalization Principles and Plans” that it “intends that the Federal Reserve will, in the longer run, hold no more securities than necessary to implement monetary policy efficiently and effectively, and that it will hold primarily Treasury securities, thereby minimizing the effect of Federal Reserve holdings on the allocation of credit across sectors of the economy.” Nevertheless, more specificity about the meaning of “efficiently”, “effectively” and “primarily” is warranted. In my view, a statement that in the longer run the Fed will pay interest only on required reserves and that the federal funds rate will be determined by the supply and demand for reserves would help clarify the nature of monetary policy in the normal state following normalization.

Conclusion

This review of the Fed’s balance sheet shows that the current high level of reserves is a legacy of quantitative easing in the years from 2009 to 2014. Given that the supply of reserves is now many times greater than the demand for reserves, the Fed now has no alternative other than to pay interest on reserves as it carries out its normalization process.

However, as a long term matter, the size and composition of the balance sheet should be consistent with the interest rate being market determined rather than administratively determined by the Fed as it sets the interest rate on reserves. It is true—as the FOMC says—that paying interest on excess reserves gives the Fed an additional tool. However, this tool enables the Fed to be more like a discretionary multipurpose institution rather than the rule-like limited purpose institution that has delivered good policy in the past and that can deliver good policy in the future.

The transition, or normalization, period during which monetary policy returns to a more normal state should be as short as possible, and, in my view, shorter than currently implied by the Fed’s “Policy Normalization Principles and Plans.”

Thank you. I would be happy to answer your questions.

⁸ Ronald McKinnon: “The Near-Zero Interest Rate Trap,” *Wall Street Journal*, July 29, 2013

⁹ John B. Taylor, “The Federal Reserve in a Globalized World Economy,” in *The Federal Reserve’s Role in the Global Economy: A Historical Perspective*, Michael Bordo and Mark Wynne (Eds.), Cambridge University Press, 2016.

Statement of David Malpass
House Financial Services Committee
Subcommittee on Monetary Policy and Trade
May 17, 2016
Interest on Reserves and the Fed's Balance Sheet

Chairman Huizenga, Ranking Member Moore, members of the subcommittee, thank you for the invitation to submit a statement regarding the Federal Reserve's balance sheet and the payment of interest on reserves. I think the Fed has been hurting growth and causing income inequality by misallocating capital to bond issuers. By constantly replenishing its giant long-maturity bond portfolio, it biases the credit system in favor of bond issuers at the expense of smaller borrowers, notably the small new businesses that are critical to U.S. dynamism. The Fed should change direction, including downsizing its balance sheet, reducing its \$2.4 trillion in bank debt, reducing the interest rate it pays banks, and shortening the maturity of its \$4.2 trillion bond portfolio. These steps would increase growth and income, especially for the middle class which has seen an unprecedented decline in real income during the recovery.

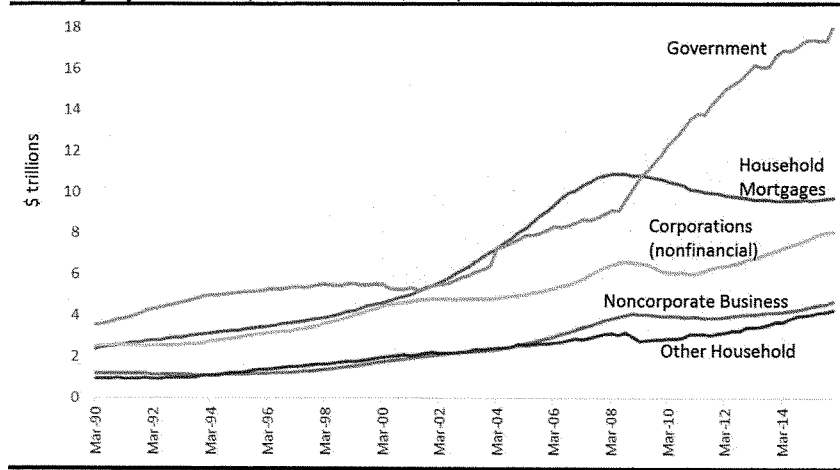
These steps would also reduce the fiscal deficit, a topic in your February 10 hearing with Fed Chair Janet Yellen. Congresswoman Maxine Waters asked Chair Yellen why the Fed has decided to more than double its interest payments to banks in 2016 after paying about \$7 billion in 2015, including more than \$121 million to Goldman Sachs and \$910 million to JPMorgan Chase. The Congresswoman could also have noted that a substantial portion of the Fed's high interest payments on reserves are going to the U.S. branches of foreign banks, a drag on U.S. taxpayer resources; and that the Fed has cheaper sources of funding than banks.

Though I'm critical of Fed policy due to its negative impact on growth and median income, I want to make clear that I support the Fed as an institution. The problem is that Fed policies aren't working. Its concept of its mission has grown way too large and is not sufficiently focused on maintaining a strong and stable dollar. It has created a huge balance sheet and regulatory apparatus that hurt growth, and it is allowing itself to house inappropriate executive branch functions such as the Consumer Financial Protection Bureau.

In a series of papers beginning in late 2009, I suggested that the Fed's policies would cause slower growth by harming the interbank market and misallocating credit to bond issuers. Most large borrowers have sufficient access to credit and, since regulators have been forcing a deleveraging of the banking system, the growth in credit for bond issuers comes at the expense of new and small businesses that could better use the available supply of credit. For example, I observed in a December 4, 2009 WSJ commentary, "Near-Zero Rates Are Hurting the Economy", that: "Capital is being rationed not on price but on availability and connections. The government gets the most, foreigners second, Wall Street and big companies third, with not much left over... Markets are almost daring the Fed to try to break out of its zero-rate box. But for small businesses and new workers, capital rationing is devastating, spelling business failures and painful layoffs. Thousands of start-ups won't launch due to credit shortages, in part because the government and corporations took more credit than they needed (because it was so cheap)."

The result of Fed policy has been a giant shortfall in income and nominal GDP, with the weakness concentrated in lower and middle incomes. Over 75% of U.S. credit growth over the last five years has gone to bond issuers. That benefits the government and big companies, but it comes at the expense of ultra-low interest rates for savers and less credit for new and small businesses. The graph shows the weakness in credit to non-corporate businesses. As a result, business investment has been particularly weak, causing devastating reductions in U.S. productivity and “potential GDP.” Job creation by new businesses has been half its normal rate, which is particularly harmful to young workers who often enter the labor force through new businesses.

Debt by Major Sectors (last obs. Dec 31, 2015)



Source: Federal Reserve; Encima Global

Many Are Challenging Fed Policy

While Wall Street and Fed-affiliated economists generally support the extreme central bank policies (which have strong Fed support and are very profitable for Wall Street), there's ample criticism elsewhere due to the weak theoretical support and poor real-world results.

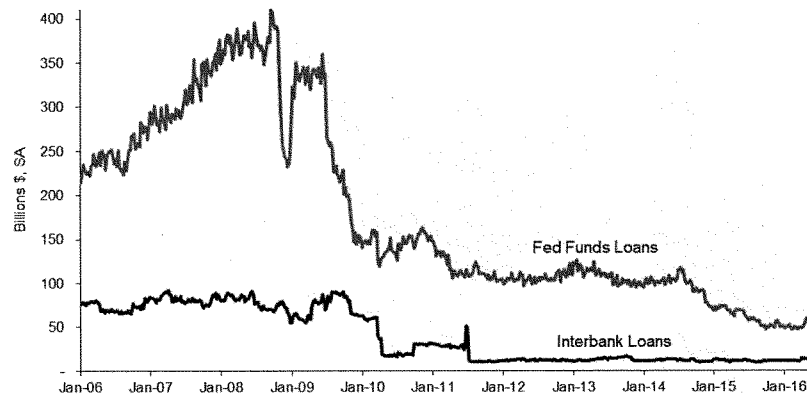
- A July 2015 Fed white paper by St. Louis Fed researcher Stephen Williamson challenged the core of the Fed's QE theory. "There is no work, to my knowledge, that establishes a link from QE to the ultimate goals of the Fed - inflation and real economic activity. Indeed, casual evidence suggests that QE has been ineffective in increasing inflation."
- In the keynote speech to the Shadow Open Market Committee on April 29, Dartmouth Professor Peter Fisher, a former Treasury Undersecretary and 15-year member of the Fed's staff, directly challenged the premise of QE: "This generation of economists has

spent their lives working with models of the economy that included the assumption that if you lower long-term interest rates both demand for and supply of credit will increase. *Having assumed this for so long, the idea that demand and supply of credit can be simultaneously determined (by lower long-term rates) has become part of the macro-economic belief system. But that does not make it so (italics added)...* (Under) special conditions, lower short-term rates and a steep yield curve can, simultaneously and strongly, stimulate both the demand for and the supply of credit and create the acceleration of aggregate demand that we associate with economic recovery. But to solve the zero interest-rate boundary, the Fed decided that flat yield curves not steep ones would do a better job. Thus the Fed's mantra was to bring down long-term rates both with its balance sheet and its forward-guiding words. Of course, none of us have access to the counterfactual. But we do know that flatter yield curves reduce the incentive for maturity transformation from what it otherwise would have been."

- At an April 28 meeting of the Economic Club of New York, the former head of the Bank of England, Lord Mervyn King, pointedly criticized central bank policy. He described negative interest rates as a wealth tax (by underpaying people for the savings.) He also challenged the economic theory that ever-lower interest rates will cause an increase in consumption, explaining that people may react to low rates by consuming less. I think these criticisms also apply to ultra-low interest rates, which discourage consumption and underpay savers, reducing the supply of lendable funds.
- At a Hoover Institution conference on May 5, during a panel discussion that included four members of the FOMC, Professor Allan Meltzer made a formal intervention to challenge current policy, citing the staggering lack of business investment.

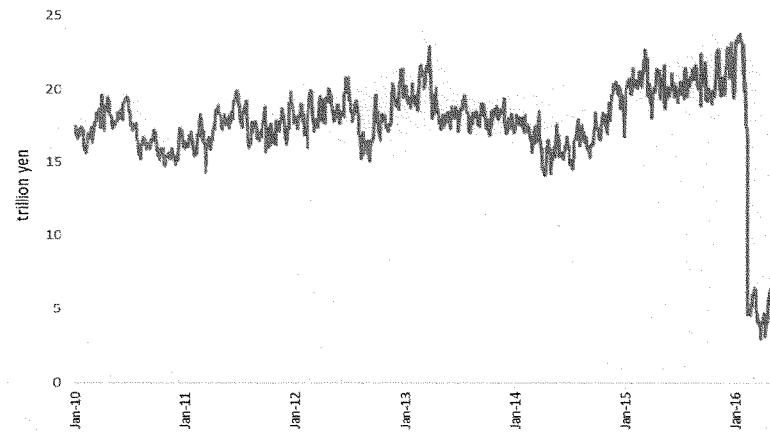
The case against the Fed's policy choices isn't new. On September 16, 2010, then-Governor of the Bank of Japan Masaaki Shirakawa argued against QE due to Japan's poor results from its 2001-2006 QE experiment: "We hardly observe the fact that massive expansions in central bank balance sheets result in an increase in inflation in advanced economies." With Shirakawa's departure from the BOJ after Prime Minister Abe's election in 2012, the BOJ launched a massive QE program, buying not only government bonds but also ETFs invested in equities and real estate. However, the results have been devastating, creating an almost-continuous malaise and below-target inflation.

- Before his death in 2014, Stanford University Professor Ronald McKinnon wrote frequently about the harm to economic growth from the paralysis of the interbank market (see graph) as the Fed held rates near zero.

Fed Funds and Interbank Loans (last obs. April 29, 2016)


Source: Federal Reserve; Encima Global

- The Fed funds market was once one of the key funding sources for smaller banks, but it basically became inoperative. Japan has moved down the same path by causing the collapse of its interbank market in February when it reduced its 0.1% interest rate to zero and below.

Japan Overnight Interbank Markets (last obs. May 15, 2016)


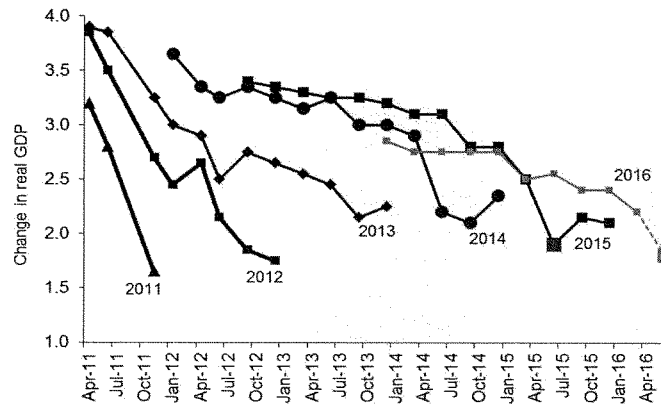
Source: Bank of Japan; Encima Global

Fed's Balance Sheet Impedes Growth

In a November 5, 2010 Washington Post oped, former Fed chairman Ben Bernanke explained his theory of the Fed buying bonds to lower long-term bond yields: "...Lower mortgage rates will make housing more affordable and allow more homeowners to refinance. Lower corporate bond rates will encourage investment. And higher stock prices will boost consumer wealth and help increase confidence, which can also spur spending. Increased spending will lead to higher incomes and profits that, in a virtuous circle, will further support economic expansion. While they have been used successfully in the United States and elsewhere, purchases of longer-term securities are a less familiar monetary policy tool than cutting short-term interest rates... We will review the purchase program regularly to ensure it is working as intended and to assess whether adjustments are needed as economic conditions change."

- Since then, the Fed has been projecting fast growth based on the belief that its policies will start working. Each year, it has had to slash its forecasts.

Fed Real GDP Forecast (last obs. March 16, 2016, my estimate for June 15, 2016)

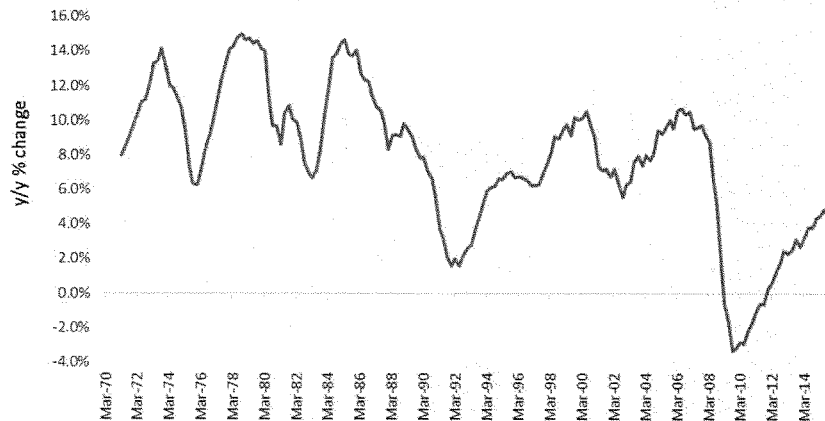


Source: Federal Reserve; Encima Global

- QE theories and near-zero interest rates didn't work because they didn't take into account the intense regulatory restraint on credit growth. In the past, near-zero interest rates and the expansion of the Fed's balance sheet would have facilitated an expansion of private sector credit. Though we don't have "access to the counterfactual" as Peter Fisher pointed out in his April 29 paper – meaning we can't go back and try different policies to see if they would have worked better – my view is that GDP growth would have been faster and median incomes would have risen, not fallen, if the Fed had allowed the emergency monetary policy measures to end and had worked to improve regulatory policy. Instead, private sector credit growth has remained dramatically slower in this cycle than in the

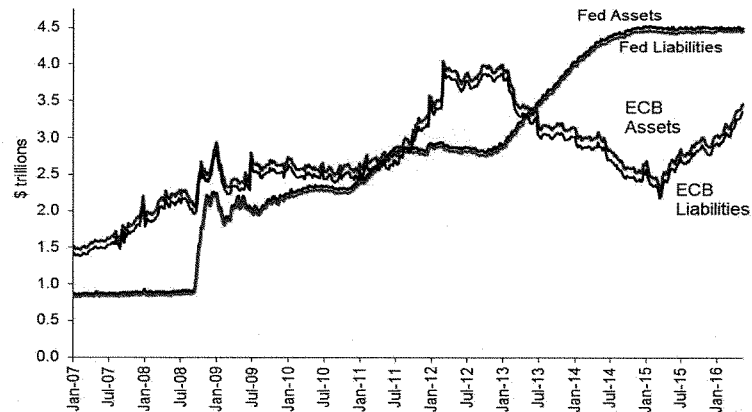
previous 50 years -- due to a combination of bank deleveraging to meet regulatory requirements, the Fed's policy of channeling most credit to over-financed bond issuers (e.g. the U.S. government, Apple), and weakness in investment demand that is often related to risk decisions by credit regulators.

Private Sector Credit Growth (last obs. December 31, 2015, 4.4% Y/Y)



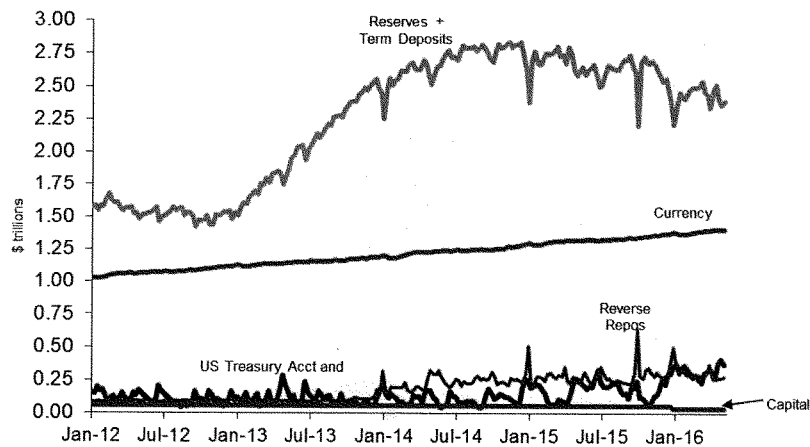
Source: Flow of Funds – Federal Reserve; Encima Global

The Fed's balance sheet decisions play a major role in the economic drag. Before 2008, the Fed's liabilities consisted primarily of currency. Currency is a very safe, long-term liability because it doesn't come due. Against that, the Fed held very liquid assets, primarily Treasury bills, making its balance sheet small and ultra safe.

Fed and ECB Assets and Liabilities (last obs. May 4, 2016)


Source: Federal Reserve; Encima Global

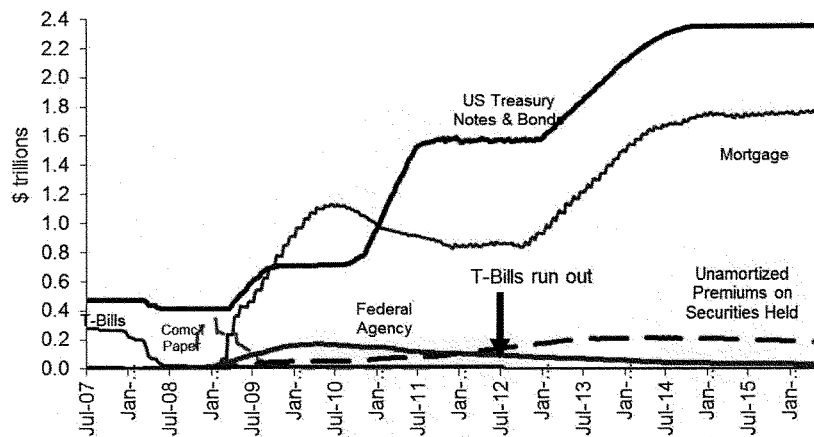
- As Fed Chair Yellen testified in February, the Fed was borrowing \$2.5 trillion from the banking system in overnight funding. That's roughly 50% of the Fed's total liabilities.

Fed Liabilities (last obs. May 4, 2016)


Source: Federal Reserve; Encima Global

- On the asset side, the Fed exhausted its Treasury bill holdings in 2012 and now holds mostly bonds, including mortgage-backed securities and Treasury bonds. In just a few years, the Fed's balance sheet has gone from matching a modest amount of relatively long-term liabilities with short-term assets, a very safe match; to a burdensome mismatch in which a tremendous quantity of short-term, floating-rate liabilities has to support long-term assets. While some of the Fed's assets are liquid, their value fluctuates over a wide range as bond yields change.

Fed Assets (last obs. May 4, 2016)



Source: Federal Reserve; Encima Global

Thus, both the quantity of the Fed's bank debt and the extent of its duration mismatch are unprecedented. In a leverage-regulated environment, this hurts growth both in terms of the quantity and type of credit available.

- Regarding the quantity of credit, commercial bank balance sheets are limited in size by the amount of their equity capital and by regulations regarding their leverage ratios, risk-weighted capitalization and liquidity. These credit restraints weren't changed or made more effective as the Fed bought bonds, meaning *the Fed's increase in liabilities to the banking system forced reductions in the other assets of the banking system*. Fed Chair Yellen testified in February that the Fed has drawn as much as 20% of the assets of the entire banking system.
- A second part of the Fed's balance sheet drag is due to its duration mismatch. Banks have had to reduce up to 20% of their assets to make room for the Fed, but the question is: which assets and what is the growth impact? In practice, as the banking system supplied short-term liabilities to the Fed, it reduced its other short-term assets, putting a priority on maintaining its maturity structure. To oversimplify, if the banking system

sold a long-term bond to the Fed in return for a short-term deposit at the Fed, it tended, over time, to reestablish its previous maturity structure. This meant reducing its other short-term assets (for example, by not renewing a small-business loan unless it could obtain a personal guarantee) and increasing its long-term assets (for example, by increasing its real estate loans or bond holdings.) Bank lending surged and U.S. GDP growth accelerated to over 4% in mid-2014 when the Fed was tapering its bond purchases and signaling the intention to taper its reinvestments and its bank borrowing (by expanding its repo borrowing.)

- We often hear that slow credit growth is due to insufficient demand, i.e. secular stagnation. But it's also insufficient supply for the type of borrowers that have credit needs. Supply and demand have to intersect in order to create transactions. For many potential borrowers, the loan terms are too onerous (e.g. personal guarantees for a small business loan but not for a bond offering.) The mix of credit would have been different (more growth oriented) if the supply of credit had been more receptive to small and new businesses – either because of higher interest rates available to lenders or less bias in favor of bonds. For example, in the current system, the credit-worthiness of federal, state and many local governments is given a huge regulatory advantage over the private sector, especially small business. This reduces private sector investment and the related productivity growth. Government bond offerings have much more lenient rules than private sector issuers – incomplete disclosure of projected pension outlays, misstatement of unfunded liabilities (as in Illinois), questionable reliance on contracts (as in the Puerto Rico's bonds), related-party transactions (as with the Detroit muni bonds owned by Detroit public pensions.) The result is that potential growth-oriented borrowers don't get credit while lenders feel that demand from small borrowers is insufficient and turn instead to bonds.

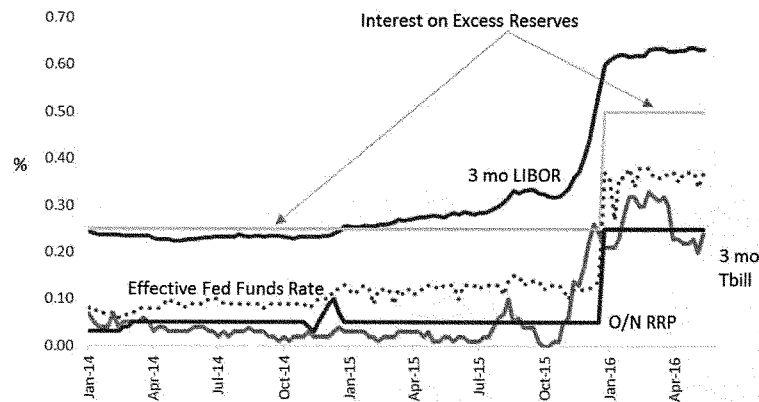
The Fed's Growth Options

In addition to the desperately-needed regulatory improvements, the Fed has several immediate growth options related to its balance sheet:

1. The Fed could taper its reinvestment, allowing its bond holdings to gradually decline. The extra cash from maturing principal would be used to reduce excess reserves, reducing the Fed's bank debt. That would leave commercial banks holding lendable cash and non-banks holding the newly-issued Treasuries (the ones the Fed would have bought if it were fully reinvesting.) Assuming banks would seek to maintain the size of their balance sheets, they would lend some of the idle cash in the fed funds market, lend some through government securities (to meet liquidity requirements and earn interest), and they would lend more to businesses too.
2. The Fed could buy shorter term bonds during its reinvestment process. This would reduce the heavy bias favoring bonds, allowing a more growth-oriented mix of credit. More credit would flow to smaller businesses, increasing growth, investment and median income (since much of the benefit of the inflated bond issuance flows to upper incomes at the expense of median incomes.)

3. The Fed could reduce the interest rate it is paying banks. For example, it could pay banks 0.35% now rather than 0.5%. This has several attractions. It would reduce the fiscal deficit directly. If banks reduce their reserves (because of the Fed's reduction in interest rate payments), the Fed could shift the mix of its liabilities toward the reverse repo market, available to the Fed at 0.25%. This has the advantage of further reducing the fiscal deficit and causing banks to lend to other borrowers (than the Fed.) It's possible/likely that a reduction in the IOR would increase bank lending in the fed funds market. It should also increase bank lending for working capital, one of the most productive types of credit in the economy.

Various Short-term Interest Rates (last obs. May 4, 2016)



Source: Federal Reserve; Encima Global

Interest on Reserves

When the Fed increased the Fed funds rate in December 2015, it decided to increase the IOR from 0.25% to 0.5% and to offer to conduct reverse repo borrowing at 0.25%. The volume in the latter market has been limited, in part because the IOR is too high. In a March 2015 paper, "The Fed Should Fix the Interest on Reserves Floor," Marvin Goodfriend of Carnegie-Mellon and formerly of the Richmond Fed describes the Fed's revisions to its thinking on the IOR. In its original concept, the Fed thought the IOR would function as a floor on the Fed funds rate. As Goodfriend describes the June 2009 FOMC transcript: "The Fed (had) planned to employ the interest on reserves floor as the primary means to exit the zero interest bound and tighten monetary policy without first shrinking its balance sheet and creating a scarcity of reserves. But there was a problem: ... the federal funds rate regularly traded 50 basis points or more below interest on reserves." By the FOMC's September 17, 2014 statement on "Policy Normalization

Principles and Plans," the Fed had decided that it "would set its rate for ON RRP's at or slightly below interest on reserves as it normalizes interest rates."

At the December 2015 rate hike, however, the Fed set the rate on the repo facility (the ON RRP) a full 25 basis points below the IOR, not the 2014 decision to set it "at or slightly below IOR". This leaves the Fed overly-dependent on bank debt. I think the spread between the ON RRP and the IOR should be 10 or 15 basis points in keeping with the 2014 policy statement. This would save the taxpayer billions of dollars and allow a diversification of the Fed's liabilities into the repo facility.

In his 2015 paper, Dr. Goodfriend objects to the repo facility, saying it would be "violating an implicit principle of central banking in the United States--that where possible the central bank should minimize its interference in financial intermediation and credit allocation in managing the monetary system." I agree with that principle as a concept, but the Fed has given it up completely by interfering in long-term interest rates, manipulating the dollar, freezing the interbank market and arbitrarily deciding on high interest payments to banks. For now, the priority should be to encourage the Fed to reduce the damage from its bank debt.

In conclusion, we should recognize that economic theory is not a perfect science and that the Fed can make mistakes and miscalculations. In the 1970s, the Fed propounded a theory that holding interest rates down would reduce inflation. Instead, it weakened the dollar, causing prices to rise. In the 2000s, the Fed kept interest rates well below market levels on the theory that inflation risks were less risky than deflation risk and that bubbles couldn't be identified in advance. It decided to limit its rate hikes to only 0.25% per FOMC meeting, contributing to dollar weakness, the housing bubble and the financial crisis. The current policies have been questioned since 2009 on the view that they help larger borrowers but hurt median incomes and growth. It's clear that growth and median income gains during the current expansion have been much less robust than in previous expansions, inviting fundamental changes in Fed policy that would favor growth.

