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THE ECONOMIC OUTLOOK

HEARING

BEFORE THE

JOINT ECONOMIC COMMITTEE
CONGRESS OF THE UNITED STATES

ONE HUNDRED FOURTEENTH CONGRESS

FIRST SESSION

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THE ECONOMIC OUTLOOK

THURSDAY, DECEMBER 3, 2015

CONGRESS OF THE UNITED STATES,
JOINT ECONOMIC COMMITTEE,
Washington, DC.

The Committee met, pursuant to call, at 10:01 a.m. in Room 216 of the Hart Senate Office Building, the Honorable Daniel Coats, Chairman, presiding.

Representatives present: Tiberi, Paulsen, Hanna, Schweikert, Grothman, Maloney, Delaney, Adams, and Beyer.

Senators present: Coats, Cruz, Cassidy, Klobuchar, Casey, Sasse, Heinrich, and Peters.

Staff present: David Bauer, Doug Brunch, Barry Dexter, Connie Foster, Harry Gural, Colleen Healy, Jason Kanter, Christina King, David Logan, Kristine Michalson, Viraj Mirani, Brian Neale, Thomas Nicholas, Robert O'Quinn, Leslie Philips, Stephanie Salomon, Sue Sweet, Phoebe Wong.

OPENING STATEMENT OF HON. DANIEL COATS, CHAIRMAN, A U.S. SENATOR FROM INDIANA

Chairman Coats. I would like to first welcome our new Vice Chairman, Congressman Tiberi. We have had Congressman Brady, I don't want to say promoted or demoted, to Chairman of the Ways and Means Committee and we are very, very happy to have Congressman Tiberi to take over as Vice Chairman. Welcome.

I also want to welcome our distinguished Chair of the Federal Reserve, Janet Yellen, and thank her for appearing before us this morning.

This Committee has a long tradition of receiving regular updates from the Chair of the Federal Reserve, and we are pleased to be continuing that tradition today.

The U.S. economy has struggled through a long season of tepid growth. It has been six years since our last Recession technically ended, and over that time our economy has grown at a historically slow pace, averaging 2.2 percent per year.

Some have suggested that a 2 percent growth rate is and will be the new normal for the economy. All of us should view these low economic expectations as unacceptable.

The Fed certainly has an important role to play in setting monetary policy, and that is where its focus should be. There will no doubt be discussion of Fed policy and interest rates during today's hearing, as accommodative monetary policy by the Fed has been the norm for some time now.

However, we should also be mindful that changing interest rates is not a long-term prescription for achieving a more dynamic economy.

Unlocking the full potential of our economy will require policy decisions that incentivize the private sector, including better fiscal management of spending by the Federal Government, as well as pursuing pro-growth policies such as tax reform and a more balanced regulatory environment and passage of trade agreements, and other policy commitments.

Our commitment to successfully addressing these other policy issues—and by "our" I mean the United States Congress, not the Federal Reserve—will go a long way toward creating certainty and confidence among both businesses and consumers.

If we do not succeed in furthering pro-growth policies, we may face an economic future defined by low expectations and diminished standards of living. At the same time, questions arise regarding the impact of weakening economies in Europe, China, and emerging market countries.

This morning the European Central Bank announced that it is expanding its stimulus measures and taking its overnight deposit rates further into negative territory.

China devalued its currency in August in response to financial turmoil and other major international trading partners face significant economic challenges. The actions taken by these countries will have an impact on the value of the Dollar and the U.S. economy. We look forward to hearing the Chairman address that issue, also.

These are some of the major issues we will discuss, and I certainly look forward to hearing Chair Yellen's thoughts on those.

There is global uncertainty also, I think we should add to this equation. Too many mornings we tune in to breaking news, or pick up the newspaper and find headlines that we do not want to read. That appears to be a spreading cancer not only in the United States but also throughout the world.

And so the uncertainty that that levels and the impact that it has on economic policies is perhaps another issue that we ought to be discussing.

This morning, unfortunately, the House of Representatives has a series of votes coming up shortly, so there may be some in and out of Members having to deal with that as we are trying to wrap up our session.

I will ask our members to try to keep their remarks and questions to five minutes. If we need a second round, we will try to accommodate that. And also, try to accommodate those that have had to run out for votes and will come back.

Chair Yellen, most of us sitting—not all of us sitting up here today would love to wake up to headlines in The Wall Street Journal, headlines in The New York Times, pictures on the front page of Financial Times, and I have all these things that highlight you this morning as the person of the day.

[Laughter.]

I don't expect that you have that same enthusiasm for waking up every morning, but we are really pleased to have you here and look forward to your testimony.

First, though, I would like to turn to Congresswoman Maloney, our Ranking Member, and then ask Mr. Tiberi to take a minute or so just to introduce himself to us as our new Vice Chairman.

[The prepared statement of Chairman Coats appears in the Submissions for the Record on page 36.]

Congresswoman Maloney.

OPENING STATEMENT OF HON. CAROLYN B. MALONEY, RANKING MEMBER, A U.S. REPRESENTATIVE FROM NEW YORK

Representative Maloney. Thank you, so much, Mr. Chairman. And so welcome, Chair Yellen. I am so pleased you are here today for this important and timely discussion. I look forward to your testimony in advance of the Federal Open Market Committee's meeting at which you will decide whether or not to raise the Federal Funds Rate.

I am interested in hearing your perspective on the following issues, and others:

What current trends do you find most important in helping you assess the short- and long-term challenges facing our economy?

Secondly, how can the Federal Reserve time future rate increases so we do not jeopardize the current economic recovery, or harm American families?

Thirdly, what do you think of the legislation recently passed by the House of Representatives that would compromise the independence of the Federal Reserve?

Before I turn to these issues and others, I think it is important to put this hearing in perspective. At the end of the Bush Administration, just a little less than seven years ago, we faced what former Fed Chairman Bernanke called, and I quote, "the worst financial crisis in global history, including the Great Depression." End quote.

We have come a long way since the economic crisis, and that progress is in no small part due to the bold actions by the nonpartisan, nonpolitical Federal Reserve.

In the month when President Bush left office, we lost almost 820,000 private-sector jobs. Over the past year, we have gained an average of 226,000 jobs per month. In fact, we have added 13.5 million private-sector jobs over a record-breaking 68 consecutive months of growth.

I have this chart, and I would like to put it in the record, which explains and documents this growth. In October 2009, unemployment reached 10 percent. Since then, it has been cut in half. It now stands at 5 percent.

[The chart titled "Private-Sector Job Growth Continues in October" appears in the Submissions for the Record on page 41.]

There were about seven unemployed workers for every job opening in July of 2009. Now there are 1.4 unemployed workers per job opening, the lowest this ratio has been since early 2001.

Real GDP fell 4.2 percent between the end of 2007 and the second quarter of 2009. But GDP has increased by more than 14 percent since then. Growth has been positive in 23 of the last 25 quarters.

Average home prices dropped 19 percent between 2007 and 2011, but now they are back up to where they were in 2007. About $17

trillion in wealth evaporated between the summer of 2007 and the beginning of 2009. All of those losses have been recovered and now total wealth is about $10 trillion higher than it was at the onset of the financial crisis.

The Federal Reserve played an extraordinary role in turning around the economy. It quickly acted to lower rates to almost zero, and has held them there for about seven years, which has been a principal factor in our economic recovery.

The Fed did this despite the opposition of those who claimed that inflation was on the horizon, and who were later proven wrong. Then, having exhausted the conventional tools of monetary policy, the Fed deployed several rounds of quantitative easing aimed at keeping long-term rates low and further stimulating our economy.

These efforts helped haul our country out of the depths of the Great Recession. But without the Fed's actions, things would be very different today. A recent study by economists Alan Blinder and Mark Zandi found that efforts by the Federal Reserve and the Obama Administration, with support from Democrats in Congress, dramatically reduced the severity and length of the Great Recession.

Specifically, the report found that without their joint efforts: the recession would have lasted twice as long; the unemployment rate would have reached nearly 16 percent; and we would have lost twice as many jobs, more than 17 million American jobs.

I would like to enter the Blinder-Zandi report into the record.

[The Blinder-Zandi report titled: "The Financial Crisis: Lessons for the Next One" appears in the Submissions for the Record on page 42.]

Ironically, Republicans in Congress made recovery more difficult. As former Federal Reserve Chairman Ben Bernanke wrote in his new book—his new book, which I recommend—and I quote:

"The economy needed help from Congress, if not from additional spending on roads and bridges, for example, then at least in areas such as retraining unemployed workers." End quote.

But the Republican-led Congress demanded deep spending cuts at a time when we needed aggressive fiscal policy to boost the economy. They ended up doing more to hurt than to help.

And now Republicans complain that the economic recovery has been too slow. Now they have gone one step further. Two weeks ago, Republicans in the House of Representatives passed, in my opinion, damaging legislation, the FORM Act, that would fundamentally hamper the Fed's ability to conduct monetary policy.

It would hurt the Fed's independence, for example, by forcing it to determine target interest rates using a mathematical formula, while ignoring a broad range of important economic indicators.

Chair Yellen, as you have noted before, if the Fed had been forced to follow such a rule in recent years—and I quote from you—"millions of Americans would have suffered unnecessary spells of joblessness over that period." End quote.

If the FORM Act had been a law during the time of the recession, the Federal Reserve would not have been able to take the aggressive steps needed to help pull our Nation out of the greatest economic crisis since the Great Depression.

I hope today that we can focus on the critical issues before us: How the Federal Reserve should act to strengthen our economic recovery. But, if necessary, we must clearly show that efforts to hamstring the Federal Reserve are misguided and dangerous.

Chair Yellen, thank you for appearing before the Joint Economic Committee today, and I look very much forward, as always, to your testimony.

[The prepared statement of Representative Maloney appears in the Submissions for the Record on page 36.]

Chairman Coats. Thank you.

Congressman Tiberi.

OPENING STATEMENT OF HON. PATRICK J. TIBERI, VICE CHAIRMAN, A U.S. REPRESENTATIVE FROM OHIO

Vice Chairman Tiberi. Thank you for your courtesy, Chairman. I want to thank Speaker Ryan for giving me this opportunity, and I want to thank you for your Indiana Hoosier niceness in this process. You and your staff have been great in welcoming me. I look forward to working with my colleagues from the Senate, as well as the House.

I know we have, in Ohio at least, still many challenges. A lot of moms and dads are underemployed. Yes, the unemployment rate has gone down, but there is a tremendous amount of anxiety I know in our State about the future of the economy. And this is so important.

Chairman Yellen—Chair Yellen, thank you for your time today. I look forward to hearing from you.

Chairman Coats. Thank you. I would like to now introduce our witness, Janet L. Yellen, who took office as Chair of the Board of Governors of the Federal Reserve System on February 3, 2014, for a four-year term ending February 3, 2018.

Dr. Yellen also serves as Chair of the Federal Open Market Committee, the System's principal monetary policymaking body.

Prior to her appointment as Chair, Dr. Yellen served as Vice Chair of the Board of Governors, taking office in 2010, when she simultaneously began a 14-year term as a member of the Board that will expire not until 2024.

Dr. Yellen is Professor Emeritus at the University of California at Berkeley where she was a Eugene E. and Catherine M. Trefethen Professor of Business Administration and Professor of Economics, and has been a faculty member there since 1980.

Dr. Yellen took leave from Berkeley for five years starting in August of 1994. She served as a member of the Board of Governors of the Federal Reserve System through February of 1997, and then left the Federal Reserve to become Chair of the Council of Economic Advisers through August 1999. She also chaired the Economic Policy Committee of the Organization for Economic Cooperation and Development.

She has served as President and Chief Executive Officer of the Federal Reserve Bank of San Francisco, and has a distinguished academic background.

Dr. Yellen, we are pleased to have you here this morning. Thank you very much for coming. This is an important time. You have had a busy week, and we appreciate you taking the time to share

with us your thoughts on where we are and where we are going with this economy and the role of the Federal Reserve.

STATEMENT OF HON. JANET L. YELLEN, CHAIR, BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM, WASHINGTON, DC

Chair Yellen. Thank you very much. Chairman Coats, Ranking Member Maloney, and Members of the Committee, I appreciate the opportunity to testify before you today.

In my remarks I will discuss the current economic outlook before turning to monetary policy.

The U.S. economy has recovered substantially since the Great Recession. The unemployment rate, which peaked at 10 percent in October 2009, declined to 5 percent in October of this year.

At that level, the unemployment rate is near the median of Federal Open Market Committee participants' most recent estimates of its longer run normal level. The economy has created about 13 million jobs since the low point for employment in early 2010, and total nonfarm payrolls are now almost 4½ million higher than just prior to the Recession.

Most recently, after a couple of months of relatively modest payroll growth, employers added an estimated 271,000 jobs in October. This increase brought the average monthly gain since June to about 195,000, close to the monthly pace of around 210,000 in the first half of the year and still sufficient to be consistent with continued improvement in the labor market.

At the same time that the labor market has improved, U.S. economic output as measured by inflation-adjusted Gross Domestic Product, or real GDP, has increased at a moderate pace on balance during the expansion.

Over the first three quarters of this year, real GDP is currently estimated to have advanced at an annual rate of 2¼ percent, close to its average pace over the previous 5 years.

Many economic forecasters expect growth roughly along those same lines in the fourth quarter. Growth this year has been held down by weak net exports, which has subtracted more than half a percentage point, on average, from the annual rate of real GDP growth over the past three quarters.

Foreign economic growth has slowed, damping increases in U.S. exports, and the U.S. Dollar has appreciated substantially since the middle of last year, making our exports more expensive and imported goods cheaper.

By contrast, total real private domestic final purchases, which includes household spending, business fixed investment, and residential investment, and currently represents about 85 percent of aggregate spending has increased at an annual rate of 3 percent this year, significantly faster than real GDP. Household spending growth has been particularly solid in 2015, with purchases of new motor vehicles especially strong.

Job growth has bolstered household income, and lower energy prices have left consumers with more to spend on other goods and services. Increases in home values and stock market prices in recent years, along with reductions in debt, have pushed up the net worth of households which also supports consumer spending.

Finally, interest rates for borrowers remain low, due in part to the FOMC's accommodative monetary policy, and these low rates appear to have been especially relevant for consumers considering the purchase of durable goods.

Other components of private domestic final purchases, including residential and business investment, have also advanced this year. Indeed, gains in real residential investment spending have been faster so far this year than last year, although the level of new residential construction still remains fairly low.

And outside of the drilling and mining sector, where lower oil prices have led to substantial cuts in outlays for new structures, business investment spending has posted moderate gains.

Turning to inflation, it continues to run below the FOMC's longer run objective of 2 percent. Overall, consumer price inflation as measured by the change in the price index for personal consumption expenditures, was only one-quarter percent of the 12 months ending in October.

However, this number largely reflects the sharp fall in crude oil prices since the summer of 2014. Because food and energy prices are volatile, it is often helpful to look at inflation excluding those two categories, known as core inflation, which is typically a better indicator of future overall inflation than recent readings of headline inflation.

But core inflation which ran at 1¼ percent over the 12 months ending in October is also well below our 2 percent objective, partly reflecting the appreciation of the U.S. Dollar which has pushed down the prices of imported goods, placing temporary downward pressure on inflation.

Even after taking account of this effect, however, inflation has been running somewhat below our objective.

Let me now turn to where I see the economy is likely headed over the next several years.

To summarize, I anticipate continued economic growth at a moderate pace that will be sufficient to generate additional increases in employment, and a rise in inflation to our 2 percent objective.

Although the economic outlook, as always, is uncertain, I currently see the risk to the outlook for economic activity and the labor market as very close to balanced.

Regarding U.S. inflation, I anticipate that the drag due to the large declines in prices for crude oil and imports over the past year-and-a-half will diminish next year. With less downward pressure on inflation from these factors, and some upward pressure from a further tightening in U.S. labor and product markets, I expect inflation to move up to the FOMC's 2 percent objective over the next few years.

Of course inflation expectations play an important role in the inflation process, and my forecast of a return to our 2 percent objective over the medium term relies on a judgment that longer term inflation expectations remain reasonably well anchored.

Let me now turn to the implications of the economic outlook for monetary policy.

In the policy statement issued after its October meeting, the FOMC reaffirmed its judgment that it would be appropriate to increase the target range for the Federal Funds Rate when we had

seen some further improvement in the labor market and were reasonably confident that inflation would move back to the Committee's 2 percent objective over the medium term.

That initial rate increase would reflect the committee's judgment based on a range of indicators that the economy would continue to grow at a pace sufficient to generate further labor market improvement and a return of inflation to 2 percent, even following the reduction in policy accommodation.

As I have already noted, I currently judge that U.S. economic growth is likely to be sufficient over the next year or two to result in further improvement in the labor market.

Ongoing gains in the labor market, coupled with my judgment that long-term inflationary expectations remain reasonably well anchored, serve to bolster my confidence in a return of inflation to 2 percent, as the disinflationary effects of declines in energy and import prices wane.

Committee participants recognize that the future course of the economy is uncertain, and we take account of both the upside and downside risks around our projections when judging the appropriate stance of monetary policy.

In particular, recent monetary policy decisions have reflected our recognition that with the Federal Funds Rate near zero we can respond more readily to upside surprises to inflation, economic growth, and employment than to downside shocks.

This asymmetry suggests that it is appropriate to be more cautious in raising our target for the Federal Funds Rate than would be the case if short-term nominal interest rates were appreciably above zero.

Reflecting these concerns, we have maintained our current policy stance even as the labor market has improved appreciably.

However, we must also take into account the well-documented lags in the effect of monetary policy. Were the FOMC to delay the start of policy normalization for too long, we would likely end up having to tighten policy relatively abruptly to keep the economy from significantly overshooting both of our goals. Such an abrupt tightening would risk disrupting financial markets and perhaps even inadvertently push the economy into a recession.

Morever, holding the Federal Funds Rate at its current level for too long could also encourage excessive risk taking and thus undermine financial stability.

On balance, economic and financial information received since our October meeting has been consistent with our expectation of continued improvement in the labor market. And as I've noted, continuing improvement in the labor market helps strengthen our confidence that inflation will move back to our 2 percent objective over the medium term.

That said, between today and the next FOMC meeting, we will receive additional data that bear on the economic outlook. These data include a range of indicators regarding the labor market, inflation, and economic activity.

When my colleagues and I meet, we will assess all the available data and their implications for the economic outlook in making our policy decision. As you know, there has been considerable focus on

the first increase in the Federal Funds Rate after nearly seven years in which that rate was at its effective lower bound.

We have tried to be as clear as possible about the considerations that will affect that decision. Of course, even after the initial increase in the Federal Funds Rate, monetary policy will remain accommodative. And it bears emphasizing that what matters for the economic outlook at expectations concerning the path of the Federal Funds Rate over time.

It is those expectations that affect financial conditions, and thereby influence spending and investment decisions. In this regard, the committee anticipates that even after employment and inflation are near mandate-consistent levels, economic conditions may for some time warrant keeping the target Federal Funds Rate below levels the committee views as normal in the longer run.

So in closing, let me say the economy has come a long way toward the FOMC's objectives of maximum employment and price stability.

When the committee begins to normalize the stance of policy, doing so will be a testament also to how far our economy has come in recovering from the effects of the financial crisis and the Great Recession.

In that sense, it is a day that I expect we are all looking forward to. So thank you. Let me stop there. I would be pleased to take your questions.

[The prepared statement of Chair Yellen appears in the Submissions for the Record on page 38.]

Chairman Coats. Chair Yellen, thank you very much. It is a day we have long waited for, and hopefully your positive remarks today will bear that out and set us on the right trend, a positive trend.

As we had discussed earlier in private, I want to raise this in public. While our trends are moving toward positive territory, the EU's trends seem to be moving into negative territory, with negative overnight interest in deposit rates, also additional thoughts about ways to stimulate their economy. They play a major role in the world economy.

We see slowdowns in China. We see problems, significant problems in Brazil and throughout many emerging markets.

My question is, how—that clearly, much of the world seems to be on a negative trend—how do you balance those two issues out relative to their impact on each other? And how does the FOMC take that into consideration in terms of their decision-making?

Chair Yellen. Thank you for that question. We have seen relatively weak growth in the global economy with different parts of the global economy faring differently, but relatively weak growth.

The U.S. has enjoyed stronger growth in labor market performance. That weak growth shows through to the demand for U.S. exports, and it is one factor that has been depressing U.S. net exports.

In addition, that difference in strength between the global economy and the U.S., and reflected also in different expectations about the path of monetary policy, as you noted the ECB has added stimulus, has taken additional actions today to provide further stim-

ulus, while there is an expectation that the FOMC is coming closer to raising rates.

That difference in expectations about monetary policy reflecting different underlying strength has led over the last year and a half to a substantial appreciation of the Dollar.

So the combination of weak foreign growth and a strong Dollar has, both of those things have depressed our export growth and increased imports, because imports are cheaper.

So that is a drag on the U.S. economy. But again, we have to remember that consumer spending, business investment, residential investment, account for 85 percent of total spending. And domestic spending is on a solid course. It has been growing around 3 percent.

So the combination of solid domestic spending, coupled with a drag from abroad that has been operative and will continue to be operative, overall on balance that's led, and I think it will continue to lead, to growth that is somewhat above trend and on a continuing path of labor market improvement.

But of course it is highly relevant to our decisions, and the strength of the Dollar is one factor that puts——means that monetary policy for the U.S. is more likely to follow a gradual path.

Chairman Coats. We also have global uncertainty relative to our national security and the world security. We seem to be entering a period of time here where violence in one form or another, whether it's domestic, international, whether it's terrorist-oriented or connected to other means, you can lay awake at night thinking of scenarios where coordinated terrorist attacks, or just an acceleration of the kind of violence that we are seeing, the mass shootings and so forth and so on, could have a negative effect. I think would have a negative effect, on the economy relative to people's fear of spending, going out, enjoying sports entertainment, other types of entertainment, or going to malls and shopping, et cetera.

To what—how does that factor into the Fed's thinking regarding its impact on the economy?

Chair Yellen. So those risks are ones that we watch very carefully. And I would agree with you that it does have the potential to have a significant economic effect. I would not say that I see a significant effect at this point, although certainly in the aftermath of the financial crisis we have seen rather cautious behavior on the part of households and firms.

And while I think there are many different factors that contribute to that cautious behavior, the crisis itself, the slow growth we've seen, many businesses talk about regulatory uncertainty, I would add geopolitical risk as a further factor that is causing that kind of cautiousness.

Chairman Coats. Thank you. My time has expired, and so I can show a good example to my colleagues in terms of implementing the five-minute rule, I will call on our Ranking Member, Congresswoman Maloney.

Representative Maloney. Thank you so much.

Thank you so much, Chair Yellen. In the speech you gave yesterday at the Economic Club of Washington, you said, and I quote, "Many FOMC participants indicated in September that they anticipated, in light of their economic forecast at the time, that it would

be appropriate to raise the target range for the Federal Funds Rate by the end of the year." End quote.

What are the longer term trends that would give you the most pause when deciding the timing of liftoff? For example, how would you assess tomorrow's jobs number in the context of its long-term trends?

Chair Yellen. Well I think the two things that we focus on most in our evaluation are economic developments that affect the labor market, and also those that affect inflation. Our Congressional mandate calls for us to achieve maximum employment and price stability. And therefore in my testimony I tried to indicate that I do see there are ups and downs. Every series is noisy. We will be looking of course carefully at tomorrow's jobs report.

What we are looking to see is a continued solid trend of job creation that, while we are close to full employment or maximum employment, at least to my mind there remains some margins of slack in the labor market. Part-time, involuntary employment remains too high. Labor force participation is a declining trend. But nevertheless, I think it is to some extent depressed by the fact that the job market hasn't been stronger.

So we want to see the economy being on a path where we will continue to erode that labor market slack over time. So we will be looking very carefully at that.

But we can't over-weight any particular number. We need to be looking at underlying trends in the data, and not over-weighting any number.

Inflation is also clearly very important. We articulated several years ago that the Committee has a 2 percent inflation objective. Inflation has been running significantly below that for some time. Just as we don't want to see persistent inflation above our objective, we also don't want to see persistent inflation below our 2 percent objective.

So as I discussed, where I think much of it is transitory but we will be looking at data to see if our expectation that it's going to move up over time will be realized. And those are key pieces.

Representative Maloney. Chair Yellen, two weeks ago the House passed legislation that would interfere with the Fed's operations in numerous ways. You wrote a sharply worded letter to Congressional leadership expressing your opposition to the bill, and I request unanimous consent to place that letter in the record.

Chairman Coats. Without objection, we will do that.

[The letter from Chair Yellen addressed to Hon. Paul Ryan and Hon. Nancy Pelosi appears in the Submissions for the Record on page 97.]

Representative Maloney. And you said, and I quote, that it would, quote, "severely damage the U.S. economy were it to become law." End quote.

Could you describe why you believe that this legislation would be so damaging to the independence of the Fed?

Chair Yellen. Thank you. Just briefly, this legislation would force the Fed to set monetary policy according to a simple rule, something called "the Taylor rule," or a variant of it, that would tie short-term interest rates to only two economic variables: the current level of inflation and the current level of output.

And while such rules are useful as reference points in thinking about monetary policy, to set the Federal Funds Rate in that way without deeper analysis of what is appropriate for the economy would be extremely damaging. At this point, that rule would call for a Federal Rules Rate well over 2 percent. And while we might be close to the point at which we should be raising it above zero, I think that if we were to follow that rule it would be damaging.

But maybe more important, I want to say that this is an approach to monetary policy that severely threatens the independence of the Federal Reserve in making decisions free of short-term political pressures in the best long-run interests of the economy.

It would subject us to regular GAO audits of our monetary policy decision-making in a way that Congress has decided repeatedly and over many years it is wise to insulate the operational decisions of the Federal Reserve from those short-term political pressures.

And I believe that almost all countries around the world have independent central banks. They have recognized it leads to stronger economic performance, and I believe this would be a step in interfering with the independence of the Federal Reserve in conducting monetary policy.

Representative Maloney. Thank you. My time has expired.

Chairman Coats. Congresswoman Maloney, we thank you. We understand that you have a series of votes in the House.

Senator Klobuchar.

Senator Klobuchar. Thank you very much.

Thank you for being here, Chair Yellen. My first question is about income inequality. We have done studies on this when I was the Ranking Member of this Committee, and I know you have written extensively on trends.

What do you see as the impact? And what do you think could be done to reverse the trend?

Chair Yellen. So I do think there is a very disturbing trend toward rising income inequality in this country. Economists have looked carefully at many different factors that might be responsible for it, and these are factors that are not recent. They have been in operation at least since the early or mid-1980s.

Two that stand out are, first, that technological change has been biased in the direction of increasing the demand for skilled labor, and diminishing the demand for less-skilled labor, and particularly people who engage in rather routine jobs that can be computerized.

So technical change, and globalization also appears to have played a role in reducing the number of jobs especially in middle-income jobs that can be outsourced or automated away.

So I think those are key factors. There are others, also, that people have studied. So let me just make clear that these trends are not ones that the Federal Reserve can address. The best contribution we can make is to try to achieve our goals, and particularly maximum employment and a job market where people who want to work can find jobs using their skills.

But there are many things that Congress could consider. Clearly the return to education, the gap between high and low skill people is very high. And so policies that enable individuals to get appropriate education and training. I think those are important.

There are many things I think that Congress could do that would make a positive difference here.

Senator Klobuchar. So this is on us——

Chair Yellen. It is, it is on you.

Senator Klobuchar [continuing]. In terms of trying to do——

Chair Yellen. We're trying to do the best we can.

Senator Klobuchar. I agree. Shifting here, you and I have talked about this. We have a lot of community banks in our states and we know we're losing a number of them through consolidation. Dodd-Frank, which I strongly supported, has protected many of our consumers. But we know for some of the smaller banks it has been hard for them to do all the paperwork with this increasing regulatory complexity.

Any ideas on what we should be doing there? Because I am sure you agree we need to have strong competition in the banking market, and we do not want the smaller players to just be eaten up.

Chair Yellen. So I think that small community banks really are suffering from regulatory overload. And I think it behooves us to focus carefully on what we can do to try to diminish those burdens.

Let me say that we recognize how high the burdens are in community banks, and for our own part we are heavily focused on trying to tailor our regulations so that it is appropriate. And we are looking carefully for ways that we can make life better for community banks, especially those that are well managed and have adequate capital.

We have raised the threshold under our Small Bank Holding Company policy so that now banks under one billion dollars are not subject—the holding companies are not subject to our capital requirements.

We are trying to do more of our supervisory work offsite, and to target our exams toward risk areas. We are engaged with the other agencies in the so-called EGRPRA process in which we are holding hearings and trying to identify things that we can do to reduce regulatory burden.

We will be reporting to Congress, and I am sure there will be a number of things that come out of that review, that will enable us to take steps that will be helpful. But I do recognize there are significant burdens, and I think it behooves us to address them.

Senator Klobuchar. Well thank you. I am going to put two other questions on the record. One is an issue that is getting a lot of attention, and that is the $50 billion asset threshold, and your views if that could be modified with the systemically important financial institution (SIFI) issue, and maybe someone else will ask it.

And then the second issue is just your views on, I am a strong supporter of the infrastructure bill that we are about to vote on today, but I would imagine you might have concerns on how some of this was paid for. It was not actually a Senate side proposal, but that might affect the Federal Reserve.

And I wish we had more time. Maybe someone else, one of my colleagues, can ask that question. But I will, in any case, put it on the record. So thank you.

Chair Yellen. I appreciate that.

Senator Klobuchar. Thank you.

Chairman Coats. I am going to exercise a little bit of discretion here and allow you to answer that question, because I know that is on a number of our minds here. Just for those who understand the issue here, we are about to pass a Highway bill, which is long needed, but part of the pay-for is—comes from your bank at the Fed.

And the word is that there is plenty of profit sloshing around there that eventually is going to come back to the Treasury anyway, so why don't we take some of it now as an early withdrawal.

Do you want to respond to that?

Chair Yellen. Yes. I appreciate the opportunity to do so. So the Highway bill, as I understand it, will take a large share of our operating surplus, which is part of the Federal Reserve's capital, to pay for this bill and not allow us to build it up.

This concerns me. I think financing federal fiscal spending by tapping the resources of the Federal Reserve sets a bad precedent and impinges on the independence of the central bank.

It weakens fiscal discipline. And I would point out that repurposing the Federal Reserve's capital surplus doesn't actually create any new money for the Federal Government. If you don't mind my quoting what CBO wrote in scoring this bill, they said as follows:

"It's important to note that the transfer of surplus funds from the Federal Reserve to the Treasury has no import for the fiscal status of the Federal Government. Although Federal budget accounting does not recognize additions to the Federal Reserve Surplus Account as revenues, such additions have the same effects as if they had instead been paid to the Treasury and were counted as revenues. A transfer of those funds would have no effect on national savings, economic growth, or income."

So in effect, by taking our surplus our holdings of U.S. Treasury securities declines, and the interest we would earn on those securities would be money that would be transferred every year for many years to come back to the federal coffers. And by taking the surplus now you are diminishing the stream of revenues into the federal budget over many years.

Now a central bank differs from a commercial bank and the role of capital is somewhat different. But almost all central banks do hold some capital in operating surplus, and holding such a surplus or capital is something that I believe enhances the credibility and confidence in the central bank.

And so on those grounds, as well, our policy—we don't have a lot of capital, but we have long had capital in surplus that I think creates confidence in our ability to manage monetary policy.

Chairman Coats. Well thank you. I think it was important to get an answer to that question. It is so relevant right now. And there is the narrative that this is easy money. I think you have given us a pretty good response to that question.

Senator Klobuchar. We appreciate it. Thank you.

Chair Yellen. Thank you, very much.

Chairman Coats. Senator Cassidy.

Senator Cassidy. Madam Chair, thanks for being here. I share—so segueing off of Senator Klobuchar's concern about income

inequality, you have written about the problem of those who are involuntarily working part-time. We have also looked at that.

And knowing that you know this, but just for context to the further conversation, Purnay, would you hold up the poster, please, we have noted that—we have noted that this effect occurs in all quintiles, but disproportionately upon the lowest quintile.

So if these are the five quintiles of workers in terms of income, actually post-recession most have returned in terms of the average number of hours per week except the bottom quintile is the one which is still lagging way behind. No dispute there, I'm sure. It is your data, so I am guessing you will agree with it.

And my concern is that the CBO did a study pointing out the marginal tax rate that the Affordable Care Act essentially puts a marginal tax rate upon the employer providing employment.

If someone is working full-time, obviously you've got to pay more to give them insurance and that effect is seen most profoundly upon that lowest quintile of workers. Would you agree with all that?

Chair Yellen. Well, so I think the data you presented is interesting. I am not aware we have tried to monitor ourselves, but I know others have looked at the impact of the Affordable Care Act. I am not aware that it has had a very large effect on the phenomenon that we are talking about.

It is of course worth monitoring going forward. You know, it is important to note that the degree of involuntary part-time employment has declined quite a lot as the economy——

Senator Cassidy. But not in that lowest quintile. Is that a fair statement? I mean, that data, which is from the Bureau of Labor Statistics, shows that it persists in that lowest quintile.

Chair Yellen. It does persist, but it is diminished.

Senator Cassidy. Relatively speaking, but still far greater than at this point in previous recoveries.

Chair Yellen. Yes, I think it is disproportionately high.

Senator Cassidy. Now let me ask, and I am sorry to interrupt but we don't—he is going to hold me to five minutes—I am looking at something from Valletta and Bengali from 2013 that suggests that rising costs for health benefits may prompt employers to shift towards part-time work to hold labor costs down, perhaps intensified by the ACA's requirement that medium-sized and large employers provide health benefits, et cetera.

Now again intuitively if the cost of health benefits is added to the wages paid as total compensation, the marginal effect of increasing the cost for health benefits for the lower quintile is going to be greater than the marginal effect for the upper quintiles.

So I am just curious that, as much as you have looked at this, that is not something that you have noted. I will move on, if you just say, well, I haven't. But I would appreciate any further thoughts you have regarding that.

Chair Yellen. I am not aware of any estimates of the size of it. Most significant-sized employers have covered and continue to cover their workers. So while there has been a lot of anecdotal discussion of this, I have not seen a study that shows that it is large.

Senator Cassidy. Let me return to something you said earlier, that you implied that the Dollar will weaken over the coming year,

because you said that both the price of oil, you imply, would begin to rise——

Chair Yellen. I'm sorry? I did not mean to make a forecast about—I don't believe I did—I didn't make a forecast in terms of——

Senator Cassidy. Well in terms of the inflationary pressure, you said that you thought that the downward effect upon inflation will be eased because of the kind of return to the norm, both——

Chair Yellen. If I might, when the Dollar appreciates, while it is moving up that tends to push import prices down, which cuts inflation. But if the Dollar simply stabilizes at a new higher level, then inflation is no longer held down.

So simply stabilizing the value of the Dollar, stabilizing at a new higher level——

Senator Cassidy. Let me ask, will that——

Chair Yellen [continuing]. Will diminish that effect.

Senator Cassidy.—will that also apply—then once it plateaus, it still intuitively seems to me that our manufacturing is going to be negatively impacted.

Chair Yellen. Yes, that is true. I mean, I think that the strong Dollar has been one of the factors, along with the cut in drilling activity, yes.

Senator Cassidy. If the EU is planning, ECB is planning to stimulate, and we are sending signals that we are going to raise interest rates, it seems like we are creating the dynamic where the Dollar will continue to strengthen.

Chair Yellen. Well the Dollar has strengthened quite a lot over the last year-and-a-half.

Senator Cassidy. But do you anticipate that plateauing? Or do you anticipate that continuing? Because if it continues, you mention how the downward pressure on inflation eases once stabilized, but if they are stimulating and we are raising rates, it suggests that we might continue to rise.

Chair Yellen. Well I believe much of that expectation is already built into the market and into exchange rates. So I think that that explains importantly why the Dollar has risen as much as it has.

I wouldn't forecast—I wouldn't forecast where the Dollar is heading.

Senator Cassidy. Thank you. I yield back.

Chairman Coats. Just a comment off the side. But related to that, I noticed this morning that the Euro actually rose based on the decisions made by the ECB, which surprised me. But perhaps the thinking was that they were taking the right path to get the economy to a better position. I don't know if you want to just remark on that, but I just thought that was—I fully expected the Dollar to strengthen this morning against the Euro, and it didn't, based on what the ECB did.

Chair Yellen. Just watching a little bit of this morning's events, my understanding is that the market expected some actions that were not forthcoming.

Chairman Coats. That has always been the problem with the market, isn't it? We can never predict what it's going to do.

Senator Heinrich.

Senator Heinrich. Thank you, Chairman.

And, Chair Yellen, welcome again. I want to kind of return to this line of questioning that Senator Klobuchar and Chairman Coats had touched on with infrastructure in particular.

And I want to thank you for very diplomatically describing why it is a bad idea to pay for things in this way. I might be less diplomatic in my characterization of those types of pay-fors, but I think it is very important that we, in our efforts to pay for things as important as infrastructure, have honest payments.

One of the changes that was made along the way had to do with the exemption of community banks from that sort of structure. And at this point, Fed Member Banks with assets less than $10 billion will be exempted from the changes in the Fed Shared Dividend Rate that were included in the Highway Trust Fund bill.

Community banks in New Mexico and across the country depend on the Fed Share Dividend for its solid return on capital investment. And I have been very vocal about how misguided it is to ask small community institutions to finance our Nation's infrastructure.

Do you have any thoughts on what the impact could have been, especially given your previous comments today, on the regulatory burden on those institutions, had that change not been made to the pay-for?

Chair Yellen. So I mean obviously there would have been a burden on those institutions. Something that worried me is that it might affect the incentives of many of those institutions to be members of the Federal Reserve, to be members of the Fed System. And I thought that was something that before one makes a change of that significance it is wise to think through more fully.

Senator Heinrich. Do you think it would have any impact on their ability to—on the decision-making in terms of lending to small businesses that are on the margin of their business plan?

Chair Yellen. That is difficult for me to say. I mean clearly there is a tax in that, but I don't know how significant that would be to lending decisions.

Senator Heinrich. So shifting gears a little bit by just going back to interest rates, by potentially raising interest rates the Fed would endorse the idea that our economy is on a stable path towards full recovery.

And I am interested in how this potential action may signal improving conditions for job creation in states like my own, especially given the fact that New Mexico and a number of other states have not experienced the same economic recovery as the country as a whole has.

Do you have thoughts on that?

Chair Yellen. Well there certainly are differences across states and localities in terms of how much the recovery has aided employment in those states. My expectation going forward is that the labor market and the economy will continue—the labor market will continue to improve, and eventually I think all states will see improvements as that occurs. But of course the exact industrial structure of a state can matter.

But there probably have been improvements, substantial improvements, and I think the labor market will continue to improve over time.

Senator Heinrich. So returning to an issue that a number of my colleagues have raised, just generally when you are looking at a situation where the FOMC is looking at increasing interest rates, but the actions of other central banks around the world are in a countervailing direction, how do you overall factor in the actions of those other central banks into the broad picture? And how does that impact your decision-making as to whether or not it is the right time to move forward?

Chair Yellen. So we are trying to assess the overall U.S. economic outlook, and we need to factor in all the different elements that determine that. Our success in selling goods to the rest of the world, and the strength of our imports, that's an important determinant of the outlook. And when we have divergent monetary policies globally, it often means that there will be exchange rate movements that accompany that. We have seen that over the last year-and-a-half.

And as I've said, the combination of the weak growth abroad, plus the movement in the Dollar, has been a factor that has been depressing net exports, and that has been a subtraction from growth. And I think it will continue to be going forward.

So that is a negative. And of course it is something that makes us much more cautious in terms of raising rates. But still, 85 percent of spending on U.S. goods and services comes from consumers, investment spending, housing, and for very good, fundamental reasons there is greater strength there.

So when we put it altogether, we are still seeing an overall picture of slightly above-trend growth, ongoing improvements in the labor market. You know, obviously there are risks there. There are risks that come from the global environment that we have monitored carefully and recognize, but overall I would say that the total—while there is this foreign weakness—overall, we are on a solid course.

Senator Heinrich. Thank you.

Chairman Coats. Senator Peters.

Senator Peters. Thank you, Mr. Chairman.

And thank you, Chair Yellen, for your testimony here today and the wonderful work that you do.

Chair Yellen. Thank you.

Senator Peters. I want to pick up a little bit on some of the comments you made on income inequality. And I realize that the Fed doesn't have the ability to alter that, but certainly you have to respond to that in terms of your policymaking and the effectiveness of your policy given some significant structural changes that are occurring in our economy as a result of the fact that a vast majority of people in this country have not seen increases in wages. The middle class in fact has been stagnant.

And it seems to be a disconnect from some of the policy, or the theory I should say, that I remember learning years ago in economics that normally when you have increases in productivity, that productivity translates into higher wage levels.

We have not seen that. In fact, in recent years we have seen that productivity has gone up significantly more than wage levels. And if you are looking at formulating monetary policy, you are looking at aggregate demand——

Chair Yellen. Right

Senator Peters [continuing]. And how you get that demand is income in the economy and wages. You mentioned that consumers are 80-plus percent of it. So the more money the consumers have, the stronger the economy is. And yet, if it is not growing from wages, then it has to grow from them taking on debt. And yet if we look at the fact that wages have been stagnant, and that actually in recent years consumers are starting to de-leverage, which is a different trend from what we saw before.

You do not have those engines of growth, although in your testimony you mentioned there is a 3 percent increase in consumer spending. But I believe that is down from previous years, as well, where we saw 3½ or more in consumer spending per year, which led to higher GDP growth.

We are seeing this long-term, many-year trend of lower wages, de-leveraging of debt, and the fact that most of all of the economic gains are only going to the very top of the income ladder. And the folks at the very top don't spend as much, consumer-wise, as folks in the middle class. There may be more resources available for investment and other types of uses of that cash. But how do you see this long-term trend of income inequality, how is that going to impact the ability for the Fed to be as effective as it may have been in past years using these tools when those things were in balance a lot more than what we are seeing right now?

Chair Yellen. Well that is a great question, and you introduced a lot of different elements into it. Clearly the trends in income, or disposable income for households, are one of the most important factors determining consumer spending.

And the fact that wages have been pretty stagnant for a number of years, I guess compensation has been growing in the 2 to 2½ percent range, that that is something we have had to take account of in forecasting what the strength of the overall U.S. economy has been, and it is integral to our forecasts.

But I guess I would say that job growth has been pretty solid now for a number of years. So disposable income, in spite of the fact that that wage growth has remained in that 2, 2½ percent range, there has been a lot of job growth that has added to disposable income.

So the saving rate moved up after the financial crisis, and it remains in positive territory and has been pretty stable. So the consumer spending we are seeing is not largely being supported by taking on additional debt. It is being supported by income that households are earning.

As the economy progresses, the labor market strengthens further, I would expect to see some upward pressure on wage growth. Recently in measures of hourly compensation in average hourly earnings I think we have seen some welcome hints. It is tentative evidence. We don't know if it will last. But at least recent data does suggest some upward movement in wage increases.

But over the last couple of years, the spending we have seen has been supported by income growth. So inequality definitely plays a role here, and of course we need to see sufficient wherewithal for households to spend in a way that generates a forecast of continuing growth.

Senator Peters. Alright. Thank you.

Chairman Coats. Senator Casey.

Senator Casey. Mr. Chairman, thank you.

Madam Chair, we are grateful for your testimony today, your presence here, and your public service. I will have just one question and I will submit a second for the record because of the limitations on time that we have today, and we have in the Senate as well.

I wanted to say first that I was heartened by some of the numbers in the first page of your testimony that we all have heard here or there but we do not emphasize enough. The statement you made that the economy has created about 13 million jobs since the low point for employment in early 2010. That is good news.

Good news on the unemployment rate itself, which as you note peaked at 10 percent in October 2009, and declined to 5 percent in October of this year. So, literally, cut in half.

So that is good news. And I think we should emphasize that even as we highlight, or itemize some of the challenges with labor force participation rate, or folks really discouraged from seeking employment.

The question I had, though, was more long term, and it really is just one question about steps that we should be taking, and steps that you might recommend for long-term competitiveness.

One of the policy steps that I hope we could take, and we had a step in the right direction on early learning a couple of months ago when we voted in connection with an education bill on an amendment that was my amendment, which was the first time in a decade really where the Senate was on record voting on a substantial early learning commitment for the country.

Just to summarize it, if every state signed up—and it would be optional—but if every state participated, we could have provided early learning to 3 million children at 200 percent of the poverty level and lower. So a substantial new investment.

We did not win. We did not prevail on that vote, but it was good to have a clarifying sense of where people stood.

But I guess just my basic question is: What would you hope we would do on taking steps on long-term investments in a more competitive workforce?

Chair Yellen. So let me say I think that one of the most disappointing aspects of U.S. economic performance is that the pace of growth and the pace of productivity growth have been very depressed. They have fallen very substantially from what we saw in pre-crisis times.

Now the good side of it is, it has not taken very much growth to see a substantial improvement in the labor market. The bad way to read that complex set of facts—namely, not a lot of growth, quite a lot of jobs—is the productivity growth has been very slow. And, ultimately, long-term living standards, how well our children will do and whether or not they will have better lives than we have, really do depend on productivity growth.

And thinking, then, I would say that Congress should put considerable attention into thinking about policies that could serve to speed the productivity growth in the economy, and education is one of the things that would head my list.

The fact that we have seen such a large gap between the wages of more educated and less educated workers, that is a signal that there is a high return to investment in education, and making it more available.

I know there are studies, many studies with respect to early childhood education that have particularly pointed to the importance of that in creating skills and better performance. But at all levels, at all levels education is important.

In addition to that, I would say it is well documented that support for basic research and development is an important foundation for economic growth. And I would say policies to make entrepreneurship easier, and to encourage it. All of those are the kinds of things that are important to long-run trends in economic growth.

Senator Casey. Thank you, very much.

Thank you, Mr. Chairman.

Chairman Coats. I am told the House of Representatives may be wrapping up its voting, and members may be coming back. With that, it gives us a little more time here. We know you have a cutoff time, and we will make sure we hit that. But if you are willing to stay a bit to see if members come back.

Chair Yellen. Yes.

Chairman Coats. I know Senator Cassidy would like to—— speaking of coming back. Congressman Delaney, thank you. You are up.

Representative Delaney. Oh, wow. Okay. Good timing, indeed.

Thank you, Chair Yellen, for the clarity of your testimony, but more importantly for your incomparable leadership of the Federal Reserve during this obviously particularly important time.

I wanted to focus on your view as to the effect of higher rates, or let's say it differently, the first step towards raising interest rates will have on borrowing. Because the conventional wisdom is always that lower interest rates encourages more borrowing, because credit costs are cheaper.

But we have had interest rates at such unusually low levels for such a sustained period of time that that has obviously been a bit of an anomaly in terms of historical rate patterns.

And I have wondered if that has kind of psychologically changed people's perspective on borrowing, and if a return to a view that things are more normal, which is what I think many people would interpret an increase in rates would certainly signal, at the levels we are at now a modest increase in rates will have, you know, largely an inconsequential effect on debt service coverage. And the free option that people, borrowers have had. You have talked about how corporate investment is kind of moderate. New home construction is still below standard, or below where you would like it to be.

So, you know, you worry that a lot of those decision makers have viewed the zero interest rates as kind of a free option. Well, you know, I don't have to do anything because they are so low and they seem to be low for a long period of time.

So I guess my question is: As you look at a day when rates do go up—because that day will occur; as we all know, you were very clear about that; exactly when, none of us know yet, of course—but do you think that will encourage more credit formation, more bor-

rowing? Which I personally think will be good for the economy because some of these people will start looking at rates differently.

Chair Yellen. So a few things I would like to say. When the Fed takes its initial step in raising the target for the Federal Funds Rate, it is important to understand that that does not mean that there is some predetermined path——

Representative Delaney. No.

Chair Yellen [continuing]. Back to historically normal rates.

Representative Delaney. I understand.

Chair Yellen. So the notion that it should be——

Representative Delaney. But it is still a signal.

Chair Yellen [continuing]. Gradual. I mean, in general, higher levels of interest rates I think do tend to make borrowing more expensive and discourages it. But it will occur in the context of a stronger economy, with higher income where people are doing better. It's not the only thing that affects investment decisions or borrowing or spending decisions.

So I would not expect to see borrowing go down, or lending go down when we raise rates modestly.

Representative Delaney. Do you think it might encourage more borrowing?

Chair Yellen. Well, one does often hear especially anecdotal evidence that I hear along the lines that you are suggesting, that there are people who do feel, I have a free option, rates will stay low for a long time. And if they see rates going up, there may be people who are on the fence who may decide now is the hour to act.

So that is——

Representative Delaney. So that would not surprise you as an outcome from this decision?

Chair Yellen. It wouldn't surprise me as an outcome, but we would not be—that is a temporary effect, in a way borrowing from the future——

Representative Delaney. And you are not making the decision——

Chair Yellen. So I don't want to encourage the idea that I believe that higher rates in and of themselves would permanently tend to boost borrowing and spending.

Representative Delaney. Right. One other quick question, if I can. Switching gears. Governor Carney gave a speech about two months ago where he talked about one of the long term risks to financial markets being climate change because it will cause a repricing of carbon-related assets and potentially the reinsurance industry around risk related to weather.

Do you share some of those concerns? I know you don't have much time, so just a short answer.

Chair Yellen. So I thought it was an extremely interesting speech. I cannot say that I am aware of work that we have done looking at that, but I think it is something that is worth—certainly worth considering.

Representative Delaney. Do you think you will be doing some work in that area?

Chair Yellen. I will—it is something we can get back to you on and have a look on.

Representative Delaney. Great. Thank you, Chair.

Chairman Coats. Thank you.

Senator Cruz.

Senator Cruz. Thank you, Mr. Chairman.

Chair Yellen, welcome. In the summer of 2008, responding to rising consumer prices, the Federal Reserve told markets that it was shifting to a tighter monetary policy.

This in turn set off a scramble for cash which caused the Dollar to soar, asset prices to collapse, and CPI to fall below zero, which set the stage for the financial crisis.

In his recent memoir, former Fed Chairman Ben Bernanke says that the decision not to ease monetary policy at the September 2008 FOMC meeting was, quote, "in retrospect, certainly a mistake."

Do you agree with Chairman Bernanke that the Fed should have eased in September of 2008, or earlier?

Chair Yellen. Are you talking about 2008, or 2007?

Senator Cruz. 2008.

Chair Yellen. Um, I mean I think the Fed responded pretty promptly in easing monetary policy to the pressures that were emerging. And I mean I don't, I don't disagree with his analysis of a particular decision. But I certainly wouldn't say that that decision is what caused the financial crisis.

And by December of 2008, the Federal Funds Rate had been lowered to zero.

Senator Cruz. So when you say you don't disagree, does that mean you agree with Chairman Bernanke that it was a mistake?

Chair Yellen. So I can't recall the exact passage that you're referring to, so before I say if I would agree I would like to have a chance to review exactly what he's said.

Senator Cruz. Well I would be very interested if you would have the opportunity to review the passage and let the Committee know whether you agree with his assessment.

Chair Yellen. Okay.

Senator Cruz. I want to shift to a different Fed Chairman, which is Paul Volcker, who said in a speech before the Bretton Woods Committee last year, quote, "By now I think we can agree that the absence of an official rules-based cooperatively managed monetary system has not been a great success. In fact, international financial crises seem at least as frequent and more destructive in impeding economic stability and growth."

Chairman Volcker went on to say, "The United States in particular had in the 1970s an unhappy decade of inflation ending in stagflation. The major Latin American debt crisis followed in the 1980s. There was a serious banking crisis late in that decade, followed by a new Mexican crisis. And then the really big and damaging Asian crisis. Less than a decade later, it was capped by the financial crisis of the 2007 through 2009 period and the Great Recession. Not a pretty picture." Now you have said, quote, "It would be a grave mistake for the Fed to commit to conduct monetary policy according to a mathematical rule."

Do you agree with Chairman Volcker's characterization that, quote, "the absence of an official rules-based cooperatively managed monetary system has not been a great success and has not been a pretty picture"?

Chair Yellen. Well you have pointed to a large number of very damaging financial crises, and in that sense I do believe it was very important for us to take steps to have a stronger financial system, and one that is less crisis prone.

I don't think that Former Chairman Volcker was proposing a rule-based monetary policy in the sense of following a simple mechanical rule. And I guess I would argue that many countries do have in essence rule-based monetary policy in the sense that most countries have inflation targeting regimes, and transparent monetary policies where the central banks are independent and spell out and are accountable to achieve an inflation objective.

And the Federal Reserve has very much strengthened its transparency as to what our goals are, what our strategy is for trying to achieve those goals, and provided the public with very detailed forecasts of what policies we think are appropriate to achieve the goals that Congress has assigned to us, including a 2 percent inflation objective.

And over the last 20 years, inflation has been highly stable, around 2 percent. So in that sense, even though we may not follow the Taylor Rule, or some simple mathematical formula, I believe we do have a rules-based monetary policy in the United States, or at least a systematic policy in the United States and many other countries, most other countries do as well.

Senator Cruz. And one final question. In 2008, the Fed began paying interest on reserves. In the seven years since then, do you know how much in interest the Fed has paid to banks under that policy?

Chair Yellen. It has been set at 25 basis points, and I don't have the exact numbers at my fingertips. But I want to say it is a critically important tool of monetary policy. It is a tool that all most certainly advanced countries' central banks have and rely on as a key tool of monetary policy.

Senator Cruz. So what has the impact been of paying billions of dollars to those banks in the last seven years?

Chair Yellen. It has helped us to set interest rates at levels that we thought were appropriate for economic growth and price stability in this country.

Senator Cruz. Thank you.

Chairman Coats. Senator Cassidy.

Senator Cassidy. Madam Chair, I get to go again. A lot of turmoil in China. There was an earlier discussion about how obviously foreign markets are a part of how we judge our growth.

China may be devaluing their currency. It seems like they have weakened their currency. I could go on on things you know better than I.

What do you see as the stability of the Chinese market? And how does that impact us?

Chair Yellen. So China has grown obviously very rapidly for a very long period of time, and in recent years has been on a general slowing trend for reasons that are entirely understandable. Namely, slower labor force growth; a reduction in the pace of investment growth; a desire that they have, which is in their own interest and one that we share, that their economy rebalance from such heavy

dependence on trade as a source of growth to domestic consumption.

And as they have moved toward the technological frontier, further progress in adopting technological changes tend to slow.

Senator Cassidy. Are they truly attempting to increase domestic consumption? I always had a sense the way that they kind of encouraged savings and use those savings to, among other things, prop up their stock market, that their rhetoric says that they are attempting to increase domestic consumption but their policies do not seem to reflect that rhetoric.

Chair Yellen. So my impression is that they are trying to rebalance their economy. Consumer spending is a smaller share, a far smaller share of their economy than consumer spending is of ours. And it has been growing rapidly.

There are challenges that they have faced in trying to boost it, but I believe that that is a course that they are on that they regard as in their own best interest, and we would agree.

Senator Cassidy. Okay. Changing subjects, by the way so you feel the turmoil we're currently seeing, and the threat that they might devalue their currency, just to be specific, you don't feel like that threatens our economy? And let me ask a secondary question: Are they attempting to, if you will, game it by increasing their exports by devaluing their currency, et cetera, et cetera?

Chair Yellen. Well there was disruption last summer in financial markets when they made a decision to devalue the Renminbi by a couple of percent. I think, to put that in context, remember that the U.S. Dollar has been rising, has been appreciating significantly over the last year-and-a-half. And the Chinese currency has been linked to the U.S. Dollar. And so during that period, the Chinese currency had been strengthening rather substantially relative to many of its trading partners. And they made a modest adjustment of their Exchange Rate, but in a way that was arguably not well communicated and proved disruptive. And then they say very large capital outflows.

I think they recognize that stability of their Exchange Rate is probably in their best interests. But ultimately would like to move to a more market-based and flexible system of Exchange Rate determination.

Senator Cassidy. I wish you were their central banker. I'm not sure—but that's—I hope you're right.

Secondly, in January of this year the economy actually slowed. I think growth actually became negative. At the time it was attributed to a slowdown in the energy market because oil prices had fallen, so energy states which produced a lot of jobs, and by the way jobs for those lower income less skilled workers that we have spoken much of here today.

Now it seems as if that fell. Oil production rose a little bit, for a variety of reasons. And now it appears that oil production is decreasing once more. The rig counts are falling. My State is impacted by this. Any comments upon how this shedding of jobs in the exploration and production component of the energy industry is going to impact our economy?

Chair Yellen. Well we have seen a huge decline in oil prices for reasons pertaining to both huge increases in supply and perhaps

some slowing in demand. It has had an enormous impact on drilling activity, on jobs in that sector, and that has been one of the things that has been holding back growth.

Senator Cassidy. So even though we have gotten some benefit for consumer spending in terms of employment, now going forward as those jobs are further shed what impact do you feel like that has upon our growth?

I am struck that your forecast is that the economy is going to continue to grow at this kind of 2.5 percent rate, not the 3½ percent we had under Reagan and Clinton, but this kind of 2.5 percent. But if we are shedding all these jobs in the industry which provides such a tremendous number of jobs for less skilled workers, it seems as if that endangers even this 2.5 percent growth we have.

Chair Yellen. Well remember that we have been creating roughly 200,000 jobs a month for the entire year.

Senator Cassidy. I was told once that it actually takes about 270,000 jobs a month to both bring back into employment those who are currently unemployed, to take care of those—but who would prefer to work, and because our labor participation market is so low—for those newer workers who are entering the market, to employ them, as well as to maintain full employment for those currently, I'm struck that something I read speaks of those 20 to 25-year-old workers being underemployed, a higher rate of unemployment among those.

So all this to say, 210,000 a month, is that adequate to, to both increase job participation but also to account for those newly entering?

Chair Yellen. So to simply provide jobs for those who are newly entering the labor force probably requires under 100,000 jobs per month. And there is a downward trend in the labor force due to its aging.

If labor force participation is stable, that helps to absorb people who are discouraged and who have dropped out. But that still requires quite a bit less than the 200,000 or so jobs——

Senator Cassidy. But in terms of increasing back up to full employment—excuse me—our labor market participation is the lowest it has been since Jimmy Carter. And so whenever the President speaks about how great the unemployment rate is, I always think—or labor participation is as low as it has been since Jimmy Carter. So I guess my question is: How do we increase our labor participation, as well as take care of those who are entering now? Because we do not seem to be accomplishing that with even a 210,000 per month labor growth.

Chair Yellen. Well we are on the path of declining labor force participation due to the aging of the work force, of the population. So I don't think that we should expect to see labor force participation move up a great deal over time.

If it were simply stable over time, rather than on that declining trend, I think we would be absorbing people who were perhaps discouraged and in a stronger job market would move back. But 200,000 jobs a month is enough to make progress on those dimensions.

Senator Cassidy. I yield back. Thank you.

Chairman Coats. Thank you, Senator.

We have had the return now of two of our key members of the Committee, and so we have a little bit of time. We have a hard 12:00 stop, so we have time for both of you to ask your questions.

Vice Chairman Tiberi. Thank you, Chairman.

Thank you, Chair Yellen. Sorry about the vote. So in your comments when I was here earlier, you mentioned moderate growth within the economy. But yet earlier this week economists at Citigroup predicted not only a tightening of the U.S. labor market will force the Fed to increase short term interest rates more rapidly than was anticipated, they said it would result in an inverted yield curve which typically precedes a recession. And actually they said, the economists said, that they would assign about a 65 percent likelihood of a recession in the United States in 2016.

Now 65 percent seems high to me, but I am not an economist, and I am not the Fed Chair. But zero risk may be too low, as well. So what would you assign a risk level of a recession next year?

Chair Yellen. So I don't have a number for you, but a decision on the part of the FOMC to increase rates would only occur in the context where the committee believed that we were going to enjoy at least somewhat above trend growth so that we would see an improvement in the labor market. And of course there is always uncertainty that pertains to the economic outlook. There are always shocks that occur.

The risks, the risks are on both sides, to faster growth and also slower growth. I can't put a number on the risk of a recession, but I absolutely would not see it as anything approaching 65 percent.

Vice Chairman Tiberi. Okay. So assuming they either do something or don't do something with respect to interest rates, I think everybody would probably agree that regardless of what you do historically speaking interest rates would still remain at a historically lower level.

What tools would you have? What tools would the Fed have if indeed the economists at Citi were right and we did go, the U.S. did go into a recession? What would you have to mitigate the effects of such a problem?

Chair Yellen. So we have all of the tools that we previously used to try to combat a recession. First of all, if we had raised rates we would have the possibility of lowering rates.

Important to markets in setting or determining longer term yields is expectations about the future path of policy. For a number of years, when we had—after rates had hit zero, we discussed the reasons that we thought it would be appropriate to keep rates at low levels. As it turned out, seven years almost now at zero rates. We discussed why we thought we would be keeping rates at low levels for a long time. And this market absorbed the notion that they will stay low for a long time and longer term yields came down.

Of course we had asset purchases. We undertook substantial asset purchases in order to stimulate the economy. I think those purchases were successful, as well, in conjunction with that forward guidance in bringing down longer term rates, and those tools are still available.

Vice Chairman Tiberi. Last question, real quick. I met with a group of Ohio bankers yesterday, and in December they brought up

to me that the Basel Committee on Banking Supervision is planning to finalize new rules for the amount of capital that banks are required to hold against their trading book assets.

We understand the current proposal could have a negative impact on the financial market liquidity, and significantly increase borrowing costs for Americans and American businesses.

So by some estimates they told me the regulatory changes proposed by the committee would increase mortgage and auto loans by a percent-and-a-half, and home loans in America by as much as 6.3 percent.

I am a former realtor, so that number just kind of popped out to me as a huge, huge problem. So there are real concerns in the lending community in Ohio that the Basel Committee's rules would make borrowing money more expensive and hinder growth in Ohio, as well as across the country.

Does the Fed support the Basel Committee finalizing the proposal before these serious concerns are addressed? And will you be conducting your own cost/benefit analysis of what impact the rules would have in our country?

Chair Yellen. I believe the Fed is taking part in those discussions, along with other regulators, but I am not aware that there is any thought—capital requirements on those positions did go up previously—I am not aware that there is any thought of changing those requirements in the manner that would have the kind of impact that you are discussing. But we can try to get back to you on this.

Vice Chairman Tiberi. Thank you.

Thank you, Chair, my time has expired.

Chairman Coats. Thanks.

Congressman Schweikert.

Representative Schweikert. Thank you, Chairman Coats.

Madam Chair, how are you? First, because I promised my team, we wanted to extend a thank you to your staff and your team for sort of tolerating many of our very technical written questions, and some of the responses.

Chair Yellen. Thank you.

Representative Schweikert. It is appreciated, because some of them are lengthy in nature.

Chair Yellen. Thank you.

Representative Schweikert. Can I take us in a slightly different direction? And, look, I am blessed to sit on Financial Services, so we get to cross each other's paths quite often.

Mr. Tiberi a little while ago was discussing some of the indices and some of the economists who are saying, look, there are storm clouds on the horizon. Our team, we have been collecting information about world-wide debt, and does that cause any fragility to us in North America? And, you know, when I am seeing numbers that in the last nine years, what developing countries, $57 trillion new debt, which is about double their GDP growth. World-wide debt is, what, 300 percent of GDP.

How do you from a policy standpoint, as you are looking at an environment of possibly future interest rate adjustments and the effects that will have on U.S. currency, at the same time with, let's

face it, a developing country debt—I won't call it a crisis—but debt stress on the horizon.

(a) How does that affect your decision-making?

But (b), does it provide us any fragility to our economic growth, or even potential recession threats?

Chair Yellen. Well it is certainly something that we take account of as we try to evaluate the global environment and the likely impact it could have on the United States. And it is something we look at, as well, as part of our financial monitoring to try to determine whether there are risks that could impact financial stability in the United States.

Representative Schweikert. But will the Fed engage in certain bilateral agreements, or swap agreements with some of the, we'll call them, developing countries' reserve banks to actually help wall off a cascade effect?

Those of us who remember the Tequila crisis and the others. What inoculations, what indemnification does the Fed engage in from a policy set?

Chair Yellen. The Fed has swap agreements with a very small number of advanced countries' central banks where we think it is important to make sure that banks doing dollar-based business have access to adequate liquidity.

We have no swap arrangements with emerging market countries. And the only reason that we engage in those swap market arrangements is to essentially protect financial stability in the United States. So there is no—I don't know the word you used, indemnification——

Representative Schweikert. Yes, I was trying to find a way, inoculation, I could pick a few of them.

Chair Yellen. I mean, these are risks that we consider in looking at U.S. financial markets. When we talk about debts, I think what has been discussed over the last year or so is the fact that private companies in many emerging markets have taken on Dollar-denominated debt.

Representative Schweikert. Yes.

Chair Yellen. I think my sense is that the banking systems and the financial sectors of those emerging markets have been much more carefully regulated in recent years and are less vulnerable. They have themselves less dollar denominated in short-term debts, but the companies and corporations in these countries do, have taken on a large quantity of debt.

Representative Schweikert. Do you see cascade risks from developing countries in both sovereign debt loads and private debt loads in those countries that would affect our economy?

Chair Yellen. It is a risk that we monitor. I would not at this point say that it is a very serious risk to the U.S. financial system.

Representative Schweikert. Okay. And this is not meant to be sort of a one-off, another one-off question, but we were looking at some data about a month ago. And we'll call it Dollar/Euro contracts. And the movement away from their being settled in New York. And some of that I did not know was because of a regulatory or a cost situation; they were not being settled under our regulatory environment.

Does that movement of Dollar-denominated contracts being settled overseas have any threat or difficulty to the Federal Reserve's ability to both see data but also influence regulatory and even the movement of those resources?

Chair Yellen. So I am not aware that there is such a trend, but I will try to look at that and get back to you.

Representative Schweikert. Okay. That is one of those technical written questions that we submit.

Chair Yellen. Yes.

Representative Schweikert. Mr. Chairman, I yield back. Thank you.

Chairman Coats. Thank you. I just want to inform the members here, the Chair has a need to leave at noon and we want to honor that. I just talked to the Ranking Member and she agrees, which maybe means what we could do is, I want to give everybody a chance to get a question in, but could we limit it to one question and maybe keep it to two to three minutes so that everybody has an opportunity to do that before we run out of time?

Dr. Adams, you are next.

Dr. Adams. Thank you, Mr. Speaker, or Mr. Chair, and thank you Ranking Member Maloney for hosting the hearing and, Chair Yellen, thank you for being here.

Based on the commentary I have heard from some of my colleagues made in the media claiming that the Federal Reserve overreaches in its ability to adjust interest rates, it may not be clear that one of the most important factors impacting how the Federal Reserve will set interest rates is based on what is called the Equilibrium Real Interest Rate, which has been consistently low and maybe even below zero.

And given that the Equilibrium Rate is very low, close to zero, what has not been receiving enough attention is how fiscal policy should play an increasing role in stimulating demand and providing an uptick to the economy.

Since the Federal Reserve has limited tools on how it can impact economic recovery through monetary policy, including adjusting interest rates and implementing quantitative easing or forward guidance, can you speak to the impact that fiscal policy, particularly sequestration and the lack of support and certainty for certain tax expenditures, even financial tools, as the Export-Import Bank has had on the rate of recovery for our economy?

Chair Yellen. Well let me say generally that there is evidence that the so-called Equilibrium Rate—this is a real rate of interest or inflation and adjusted rate of interest—fell sharply after the financial crisis and remains quite depressed.

And it is a factor that leads us to believe that even when we start raising rates that those rate increases will be gradual.

Now in general when this rate comes down it means that rates are likely to be lower than the historical norm. And to the extent that we are operating in a low, even a positive interest rate environment, if the economy is hit by negative shocks, while we do have tools that we can use, our most sure and certain instrument of policy is the Fed Funds Rate.

So when the average level of the Fed Funds Rate is low, we have less room to respond to negative shocks. So it would be helpful to

be in an environment and give us more scope to be stimulating the economy and responding to adverse shocks if the average level of interest rates were somewhat higher. And I don't want to give you advice on fiscal policy—that is up to you—but a more stimulative fiscal policy is something that would in a sense enable the Fed on average to have somewhat higher level of rates, and then have more scope to respond to negative shocks.

Dr. Adams. Thank you very much, Mr. Chairman. I will yield back.

Chairman Coats. Congressman Beyer.

Representative Beyer. Thank you, Mr. Chairman.

And, Madam Chair, thanks so much. The recent FOMC projections have a medium- and longer-run unemployment rate of 4.9 percent, which is very close to what we were always taught was maximum unemployment. But the broader labor market that the BLS uses, the U6, counts those who have recently given up looking for work, or are employed part-time for economic reasons, and the U6 stood at 9.8 percent in October, which is still higher than its average 9 percent during the last economic expansion from 2001 to 2007.

So this suggests there may still be considerable slack in the labor market. So how important is the U6 and other labor tools? And basically, given the considerable slack suggested by this 9.8 percent, is this going to be the right time to raise rates?

Chair Yellen. Well, so I would agree with you that U6 remains elevated relative to its historic norms. It is higher than I would have expected based on our historical experience, given where the standard, or U3 unemployment rate is. And it is one of the things that leads me to believe that even though we are close to that 4.9 percent median, there does remain a margin of slack in the labor market.

An important part of U6 that makes it that high is involuntary part-time employment. And while that has come down substantially, it is still hard to tell for sure because there is a trend over time toward more part-time employment in the U.S. economy. But I believe that it remains higher than it ought to be in a so-called "full employment" economy.

In addition, as you noted, there are also discouraged and marginally attached workers, and a fair number of them. Again, that has come down, too. So I do see margins of slack, and I think they are reflected in that discrepancy on U6.

Representative Beyer. Very good. Thank you, Madam Chair.

Chairman Coats. Congressman Paulsen.

Representative Paulsen. Thank you, Mr. Chair. And thank you, Chair Yellen, for being here. I appreciate your patience.

I am going to follow up a little bit on what Vice Chairman Tiberi had mentioned. It is more along the cumulative impact that I had concerns with from a regulatory perspective, that the financial institution or the financial sector had to deal with.

I am thinking of the recent adoption of capital surcharges and the total loss-absorbing capacity or TLAC proposal.

Can you describe what all of these changes mean on a cumulative basis, both on the industry and on the economy, and in particular this cost/benefit idea or analysis. Have you done, or has it

been talked about or discussed about doing a more comprehensive cost/benefit analysis of what the accumulation of all these regulations have on the industry in particular, and on the economy?

I am just thinking from the perspective of this regulatory rulebook that has been in a constant state of revision, essentially, for the last six years. Can you see any benefit of pausing the process just to assess that cumulative impact of regulations on the economy?

Chair Yellen. So I do think the regulation is having an important impact on the economy. And my assessment would be the most important impact it has had is to make the banking system and the financial system more broadly far safer and sounder and less crisis prone than it was prior to the financial crisis.

You described two regulations, the so-called TLAC, or Long-Term Debt Requirement, we proposed recently. And I believe you also mentioned capital surcharges.

Now it is important to understand that those regulations only apply to the eight largest systemically important banks. In our regulations, we are trying to make sure that community banks that are not systemic are not responsible for the financial crisis, are not going to be hit with all of those regulations. But I do think it is critically important that the very largest and most systemic organizations need to be safer and sounder.

They need to have more capital. They need to have more liquidity. And Congress told us that they need, in the event that they encounter difficulties or insolvency, we need to be able to resolve those institutions.

We do not want the taxpayer bailing out those institutions again. And the SIFI surcharges, or higher capital standards means that they are much less likely to fail. It gives an advantage to medium and smaller sized institutions to the extent it burdens them in competing away their business, and that is safer.

And if they did need to be resolved, that loss absorbency that comes from having long-term at the holding company is going to be something that is very important that would enable their resolution either under Title II or under the Bankruptcy Code.

So I do think that, yes, there are some costs associated with these regulations, and certainly on parts of it we have done significant cost/benefit analysis. But really there is a huge benefit.

I mean according to one estimate the cost to the United States of the financial crisis probably amounted to $16 trillion. I've seen one estimate that puts it at $16 trillion. So having a safer and sounder financial system, by having more capital and liquidity and resolvability, is really I think clearly a net benefit.

Representative Paulsen. Thank you, Mr. Chairman.

Representative Grothman. Thank you. I hope this question has not been asked before.

Your two publicly stated mandates are price stability and full employment. And insofar as when you answer my question on full employment, I want you to remember we have a lot of safety net programs, and a lot of people feel that we are not going to achieve any better than when we were at 4.9 right now because the safety nets are so generous, people are either not looking or working part time because they make so much more on that.

But at least right now, price stability and full employment are supposedly where you want them to be. So given that we are in a period of price stability, full employment, and the banking system is recovered, can you explain to all the savers—and I used to represent older people; you know, you'd save money, a hundred grand in the bank, you live off the interest rate—could you explain to our savers and our elderly population why you continue to maintain a zero interest rate, given that it appears we are at full employment, given it appears our banks are stable, and given it appears we have no inflation?

Chair Yellen. Well, so I would say that inflation is running, I think we are pretty close to maximum employment. Inflation is running below our 2 percent objective. And we certainly want to see that changed.

But the economy is in the sense that you have described doing well. And that is the reason that it is a live option for us at our December meeting to discuss, as we indicated, whether or not it is appropriate to raise rates.

But we do have to ask the question: What is a so-called "neutral rate" at which the economy would continue to operate near full employment, and approach price stability?

And a good deal of research, and I discuss some of this in a speech I gave just yesterday, suggests that the neutral rate of interest is very much lower than it has been historically. In real or inflation-adjusted terms, perhaps close to zero at present.

So the level of interest rates that would support a continuation of these desirable trends is probably low. Of course when we were recovering from the Great Recession with high unemployment, to stimulate all the job creation we had we had to keep interest rates at very low levels, zero. We are contemplating raising them, but we have said that we expect that process to be gradual.

And we want to make sure that, having achieved this progress in the labor market, we maintain it and don't put it in danger.

Representative Grothman. You mean my whole lifetime, when older people put money in the bank and they were getting 3, or 4, or 5 percent, we didn't know it but during that whole time we were putting an unnecessary drag on the economy?

Chair Yellen. We had a different economy then, and many things are different domestically and globally than they were then.

The rates of return that savers are able to get depend on the strength of investment demand, the strength of demand for borrowing the funds that savers are trying to provide, and we live in an economy globally as well as domestically where in some sense there is a great deal of savings relative to the demand for those funds.

And that is a market force that shapes the reality that the Federal Reserve operates in, and conditions our ability to set rates that will be consistent with the attainment of Congress's objectives they have asked us to achieve.

Representative Grothman. Okay, so people are saving more money now so we can't give them as much interest rates? They are saving more than they used to.

Chair Yellen. Well if there were a huge demand for those funds, interest rates would be bid up to the levels that we are more accus-

tomed to having experienced historically. But the demand for those funds is simply not strong enough to generate a level of interest rates that is more historically normal.

Chairman Coats. Thank you, Congressman. Congressman Hanna has graciously waived his time, but I want to say, Madam Chair, that I think this has been a very instructive and timely hearing and we deeply appreciate your willingness to be with us.

We have a common goal, those of us on both ends of Constitution Avenue. The Congress of the United States, along with the Executive Branch, but also the Federal Reserve. I think that common goal is to enact and implement sound policies that achieve a dynamic economy, that provides meaningful employment not only for our generation but meaningful employment for future generations.

And the more we can work together, and the more we can share how we get to those common goals and pass that on to future generations, that clearly is a goal that has to be pursued with a lot of passion and a lot of intellect. And you provide both. So we thank you for that.

And with that, the hearing is adjourned.

(Whereupon, at 12:02 p.m., Thursday, December 3, 2015, the hearing was adjourned.)

SUBMISSIONS FOR THE RECORD

PREPARED STATEMENT OF HON. DAN COATS, CHAIRMAN, JOINT ECONOMIC COMMITTEE

The committee will come to order. I would first like to welcome Congressman Tiberi to the committee, and congratulate him on his new position as Vice Chairman of the Committee. I look forward to working with him.

- I would now like to welcome Federal Reserve Chair Janet Yellen and thank her for appearing before the Joint Economic Committee today to share her outlook on the U.S. economy. This committee has a long tradition of receiving regular updates from the Chair of the Federal Reserve, and we are pleased to be continuing that tradition here today.
- The U.S. economy is in the midst of a long season of tepid growth. It has been six years since our last recession technically ended, and over that time, our economy has grown at a historically slow pace, with real GDP growth averaging 2.2 percent per year.
- Our labor market also continues to underwhelm. Unemployment has hovered around 5 percent for some time now, but this doesn't tell the whole story. The labor force participation rate continues to fall, standing today at a recovery low of 62.4 percent, and millions of workers in their prime earning years are either out of work or underemployed.
- Many developed countries in the global economy haven't fared much better, experiencing growth rates of less than 2 percent, high youth unemployment and general lack of opportunity.
- In part due to these subpar expectations in advanced economies, some have suggested that a 2 percent growth rate is the "new normal" for our economy. All of us should view these low economic expectations as unacceptable.
- The Fed certainly has an important role to play in setting monetary policy, and that is where its focus should be. There will no doubt be discussion of interest rates during today's hearing, as accommodative monetary policy by the Fed has been the norm for some time now. However, we should be mindful that changing interest rates is not a long-term prescription for what ails our economy.
- It is the role of Congress and the President, not the Federal Reserve, to set the stage for greater economic growth.
- For example, in my home state of Indiana, things are looking up. Our labor force participation is trending upward, and our unemployment rate has fallen to 4.4 percent. This is remarkable given that Indiana's unemployment rate once topped the nation's recession high of 10 percent.
- Indiana has benefitted from pro-growth policies, and Congress should follow suit.
- We already know how to unlock the full potential of our economy: through free trade, tax reform, and elimination of regulatory barriers. Our commitment to putting our fiscal house in order will also go a long way toward creating certainty and confidence among both businesses and consumers.
- History confirms that it is up to public policymakers to enact laws that allow the private sector to thrive.
- If we do not succeed in furthering pro-growth policies, we may face an economic future defined by low expectations and diminished standards of living.
- I would like to again thank Chair Yellen for joining us today. I look forward to hearing her thoughts on the state of the economy and what we might expect in the coming months.

I now recognize Ranking Member Maloney for her opening statement.

PREPARED STATEMENT OF HON. CAROLYN B. MALONEY, RANKING MEMBER

Thank you, Mr. Chairman. Chair Yellen, I am pleased you are here today for this important and timely discussion. I look forward to your testimony in advance of the Federal Open Market Committee's meeting at which you will decide whether or not to raise the federal funds rate.

I am interested in hearing your perspective on the following issues and others:

- What current trends do you find most important in helping you assess the short- and long-term challenges facing our economy?
- How can the Federal Reserve time future rate increases so we don't jeopardize the current economic recovery or hurt American families?
- What do you think of the legislation recently passed by the House that would compromise the independence of the Fed?

RECOVERING FROM THE GREAT RECESSION

Before I turn to these issues, I think it's important to put this hearing in context.

At the end of the Bush administration, just a little less than 7 years ago, we faced what former Fed Chairman Ben Bernanke called "[. . .] the worst financial crisis in global history, including the Great Depression."

We have come a long way since that economic cataclysm. And that progress is in no small part due to bold actions by the non-partisan, non-political Federal Reserve.

In the month when President Bush left office we lost almost 820,000 private-sector jobs. Over the past year, we have gained an average of 226,000 jobs per month. In fact, we have added 13.5 million private-sector jobs over a record-breaking 68 consecutive months.

This chart shows this impressive growth—I'd like to enter it into the record.

In October 2009, unemployment reached 10.0 percent. Since then it has been cut in half—it now stands at 5.0 percent.

There were about seven unemployed workers for every job opening in July 2009. Now there are 1.4 unemployed workers per job opening, the lowest this ratio has been since early 2001.

Real GDP fell 4.2 percent between the end of 2007 and the second-quarter of 2009. But GDP has increased by more than 14 percent since then. Growth has been positive in 23 of the last 25 quarters.

Average home prices dropped 19 percent between 2007 and 2011. But now they are back up to where they were in 2007.

About $17 trillion in wealth evaporated between the summer of 2007 and the beginning of 2009. All of those losses have been recovered, and now total wealth is about $10 trillion higher than it was at the onset of the financial crisis.

THE FEDERAL RESERVE PLAYED A KEY ROLE IN THE RECOVERY

The Federal Reserve played an extraordinary role turning around the economy. The Fed quickly acted to lower rates to almost zero and has held them there for about seven years, which has been a principal factor in the economic recovery.

The Fed did this despite the opposition of those who claimed that inflation was on the horizon—and who were later proven wrong.

Then, having exhausted the conventional tools of monetary policy, the Fed deployed several rounds of quantitative easing aimed at keeping long-term rates low and further stimulating the economy.

These efforts helped haul our country out of the depths of the Great Recession. But without the Fed's actions, things would be very different today.

A recent study by economists Alan Blinder and Mark Zandi found that efforts by the Federal Reserve and the Obama Administration—with support from Democrats in Congress—dramatically reduced the severity and length of the Great Recession.

Specifically, the report found that without their joint efforts:

- the recession would have lasted twice as long,
- the unemployment rate would have reached nearly 16 percent, and
- we would have lost twice as many jobs, more than 17 million.

I'd like to enter the Blinder-Zandi report into the record.

CONGRESS HAMPERED THE RECOVERY

Ironically, Republicans in Congress made recovery more difficult.

As former Federal Reserve Chairman Ben Bernanke wrote in his new book

> "The economy needed help from Congress—if not from additional spending (on roads and bridges for example), then at least in areas such as retraining unemployed workers."

But the Republican-led Congress demanded deep spending cuts at a time when we needed aggressive fiscal policy to boost the economy.

They ended up doing more to hurt than to help.

And now Republicans complain that the economic recovery has been too slow.

THE FORM ACT

Now they have gone a step further. Two weeks ago, Republicans in the House passed legislation—the FORM Act—that would fundamentally hamper the Fed's ability to conduct monetary policy.

It would limit the Fed's independence, for example, by forcing it to determine target interest rates using a mathematical formula, while ignoring a broad range of important economic indicators.

Chair Yellen, as you have noted before, if the Fed had been forced to follow such a rule in recent years, quote "[. . .] millions of Americans would have suffered unnecessary spells of joblessness over this period."

If the FORM Act had been a law during the time of the recession, the Federal Reserve would not have been able to take the aggressive steps needed to help pull our nation out of the greatest economic catastrophe since the Great Depression.

CONCLUSION

I hope today that we can focus on the critical issue before us—how the Federal Reserve should act to strengthen our economic recovery.

But if necessary, we must clearly show that efforts to hamstring the Fed are misguided.

Chair Yellen—thank you for appearing before the Joint Economic Committee today. I look forward to your testimony.

PREPARED STATEMENT OF JANET L. YELLEN, CHAIR, BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM

Chairman Coats, Ranking Member Maloney, and members of the Committee, I appreciate the opportunity to testify before you today. In my remarks I will discuss the current economic outlook before turning to monetary policy.

THE ECONOMIC OUTLOOK

The U.S. economy has recovered substantially since the Great Recession. The unemployment rate, which peaked at 10 percent in October 2009, declined to 5 percent in October of this year. At that level, the unemployment rate is near the median of Federal Open Market Committee (FOMC) participants' most recent estimates of its longer-run normal level. The economy has created about 13 million jobs since the low point for employment in early 2010, and total nonfarm payrolls are now almost 4½ million higher than just prior to the recession. Most recently, after a couple of months of relatively modest payroll growth, employers added an estimated 271,000 jobs in October. This increase brought the average monthly gain since June to about 195,000—close to the monthly pace of around 210,000 in the first half of the year and still sufficient to be consistent with continued improvement in the labor market.

At the same time that the labor market has improved, U.S. economic output—as measured by inflation-adjusted gross domestic product (GDP), or real GDP—has increased at a moderate pace, on balance, during the expansion. Over the first three quarters of this year, real GDP is currently estimated to have advanced at an annual rate of 2¼ percent, close to its average pace over the previous five years. Many economic forecasters expect growth roughly along those same lines in the fourth quarter.

Growth this year has been held down by weak net exports, which have subtracted more than ½ percentage point, on average, from the annual rate of real GDP growth over the past three quarters. Foreign economic growth has slowed, damping increases in U.S. exports, and the U.S. dollar has appreciated substantially since the middle of last year, making our exports more expensive and imported goods cheaper.

By contrast, total real private domestic final purchases (PDFP)—which includes household spending, business fixed investment, and residential investment, and currently represents about 85 percent of aggregate spending—has increased at an annual rate of 3 percent this year, significantly faster than real GDP. Household spending growth has been particularly solid in 2015, with purchases of new motor vehicles especially strong. Job growth has bolstered household income, and lower energy prices have left consumers with more to spend on other goods and services. Increases in home values and stock market prices in recent years, along with reductions in debt, have pushed up the net worth of households, which also supports consumer spending. Finally, interest rates for borrowers remain low, due in part to the FOMC's accommodative monetary policy, and these low rates appear to have been especially relevant for consumers considering the purchase of durable goods.

Other components of PDFP, including residential and business investment, have also advanced this year. Indeed, gains in real residential investment spending have been faster so far this year than last year, although the level of new residential construction still remains fairly low. And outside of the drilling and mining sector, where lower oil prices have led to substantial cuts in outlays for new structures, business investment spending has posted moderate gains.

Turning to inflation, it continues to run below the FOMC's longer-run objective of 2 percent. Overall consumer price inflation—as measured by the change in the price index for personal consumption expenditures—was only ¼ percent over the 12 months ending in October. However, this number largely reflects the sharp fall in crude oil prices since the summer of 2014. Because food and energy prices are volatile, it is often helpful to look at inflation excluding those two categories—known as core inflation—which is typically a better indicator of future overall inflation than recent readings of headline inflation. But core inflation—which ran at 1¼ percent over the 12 months ending in October—is also well below our 2 percent objective, partly reflecting the appreciation of the U.S. dollar, which has pushed down the prices of imported goods, placing temporary downward pressure on inflation. Even after taking account of this effect, however, inflation has been running somewhat below our objective.

Let me now turn to where I see the economy is likely headed over the next several years. To summarize, I anticipate continued economic growth at a moderate pace that will be sufficient to generate additional increases in employment and a rise in inflation to our 2 percent objective. Although the economic outlook, as always, is uncertain, I currently see the risks to the outlook for economic activity and the labor market as very close to balanced.

Regarding U.S. inflation, I anticipate that the drag due to the large declines in prices for crude oil and imports over the past year and a half will diminish next year. With less downward pressure on inflation from these factors and some upward pressure from a further tightening in U.S. labor and product markets, I expect inflation to move up to the FOMC's 2 percent objective over the next few years. Of course, inflation expectations play an important role in the inflation process, and my forecast of a return to our 2 percent objective over the medium term relies on a judgment that longer-term inflation expectations remain reasonably well anchored.

MONETARY POLICY

Let me now turn to the implications of the economic outlook for monetary policy. In the policy statement issued after its October meeting, the FOMC reaffirmed its judgment that it would be appropriate to increase the target range for the federal funds rate when we had seen some further improvement in the labor market and were reasonably confident that inflation would move back to the Committee's 2 percent objective over the medium term. That initial rate increase would reflect the Committee's judgment, based on a range of indicators, that the economy would continue to grow at a pace sufficient to generate further labor market improvement and a return of inflation to 2 percent, even following the reduction in policy accommodation. As I have already noted, I currently judge that U.S. economic growth is likely to be sufficient over the next year or two to result in further improvement in the labor market. Ongoing gains in the labor market, coupled with my judgment that longer-term inflation expectations remain reasonably well anchored, serve to bolster my confidence in a return of inflation to 2 percent as the disinflationary effects of declines in energy and import prices wane.

Committee participants recognize that the future course of the economy is uncertain, and we take account of both the upside and downside risks around our projections when judging the appropriate stance of monetary policy. In particular, recent monetary policy decisions have reflected our recognition that, with the federal funds rate near zero, we can respond more readily to upside surprises to inflation, economic growth, and employment than to downside shocks. This asymmetry suggests that it is appropriate to be more cautious in raising our target for the federal funds rate than would be the case if short-term nominal interest rates were appreciably above zero. Reflecting these concerns, we have maintained our current policy stance even as the labor market has improved appreciably.

However, we must also take into account the well-documented lags in the effects of monetary policy. Were the FOMC to delay the start of policy normalization for too long, we would likely end up having to tighten policy relatively abruptly to keep the economy from significantly overshooting both of our goals. Such an abrupt tightening would risk disrupting financial markets and perhaps even inadvertently push the economy into recession. Moreover, holding the federal funds rate at its current

level for too long could also encourage excessive risk-taking and thus undermine financial stability.

On balance, economic and financial information received since our October meeting has been consistent with our expectation of continued improvement in the labor market. And, as I have noted, continuing improvement in the labor market helps strengthen our confidence that inflation will move back to our 2 percent objective over the medium term. That said, between today and the next FOMC meeting, we will receive additional data that bear on the economic outlook. These data include a range of indicators regarding the labor market, inflation, and economic activity. When my colleagues and I meet, we will assess all of the available data and their implications for the economic outlook in making our policy decision.

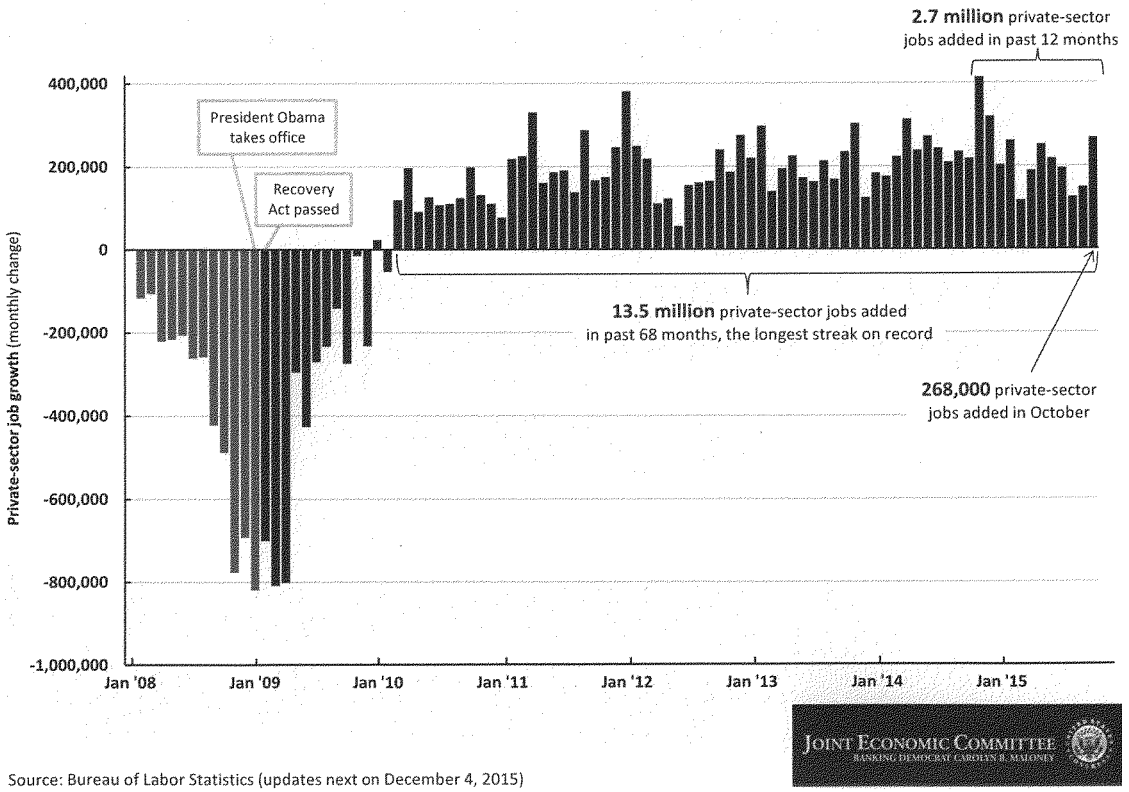
As you know, there has been considerable focus on the first increase in the federal funds rate after nearly seven years in which that rate was at its effective lower bound. We have tried to be as clear as possible about the considerations that will affect that decision. Of course, even after the initial increase in the federal funds rate, monetary policy will remain accommodative. And it bears emphasizing that what matters for the economic outlook are expectations concerning the path of the federal funds rate over time: It is those expectations that affect financial conditions and thereby influence spending and investment decisions. In this regard, the Committee anticipates that even after employment and inflation are near mandate-consistent levels, economic conditions may, for some time, warrant keeping the target federal funds rate below levels the Committee views as normal in the longer run.

SUMMARY

In closing, the economy has come a long way toward the FOMC's objectives of maximum employment and price stability. When the Committee begins to normalize the stance of policy, doing so will be a testament, also, to how far our economy has come in recovering from the effects of the financial crisis and the Great Recession. In that sense, it is a day that I expect we all are looking forward to.

Thank you. I would be pleased to take your questions.

Private-Sector Job Growth Continues in October



Source: Bureau of Labor Statistics (updates next on December 4, 2015)

Center on Budget and Policy Priorities | POLICY FUTURES

October 15, 2015

The Financial Crisis:
Lessons for the Next One

By Alan S. Blinder and Mark Zandi

The massive and multifaceted policy responses to the financial crisis and Great Recession — ranging from traditional fiscal stimulus to tools that policymakers invented on the fly — *dramatically* reduced the severity and length of the meltdown that began in 2008; its effects on jobs, unemployment, and budget deficits; and its lasting impact on today's economy.

Without the policy responses of late 2008 and early 2009, we estimate that:

- The peak-to-trough decline in real gross domestic product (GDP), which was barely over 4%, would have been close to a stunning 14%;
- The economy would have contracted for more than three years, more than twice as long as it did;
- More than 17 million jobs would have been lost, about twice the actual number.
- Unemployment would have peaked at just under 16%, rather than the actual 10%;
- The budget deficit would have grown to more than 20 percent of GDP, about double its actual peak of 10 percent, topping off at $2.8 trillion in fiscal 2011.
- Today's economy might be far weaker than it is — with real GDP in the second quarter of 2015 about $800 billion lower than its actual level, 3.6 million fewer jobs, and unemployment at a still-dizzying 7.6%.

We estimate that, due to the fiscal and financial responses of policymakers (the latter of which includes the Federal Reserve), real GDP was 16.3% higher in 2011 than it would have been. Unemployment was almost seven percentage points lower that year than it would have been, with about 10 million more jobs.

To be sure, while some aspects of the policy responses worked splendidly, others fell far short of hopes. Many policy responses were controversial at the time and remain so in retrospect. Indeed, certain financial responses were deeply unpopular, like the bank bailouts in the Troubled Asset Relief Program (TARP). Nevertheless, these unpopular responses had a larger combined impact on

growth and jobs than the fiscal interventions. All told, the policy responses — the 2009 Recovery Act, financial interventions, Federal Reserve initiatives, auto rescue, and more — were a resounding success.

Our findings have important implications for how policymakers should respond to the next financial crisis, which will inevitably occur at some point because crises are an inherent part of our financial system. As explained in greater detail in Section 5:

- It is essential that policymakers employ "macroprudential tools" (oversight of financial markets) *before* the next financial crisis to avoid or minimize asset bubbles and the increased leverage that are the fodder of financial catastrophes.
- When financial panics do come, regulators should be as consistent as possible in their responses to troubled financial institutions, ensuring that creditors know where their investments stand and thus don't run to dump them when good times give way to bad.
- Policymakers should not respond to every financial event, but they should respond aggressively to potential crises — and the greater the uncertainty, the more policymakers should err on the side of a bigger response.
- Policymakers should recognize that the *first* step in fighting a crisis is to stabilize the financial system because without credit, the real economy will suffocate regardless of almost any other policy response.
- To minimize moral hazard, bailouts of companies should be avoided. If they are unavoidable, shareholders should take whatever losses the market doles out and creditors should be heavily penalized. Furthermore, taxpayers should ultimately be made financially whole and better communication with the public should be considered an integral part of any bailout operation.
- Because fiscal and monetary policy interactions are large, policymakers should use a "two-handed" approach (monetary *and* fiscal) to fight recessions — and, if possible, they should select specific monetary and fiscal tools that reinforce each other.
- Because conventional monetary policy — e.g., lowering the overnight interest rate — may be insufficient to forestall or cure a severe recession, policymakers should be open to supplementing conventional monetary policy with *unconventional* monetary policies, such as the Federal Reserve's quantitative easing (QE) program of large-scale financial asset purchases, especially once short-term nominal interest rates approach zero.
- *Discretionary* fiscal policy, which has been a standard way to fight recessions since the Great Depression, remains an effective way to do so, and the size of the stimulus should be proportionate to the magnitude of the expected decline in economic activity.
- Policymakers should not move fiscal policy from stimulus to austerity until the financial system is clearly stable and the economy is enjoying self-sustaining growth.

The worldwide financial crisis and global recession of 2007-2009 were the worst since the 1930s. With luck, we will not see their likes again for many decades. But we will see a variety of financial

crises and recessions, and we should be better prepared for them than we were in 2007. That's why we examined the policy responses to this most recent crisis closely, and why we wrote this paper.

We provide details of the methods we used to generate the findings summarized above. But generally speaking, we use the Moody's Analytics model of the macroeconomy to simulate how growth, jobs, unemployment, and other variables might have evolved in the absence of the policy. We then compare this simulated path to what actually happened, identifying the differences as the impacts of the policy. That's a standard approach, one that, for example, the Congressional Budget Office used to evaluate the Recovery Act (whose findings, as we show, are similar to our own).

Table 1 shows the estimated impacts of the full panoply of policy responses, along with the impacts of two specific sub-categories: fiscal stimulus and the financial response. The columns show how much the policies boosted real GDP and jobs, and how much they reduced unemployment, in the years 2009-2012. (Details in the paper provide quarterly data through the second quarter of 2015 and include impacts on inflation as well.)

TABLE 1

Policy Responses to the Great Recession Boosted GDP and Jobs and Reduced Unemployment

		Cumulative Boost to Real GDP (%)	Cumulative Number of Jobs Added (Millions)	Cumulative Change in Unemployment (Percentage Points)
Total Policy Response	**2009**	6.0	3.6	-2.0
	2010	13.5	8.5	-5.4
	2011	16.3	10.1	-6.8
	2012	16.0	9.9	-6.7
Fiscal Stimulus, including Recovery Act	**2009**	1.6	0.8	-0.3
	2010	3.6	2.7	-1.2
	2011	3.3	2.7	-1.7
	2012	2.9	2.2	-1.4
Financial Response	**2009**	2.8	2.1	-1.0
	2010	5.6	4.5	-2.7
	2011	5.6	4.9	-2.9
	2012	6.4	4.9	-2.8

Sources: BEA, BLS, Moody's Analytics

Policymakers clearly made mistakes leading up to the financial crisis and Great Recession. They failed to prevent the housing and bond bubbles from inflating, under-regulated the financial system, and erred by treating the prospective failures of Bear Stearns and Lehman Brothers so differently. Not every one of their monetary, financial, and fiscal policies after the day Lehman Brothers filed for bankruptcy was effective, and the policymaking process was messy at times. But, as a whole, the policy response was a huge success. Without it, we might have experienced something approaching Great Depression 2.0.

Today, the economic expansion is more than six years old — longer than most expansions — and we're approaching full employment. It's been a long time coming, but it would have taken much longer without the timely, massive, and unprecedented responses of policymakers.

# # #

In July of 2010, the two of us published a comprehensive analysis of the panoply of policy interventions that, we argued, successfully mitigated the Great Recession and put the U.S. economy on the road to recovery.[1] The estimated impacts were significant. For example, we estimated that all the policies together reduced the peak-to-trough decline in real GDP by about 70% and held the maximum unemployment rate to 10% rather than letting it top out near 16%.

To this day, that analysis — in which we used the Moody's Analytics U.S. Macro Model extensively[2] — remains the only attempt we know of to assess the quantitative impacts of the entire package of policies (or at least most of them) promulgated by the Federal Reserve, the Treasury Department, the White House and Congress, and others. Now, with the benefit of a newly revised macro model, five more years of data, and a variety of published studies of individual pieces of policy, this paper is the second.

But it's more than that:

- Section 1 provides a very brief description of the origins of the cataclysm that hit us in 2007-2008.[3]
- Section 2 explains the numerous and sometimes creative policy interventions — fiscal, monetary, and financial — that policymakers deployed to limit the financial damage and mitigate the recession.
- Section 3 uses the Moody's model to assess the impacts of these policies on major macro variables, both as a whole and in parts. (Sections 2 and 3, which are the heart of this paper, replicate and extend our 2010 paper, and we find that our original estimates hold up well.)
- Section 4 addresses some of the major criticisms of the policies and briefly reviews some criticisms of our method of assessing their effects and some other studies — not based on macro econometric models — that have evaluated the effectiveness of some of the same policies.
- Finally, Section 5 seeks to draw lessons for the future. While it seems most unlikely that history will repeat itself, Mark Twain has reminded us that it often rhymes.

Section 1: Back to the Thirties?: What Hit Us

The U.S. and quite a few other countries experienced massive asset-price bubbles during the 2000s. Two kinds, mainly. The first was the well-known house-price bubble, which began in the early 2000s in the U.S. and started to burst in 2006 or 2007 (depending on which price index you

[1] See Blinder and Zandi (July 2010).

[2] See Zandi and Hoyt (April 2015).

[3] For far more detail, see Zandi (2009, 2012) or Blinder (2013).

use). The second was a global bubble in the prices of fixed-income securities—a "bond bubble," for short—or, what amounts to the same thing, the compression of risk premia to inexplicably low levels as investors either ignored or underpriced risk. As one stunning and poignant example, consider that the spread between Greek and German 10-year sovereign bond yields was razor-thin—below 35 basis points—for years up until just before the crisis hit.

When the housing and bond bubbles burst at about the same time, asset holders suffered huge capital losses. (Stock markets also swooned.) Worse yet, many investors had leveraged their positions, in some cases heavily, thereby magnifying the losses. Mountains of derivatives (MBS, CDOs, CDS, etc.), some of them complex and opaque, had been built upon the shaky foundations of dubious mortgages, inflated house prices, and compressed risk spreads—often creating huge amounts of additional leverage.

This complex, opaque, overleveraged and under-regulated house of cards began to shake, gently at first, in July 2007 when Bear Stearns told investors that there was "effectively no value left" in one of its mortgage-related funds. Market jitters got even worse in August, when BNP Paribas halted withdrawals on three funds based on U.S. subprime mortgages, telling its investors that "the complete evaporation of liquidity" in these markets "made it impossible to value [these] assets fairly." HSBC quickly followed, closing its U.S. subprime mortgage lending business in September 2007.[4]

The financial system was under mounting pressure thereafter, with markets experiencing a frightening roller-coaster ride, moving up and down as the ebb and flow of news varied from merely bad to truly horrible. But the world's financial system might not have collapsed as it subsequently did were it not for the inconsistent handling of a pair of stumbling investment banks: Bear Stearns and Lehman Brothers.

The stock- and bondholders of these two institutions were treated very differently by policymakers working to quell the gathering panic. Bear's shareholders lost most—but not quite all—of their equity when JP Morgan Chase took it over, but Bear's creditors were made whole by JP Morgan with help from the Fed. Almost six months later, shareholders and creditors of mortgage giants Fannie Mae and Freddie Mac received similar treatments. But on September 15, 2008, Lehman was sent to bankruptcy court, and everything fell apart. Lehman shareholders and bondholders were wiped out, thereby "solving" what economists call the moral hazard problem, an economic distortion that arises when a person or firm believes that part of its risk will be covered by some third party. After Lehman, creditors in other financial institutions no longer knew whether the U.S. government stood behind the financial system. Interbank lending stopped, risk spreads soared, and the worldwide financial crisis was on. Within days, the U.S. government, which had decided not to "bail out" Lehman, found itself bailing out or otherwise saving AIG, Bank of America, Citigroup, Goldman Sachs, Morgan Stanley, money market mutual funds, the commercial paper market, and much else.

What happened in the financial markets did not stay in the financial markets. The U.S. economy had been sputtering but not contracting before the Lehman bankruptcy.[5] But after Lehman, it began

[4] The three quotations in this paragraph come from company statements and can be found in Blinder (2013, p. 90).

[5] Real GDP grew by nearly 2% in 2007 and was essentially flat during the first half of 2008. The NBER dates the

to fall at a frightening pace: Real GDP declined by an annualized 8.2% in the fourth quarter of 2008 and 5.4% in the first quarter of 2009. Around that time, many people who are not prone to hysteria talked openly about the prospects of "Great Depression 2.0."

It did not happen, however; and we argue here (as we did in our 2010 paper) that one major reason was the extraordinary policy response from the Federal Reserve, the Treasury, the Federal Deposit Insurance Corp., the Federal Housing Administration, and Congress.[6] The list of policy initiatives that we present in Section 3 is long and complex. But a handful stand out. We believe, and offer supporting evidence below, that the economy would have fallen much further were it not for aggressive actions taken by the Fed and FDIC to shore up liquidity in the financial system early in the crises in late 2008: the Troubled Asset Relief Program, or TARP, passed in early October 2008; the bank stress tests, or SCAP, announced in February 2009 and completed in May 2009; the large fiscal stimulus known as the American Recovery and Reinvestment Act, passed in mid-February 2009; and the unprecedented easing of monetary policy that included near-zero short-term interest rates, which continue today, and several rounds of quantitative easing, the last of which ended in late 2014.

These policies, each one complex and controversial, led, we believe, to a surprising result: Even though the U.S. was at the epicenter of the financial crisis, we experienced one of the milder recessions in the world. For example, the peak-to-trough decline in real GDP in the U.S. was only 4.1%, compared with 6.9% in Germany (which had no housing bubble) and 6% in the U.K. (which did). Even in Canada, where there was neither a housing bubble nor a homegrown financial crisis, the GDP decline matched our own. Most other countries fared worse.

Recovery from the recession has been another matter, however. There the U.S. has less to brag about. In the six years since the official recession trough in the second quarter of 2009, U.S. GDP growth has averaged a mediocre 2.1% per annum. Only miserable productivity performance turned this sluggish GDP growth into millions of new jobs and a 4.7-percentage point drop in the unemployment rate since its peak in April 2010.

Part of the reason for the weak recovery, we will argue in Section 4, is that fiscal policy turned notably contractionary beginning in 2011. In addition, political brinkmanship that led to a government shutdown in October 2013 and a near default on the Treasury's debt payments created enormous uncertainties in an already-uncertain time. That weighed heavily on the collective psyche and presumably on business expansion plans. Even today, the long shadow of the Great Recession still constricts the flow of residential mortgage credit, particularly to first-time homebuyers, slowing the recovery from the housing bust.

Despite the recovery's disappointing performance, it has been much better than that of nearly all other countries that have suffered financial crises over the years. Japan is still trying to dig out from its financial implosion of a quarter century ago. History shows that making it back from a financial crisis is very difficult,[7] but the U.S. economy in recent years has done better than most.

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recession as starting in December 2007.

[6] This discussion focuses on the U.S. Similarly extraordinary responses took place in other countries.

[7] Reinhart and Rogoff (2009).

How the U.S. economy fared on the way down and on the way back up are matters of historical record. But parsing out the portions attributable to policy actions—whether in cushioning the downturn or supporting the recovery—requires a counterfactual: How would the economy have performed in the absence of some or all of the policy interventions? To answer questions like these, one needs a model; and in Section 4 we rely mostly on the Moody's Analytics model.

Section 2: The Policy Response: Massive and Multifaceted

The policy responses to the financial crisis and the Great Recession were massive and multifaceted (see Table 2). Not only did they include the aggressive use of standard monetary and fiscal policy tools, but new tools were invented and implemented on the fly in late 2008 and early 2009. Some aspects of the response worked splendidly, while others fell far short of hopes, and many were controversial—both in real time and even in retrospect. In total, however, we firmly believe that the policies must be judged a success.

TABLE 2

Cost of Federal Government Response to the Financial Crisis (billions of dollars)

	Originally Committed	Ultimate Cost
Total	**12,332**	**1,640**
Federal Reserve	6,699	15
Term auction credit	900	0
Other loans	Unlimited	3
Primary credit	Unlimited	0
Secondary credit	Unlimited	0
Seasonal credit	Unlimited	0
Primary Dealer Credit Facility (expired 2/1/2010)	Unlimited	0
Asset-Backed Commercial Paper Money Market Mutual Fund	Unlimited	0
AIG	26	2
AIG (for SPVs)	9	0
AIG (for ALICO, AIA)	26	1
Rescue of Bear Sterns (Maiden Lane)**	27	4
AIG-RMBS purchase program (Maiden Lane II)**	23	1
AIG-CDO purchase program (Maiden Lane III)**	30	4
Term Securities Lending Facility (expired 2/1/2010)	200	0
Commercial Paper Funding Facility** (expired 2/1/2010)	1,800	0
TALF	1,000	0
Money Market Investor Funding Facility (expired 10/30/2009)	540	0
Currency swap lines (expired 2/1/2010)	Unlimited	0
Purchase of GSE debt and MBS (3/31/2010)	1,425	0
Guarantee of Citigroup assets (terminated 12/23/2009)	286	0
Guarantee of Bank of America assets (terminated)	108	0

TABLE 2

Cost of Federal Government Response to the Financial Crisis (billions of dollars)

	Originally Committed	Ultimate Cost
Purchase of long-term Treasuries	300	0
Treasury	**1,160**	**40**
TARP	600	40
Fed supplementary financing account	560	0
Fannie Mae and Freddie Mac****	Unlimited	0
FDIC	**2,913**	**75**
Guarantee of U.S. banks' debt*	1,400	4
Guarantee of Citigroup debt	10	0
Guarantee of Bank of America debt	3	0
Transaction deposit accounts	500	0
Public-Private Investment Fund Guarantee	1,000	0
Bank resolutions	Unlimited	71
Federal Housing Administration	**100**	**26**
Refinancing of mortgages, Hope for Homeowners	100	0
Expanded Mortgage Lending	Unlimited	26
Congress	**1,460**	**1,484**
Economic Stimulus Act of 2008	170	170
American Recovery and Reinvestment Act of 2009***	808	832
Cash for clunkers	3	3
Additional emergency UI benefits	90	90
Education Jobs and Medicaid Assistance Act	26	26
Other stimulus	20	20
Tax Relief, Unemployment Insurance Reauthorization, and Job Creation Act of 2010	189	189
Temporary Payroll Tax Cut Continuation Act of 2011	29	29
Middle Class Tax Relief and Job Creation Act of 2012	125	125

* Includes foreign-denominated debt
** Net portfolio holdings
*** Excludes AMT patch
**** Assumes fair value accounting
Sources: Federal Reserve, Treasury, FDIC, FHA, Moody's Analytics

The essential first steps were a series of emergency rescue operations of the financial system—something that is never popular. The Federal Reserve flooded the system with liquidity, throwing a lifeline first to banks, then also to money-market funds, commercial paper issuers, broker-dealers, insurance companies, and investment banks. These initial steps were critical because financial institutions had all but stopped lending to one another, fearful of being dragged over the brink by another failing institution—a fear that was not unreasonable after Lehman Brothers collapsed. The FDIC acted by raising insurance limits on bank deposits to quell what appeared to be silent runs at

some major banks,[8] and by guaranteeing debt issued by depository institutions, which had been all but locked out of the bond market.[9] It seems fair to say that, absent a dire emergency, neither the Fed nor the FDIC would have considered any of these extraordinary measures.

Although the Fed's efforts were substantial and valiant, they were insufficient. Congress needed to act as well. After much hand-wringing, it did, by establishing a $700 billion bailout fund known as the Troubled Asset Relief Program. Congress initially voted TARP down, but quickly reversed itself after stockholders furiously dumped shares in reaction. The word "TARP" remains political poison to this day. No member of Congress wanted to be known for supporting a bailout of the Wall Street institutions that were at the root of the crisis. But doing so was essential.

In fact, TARP's real purpose was not to save Wall Street, but to protect Main Street. Yes, many banks were bailed out by receiving capital they desperately needed to survive. But had the banks failed, credit to businesses and households would have dried up, pushing the already-reeling economy deeper into the abyss.

The $700 billion authorized by Congress for TARP was never fully committed, and the ultimate cost to taxpayers will come in closer to $40 billion—far below initial loss estimates.[10] And much of that loss is accounted for by the auto bailout, which was not part of TARP's original purpose (see Table 3). Taxpayers actually made money on the part of TARP, which was the majority, that was used to bail out the financial system—although, of course, virtually all investors lost money when the financial system imploded. A few small-bank recipients of TARP money were not able to pay it back, but most, including all the large banks, repaid with both interest and capital gains on warrants.

TABLE 3

Troubled Asset Relief Program (billions of dollars)

	Originally Committed	Ultimate Cost
Total	**600**	**40**
Financial System Bailout	450	-5
Capital Purchase Plan	250	-16
Systemically Important Institutions	115	15
Federal Reserve (TALF)	55	-1
Public-Private Investment Fund (PPIP)	30	-3
Auto Bailout	84	17
GM	64	14
Chrysler	15	3
Auto suppliers	5	0

[8] The insurance limit was abolished altogether for business transaction accounts.

[9] By then, "depository institutions" had been defined to include the remaining giant investment banks, Goldman Sachs and Morgan Stanley.

[10] The Congressional Budget Office (2009, p. 1) initially estimated a 26% actuarial loss rate of TARP's disbursements to banks.

TABLE 3

Troubled Asset Relief Program (billions of dollars)

	Originally Committed	Ultimate Cost
Small-Business Aid	15	0
SBA loan purchase	15	0
Community Development Capital Initiative	N/A	0
Housing Bailout	52	28
Homeowner Affordability and Stability Plan	52	28
FHA Short Refinance program	N/A	0

Sources: Federal Reserve, Treasury, FDIC, FHA, Moody's Analytics

The financial panic was not fully subdued, however, until the biggest financial institutions were forced to recapitalize. In the spring of 2009, regulators demanded that banks figure out how much capital they needed in order to withstand massive losses comparable to those suffered in the Great Depression—the so-called stress tests. Then, if short, the bankers would have to go out and raise that much new equity from private investors. If they failed, they would have to accept capital from the government (using TARP funds) on highly unfavorable terms.

Bankers objected to this exercise loudly at first, since the stress tests were new and complex, and the thought of going hat in hand to investors for more capital was unpalatable. But regulators wisely overruled the banks, and the stress tests worked—probably better than anyone imagined. America's banks were recapitalized, and both the markets and the bankers themselves were reassured that the system was sound. A few short months after the U.S. financial system had effectively collapsed, it was up and running again. Note that stress-testing requires very little public spending, and hence provides a huge "big bang for the buck."

Stress-testing has since become a standard part of global financial regulation. When asked what he likes most about financial regulatory reform, former Fed Chairman Ben Bernanke often points to stress-testing.[11] European authorities have also conducted extensive stress tests, and the International Monetary Fund advocates their adoption by all member countries. The largest financial institutions in the world now stress-test their balance sheets and income statements every year; it has become a critical part of risk and capital management.

After getting the financial system back on solid ground, policymakers turned their attention to the faltering economy. The Federal Reserve jettisoned its historic go-slow approach, slashing short-term interest rates virtually to zero by December 2008. The Fed also brought out new monetary tools that had previously existed only in theory. Most notably, it engaged in quantitative easing, or QE, which entailed the purchase of trillions of dollars in Treasury and agency securities (such as mortgage-backed securities issued by government-sponsored enterprises). It also offered market participants a lot more forward guidance—in various forms—than it ever had before.

[11] See, for example, Bernanke (2013).

QE has its downsides, but it substantially lowered long-term interest rates.[12] Within a short time, homebuyers with good jobs and high credit scores could obtain mortgages at record low rates, which helped end the housing crash. QE also significantly lifted stock prices. The Fed had misjudged events leading up to the financial crises, but it committed itself to avoiding the same mistakes afterward.[13]

Away from Wall Street and the banks, the U.S. auto industry posed an especially vexing problem for the Bush and Obama administrations and Congress. U.S. automakers had been losing market share to more efficient foreign producers (including transplants on U.S. soil) for decades. Then the Great Recession hit and rising unemployment and shrinking credit made it much harder for Americans to afford new cars. Vehicle sales collapsed. Profits suffered even more, as the automakers tried desperately to maintain sales volumes by offering aggressive discounts and easier financing terms. By early 2009, GM and Chrysler were careening toward bankruptcy.

Worse, the turmoil in financial markets meant that the crippled auto companies might not find financing to keep their factories running during the months or years of restructuring that a normal bankruptcy would require. The obvious alternative was liquidation. But if Chrysler and GM closed down, other auto-related firms, maybe even Ford, would follow. The list of potential casualties included a vast network of parts suppliers and dealerships all over America. Millions of jobs were at stake, especially in the Midwest and South.

Washington's bailout of the auto industry was not pretty, and it certainly was not part of the standard playbook of economists who believe in "creative destruction." But it forestalled something much uglier, and it was essential to the subsequent revival of the industry.[14] By most metrics, it was a success,[15] although it cost taxpayers about $17 billon in TARP money (see Table 3).

Among the biggest and most controversial efforts to end the recession was the Obama administration's fiscal stimulus. The logic behind fiscal stimulus is straightforward: With businesses and consumers hunkered down, the government steps in by *temporarily* increasing its own spending and/or cutting taxes to induce households and businesses to spend more. The objective of such a stimulus is to mitigate or end recessions and/or to jump-start or propel a recovery, depending on the timing. Importantly, but often forgotten, a stimulus is *not* intended to speed up longer-term economic growth. To a first approximation, real GDP five years or so later should be the same with or without stimulus measures.

Using fiscal policy to combat a recession was hardly a novel idea in 2008-2009; it had been part of the response to every recession since World War II, and the size of the stimulus was always tied to the severity of the recession. The amount of the fiscal stimulus used to fight the recession of 2007-2009 was massive, however: equal to almost 10% of GDP, more than half of which came from the

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[12] For a good summary of the literature, see Williams (2014).

[13] While he was a Fed governor, Bernanke (2002) had famously pledged to Milton Friedman: "I would like to say to Milton and Anna [Schwartz]: Regarding the Great Depression. You're right, we did it. We're very sorry. But thanks to you, we won't do it again."

[14] Cash for clunkers, formally the Car Allowance Rebate System, in July-August 2009 also helped.

[15] See Rattner (2010) and Goolsbee and Krueger (2015).

American Recovery and Reinvestment Act (see Table 4). But the Great Recession was the worst downturn since 1937.

TABLE 4

Fiscal Stimulus During the Great Recession (billions of dollars)

	Spending
Total Fiscal Stimulus	**1,484**
Spending increases	783
Tax cuts	701
Economic Stimulus Act of 2008	**170**
American Recovery and Reinvestment Act of 2009	**832**
Infrastructure and other spending	**147**
Traditional infrastructure	38
Nontraditional infrastructure	109
Transfers to state and local governments	**188**
Medicaid	93
Education	95
Transfers to persons	**307**
Social Security	13
Unemployment assistance	224
Food stamps	46
COBRA payments	24
Tax cuts	**190**
Businesses & other tax incentives	40
Making Work Pay	64
First-time homebuyer tax credit	14
Individuals excluding increase in AMT exemption	72
Cash for Appliances	0.3
Cash for clunkers	**3**
HIRE Act (Job Tax Credit)	**17**
Worker, Homeownership, and Business Assistance Act of 2009	**91**
Extended unemployment insurance benefits (Mar 16)	6
Extended unemployment insurance benefits (Apr 14)	12
Extended unemployment insurance benefits (May 27)	3
Extended unemployment insurance benefits (Jul 22)	34
Extended/expanded net operating loss provisions of ARRA	33
Extended/expanded homebuyer tax credit	3
Department of Defense Appropriations Act of 2010	**2**
Extended guarantees and fee waivers for SBA loans	1
Expanded COBRA premium subsidy	1
Education Jobs and Medicaid Assistance Act	**26**
Tax relief, unemployment insurance reauthorization, and Job Creation Act of 2010	**189**

TABLE 4

Fiscal Stimulus During the Great Recession (billions of dollars)

	Spending
Temporary extension of UI benefits (outlay)	56
Temporary extension of investment incentives	22
Temporary payroll tax holiday (change in revenue)	112
Temporary Payroll Tax Cut Continuation Act of 2011	**29**
Middle Class Tax Relief and Job Creation Act of 2012	**125**

Sources: CBO, Treasury, Recovery.gov, IRS, Department of Labor, JCT, Council of Economic Advisors, Moody's Analytics

Several rounds of fiscal stimulus measures were fired at the recession. The first consisted of the tax rebates sent out near the end of the Bush administration. The largest—and most lastingly controversial—was the American Recovery and Reinvestment Act, which passed on a largely party-line vote just weeks after Barack Obama took office. The ARRA provided more than $830 billion in stimulus measures, much of it in the first three years after its passage in February 2009; about three-fourths of this was temporary spending increases, and the other fourth was tax cuts.[16] It worked. The job losses started to abate immediately,[17] and the Great Recession officially ended in June.

The stimulus was far less successful politically, however. Skepticism about its effectiveness was widespread, fueled in part by a serious marketing blunder made by the fledgling Obama administration. In selling the ARRA, also known as the Recovery Act, to a suspicious Congress, the administration argued that the act would prevent the unemployment rate from rising above 8%.[18] In fact, the unemployment rate was already about 8% by the time the administration took office—only nobody knew that. The economy was sinking so rapidly that the data could not keep up. Policymakers planning the stimulus were working with *forecasts* that severely underestimated how bad things would get, and with *data* that underestimated how bad things already were. It was a rookie mistake by the new president and his staff, but it handed their opponents a political sledgehammer with which they proceeded, inappropriately but effectively, to bash the stimulus—even claiming that it was somehow a "job killer."

Policymakers also focused—though not nearly enough, in our view—on the plummeting housing market, which was in a *depression*, not just a recession. A range of policy steps had been taken, beginning with the Bush administration's temporary tax break on mortgage debt forgiven in a short sale and with Hope for Homeowners, which was largely wishful thinking.

The Obama administration acted more aggressively, empowering government lenders Fannie Mae, Freddie Mac, and the FHA to fill the hole created by the collapse of private mortgage lending. The FHA's response was especially forceful. While the credit spigot closed for nearly all borrowers during the financial crisis, it remained open for mortgage borrowers because of the FHA—which was precisely what the agency's New Deal-era designers had in mind when they set it up. Without a

[16] See CBO (February 2015).

[17] But actual job growth did not resume until a year later, in March 2010.

[18] See Romer and Bernstein (2009).

steady flow of credit from the FHA, the housing market might have completely shut down, taking the already-reeling economy with it.

Government policy also succeeded in breaking the vicious deflationary psychology that had gripped the housing market. A series of tax credits for first-time homebuyers, each of which lasted only a few months, gave buyers a compelling reason to act rather than to wait for prices to fall further. Home sales gyrated as the credits were extended, withdrawn, and then extended again—an element of volatility directly attributable to the government. But at least the free fall in home sales and prices stopped.

Probably the *least* effective of the Obama administration's policy responses to the housing crash involved mortgage loan modifications and refinancings. Because foreclosure is costly to both homeowners and financial institutions, government officials hoped to persuade banks to change the terms of troubled mortgage loans, lowering either the interest rate or the principal owed, so as to keep homeowners in their homes. Loosening the rules on refinancing so that troubled homeowners could reduce their monthly payments also seemed promising. But these ideas worked better in theory than in practice. The Making Home Affordable Program, introduced by President Obama in mid-February 2009, was designed to push both modifications and refinancing. But it was underfinanced, under-promoted, and not effectively managed. While the program helped some, it fell well short of both expectations and needs.

With housing no longer in free fall and the economy recovering, policymakers turned later in 2009 to the daunting task of financial regulatory reform. The financial system's catastrophic failure demanded a reworking of the system's legal and regulatory plumbing. The Dodd-Frank Act, the reform legislation that became law in the summer of 2010 after a tortuous trip through Congress, made a vast number of changes to the financial system. This multifaceted law is not without its flaws, but overall it likely ensures that future financial crises will not be nearly as cataclysmic as the one we just suffered through.

One key reason for this is Dodd-Frank's clearly defined process for dealing with potential failures of financial institutions that are too big to fail (now called SIFIs, for Systemically Important Financial Institutions). Regulators had been partly confused and partly unable to handle nonbank institutions that threatened to fail in 2008—ranging from Bear Stearns to Fannie and Freddie to Lehman to AIG. A myriad of problems arose in managing those failures and near failures, which allowed the financial shock waves to propagate.

Dodd-Frank does not *solve* the too-big-to-fail problem; there will always be institutions whose failure would rock the system. But the law does make it more likely that such failures will be more orderly in the future. Requiring big institutions to formulate "living wills"—guiding regulators on how to unwind the firms' operations if they fail—also seems likely to help.

Importantly, although perhaps less well known, Dodd-Frank also institutionalized the bank stress tests that had so successfully ended the financial turmoil in 2009, thereby further reducing too-big-to-fail risk. The largest and most important financial institutions now must simulate adverse economic scenarios and study the effect on their balance sheets and income statements annually.

Dodd-Frank's most controversial provision, however, was probably the establishment of the Consumer Financial Protection Bureau. Although critics were right to worry about the added regulatory burden created by this new agency, the CFPB put consumer interests front and center in a way they had not been before. Part of the CFPB's mission is to ensure that financial products offered to consumers are appropriate to their needs, and that consumers have enough information to adequately evaluate these products. CFPB protections were sorely needed given the sometimes-dizzying complexity of financial services and the woeful state of consumer financial literacy—many homebuyers have a hard time understanding compound interest, never mind Libor and adjustable rate mortgages.

Dodd-Frank is far from a perfect law; some of its blemishes ought to get ironed out in subsequent legislation. In all, though, it should reduce the odds of another cataclysmic financial crisis. This does not mean that we will not experience big ups and downs, even asset-price bubbles, in the future, but these should not lead to a complete shattering of the financial system as we witnessed just a few years ago.

Section 3: Quantifying the economic impacts

To quantify the economic impacts of the aforementioned panoply of policies, we simulated the Moody's Analytics model of the U.S. economy under different counterfactual scenarios. In all scenarios, the federal government's automatic stabilizers—the countercyclical tax and spending policies that are implemented without explicit approval from Congress and the administration—are assumed to operate. So is the traditional monetary policy response via the Federal Reserve's management of short-term interest rates, albeit constrained by the zero lower bound.[19]

To assess the full impact of the policy response, the "No Policy Response" scenario assumes that, apart from the above, policymakers simply sit on their hands in response to the crisis. They take no extraordinary fiscal or monetary measures as the turmoil mounts. While it is hard to imagine that policymakers would stand still while such a downturn intensified, many critics of the policy responses have argued that is precisely what policymakers should have done.

To isolate the economic impacts of the fiscal stimulus, the "No Fiscal Stimulus" scenario assumes that policymakers do not implement any *discretionary* tax cuts and government spending increases. Policymakers in this scenario *do* bail out the financial system, and the Federal Reserve *does* take extraordinary steps to provide liquidity to the financial system and engages in quantitative easing. But there is no fiscal response. The "No Recovery Act Scenario" is similar, but it focuses only on the largest and most controversial fiscal stimulus: the ARRA.

In the "No Financial Policy" scenario, we assume that the full fiscal response happens but that the Federal Reserve does not act as the lender of last resort, refusing to implement the full range of liquidity provisions and quantitative easing that it actually did. Nor is the financial system bailed out

[19] Global economic growth and interest rates, the broad trade-weighted dollar, and oil and other commodity prices are determined in a model that is recursive to the Moody's Analytics U.S. macro model. The simulation results from the U.S. macro model are used to drive the global and commodity market models, the results of which are then used in a second-round simulation of the U.S. macro model.

via the FDIC's guarantee of bank debt, the bank stress-testing process, and the provision of equity capital via the TARP.

To separately analyze the economic impact of the Fed's controversial QE program, the "No Quantitative Easing" scenario assumes that the Fed does not engage in QE, but that all other aspects of the financial rescue happen as they actually did. Finally, to isolate the impacts of the bank bailout, the "No Bank Bailout" scenario assumes that all policy steps are taken *except for* the Fed's bank stress tests and the capital infusions from TARP.

The final scenario considered is the "No Auto Bailout" scenario, which examines the economic impact of policymakers' support to the U.S. auto industry. This support was neither a fiscal stimulus nor financial policy, and is thus considered independently.

All of the scenarios are simulated using the Moody's Analytics macro model over the period from the start of the Great Recession in 2008 through the first half of 2015. The differences between the economy's performance under each of the scenarios and its actual performance provide the model's estimates of the effects of the wide range of policies implemented to stem the financial crisis and end the Great Recession.

The macro model

Quantifying the economic impact of government policies is not an accounting exercise; it is an econometric one. Outcomes for employment and other measures of economic activity must be estimated by using a statistical representation of the economy based on historical relationships, such as the Moody's Analytics macro model.

The Moody's model is regularly used for similar purposes: forecasting, scenario analysis, bank stress-testing, and quantifying the economy-wide impacts of a range of policies. The Federal Reserve uses a similar model for its forecasting and policy analysis, as do the Congressional Budget Office and the Office of Management and Budget. Some important details about the model's specifications are mentioned in discussing the simulation results below.[20] There are both advantages and disadvantages to using such large macroeconometric models, but no other type of model is able to consider the totality of the policy responses to the Great Recession.

Modeling fiscal stimulus

The modeling techniques for simulating the various fiscal policy responses to the economic downturn are straightforward, and have been used by countless modelers over the years. While the scale of the fiscal stimulus was massive, most of the tax and government spending instruments have been used in past recessions. So little modeling innovation was required on our part.

This does not deny that there has been a heated debate over the efficacy of fiscal stimulus measures. Much of that debate has centered on the magnitude of the multipliers generated by various fiscal policy instruments. These multipliers measure the added economic activity generated by a change in taxes or government spending.

[20] See Zandi and Hoyt (April 2015).

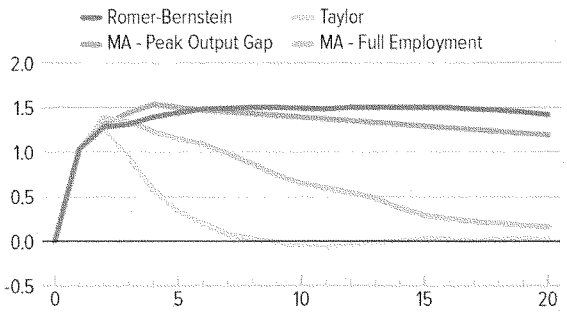
In its analysis of the expected impacts of the ARRA, in early 2009, the Obama administration estimated government spending multipliers that were persistently near 1.5—meaning that a $1 increase in government spending results in a $1.50 increase in GDP (see Figure 1).[21] In contrast, Professor John Taylor, a critic of fiscal stimulus, estimated that the multipliers were more than 1 initially but quickly faded away.[22]

In the Moody's Analytics macro model, the multipliers vary considerably depending on the precise fiscal policy instrument and on how far the economy is from full employment. Direct income support to low-income and unemployed individuals has some of the largest bang for the buck, with the temporary increase in SNAP benefits topping the list, as Table 5 shows.

FIGURE 1

Fiscal Multiplier Estimates

Estimates of federal government spending multipliers a given number of quarters after a policy change



Sources: BEA, Moody's Analytics

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When the economy has a large output gap, that is, when actual GDP is far below potential GDP, as it was in early 2009, the multipliers are large and persistent. For example, the early-2009 multiplier for infrastructure spending in the Moody's model is very close to what the Obama administration assumed. However, as the output gap disappears, the multipliers diminish quickly (see Figure 1). Indeed, when the output gap is zero—that is, when the economy is at full employment—the increase in government spending crowds out private sector output almost completely. The multipliers become quite small as the higher interest rates resulting from the increased government

[21] See Romer and Bernstein (2009).

[22] See Cogan and Taylor (2011).

spending and larger budget deficits reduce consumer spending and business investment nearly dollar for dollar.

TABLE 5

Fiscal Stimulus Multipliers (estimates of the one-year change in GDP for given reductions in federal tax revenue or increases in government spending)

	As of 2009 Q1	As of 2015 Q1
Tax Cuts		
Refundable lump-sum tax rebate	1.22	1.03
Nonrefundable lump-sum tax rebate	1.01	0.69
Temporary Tax Cuts		
Child Tax Credit, ARRA parameters	1.38	1.17
Making Work Pay	1.30	1.03
Payroll tax holiday for employees	1.27	0.94
Earned income tax credit, ARRA parameters	1.24	0.87
Job tax credit	1.20	0.85
Payroll tax holiday for employers	1.05	0.79
Across-the-board tax cut	1.02	0.66
Housing tax credit	0.90	0.61
Accelerated depreciation	0.29	0.23
Loss carryback	0.25	0.09
Permanent Tax Cuts		
Extend alternative minimum tax patch	0.53	0.44
Make dividend and capital gains tax cuts permanent	0.39	0.34
Cut in corporate tax rate	0.32	0.30
Spending Increases		
Temporary increase in food stamps	1.74	1.22
Temporary federal financing of work-share programs	1.69	1.13
Extension of unemployment insurance benefits	1.61	1.01
Increase in defense spending	1.53	0.87
Increase in infrastructure spending	1.57	0.86
General aid to state governments	1.41	0.58
Low Income Home Energy Assistance Program (LIHEAP)	1.13	0.55

Source: Moody's Analytics

Modeling quantitative easing

Modeling the myriad of policies used to address the collapse of the financial system was more difficult, given that most were unprecedented and unconventional. This task not only demanded some creativity, it also required us to make a number of simplifying assumptions and judgment calls.

To illustrate, consider our approach to modeling the Federal Reserve's quantitative easing programs. The federal funds rate is determined in the model by a modified Taylor rule: an equation that links the Fed's interest rate policy to economic and financial market conditions. Specifically, the Taylor rule in the model includes a measure of the equilibrium funds rate, the difference between the unemployment rate and the natural rate, the difference between inflation (as measured by the core consumer expenditure deflator) and the Fed's inflation target, and the VIX index—the implied volatility in Standard & Poor's 500 index options, which is a proxy for investor confidence in the stability of the financial system (see Appendix Table A1).[23] The nominal equilibrium funds rate is determined within the model, and equals the sum of the Fed's inflation target and the economy's estimated growth rate of real potential GDP.[24]

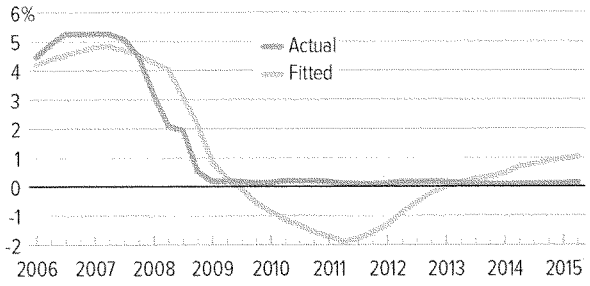
Of course, the Fed reduced the funds rate rapidly when the Great Recession struck. The rate hit the 0- to 25-basis point lower bound in December 2008. A few weeks prior to that, the Fed had announced its first large-scale bond-buying program, designed to push down long-term interest rates. In the model, QE kicks in once the fitted funds rate—the funds rate determined by the modified Taylor rule—falls below zero (see Figure 2). It is captured by an expansion of the assets held on the Fed's balance sheet. The size of the balance sheet directly impacts 10-year Treasury yields and fixed mortgage rates in the model, and those two interest rates, in turn, have wide-ranging impacts.

[23] The VIX is used as a measure of financial stability by the Federal Reserve in its CCAR stress test scenarios. The macro model does not use the VIX index constructed by the Chicago Board Options Exchange, but rather a similar measure that Moody's Analytics constructs.

[24] Potential is determined endogenously using a standard Solow growth model framework, with total factor productivity determined exogenously.

FIGURE 2

Fitted Versus Actual Federal Funds Rate



Source: BEA, Moody's Analytics

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The magnitude of the bond-buying and balance sheet expansion is calibrated to the actual QE-related bond-buying undertaken by the Fed. Most pre-existing estimates of the impact of QE on interest rates come from event studies using "windows" of various lengths around an announcement date. Those studies typically find that QE1, which helped bring moribund markets back to life, had more bang for the buck than subsequent rounds of QE. That cannot be true given the structure of the Moody's model. So, relative to the event-studies literature, we expect our simulations to show smaller early effects of QE1 and perhaps larger effects of subsequent rounds of QE.

Modeling the bank bailout

Modeling the channels through which the bank bailout impacted the economy is also challenging. The severity of the Great Recession was due in significant part to the collapse of the financial system, and the subsequent revival of the economy was due in no small part to the policy steps that brought the system back from the brink.

The macro model captures the interplay between the financial system and the economy through equations for commercial banks' Tier 1 capital, net charge-offs, assets outstanding, and return on assets.

The ratio of Tier 1 capital to risk-weighted assets is a key measure used by regulators to gauge the capital adequacy of financial institutions. The bank stress-testing process, which was first implemented in early 2009, requires banks to maintain a minimum level of Tier 1 capital under a "severe adverse" scenario that is similar in severity and duration to the Great Recession.[25] The

[25] There is also an "adverse" scenario which, while not as severe, moves some different economic variables. Banks must pass both.

current standard is that banks must have at least a 5.5% Tier 1 capital ratio after allowing for losses from the stress scenario.

The Tier 1 capital ratio is determined in the model by banks' returns on assets, as banks can use their profits to enhance their capital positions; by their net charge-off rates, as greater loan losses cut into capital; and by a measure of the capital that banks are required to raise to meet their regulatory minimums (see Appendix Table A2). The equity capital that the nation's largest banks were required to take from the TARP bailout fund during the financial crisis is also accounted for.

In the model, the Tier 1 capital ratio is an important driver of bank lending standards, as measured by the Federal Reserve's Senior Loan Officer Opinion Survey. Lending standards for commercial and industrial loans and for mortgage loans are particularly significant drivers of business investment and housing activity. As banks raise capital to meet their regulatory requirements, lending standards tighten, restricting credit availability and thus investment and housing demand. Once banks are adequately capitalized, credit conditions ease, supporting stronger investment and housing activity.

An illiquid and undercapitalized financial system also results in higher interest rates on loans, as financial institutions demand higher risk premia to compensate them for the prospect of not getting repaid in a timely manner. In the macro model, this angst in the financial system is captured by the VIX index. The VIX is a key driver of one-month Libor which, in turn, affects all interest rates in the model, including various interest rate *spreads* such as the spread between three-month Libor and three-month Treasury bills; the spread between fixed mortgage rates and 10-year Treasury bonds; and the spread of below-investment-grade corporate bond ("junk bond") rates over Treasuries. Interest rate spreads rose alarmingly during the crisis, but came tumbling down once policymakers responded. The impacts of the Fed's extraordinary liquidity provisions and the FDIC's move to guarantee bank debt during the height of the financial crisis are also captured in the one-month Libor equation (see Appendix Table A3).

One plus one is ... three?

When quantifying the economic impact of the policy response to the financial crisis and recession, one plus one is greater than two. Because the policies reinforce each other, the combined effects of different policies exceed the sum of the effects of each of the policies taken in isolation—often by large amounts.

To illustrate this dynamic, consider the impact of providing housing tax credits, which were part of the fiscal stimulus. The tax credits boost housing demand, which pushes house prices higher. Foreclosures then decrease, so the financial system suffers smaller mortgage loan losses. These smaller losses, in turn, enhance the capital of the banking system, allowing banks to ease underwriting conditions and reduce lending rates, which supports even greater economic activity. Hence housing tax credits increase the efficacy of monetary policy.

The Federal Reserve's effort to provide liquidity to the asset-backed securities market through the Term Asset-Backed Securities Loan Facility is another example of positive interactions. TALF was instrumental in supporting auto lending and auto sales, and thus enhancing the impact of the auto industry bailout.

There are also several important nonlinearities in the macro model that significantly amplify the economic impacts of policy changes. Particularly important in this regard is the model's relationship between consumer spending and consumer confidence. Confidence impacts spending through the wealth effect—the change in households' spending due to a change in their wealth. These positive wealth effects are modest when consumer confidence is low, but become larger when consumers are more confident. Therefore, a more muscular policy response to a financial crisis can have outsize economic benefits, if it lifts confidence sufficiently.

The relationship between capacity utilization and business investment is also highly nonlinear. Rising utilization rates do little to prompt more investment spending when they are low, but they have larger impacts on investment when factories, mines and utilities are operating closer to capacity. A policy response that supports a struggling economy will therefore have an extra-large economic benefit.

But the most important nonlinearity in the macro model is in the relationship between the VIX index and two key financial prices: interest rates and the value of the U.S. dollar. In the model, the VIX increases with lower capacity utilization and consumer confidence, higher price-earnings multiples for S&P 500 companies, lower bank capitalization (as measured by the Tier 1 capital ratio), and more systemic risk in the financial system as measured by the strength of the relationship between the expected default frequencies of publicly traded financial institutions (see Appendix Table A4).[26]

Movements in the VIX have outsize impacts on rates and the dollar, which in turn have large impacts on the economy. For example, big increases in the VIX signal that global investors are nervous, prompting a flight to quality into U.S. assets and an appreciation of the dollar—which is precisely what happened during the year after Bear Stearns collapsed in spring 2008. Policies that work quickly to head off such financial panic stem this flight to quality, and the economy benefits as the lower value of the dollar improves the nation's trade balance.

What actually happened?

Before turning to the model simulations, it is worth briefly considering how the financial system and economy have performed since the extraordinary measures taken by policymakers during the crisis.

The bailout of the financial system appears to have been both highly effective and efficient. As noted earlier, the system was near collapse in the turmoil of late 2008, but was already operating well by the late spring of 2009. Liquidity in the system had been restored and the nation's large banks had been sufficiently recapitalized to weather the mounting losses on their residential mortgages and other loans. Lenders remained cautious for a while, but credit flows began to normalize by 2011.

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[26] A financial institution's expected default frequency is a measure of the probability that the firm will default within one year. Default is defined as failure to make scheduled principal or interest payments. A firm defaults when the market value of its assets (the value of the ongoing business) falls below its liabilities payable (the default point). See Hughes and Malone (2015) for more details on EDFs and how they are used to measure the degree of systemic risk in the financial system.

Many critics hold that the bankers and their creditors got unfairly bailed out by taxpayers. There is also still some unfinished business left over from the crisis response. The mortgage giants, Fannie Mae and Freddie Mac, which were put into conservatorship early in the crisis, remain stuck there, the private residential mortgage securities market remains largely dormant, and monetary policy has yet to normalize.

These are all valid criticisms, several of which will be dealt with in Section 5 below. But it is important to acknowledge that without a well-functioning financial system the broader economy might never have gotten back on its feet. This view is bolstered by recent experiences in Europe and Japan, where the banking systems, and thus the economies, have struggled. Moreover, taxpayers ultimately made money on the bailout, as noted earlier. The Dodd-Frank Act also imposed substantial changes on the financial services industry, increasing the system's capitalization, increasing regulatory oversight, and mitigating the risk that financial institutions are too big to fail. The government continues to play an outsize role in the residential mortgage market, but that role is steadily diminishing.[27] The Fed has ended QE and, as this is written, appears poised to begin normalizing interest rates.

The economy's performance since the crisis and recession has fallen short of most expectations. While the Great Recession ended soon after the policy response to the crisis was in full swing, the pace of recovery has been slow. Real GDP growth has averaged only 2.1% per annum over the past six years, well below the 3% average growth experienced since World War II. Job growth has been more encouraging, mainly because productivity growth has nearly stalled, but the economy has begun getting closer to full employment only recently, nearly a decade since it was last there.

However, as we will soon show, it seems perverse to blame the economy's disappointing recovery on the policy responses. More likely, it was due to the inevitable headwinds created by the economy's deleveraging in the wake of the financial crisis, adjustments induced by the major reforms to the healthcare and financial system during this period, the premature turn from fiscal stimulus to fiscal austerity--and even the uncertainty created by political brinkmanship over the budget, which led to a government shutdown and a downgrade of U.S. Treasury debt.

The "No Policy Response" scenario

The substantial economic benefits from the wide-ranging policy responses to the crisis and recession are clearest when considering how poorly the economy might have performed if there had been no policy response at all. It probably would have been devastating. The peak-to-trough decline in real GDP, which was barely over 4% in reality, would have been close to 14%, a stunning number, according to the model. Furthermore, the economy would have contracted for more than three years, more than twice as long as the actual contraction (see Table 6 and Appendix Table B1).

[27] The share of mortgage originations for government mortgage lenders the FHA and Department of Veterans Affairs has significantly declined from the peak immediately after the recession. Fannie Mae and Freddie Mac are also ramping up their credit risk sharing with private sources of capital.

TABLE 6

Economic Impact of No Policy Response

		2008	2009	2010	2011	2012	2013	2014
Real GDP*	*No Policy*	14,757.2	13,602.6	13,030.0	12,919.9	13,236.5	13,867.2	14,827.5
% Change		-0.8	-7.8	-4.2	-0.8	2.5	4.8	6.9
Real GDP*	*Actual*	14,830.4	14,418.8	14,783.8	15,020.6	15,354.6	15,583.3	15,961.7
% Change		-0.3	-2.8	2.5	1.6	2.2	1.5	2.4
Payroll employment**	*No Policy*	137.1	127.6	121.8	121.8	124.2	128.1	133.6
% Change		-0.4	-6.9	-4.5	0.0	2.0	3.1	4.3
Payroll employment**	*Actual*	137.2	131.2	130.3	131.8	134.1	136.4	139.0
% Change		-0.6	-4.3	-0.7	1.2	1.7	1.7	1.9
Unemployment rate (%)	*No Policy*	5.8	11.2	15.0	15.7	14.7	12.8	9.5
Unemployment rate (%)	*Actual*	5.8	9.3	9.6	8.9	8.1	7.4	6.2
CPI***	*No Policy*	215.2	211.5	206.1	206.5	208.5	211.2	215.2
% Change		3.8	-1.7	-2.5	0.2	1.0	1.3	1.9
CPI***	*Actual*	215.3	214.6	218.1	224.9	229.6	233.0	236.7
% Change		3.8	-0.3	1.6	3.1	2.1	1.5	1.6

* Billions of 2009 dollars
** Millions
*** 1982-1984 = 100
Sources: BEA, BLS, Moody's Analytics

By the time employment hits bottom in the "No Policy Response" scenario, more than 17 million jobs have been lost, which is about twice the actual number, and unemployment peaks at just under 16% (instead of 10%). Though not determined in the model, it would not be surprising if the *under*employment rate, which includes marginally attached workers and part-timers who want full-time jobs, would have exceeded one-fourth of the labor force. This dour scenario is also characterized by deflation, as wages and prices decline through 2011.

Furthermore, the federal budget deficit (not shown in table) surges, peaking at $2.8 trillion, more than 20% of GDP, in fiscal 2011. This, too, is about double the size of the actual deficit—which peaked in fiscal 2009. Thus, even though the policy response was costly to taxpayers, not responding would have been much more costly.[28]

According to the Moody's Analytics model, had policymakers punted and not responded to the crisis, the economy would have unraveled into a 1930s-like depression. Indeed, to this day the economy would still be far weaker than it actually is. As of the second quarter of 2015, real GDP in

[28] The estimates presented in Table 9 are different from, but quite close to, the ones we presented in Blinder and Zandi (2010). The differences stem mainly from changes to the model between 2010 and 2015.

the "No Policy Response" scenario is still about $800 billion lower than actual, there are 3.6 million fewer jobs, and the unemployment rate is a still-dizzying 7.6%.

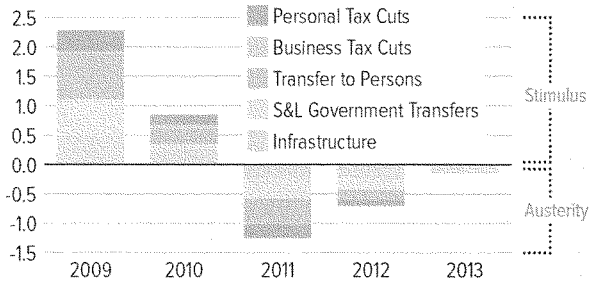
The "No Fiscal Stimulus" scenario

The use of fiscal stimulus measures to combat the recession may have been the most politically contentious of the policy steps taken to combat the recession. But it was critical in stanching the hemorrhaging of the economy and jump-starting the recovery. The Recovery Act (February 2009) included myriad tax and spending provisions. Combined, they added well over 2% to GDP in 2009 and an additional almost 1% by the end of 2010 (see Figure 3). The temporary tax cuts were particularly important in supporting consumer spending in the teeth of the downturn, but the spending, including increased outlays on infrastructure, boosted growth for longer. By 2011, the provisions of the Recovery Act were winding down, which weighed on growth, shaving over a percentage point from real GDP growth. The effects of this large fiscal stimulus package had largely faded away by 2013.

FIGURE 3

From Fiscal Stimulus to Fiscal Austerity

Recovery Act's percentage point contribution to real GDP growth



Source: Moody's Analytics

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But a string of other, smaller fiscal stimulus packages was to come, and taken together with the Recovery Act, they provided an important economic boost. This can be seen in the scenario in which it is assumed there is no fiscal stimulus, but that policymakers follow through on all the other policy efforts (see Table 7 and Appendix Table B2). The peak-to-trough decline in real GDP in this scenario is almost 6%, and employment declines by almost 11 million jobs.[29] The economy hits

[29] These effects are a bit larger than those presented in Blinder and Zandi in large part because of the additional fiscal stimulus provided by Congress after that paper was published. Changes to the macro model also contributed to the changed estimates.

bottom in late 2009, and by the time it finally gains traction in spring 2011, the unemployment rate peaks at almost 11%.

TABLE 7

Economic Impact of No Fiscal Stimulus

		2008	2009	2010	2011	2012	2013	2014
Real GDP*	**No Fiscal Stimulus**	14,784.0	14,187.3	14,271.3	14,536.4	14,927.2	15,306.0	15,851.2
% Change		-0.6	-4.0	0.6	1.9	2.7	2.5	3.6
Real GDP*	**Actual**	14,830.4	14,418.8	14,783.8	15,020.6	15,354.6	15,583.3	15,961.7
% Change		-0.3	-2.8	2.5	1.6	2.2	1.5	2.4
Payroll employment**	**No Fiscal Stimulus**	137.1	130.5	127.6	129.2	131.9	134.8	138.3
% Change		-0.3	-4.9	-2.2	1.2	2.1	2.2	2.6
Payroll employment**	**Actual**	137.2	131.2	130.3	131.8	134.1	136.4	139.0
% Change		-0.6	-4.3	-0.7	1.2	1.7	1.7	1.9
Unemployment rate (%)	**No Fiscal Stimulus**	5.8	9.6	10.8	10.6	9.5	8.4	6.6
Unemployment rate (%)	**Actual**	5.8	9.3	9.6	8.9	8.1	7.4	6.2
CPI***	**No Fiscal Stimulus**	215.2	213.6	214.6	219.7	223.8	227.1	231.2
% Change		3.8	-0.8	0.5	2.3	1.9	1.5	1.8
CPI***	**Actual**	215.3	214.6	218.1	224.9	229.6	233.0	236.7
% Change		3.8	-0.3	1.6	3.1	2.1	1.5	1.6

* Billions of 2009 dollars
** Millions
*** 1982-1984 = 100
Sources: BEA, BLS, Moody's Analytics

Without the fiscal stimulus, the federal budget deficit peaks at $1.6 trillion in fiscal 2010, and does not fall below $1 trillion until fiscal 2013. The cumulative difference between the deficits in this scenario and the government's actual deficits covers about three-fourths of the more than $1.4 trillion taxpayers shelled out to finance the stimulus packages. But the cost seems worth it. Without the stimulus, GDP, jobs and unemployment would have only recently caught up to the economy's actual performance.

The "No Recovery Act" scenario

The American Recovery and Reinvestment Act was far and away the largest and most controversial of the fiscal stimulus efforts. It was vital to ending the free fall in the economy and jump-starting the economic recovery. The Recovery Act was passed in February 2009, the recession ended in June 2009, and job growth resumed in February 2010.

According to the Moody's model, the maximum GDP impact from the Recovery Act occurred in 2010, when real GDP was 3.3% higher than if the stimulus had never been implemented (see Table

8 and Appendix Table B3). In terms of jobs, the stimulus added almost 3 million jobs at its apex, and the unemployment rate was reduced by more than 1.5 percentage points.

These results are consistent with those of the Congressional Budget Office in its analysis of the economic impact of the Recovery Act.[30]

TABLE 8

Estimated Impact of the American Recovery and Reinvestment Act

	Real GDP (%)			Employment (millions)			Unemployment Rate (percentage point)		
	CBO Low	CBO High	Moody's	CBO Low	CBO High	Moody's	CBO Low	CBO High	Moody's
2009	0.4	1.8	1.3	0.2	0.9	0.8	-0.1	-0.5	-0.4
2010	0.7	4.1	3.3	0.7	3.3	2.6	-0.4	-1.8	-1.4
2011	0.4	2.3	2.0	0.5	2.6	1.7	-0.2	-1.4	-1.1
2012	0.1	0.8	0.5	0.2	1.1	0.4	-0.1	-0.6	-0.2
2013	0.1	0.4	0.1	0.1	0.5	0.1	0.0	-0.3	-0.1
2014	0.0	0.2	0.0	0.1	3.0	0.0	0.0	-0.2	0.0

Source: Moody's Analytics, CBO

The "No Financial Policy Response" scenario

Re-establishing a stable financial system and healthy credit flows were a necessary condition for economic recovery. The long list of extraordinary policy responses that saved the nation's financial system—including the Fed's extraordinary efforts, the FDIC's guarantee of bank debt, the bank stress tests, and the recapitalization through TARP—was especially important.

In a counterfactual scenario that assumes that policymakers did not take any of the steps they did to shore up the financial system but did follow through on the fiscal policies just analyzed, the economy would have struggled through spring 2011 (see Table 9 and Appendix Table B4). According to the model, GDP would have declined 6.5% from peak to trough, employment would have fallen by more than 12.5 million jobs, and the unemployment rate would have risen to nearly 12.5%.[31] There is also a period of modest deflation in 2010 and very large budget deficits in this scenario.

Perhaps most disconcerting is that, to this day, the economy would still not have recovered what it lost in the recession. As of the second quarter of 2015, real GDP in this scenario is still about $600 billion shy of where it is currently, employment is lower by 3.2 million jobs, and the unemployment rate is 1.9 percentage points higher.

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[30] See CBO (2015)

[31] In our 2010 paper, the estimated effects on output and employment were a bit smaller, but the effect on the unemployment rate was slightly larger.

The "No Quantitative Easing" scenario

Controversy over the Fed's quantitative easing program has been extraordinarily heated. When the Fed first began QE1 in 2009, there was much hand-wringing over the prospects of runaway inflation due to the surfeit of bank reserves created by the Fed's bond-buying. However, inflation has remained subdued. Critics then shifted to claiming that QE is fomenting bubbles in various asset markets. Stock and property values may be a bit rich today, in part because of QE. But it is hard to argue that these markets have turned speculative in the sense that investors are flipping stocks and properties and using leverage to finance their buying and selling.

There are also worries that the Fed's policies are exacerbating the skewing of the distributions of income and wealth as older retirees who hold most of their savings in cash-like instruments have been hit hard by super-low interest rates. Some critics even worry that QE, by holding interest rates down, has let fiscal policymakers off the hook, as they did not need to make the hard budget-shrinking policy choices necessary for solid long-term growth.

Perhaps. All these objections are taken up in Section 5. But the evidence is strong that QE has done what it was intended to do, namely to lower long-term interest rates. This is captured in the macro model as follows: QE purchases push down the yield on 10-year Treasury bonds via the increase in the Fed's balance sheet (see Appendix Table A5). Every 1-percentage point increase in the ratio of Fed assets to GDP ultimately reduces the 10-year Treasury yield by close to 5 basis points in the model. Doing the arithmetic, this implies the Fed's QE program has reduced long-term Treasury yields by more than a percentage point.[32,33]

The lower long-term interest rates resulting from QE support stronger economic growth in the macro model via their impact on stock prices and housing values and the wealth effects on consumer spending. Lower long-term rates also lift business investment through a lower cost of capital, and support a better trade balance as the lower rates push down the value of the dollar.

In total, QE has increased the level of real GDP by approximately 1.5% as of the first quarter of 2015, according to the model (see Figure 4). Although the script on QE's success or failure is still being written, and it is unclear how graceful the normalization of the Fed's balance sheet will be, so far at least, it appears to be a significant success.

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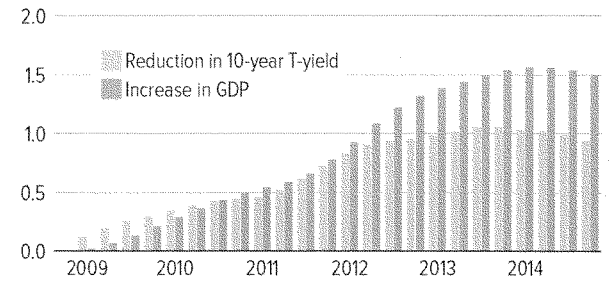
[32] QE likely also impacts the 10-year yield via global investors' expectations regarding the future conduct of monetary policy and the path of the federal funds rate. This signaling effect was especially large for the first round of QE, but much less important by the time QE3 was rolled out. QE by other global central banks has likely also impacted 10-year Treasury yields as the Treasury bond market is a global market. The European Central Bank's decision to begin QE in late 2014 has been especially important most recently. These effects are not explicitly captured in the macro model.

[33] Williams (2014, Table 1) presents a wide range of estimates for the effects of $600 billion worth of QE on long-term interest rates from 12 studies, mostly event studies. His range is 10 to 100 basis points. If we throw out the highest and the lowest, this huge range shrinks to a still-large 15 to 45 basis points. If we then blow up these estimates to the actual $1.425 trillion in QE in our Table, that range would translate to 36 to 107 basis points.

FIGURE 4

Quantitative Easing Lowered Rates, Supported Growth

Cumulative percentage point change in key variables



Sources: Federal Reserve, Moody's Analytics

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The "No Bank Bailout" scenario

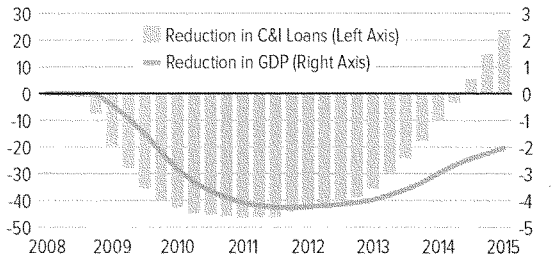
As for most of the policy responses to the financial crisis there is significant disagreement about the efficacy of the bank bailout. But without the bank stress tests and the TARP bailout funds, the nation's banking system likely would have remained undercapitalized, if not comatose, for much longer, impeding lending and economic growth. To what extent? To estimate that, the macro model was simulated under the scenario that the banks were *not* stress-tested and did *not* get capital injections from TARP.

With inadequate capital, banks respond by tightening their underwriting standards and raising their loan rates in an effort to shed risky assets. Commercial and industrial lending to businesses is hit especially hard, with outstandings cut nearly in half at their nadir in 2011 (see Figure 5). Commercial real estate and consumer lending is also much weaker. Residential mortgage lending is impacted less, owing to the effective nationalization of mortgage lending when Fannie Mae and Freddie Mac were placed into conservatorship.

FIGURE 5

Impact of Bank Bailout

Cumulative percentage point change from the fourth quarter of 2007



Sources: Federal Reserve, Moody's Analytics

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The fallout on the real economy is substantial (see Figure 5, Table 10, and Appendix Table B5). Credit is the mother's milk of economic activity. As illustrated by Europe, where the banking system was only recently adequately stress-tested and recapitalized, an economy will struggle to grow without well-functioning banks to extend credit. In the model, real GDP is lower by close to 4% at the bottom in 2011.

TABLE 10

Economic Impact of No Bank Bailout

		2008	2009	2010	2011	2012	2013	2014
Real GDP*	*No Bank Bailout*	14,830	14,237	14,293	14,414	14,740	15,030	15,559
% change		*-0.3*	*-4.0*	*0.4*	*0.8*	*2.3*	*2.0*	*3.5*
Real GDP*	*Actual*	14,830	14,419	14,784	15,021	15,355	15,583	15,962
% change		*-0.3*	*-2.8*	*2.5*	*1.6*	*2.2*	*1.5*	*2.4*
Payroll employment**	*No Bank Bailout*	137.2	130.2	127.5	128.5	130.8	133.5	136.9
% change		*-0.3*	*-5.1*	*-2.1*	*0.8*	*1.8*	*2.1*	*2.6*
Payroll employment**	*Actual*	137.2	131.2	130.3	131.8	134.1	136.4	139.0
% change		*-0.6*	*-4.3*	*-0.7*	*1.2*	*1.7*	*1.7*	*1.9*
Unemployment rate (%)	*No Bank Bailout*	5.8	9.9	11.5	11.1	10.2	9.2	7.5
Unemployment rate (%)	*Actual*	5.8	9.3	9.6	8.9	8.1	7.4	6.2
CPI***		215.3	213.7	212.8	216.2	218.8	221.3	224.8

TABLE 10

Economic Impact of No Bank Bailout

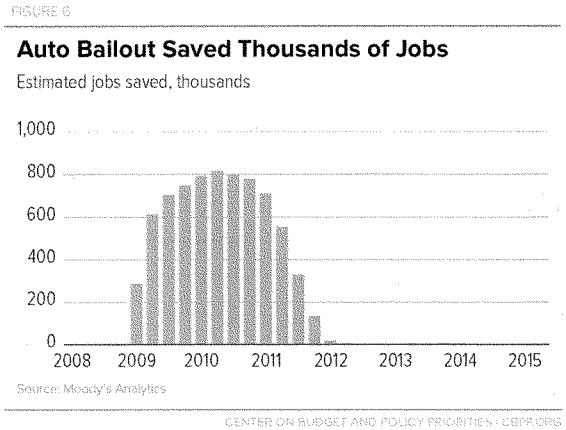
		2008	2009	2010	2011	2012	2013	2014
% change	*No Bank Bailout*	*3.8*	*-0.7*	*-0.4*	*1.6*	*1.2*	*1.2*	*1.6*
CPI***	*Actual*	215.3	214.6	218.1	224.9	229.6	233.0	236.7
% change		*3.8*	*-0.3*	*1.6*	*3.1*	*2.1*	*1.5*	*1.6*

* Billions of 2009 dollars
** Millions
*** 1982-1984 = 100
Sources: BEA, BLS, Moody's Analytics

The "No Auto Bailout" scenario

Policymakers agonized over their decision to provide financial aid to the reeling auto industry in late 2008. No one wanted to use taxpayer dollars to shore up the industry. But the fear was that, without any government help, the Big Three would quickly end up in a Chapter 7 liquidation rather than a Chapter 11 restructuring. Given the collapse in the financial system and resulting credit crunch, debtor in possession financing would be extremely difficult to get from private sources. So their factories and other operations might shut down, resulting in hundreds of thousands of layoffs at just the wrong time.

FIGURE 6



Neither the Bush nor Obama administration wanted to take that chance in a sliding economy. The Big Three employed fewer than 250,000 people in the U.S., but given their broad links into the rest of the economy, hundreds of thousands of other jobs would have been at risk immediately. Indeed,

according to the Moody's model, not providing help to the industry would have cost the economy 800,000 jobs at the peak of its impact in mid-2010 (see Figure 6).[34]

Section 4: Some criticisms of the policy interventions

We have just argued that the dramatic policy interventions pursued by the Federal Reserve, the Treasury, and Congress in 2008-2009 had large, and largely salutary, effects on the U.S. economy: ending the financial panic, mitigating the recession, and hastening the recovery. But, to put it mildly, not everyone agrees with that assessment, not to mention with our specific numerical estimates. And in fairness, we have focused on the impacts of the anti-recession policies on macro variables such as GDP and employment, thereby estimating the *benefits* of the extraordinary policies but not fully considering their potential *costs*.

What are some of these costs? Critics have focused on a list of issues that we take up in turn, albeit briefly.

Many of the emergency rescue operations created moral hazard problems that will plague us in the future.

There can be no doubt that several of the emergency actions taken by the Fed and the Treasury created or exacerbated moral hazard. Critics worry that this may prove problematic in the future when the precedents set in 2008-2009 either lead to excessive risk-taking, followed perhaps by more financial instability, or are violated, possibly recreating the sort of market chaos that occurred when the Bear Stearns precedent was not followed in the Lehman case. These are valid concerns. But we view it as a potentially catastrophic mistake to accept the argument "it creates moral hazard" as a show stopper. Rather, we think policymakers should conceptualize bailout decisions as *trade-offs*: trading the costs of potential moral hazard in the future against a potential catastrophe in the present.

Moral hazard costs are conjectural, difficult to quantify, and often distant in time, whereas the macroeconomic benefits from a stronger economy are clear, quantifiable (we have argued), and immediate. Critics point out that this contrast may skew decision-making in real time toward too many bailouts. So it seems important, *after the acute stage of the crisis has passed*, to install new policies that limit the potential for subsequent opportunistic behavior. That was one of the guiding principles of the Dodd-Frank Act, especially in its "orderly liquidation authority" and "no taxpayer-funded bailout" provisions.

Will it work? Only time will tell. But one way to make an educated guess about whether moral hazard is better or worse today than, say, before the series of financial institution rescues in 2008 is to study the behavior of credit default swap spreads for large too-big-to-fail financial institutions. Narrower spreads imply a lower market assessment of risk, some of which may stem from investors' beliefs that the government will bail out giant financial institutions if necessary—thus implying greater moral hazard (see Figure 7). Prior to the crisis, between 2004 and 2007, CDS spreads for these institutions averaged close to 20 basis points. This compares to a spread of over 60 basis points more recently. While many factors can impact CDS spreads, including the liquidity of trading

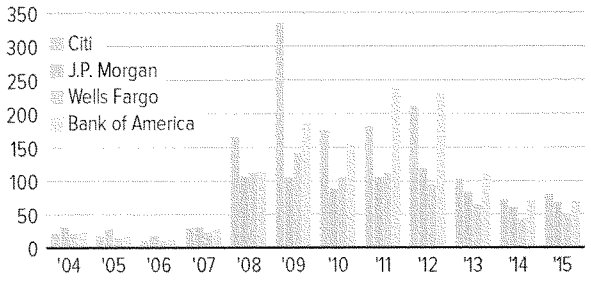
[34] See Zandi (2008) for a more thorough analysis of the auto bailout.

in these derivatives, this increase in spreads is large and suggestive that investors believe that the government is no longer backing these institutions as strongly as it did pre-crisis.

FIGURE 7

Fixing Too Big To Fail

CDS spreads for too-big-to-fail banks



Sources: Bloomberg, Moody's Analytics

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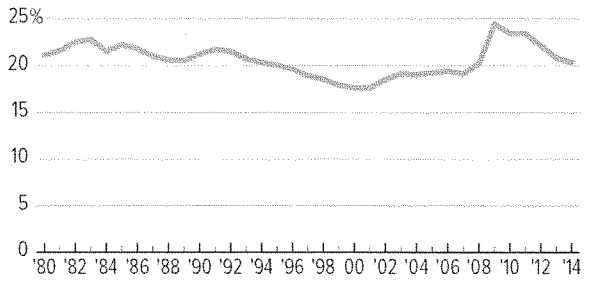
The spending parts of the 2009 fiscal stimulus unduly expanded the size of the federal government, were wasteful, and probably killed more jobs than they created.

Fiscal stimulus measures did fuel a surge in federal government spending during the recession and the early part of the economic recovery. But this was temporary—by design. The central idea behind fiscal stimulus is to lift government spending *temporarily* in bad economic times, and then, once the economy is back on its feet, to end the additional spending. That is precisely what happened during and after the Great Recession. Whether you measure federal spending in real or nominal terms or as a share of GDP, it peaked in the first quarter of 2010. Government spending remains low as a share of GDP and is about where it was during the Reagan presidency (see Figure 8).

FIGURE 8

Government Spending as a Share of GDP



Source: OMB

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Regarding waste, it is hard to imagine a package of more than $800 billion worth of federal spending, tax cuts, and grants to states and localities that does not include at least *some* waste, fraud and abuse. But the spending components of the Recovery Act appear to have had amazingly little of that, perhaps in part because of monitoring by the Recovery Act Transparency and Accountability Board.

It may be legitimate to argue that any particular government spending program is wasteful and inefficient, reflects the wrong priorities, or even usurps functions best left to the private sector. But it is difficult to imagine how more government spending could actually "kill" jobs.[35] After all, when it purchases goods and services, the federal government is either hiring people to work for it directly or buying products from private companies, who then probably hire more workers. How can either kill jobs? In the Moody's model, of course, as in other Keynesian macro models, that does not happen.

Some critics have argued that the conclusion that the stimulus created lots of jobs is built into the structure of these models. For example, the estimates in our 2010 paper could have been made *before* the stimulus was enacted; they *do not* depend on what actually happened in 2009-2012.[36] That is true, and one way to address this criticism is to look *ex post* at a variety of studies of particular pieces of the stimulus that ask whether they really stimulated spending or employment. Since our 2010 paper was published, a number of papers have done precisely that.

One of the first was by James Feyrer and Bruce Sacerdote (2011), who assessed the effectiveness of the 2009 stimulus spending by comparing what *actually* happened on the ground in states that

[35] The phrase "job-killing government spending" became a kind of mantra for House Speaker John Boehner (R-OH).

[36] See, for example, Cogan and Taylor (2011).

received *different* amounts of ARRA money. In making such geography-based assessments, it is important to deal with reverse causation. For example, states hit harder by the recession received more stimulus money than states that fared comparatively well. Failing to account for that econometrically would bias the estimated effects of the stimulus *downward*. Feyrer and Sacerdote (2011) use instrumental variables to do that, and find that the job impact of fiscal stimulus measures depends on the type of stimulus. Specifically, they estimate that federal education grants to states created hardly any jobs. But excluding those, the rest of the stimulus created jobs at approximately the rate that macro models suggest.

A paper by Daniel Wilson (2012), who focused on Medicaid grants (which were deliberately made fungible by the federal government) and highway funds across states, found broadly similar results, as did Gabriel Chodorow-Reich et al. (2011).

A paper by Timothy Conley and Bill Dupor (2013) is the main exception to the finding that *cross-sectional* studies based on *actual* data give roughly the same assessment of the stimulus' effects as *simulations* of *macro* models. They find strong positive effects of ARRA spending on *public-sector* employment but small or even negative effects on *private-sector* employment. Han Tran (2015), who obtains starkly different results, speculates that one reason may be that, unlike most other studies of stimulus spending, Conley and Dupor (2013) scale ARRA spending by state government *spending* (which was *directly* affected by the ARRA) instead of by state population or state GDP. Christina Romer (2011) suggests that Conley and Dupor (2013) may have a weak instruments problem.

The large fiscal stimulus increased the federal budget deficit, which left the country with a higher debt-to-GDP ratio, spelling future problems.

It is certainly true that the Recovery Act (and many of the other policy interventions) contributed to larger federal budget deficits, which increased from $459 billion in fiscal 2008 to a stunning $1.413 trillion in fiscal 2009. These bigger deficits did add to the nation's public debt, and the debt-to-GDP ratio nearly doubled.

But the imploding economy raised the nation's deficits and debt load even more,[37] and the effect of the weak economy on the fiscal situation would have been far larger without the policy interventions. Thus, while the policy interventions cost taxpayers a bundle, it would have cost them even more if policymakers did nothing and allowed the economy to descend into depression.

Furthermore, we agree with the majority of economists who think the cost-benefit calculus of running larger versus smaller deficits shifts dramatically in favor of deficits when the economy is depressed. So we consider the larger deficits of, say, 2009-2013 as a plus rather than a minus.

The government's response to the crisis was unfair. It bailed out the big banks and the automakers, but it did not help homeowners much, and millions lost their homes in foreclosure.

Many have criticized the policy response for being unfair. It was argued that the U.S. government engaged in crony capitalism, favoring some groups over others for political reasons. The Bush

[37] For a breakdown, see Table 8.1, page 235, in Blinder (2013).

administration was chastised for helping Goldman Sachs, where Treasury Secretary Henry Paulson had been the CEO. The Obama administration was hammered over the GM and Chrysler bailouts, which were said to favor labor unions over bondholders in those companies.

We sympathize with some of these critiques, especially the complaints that (a) more could and should have been done to limit foreclosures and (b) taxpayers could have been given more of the upside from the financial bailouts. But there are always winners and losers when policies change, and in this case the winners far outnumbered the losers. Would *other* Americans have been better off if the government had refused to save the (greedy and irresponsible) banks and the (incompetent) auto companies? We are pretty sure the answer is no. The policy responses were designed to get the biggest—and quickest—economic bang for the buck, not to promote distributional equity.

The Federal Reserve stretched its powers beyond the legal breaking point, in some cases poaching into the realm of fiscal policy.

While some of its actions were unprecedented, there can be little doubt that the Fed acted within its statutory authority. After all, before the Federal Reserve Act was amended by Dodd-Frank, the pliable Section 13(3) permitted the Board of Governors to extend credit to "any individual, partnership, or corporation" under "unusual and exigent circumstances" as long as borrowers posted good collateral for their loans. The circumstances of 2008-2009 were certainly "unusual and exigent," and every recipient of Federal Reserve credit was an "individual, partnership, or corporation." The collateral also appears to have been decent and, in any case, the law designated the Fed itself as the sole judge of that.[38] So legality is not a serious issue.

However, the Fed did put taxpayer money at risk each time it invested in (or loaned against, especially when the loans were without recourse) risky assets. And those can legitimately be considered quasi-fiscal operations. (In principle, they had scorable actuarial costs.) We agree that, in normal circumstances, the Fed should refrain from "spending" taxpayer money, even actuarially. But the circumstances of 2008-2009 were far from normal.

Congress, apparently, did not agree. When it wrote Dodd-Frank, it decided to constrain the Fed's emergency lending powers in the future. We think that was a mistake, by the way, which leaves the fire brigade less well-equipped to fight the next conflagration. (More on this in Section 6.)

The Federal Reserve sacrificed its independence by bending to the will of the administration and Congress.

We have heard this criticism but, frankly, do not understand the basis for it. Allan Meltzer (2009, p. 13), for example, has claimed that "Chairman Ben Bernanke ... worked closely with the Treasury and yielded to pressures from the chairs of the House and Senate Banking Committee and others in Congress." Bernanke certainly did work closely with Treasury Secretaries Henry Paulson and Timothy Geithner to extinguish the raging financial fires in 2008 and 2009; we hate to imagine what might have happened if he had not. But we do not see that as sacrificing the central bank's independence, and we do not see what congressional "pressures" Bernanke bowed to. Perhaps most

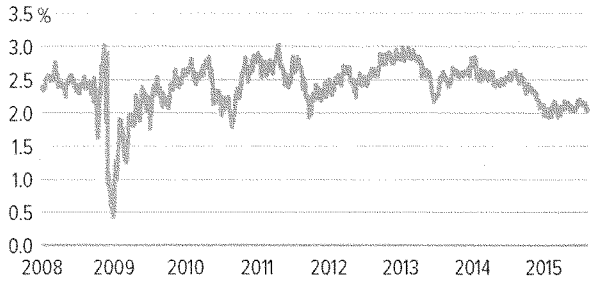
[38] As is well known, the Fed's stated reason for not bailing out Lehman Brothers was that Lehman lacked sufficient collateral.

fundamentally, we do not see the Fed as less independent today than it was in, say, 2007. Were that true, you might expect to see, for example, that *long-term* inflationary expectations became unhinged. They did not (see Figure 9).

FIGURE 9

Long-Term Inflation Expectations Stable

5-Year, 5-Year Forward Inflation Expectations



Sources: Federal Reserve Board, Moody's Analytics

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The Fed's hyper-expansionary monetary policies—in particular the creation of trillions of dollars of excess bank reserves—will eventually prove inflationary.

The future will have to speak for itself. But we know this much already: When the Fed announced the beginnings of what came to be called QE1 in November 2008, the 12-month trailing core CPI inflation rate was 2%. As of this writing, more than 6½ years later, it is 1.8%; and it has been flat as a board since August 2012, never rising above 2% nor falling below 1.6%. The inflation Cassandras, while consistently wrong for years, have never stopped issuing false alarms. They do not seem to recognize either (a) that excess reserves sitting idly in banks' accounts at the Fed do not create monetary or credit expansions, or (b) that bank reserves are basically like T-bills now that the Fed pays interest on reserves—and no one ever claimed that bank holdings of T-bills are inflationary. Finally, as just noted, market expectations do not agree with the inflation Cassandras.

Maintaining the near-zero interest rate policy, or ZIRP, for so long and engaging in massive quantitative easing risks creating bubbles and undermining financial stability.

Could be. The "bubble" criticism is hard to deal with because most bubbles are identifiable only after they burst—and there has been no such bursting to date. But bubbles are generally characterized by speculation, wherein investors purchase an asset simply because they think they can sell it quickly to another investor for a higher price. Such behavior is not much in evidence in asset markets today. We may someday look back at 2015's record stock market—which is almost certainly higher because of the Federal Reserve's actions—and declare that it was bubbly. We do not know that today, however,

and the S&P 500 has been more or less flat since the beginning of 2015. Nor have any of the other scare stories of financial instability stemming from ZIRP or QE come true. Time will tell.

ZIRP and QE have created a massive "exit" problem for the Fed, which is likely to go badly.

Two things almost certainly *are* true: The Fed will eventually shrink its balance sheet (which is now about $4.5 trillion) quite a lot, and the Fed will eventually push the funds rate much higher than it is today (0 to 25 basis points). Those adjustments, which are expected to start within months, are the essence of what is commonly called the Fed's "exit strategy," and the Fed has been talking about and planning for exit for years (actually, since 2009!).

Nonetheless, a number of observers fear that the job will overwhelm the Fed in practice. Specifically, it is often claimed that the Fed's reluctance to move fast enough will leave us with higher inflation in the end. We think exit, while a big job and unlikely to be executed perfectly, is not as difficult as is frequently portrayed—especially since the Fed can speed it up, slow it down, or otherwise modify the exit process as often as it wishes. No one can see the future; we will all have to wait. But we do know that inflationary expectations over the next decade remain low (see again Figure 9).

ZIRP and QE constitute financial repression that forces savers to struggle with extraordinarily low interest rates. It is the wealthy classes—the owners of stocks, bonds and real estate—who have benefited the most.

Ordinary savers, with their assets in CDs and other safe instruments, have indeed suffered from the low interest rate environment. But the number of people living off interest is very small. Most savers have other assets—such as stocks, bonds and real estate—that have benefited substantially from the Fed's efforts that have supported asset prices by keeping interest rates low. Furthermore, QE probably reduced income inequality by giving the recovery a boost. In total, any inegalitarian redistribution from QE seems to have been modest.[39]

The Fed's aggressive actions have taken fiscal policymakers off the hook, enabling them to avoid (or at least postpone) the hard fiscal decisions that would put the nation on a sound long-term fiscal path.

Perhaps. But the Fed had to work harder to support the economy once fiscal policymakers decided to push in the opposite direction. Moreover, while political counterfactuals can always be questioned, it seems a stretch to argue that Congress and the administration would have found it easier to work together if the Fed had not supported the flagging economy. Rather, fiscal policymakers might have bickered even more as the weaker economy fostered more political dissension. In our view, the economy would be in a far worse place today if the Fed had left more things up to the politicians.

In short, while there is some basis for some of these criticisms, we do not find any of them compelling. And we certainly do not believe that any of them—nor even the entire list—makes a

[39] See the results reported at a June 2015 Brookings Institution conference on this question at www.brookings.edu/events/2015/06/01-inequality-and-monetary-policy.

plausible case that policy passivity would have been wiser in 2008-2009 than the policy activism pursued by U.S. policymakers.

Section 5: The past as prologue: Lessons for "next time"

Only a few years have passed since the financial crisis and Great Recession, and more perspective may be necessary before we can claim to understand fully the lessons from that cataclysmic period. But some already seem clear.

In the spirit of addressing potential moral hazards before, as opposed to during, the crisis, policymakers should employ macroprudential tools to avoid or minimize asset bubbles and the increased leverage that are the fodder for financial catastrophes. Doing so includes requiring more capital and liquidity in the financial system, stress-testing financial institutions, and strengthening regulatory vigilance, particularly over large institutions and rapidly growing parts of the system. Yes, it is notoriously difficult to identify bubbles before they burst, but the old banking adage that "if it is growing like a weed, it is probably a weed" will help policymakers know where to look.

Nonetheless, despite policymakers' best efforts, there will be financial crises in the future. That is not all bad. Crises are an inherent part of our financial system; without them it is likely that the risk-taking necessary for strong long-term economic growth would be stymied. But when the good times roll, investors find it difficult to avoid getting caught up in the euphoria, to take on too much risk, and to saddle themselves with too much debt.

When financial panics do come, regulators should take care to be as consistent as possible. They should, for example, avoid the starkly different treatments of Bear Stearns and Lehman Brothers in 2008. The consistent resolution of troubled financial institutions is vital to ensure that creditors in the financial system know where their investments stand and thus do not run to dump them when the good times give way to the bad.

The line is subtle here: Policymakers should not respond to every financial event; after all, asset prices go up and down all the time. But they should respond aggressively to potential crises, wherein liquidity dries up throughout the financial system, threatening to take down many institutions and ultimately the entire financial system. Of course, making such a distinction in the fog of real time is difficult. But the greater the uncertainty, the more policymakers should err on the side of a bigger and more open response. That TARP was so big—at the time an unfathomable $700 billion—was a key to its success. Creditors had no doubt that the government was backstopping the financial system.

Furthermore, it seems to us that the *first* step in fighting a crisis is to stabilize the financial system. Without credit, the real economy will suffocate regardless of almost any other policy response. The Federal Reserve must ensure that there is substantial liquidity (as Walter Bagehot understood in the 19th century) and, if necessary, steps should be taken either to ensure or restore the solvency of systemically important institutions or to resolve them in an orderly way.[40] In this regard, we believe it

[40] Dodd-Frank provides for orderly liquidation.

is a mistake to limit the Fed's ability to provide emergency loans under Section 13(3) of the Federal Reserve Act, as Dodd-Frank has done.

Conventional monetary policy—that is, lowering the overnight interest rate—may be insufficient to forestall or cure a severe recession. This realization can lead policymakers in one of two directions—or both, if the recession is severe enough or happens suddenly. One direction is to supplement *conventional* monetary policy with *unconventional* monetary policies, such as QE, especially once short-term nominal interest rates approach zero.[41] While QE has potential downsides, critics need to learn that massive infusions of bank reserves are not inflationary if they just pile up willingly as excess reserves on banks' balance sheets.

The other direction is to deploy fiscal policy instruments such as tax cuts and government spending. Here critics need to remember that the effects of a temporary fiscal stimulus on budget deficits are temporary.[42]

Discretionary fiscal policy is an effective way to support an economy suffering a lengthy and severe downturn. Fiscal stimulus measures have been part of the standard policy playbook for combating recessions since the Great Depression. The size of the stimulus should be proportionate to the magnitude of the expected decline in economic activity. The specific tax and spending policies included as part of the stimulus should be based in large part on their efficacy or bang for the buck. But the policy steps taken may have to be more varied, or even experimental, when the downturn is anticipated to be deep. Tax breaks and transfers to persons, such as more food stamps and unemployment insurance, will generally help the economy quickly, but their benefits will fade quickly, too. Infrastructure and other spending will take longer to implement, but that could be a plus in a longer recession.

Fiscal policy should not swing from stimulus to austerity until it is clear that the financial system is stable and the economy is enjoying self-sustaining growth. A good rule of thumb is that the estimated unemployment gap—the difference between actual unemployment and the full-employment unemployment rate as a percent of the labor force—be clearly less than 1 percentage point and declining before the stimulus is withdrawn. Until the labor market is clearly approaching full employment, confidence and thus the economic recovery will remain fragile and vulnerable to almost anything that goes wrong. Policymakers may need to put other policies—for example, deficit reduction or entitlement reform—on hold until a self-sustaining expansion is under way.

Fiscal and monetary policy interactions are large, that is, fiscal stimulus measures enhance the power of monetary/financial stimulus measures substantially—and vice versa.[43] So there is a strong argument for using a "two-handed" (monetary *and* fiscal) policy approach to fighting recessions. Indeed, it may even be possible to select specific monetary and fiscal tools with an eye to those that

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[41] Economists used to speak of the "zero lower bound," but we have now seen that nominal interest rates can actually go negative.

[42] Except for the subsequently greater interest burden.

[43] For example, it is well known that fiscal policies have larger multipliers if monetary policy accommodates them by preventing interest rates from rising.

reinforce each other. The new homebuyers' tax credit, for example, enhanced the effectiveness of the Fed's purchases of mortgage securities in reducing mortgage rates, and vice versa.

Bailouts of companies—whether financial or not—should be avoided if at all possible. If they are unavoidable, shareholders should take whatever losses the market doles out and creditors should be heavily penalized to minimize moral hazard. To the maximum extent possible, such rules should be specified in advance. Furthermore, taxpayers should ultimately be made financially whole. Better communication with the public should be considered an integral part of any bailout operation. Bailouts will never be popular, but policymakers should expend every effort to make them less politically poisonous.

Increasing moral hazard should always be considered a cost of any rescue program, but it should not be a show stopper. There have been in the past, and we suspect there will be in the future, instances in which some sort of "bailout" or rescue operation passes a cost-benefit test even though it exacerbates moral hazard. Decisions must be made case by case.

Policymakers clearly made mistakes in the lead-up to the financial crisis and Great Recession. They failed to use macroprudential policy to weigh against the housing and bond bubbles, and they botched the resolution process of failing financial institutions. But they got the policy response to the crisis mostly right. Not every monetary, financial and fiscal policy step was effective, and the policymaking process was at times messy and counterproductive. But taken in its totality, the policy response was a huge success. Without it, we might have experienced Great Depression 2.0.

The economic expansion is more than six years old, longer than most expansions, and we are getting closer to full employment. It has been a long time coming, but it would have taken much longer without the massive and unprecedented response of policymakers.

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Appendix A

TABLE A1

What Explains the Federal Funds Rate?

Dependent variable: Federal Funds Rate

Method: Least squares

Sample: 1979Q1 to 2014Q4

144 observations

Variable	Coefficient	Standard Error	t-statistic
Federal funds rate lagged 1 qtr	0.752	0.045	16.89
Nominal potential GDP growth	0.258	0.053	4.91
Difference between actual and natural unemployment rate	-0.203	0.054	-3.73
Difference between core PCE inflation and Fed's target	0.429	0.084	5.08
VIX index, 2-qtr moving avg	-0.269	0.172	-1.56
R-squared	0.959		
Durbin-Watson	1.673		

Source: Moody's Analytics

TABLE A2

What Explains the Tier 1 Capital Ratio?

Dependent variable: Ratio of Tier 1 capital to risk-weighted assets

Method: Least squares

Sample: 2000Q1 to 2014Q4

57 observations

Variable	Coefficient	Standard Error	t-statistic
Constant	8.095	0.386	20.93
Net charge-off rate, 8-qtr moving avg	-2.79	0.85	-3.29
Return on assets	1.44	0.31	4.64
Dodd-Frank regulatory reform dummy	2.67	0.196	13.59
R-squared	0.86		
Durbin-Watson	0.774		

Source: Moody's Analytics

TABLE A3

What Explains One-Month Libor?

Dependent variable: 1-mo Libor
Method: Least squares
Sample: 1987Q2 to 2015Q1
112 observations

Variable	Coefficient	Standard Error	t-statistic
Constant	-0.072	0.386	20.93
Federal funds rate	0.996	0.85	-3.29
VIX	0.266	0.31	4.64
Fed/FDIC crisis liquidity provisions	-0.035	0.012	-3.02
Lagged 1-mo Libor	0.529	0.097	5.46
R-squared	0.997		
Durbin-Watson	2.19		

Sources: Moody's Analytics

TABLE A4

What Explains the S&P 500 VIX?

Dependent variable: S&P 500 VIX
Method: Least squares
Sample: 1978Q1 to 2014Q4
144 observations

Variable	Coefficient	Standard Error	t-statistic
Constant	2.495	1.035	2.411
Capacity utilization	-0.022	0.013	-1.738
Consumer confidence	-0.012	0.004	-3.259
S&P 500 price-earnings ratio	0.010	0.003	3.234
Commercial bank Tier 1 capital ratio	-0.254	0.061	-4.131
Systemic risk in the financial system	0.355	0.139	2.550
R-squared	0.382		
Durbin-Watson	1.769		

Sources: Moody's Analytics

TABLE A5

What Explains the 10-Year Treasury Yield?

Dependent variable: 10-yr Treasury bond yield

Method: Least squares

Sample: 1979Q1 to 2014Q4

144 observations

Variable	Coefficient	Standard Error	t-statistic
10-yr Treasury yield lagged 1 quarter	0.821	0.030	27.01
Federal funds rate	0.159	0.025	6.23
VIX	-0.089	0.077	-1.16
Ratio federal debt to GDP, 2-qtr moving avg	0.010	0.003	3.10
Ratio federal assets to GDP, 4-qtr moving avg	-0.010	0.008	-1.02
R-squared	0.976		
Durbin-Watson	1.515		

Sources: Moody's Analytics

Appendix B

TABLE B1

Economic Impact of No Policy Response

		2008 Q1	2008 Q2	2008 Q3	2008 Q4	2009 Q1	2009 Q2	2009 Q3	2009 Q4	2010 Q1	2010 Q2	2010 Q3	2010 Q4	2011 Q1	2011 Q2	2011 Q3
Real GDP*	*No Policy*	14,890	14,907.7	14,809.8	14,421.6	14,021.3	13,698.0	13,442.3	13,248.9	13,092.5	13,045.8	13,004.2	12,977.7	12,849.0	12,893.4	12,903.7
Annualized % change		*-2.7*	*0.5*	*-2.6*	*-10.1*	*-10.7*	*-8.9*	*-7.3*	*-5.6*	*-4.6*	*-1.4*	*-1.3*	*-0.8*	*-3.9*	*1.4*	*0.3*
Real GDP*	*Actual*	14,890	14,963	14,892	14,577	14,375	14,356	14,403	14,542	14,605	14,746	14,846	14,939	14,881	14,990	15,021
Annualized % change		*-2.7*	*2.0*	*-1.9*	*-8.2*	*-5.4*	*-0.5*	*1.3*	*3.9*	*1.7*	*3.9*	*2.7*	*2.5*	*-1.5*	*2.9*	*0.8*
Payroll employment**	*No Policy*	138.3	137.8	137.0	135.1	131.9	128.4	126.0	124.0	122.6	122.2	121.3	121.2	121.1	121.5	122.0
Annualized % change		*0.1*	*-1.5*	*-2.1*	*-5.5*	*-9.2*	*-10.2*	*-7.4*	*-6.2*	*-4.5*	*-1.3*	*-2.9*	*-0.4*	*-0.1*	*1.3*	*1.5*
Payroll employment**	*Actual*	138.28	137.81	137.1	135.49	133.23	131.37	130.4	129.88	129.73	130.36	130.34	130.65	131.01	131.65	132.08
Annualized % change		*0.1*	*-1.4*	*-2.0*	*-4.6*	*-6.5*	*-5.5*	*-2.9*	*-1.6*	*-0.5*	*2.0*	*-0.1*	*1.0*	*1.1*	*2.0*	*1.3*
Unemployment rate (%)	*No Policy*	5.0	5.3	6.0	7.0	8.8	10.6	12.1	13.4	14.1	14.9	15.4	15.8	15.7	15.7	15.8
Unemployment rate (%)	*Actual*	5.0	5.3	6.0	6.9	8.3	9.3	9.6	9.9	9.8	9.6	9.5	9.5	9.1	9.1	9.0
CPI***	*No Policy*	212.8	215.5	218.8	213.7	212.1	212.8	211.3	209.7	207.8	206.5	205.0	205.1	205.3	206.5	207.0
Annualized % change		*4.4*	*5.3*	*6.3*	*-9.0*	*-3.1*	*1.3*	*-2.7*	*-3.1*	*-3.4*	*-2.5*	*-2.9*	*0.2*	*0.4*	*2.4*	*1.0*
CPI***	*Actual*	212.8	215.5	218.9	213.9	212.4	213.5	215.3	217.0	217.4	217.3	217.9	219.7	222.0	224.6	226.1
Annualized % change		*4.4*	*5.3*	*6.3*	*-8.9*	*-2.7*	*2.1*	*3.5*	*3.2*	*0.6*	*-0.1*	*1.2*	*3.3*	*4.3*	*4.7*	*2.6*

Economic Impact of No Policy Response (Cont.)

		2011 Q4	2012 Q1	2012 Q2	2012 Q3	2012 Q4	2013 Q1	2013 Q2	2013 Q3	2013 Q4	2014 Q1	2014 Q2	2014 Q3	2014 Q4	2015 Q1	2015 Q2
Real GDP*	*No Policy*	13,033.4	13,129.1	13,214.2	13,268.1	13,334.6	13,509.8	13,697.7	13,972.8	14,288.6	14,432.5	14,727.5	14,993.0	15,157.1	15,272.1	15,472.8
Annualized % change		*4.1*	*3.0*	*2.6*	*1.6*	*2.0*	*5.4*	*5.7*	*8.3*	*9.4*	*4.1*	*8.4*	*7.4*	*4.5*	*3.1*	*5.4*
Real GDP*	*Actual*	15,190	15,291	15,362	15,381	15,384	15,457	15,500	15,614	15,762	15,725	15,902	16,069	16,151	16,177	16,270
Annualized % change		*4.6*	*2.7*	*1.9*	*0.5*	*0.1*	*1.9*	*1.1*	*3.0*	*3.8*	*-0.9*	*4.6*	*4.3*	*2.1*	*0.6*	*2.3*
Payroll employment**	*No Policy*	122.5	123.5	123.8	124.4	125.2	126.3	127.4	128.7	130.1	131.6	133.0	134.2	135.6	136.8	138.0
Annualized % change		*1.7*	*3.2*	*1.2*	*1.8*	*2.6*	*3.5*	*3.5*	*4.3*	*4.3*	*4.6*	*4.5*	*3.6*	*4.2*	*3.6*	*3.4*
Payroll employment**	*Actual*	132.63	133.45	133.85	134.26	134.84	135.54	136.1	136.64	137.3	137.84	138.64	139.38	140.23	141.01	141.6
Annualized % change		*1.7*	*2.5*	*1.2*	*1.2*	*1.7*	*2.1*	*1.7*	*1.6*	*1.9*	*1.6*	*2.3*	*2.2*	*2.5*	*2.2*	*1.7*
Unemployment rate (%)	*No Policy*	15.6	15.1	14.9	14.7	14.3	13.9	13.4	12.3	11.5	10.5	9.6	9.1	8.5	8.1	7.6
Unemployment rate (%)	*Actual*	8.6	8.3	8.2	8.0	7.8	7.7	7.5	7.2	7.0	6.6	6.2	6.1	5.7	5.6	5.4
CPI***	*No Policy*	207.2	207.8	207.9	208.5	209.8	210.4	210.3	211.5	212.4	213.7	215.2	216.1	216.0	214.8	216.9
Annualized % change		*0.3*	*1.2*	*0.2*	*1.2*	*2.4*	*1.2*	*-0.2*	*2.4*	*1.6*	*2.4*	*2.9*	*1.7*	*-0.1*	*-2.2*	*3.9*
CPI***	*Actual*	227.0	228.3	228.9	229.9	231.4	232.2	232.1	233.4	234.2	235.4	236.9	237.5	237.0	235.2	236.9
Annualized % change		*1.7*	*2.3*	*1.0*	*1.8*	*2.6*	*1.4*	*-0.1*	*2.3*	*1.4*	*2.1*	*2.4*	*1.2*	*-0.9*	*-3.1*	*3.0*

* Billions of 2005 dollars (seasonally adjusted annualized rate)
** Millions (seasonally adjusted)
*** 1982-1984 = 100 (seasonally adjusted)
Source: BEA, BLS, Moody's Analytics

TABLE B2

Economic Impact of No Fiscal Stimulus

		2008 Q1	2008 Q2	2008 Q3	2008 Q4	2009 Q1	2009 Q2	2009 Q3	2009 Q4	2010 Q1	2010 Q2	2010 Q3	2010 Q4	2011 Q1	2011 Q2	2011 Q3
Real GDP*	*No Fiscal Stimulus*	14,890	14,907	14,809	14,530	14,320	14,198	14,121	14,110	14,120	14,232	14,323	14,411	14,368	14,494	14,556
Annualized % change		-2.7	0.5	-2.6	-7.4	-5.6	-3.4	-2.2	-0.3	0.3	3.2	2.6	2.5	-1.2	3.6	1.7
Real GDP*	*Actual*	14,890	14,963	14,892	14,577	14,375	14,356	14,403	14,542	14,605	14,746	14,846	14,939	14,881	14,990	15,021
Annualized % change		-2.7	2.0	-1.9	-8.2	-5.4	-0.5	1.3	3.9	1.7	3.9	2.7	2.5	-1.5	2.9	0.8
Payroll employment**	*No Fiscal Stimulus*	138.3	137.8	137.0	135.4	133.2	130.9	129.5	128.3	127.5	127.8	127.4	127.7	128.0	128.8	129.6
Annualized % change		0.1	-1.5	-2.1	-4.6	-6.5	-6.7	-4.1	-3.7	-2.3	0.8	-1.1	0.6	1.0	2.7	2.5
Payroll employment**	*Actual*	138.3	137.8	137.1	135.5	133.2	131.4	130.4	129.9	129.7	130.4	130.3	130.7	131.0	131.7	132.1
Annualized % change		0.1	-1.4	-2.0	-4.6	-6.5	-5.5	-2.9	-1.6	-0.5	2.0	-0.1	1.0	1.1	2.0	1.3
Unemployment rate (%)	*No Fiscal Stimulus*	5.0	5.3	6.0	6.9	8.3	9.4	10.0	10.6	10.8	10.8	10.8	10.9	10.8	10.8	10.7
Unemployment rate (%)	*Actual*	5.0	5.3	6.0	6.9	8.3	9.3	9.6	9.9	9.8	9.6	9.5	9.5	9.1	9.1	9.0
CPI***	*No Fiscal Stimulus*	212.8	215.5	218.8	213.8	212.3	213.4	214.0	214.7	214.5	214.2	214.3	215.6	217.2	219.4	220.6
Annualized % change		4.4	5.3	6.3	-8.9	-2.8	2.1	1.3	1.3	-0.3	-0.5	0.0	2.5	3.1	4.1	2.2
CPI***	*Actual*	212.8	215.5	218.9	213.9	212.4	213.5	215.3	217.0	217.4	217.3	217.9	219.7	222.0	224.6	226.1
Annualized % change		4.4	5.3	6.3	-8.9	-2.7	2.1	3.5	3.2	0.6	-0.1	1.2	3.3	4.3	4.7	2.6

Economic Impact of No Fiscal Stimulus (Cont.)

		2011 Q4	2012 Q1	2012 Q2	2012 Q3	2012 Q4	2013 Q1	2013 Q2	2013 Q3	2013 Q4	2014 Q1	2014 Q2	2014 Q3	2014 Q4	2015 Q1	2015 Q2
Real GDP*	*No Fiscal Stimulus*	14,728	14,837	14,925	14,962	14,985	15,098	15,196	15,367	15,563	15,573	15,787	15,977	16,069	16,099	16,191
Annualized % change		*4.8*	*3.0*	*2.4*	*1.0*	*0.6*	*3.0*	*2.6*	*4.6*	*5.2*	*0.3*	*5.6*	*4.9*	*2.3*	*0.7*	*2.3*
Real GDP*	*Actual*	15,190	15,291	15,362	15,381	15,384	15,457	15,500	15,614	15,762	15,725	15,902	16,069	16,151	16,177	16,270
Annualized % change		*4.6*	*2.7*	*1.9*	*0.5*	*0.1*	*1.9*	*1.1*	*3.0*	*3.8*	*-0.9*	*4.6*	*4.3*	*2.1*	*0.6*	*2.3*
Payroll employment**	*No Fiscal Stimulus*	130.2	131.2	131.6	132.1	132.8	133.6	134.4	135.1	136.0	136.8	137.8	138.8	139.8	140.7	141.3
Annualized % change		*1.8*	*3.1*	*1.3*	*1.4*	*2.0*	*2.6*	*2.3*	*2.3*	*2.8*	*2.4*	*2.9*	*2.7*	*3.0*	*2.5*	*1.8*
Payroll employment**	*Actual*	132.6	133.5	133.9	134.3	134.8	135.5	136.1	136.6	137.3	137.8	138.6	139.4	140.2	141.0	141.6
Annualized % change		*1.7*	*2.5*	*1.2*	*1.2*	*1.7*	*2.1*	*1.7*	*1.6*	*1.9*	*1.6*	*2.3*	*2.2*	*2.5*	*2.2*	*1.7*
Unemployment rate (%)	*No Fiscal Stimulus*	10.3	9.8	9.6	9.4	9.2	9.0	8.7	8.2	7.7	7.3	6.7	6.5	6.0	5.8	5.6
Unemployment rate (%)	*Actual*	8.6	8.3	8.2	8.0	7.8	7.7	7.5	7.2	7.0	6.6	6.2	6.1	5.7	5.6	5.4
CPI***	*No Fiscal Stimulus*	221.4	222.6	223.1	224.0	225.4	226.2	226.2	227.5	228.4	229.7	231.2	232.1	231.8	230.2	232.2
Annualized % change		1.5	2.1	0.9	1.7	2.6	1.4	-0.1	2.4	1.6	2.3	2.7	1.5	-0.5	-2.6	3.4
CPI***	*Actual*	227.0	228.3	228.9	229.9	231.4	232.2	232.1	233.4	234.2	235.4	236.9	237.5	237.0	235.2	236.9
Annualized % change		*1.7*	*2.3*	*1.0*	*1.8*	*2.6*	*1.4*	*-0.1*	*2.3*	*1.4*	*2.1*	*2.4*	*1.2*	*-0.9*	*-3.1*	*3.0*

* Billions of 2009 dollars (seasonally adjusted annualized rate)
** Millions (seasonally adjusted)
*** 1982-1984 = 100 (seasonally adjusted)
Source: BEA, BLS, Moody's Analytics

TABLE B3

Estimated Impact of the American Recovery and Reinvestment Act

	Real GDP (%)			Employment (millions)			Unemployment Rate (percentage point)		
	CBO Low	CBO High	Moody's	CBO Low	CBO High	Moody's	CBO Low	CBO High	Moody's
2009									
Q1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Q2	0.4	1.3	0.8	0.1	0.5	0.5	-0.1	-0.3	-0.3
Q3	0.6	2.4	1.6	0.3	1.1	0.9	-0.2	-0.6	-0.5
Q4	0.7	3.3	2.7	0.5	1.9	1.6	-0.2	-1.0	-0.8
2010									
Q1	0.9	4.3	3.2	0.6	2.7	2.2	-0.3	-1.5	-1.1
Q2	0.8	4.6	3.3	0.7	3.4	2.6	-0.4	-1.8	-1.3
Q3	0.7	4.1	3.4	0.7	3.6	2.9	-0.4	-2.0	-1.5
Q4	0.6	3.5	3.3	0.6	3.5	2.7	-0.3	-1.9	-1.6
2011									
Q1	0.6	3.2	3.0	0.6	3.3	2.6	-0.3	-1.8	-1.6
Q2	0.4	2.5	2.4	0.5	2.9	2.0	-0.3	-1.6	-1.3
Q3	0.3	2.0	1.6	0.4	2.4	1.2	-0.2	-1.3	-0.8
Q4	0.2	1.5	1.1	0.3	2.0	0.8	-0.2	-1.1	-0.6
2012									
Q1	0.1	1.0	0.8	0.2	1.5	0.6	-0.1	-0.8	-0.5
Q2	0.1	0.8	0.6	0.2	1.2	0.4	-0.1	-0.6	-0.4
Q3	0.1	0.7	0.4	0.2	0.9	0.3	-0.1	-0.5	-0.3
Q4	0.1	0.6	0.3	0.1	0.8	0.2	-0.1	-0.4	-0.2
2013									
Q1	0.1	0.5	0.2	0.1	0.6	0.2	-0.1	-0.3	-0.1
Q2	0.1	0.4	0.1	0.1	0.5	0.1	0.0	-0.3	-0.1
Q3	0.1	0.4	0.1	0.1	0.5	0.1	0.0	-0.3	-0.1
Q4	0.0	0.3	0.0	0.1	0.4	0.1	0.0	-0.2	0.0
2014									
Q1	0.0	0.3	0.0	0.1	0.4	0.0	0.0	-0.2	0.0
Q2	0.0	0.2	0.0	0.1	0.3	0.0	0.0	-0.2	0.0
Q3	0.0	0.2	0.0	0.0	0.3	0.0	0.0	-0.1	0.0
Q4	0.0	0.2	0.0	0.0	0.2	0.0	0.0	-0.1	0.0

Source: Moody's Analytics, CBO

TABLE 64

Economic Impact of No Financial Policy

		2008 Q1	2008 Q2	2008 Q3	2008 Q4	2009 Q1	2009 Q2	2009 Q3	2009 Q4	2010 Q1	2010 Q2	2010 Q3	2010 Q4	2011 Q1	2011 Q2	2011 Q3
Real GDP*	*No Financial Policy*	14,890	14,963	14,891	14,498	14,161	14,012	13,948	13,972	13,933	13,982	14,021	14,087	14,015	14,106	14,128
Annualized % change		-2.7	2.0	-1.9	-10.2	-9.0	-4.2	-1.8	0.7	-1.1	1.4	1.1	1.9	-2.0	2.6	0.6
Real GDP*	*Actual*	14,890	14,963	14,892	14,577	14,375	14,356	14,403	14,542	14,605	14,746	14,846	14,939	14,881	14,990	15,021
Annualized % change		-2.7	2.0	-1.9	-8.2	-5.4	-0.5	1.3	3.9	1.7	3.9	2.7	2.5	-1.5	2.9	0.8
Payroll employment**	*No Financial Policy*	138.3	137.8	137.1	135.3	132.3	129.7	127.8	126.6	125.8	125.9	125.6	125.9	126.2	126.8	127.2
Annualized % change		0.1	-1.4	-2.0	-5.3	-8.3	-7.9	-5.7	-3.7	-2.3	0.2	-1.0	0.9	1.0	1.9	1.3
Payroll employment**	*Actual*	138.3	137.8	137.1	135.5	133.2	131.4	130.4	129.9	129.7	130.4	130.3	130.7	131.0	131.7	132.1
Annualized % change		0.1	-1.4	-2.0	-4.6	-6.5	-5.5	-2.9	-1.6	-0.5	2.0	-0.1	1.0	1.1	2.0	1.3
Unemployment rate (%)	*No Financial Policy*	5.0	5.3	6.0	7.0	8.5	10.0	10.9	11.8	12.0	12.4	12.3	12.4	12.0	12.0	11.9
Unemployment rate (%)	*Actual*	5.0	5.3	6.0	6.9	8.3	9.3	9.6	9.9	9.8	9.6	9.5	9.5	9.1	9.1	9.0
CPI***	*No Financial Policy*	212.8	215.5	218.9	213.8	212.2	213.1	213.5	213.6	212.7	211.8	211.2	212.1	213.3	215.0	215.8
Annualized % change		4.4	5.3	6.3	-8.9	-2.9	1.7	0.7	0.2	-1.6	-1.7	-1.1	1.6	2.3	3.3	1.5
CPI***	*Actual*	212.8	215.5	218.9	213.9	212.4	213.5	215.3	217.0	217.4	217.3	217.9	219.7	222.0	224.6	226.1
Annualized % change		4.4	5.3	6.3	-8.9	-2.7	2.1	3.5	3.2	0.6	-0.1	1.2	3.3	4.3	4.7	2.6

Economic Impact of No Financial Policy (Cont.)

		2011 Q4	2012 Q1	2012 Q2	2012 Q3	2012 Q4	2013 Q1	2013 Q2	2013 Q3	2013 Q4	2014 Q1	2014 Q2	2014 Q3	2014 Q4	2015 Q1	2015 Q2
Real GDP*	*No Financial Policy*	14,283	14,377	14,444	14,459	14,460	14,536	14,593	14,727	14,900	14,904	15,112	15,315	15,442	15,521	15,678
Annualized % change		*4.5*	*2.7*	*1.9*	*0.4*	*0.0*	*2.1*	*1.6*	*3.7*	*4.8*	*0.1*	*5.7*	*5.5*	*3.4*	*2.1*	*4.1*
Real GDP*	*Actual*	15,190	15,291	15,362	15,381	15,384	15,457	15,500	15,614	15,762	15,725	15,902	16,069	16,151	16,177	16,270
Annualized % change		*4.6*	*2.7*	*1.9*	*0.5*	*0.1*	*1.9*	*1.1*	*3.0*	*3.8*	*-0.9*	*4.6*	*4.3*	*2.1*	*0.6*	*2.3*
Payroll employment**	*No Financial Policy*	127.7	128.5	128.9	129.4	129.9	130.7	131.4	132.0	132.8	133.5	134.6	135.4	136.5	137.5	138.4
Annualized % change		1.7	2.6	1.2	1.3	1.9	*2.3*	*2.1*	*1.9*	*2.4*	*2.3*	*3.4*	*2.4*	*3.3*	*3.0*	*2.6*
Payroll employment**	*Actual*	132.6	133.5	133.9	134.3	134.8	135.5	136.1	136.6	137.3	137.8	138.6	139.4	140.2	141.0	141.6
Annualized % change		*1.7*	*2.5*	*1.2*	*1.2*	*1.7*	*2.1*	*1.7*	*1.6*	*1.9*	*1.6*	*2.3*	*2.2*	*2.5*	*2.2*	*1.7*
Unemployment rate (%)	*No Financial Policy*	11.5	11.1	11.1	10.8	10.6	10.6	10.2	9.8	9.5	9.1	8.5	8.3	7.8	7.6	7.3
Unemployment rate (%)	*Actual*	8.6	8.3	8.2	8.0	7.8	7.7	7.5	7.2	7.0	6.6	6.2	6.1	5.7	5.6	5.4
CPI***	*No Financial Policy*	216.2	216.9	217.1	217.8	219.1	219.7	219.6	220.8	221.5	222.7	224.1	224.8	224.4	222.7	224.4
Annualized % change		0.7	*1.4*	*0.4*	*1.3*	*2.3*	*1.2*	*-0.3*	*2.2*	*1.4*	*2.1*	*2.5*	*1.2*	*-0.7*	*-2.9*	*3.1*
CPI***	*Actual*	227.0	228.3	228.9	229.9	231.4	232.2	232.1	233.4	234.2	235.4	236.9	237.5	237.0	235.2	236.9
Annualized % change		*1.7*	*2.3*	*1.0*	*1.8*	*2.6*	*1.4*	*-0.1*	*2.3*	*1.4*	*2.1*	*2.4*	*1.2*	*-0.9*	*-3.1*	*3.0*

* Billions of 2009 dollars (seasonally adjusted annualized rate)
** Millions (seasonally adjusted)
*** 1982-1984 = 100 (seasonally adjusted)
Source: BEA, BLS, Moody's Analytics

TABLE B5

Economic Impact of No Bank Bailout

		2008 Q1	2008 Q2	2008 Q3	2008 Q4	2009 Q1	2009 Q2	2009 Q3	2009 Q4	2010 Q1	2010 Q2	2010 Q3	2010 Q4	2011 Q1	2011 Q2	2011 Q3
Real GDP*	*No Bank Bailout*	14,890	14,963	14,891	14,577	14,313	14,223	14,186	14,228	14,199	14,272	14,323	14,378	14,296	14,385	14,407
Annualized % change		-2.7	2.0	-1.9	-8.2	-7.1	-2.5	-1.0	1.2	-0.8	2.1	1.4	1.6	-2.3	2.5	0.6
Real GDP*	*Actual*	14,890	14,963	14,892	14,577	14,375	14,356	14,403	14,542	14,605	14,746	14,846	14,939	14,881	14,990	15,021
Annualized % change		-2.7	2.0	-1.9	-8.2	-5.4	-0.5	1.3	3.9	1.7	3.9	2.7	2.5	-1.5	2.9	0.8
Payroll employment**	*No Bank Bailout*	138.3	137.8	137.1	135.5	133.0	130.7	129.2	128.1	127.4	127.6	127.3	127.5	127.7	128.3	128.7
Annualized % change		0.1	-1.4	-2.0	-4.6	-7.2	-6.6	-4.7	-3.3	-2.1	0.7	-0.9	0.6	0.7	1.8	1.3
Payroll employment**	*Actual*	138.3	137.8	137.1	135.5	133.2	131.4	130.4	129.9	129.7	130.4	130.3	130.7	131.0	131.7	132.1
Annualized % change		0.1	-1.4	-2.0	-4.6	-6.5	-5.5	-2.9	-1.6	-0.5	2.0	-0.1	1.0	1.1	2.0	1.3
Unemployment rate (%)	*No Bank Bailout*	5.0	5.3	6.0	6.9	8.4	9.7	10.4	11.1	11.4	11.4	11.4	11.6	11.2	11.3	11.2
Unemployment rate (%)	*Actual*	5.0	5.3	6.0	6.9	8.3	9.3	9.6	9.9	9.8	9.6	9.5	9.5	9.1	9.1	9.0
CPI***	*No Bank Bailout*	212.8	215.5	218.9	213.9	212.3	213.2	214.7	214.8	213.6	212.4	212.3	213.0	214.6	216.1	216.9
Annualized % change		4.4	5.3	6.3	-8.9	-2.9	1.7	2.9	0.2	-2.2	-2.3	-0.1	1.4	2.9	2.9	1.4
CPI***	*Actual*	212.8	215.5	218.9	213.9	212.4	213.5	215.3	217.0	217.4	217.3	217.9	219.7	222.0	224.6	226.1
Annualized % change		4.4	5.3	6.3	-8.9	-2.7	2.1	3.5	3.2	0.6	-0.1	1.2	3.3	4.3	4.7	2.6

Economic Impact of No Bank Bailout (Cont.)

		2011 Q4	2012 Q1	2012 Q2	2012 Q3	2012 Q4	2013 Q1	2013 Q2	2013 Q3	2013 Q4	2014 Q1	2014 Q2	2014 Q3	2014 Q4	2015 Q1	2015 Q2
Real GDP*	*No Bank Bailout*	14,568	14,668	14,743	14,768	14,780	14,865	14,931	15,073	15,252	15,267	15,485	15,686	15,798	15,853	15,968
Annualized % change		4.6	2.8	2.1	0.7	0.3	2.3	1.8	3.9	4.9	0.4	5.8	5.3	2.9	1.4	2.9
Real GDP*	*Actual*	15,190	15,291	15,362	15,381	15,384	15,457	15,500	15,614	15,762	15,725	15,902	16,069	16,151	16,177	16,270
Annualized % change		*4.6*	*2.7*	*1.9*	*0.5*	*0.1*	*1.9*	*1.1*	*3.0*	*3.8*	*-0.9*	*4.6*	*4.3*	*2.1*	*0.6*	*2.3*
Payroll employment**	*No Bank Bailout*	129.3	130.1	130.5	131.0	131.6	132.4	133.1	133.8	134.6	135.4	136.5	137.4	138.4	139.3	140.1
Annualized % change		1.7	2.6	1.3	1.5	2.0	*2.4*	*2.2*	*2.1*	*2.5*	*2.4*	*3.1*	*2.8*	*2.9*	*2.7*	*2.1*
Payroll employment**	*Actual*	132.6	133.5	133.9	134.3	134.8	135.5	136.1	136.6	137.3	137.8	138.6	139.4	140.2	141.0	141.6
Annualized % change		*1.7*	*2.5*	*1.2*	*1.2*	*1.7*	*2.1*	*1.7*	*1.6*	*1.9*	*1.6*	*2.3*	*2.2*	*2.5*	*2.2*	*1.7*
Unemployment rate (%)	*No Bank Bailout*	10.8	10.4	10.3	10.1	9.8	9.7	9.4	9.0	8.6	8.1	7.6	7.3	6.8	6.6	6.4
Unemployment rate (%)	*Actual*	8.6	8.3	8.2	8.0	7.8	7.7	7.5	7.2	7.0	6.6	6.2	6.1	5.7	5.6	5.4
CPI***	*No Bank Bailout*	217.3	218.0	218.2	218.8	220.1	220.7	220.5	221.7	222.5	223.6	225.0	225.6	225.2	223.5	225.2
Annualized % change		0.8	1.3	0.3	1.3	2.2	1.1	-0.3	2.2	1.4	2.1	2.5	1.2	-0.8	-3.0	3.1
CPI***	*Actual*	227.0	228.3	228.9	229.9	231.4	232.2	232.1	233.4	234.2	235.4	236.9	237.5	237.0	235.2	236.9
Annualized % change		*1.7*	*2.3*	*1.0*	*1.8*	*2.6*	*1.4*	*-0.1*	*2.3*	*1.4*	*2.1*	*2.4*	*1.2*	*-0.9*	*-3.1*	*3.0*

* Billions of 2009 dollars (seasonally adjusted annualized rate)
** Millions (seasonally adjusted)
*** 1982-1984 = 100 (seasonally adjusted)
Source: BEA, BLS, Moody's Analytics

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BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM
WASHINGTON, D. C. 20551

JANET L. YELLEN
CHAIR

November 16, 2015

The Honorable Paul Ryan
Speaker of the House of Representatives
House of Representatives
Washington, D.C. 20515

The Honorable Nancy Pelosi
Democratic Leader
House of Representatives
Washington, D.C. 20515

Dear Mr. Speaker and Madam Leader:

I am writing regarding the House of Representative's consideration of H.R. 3189, the Fed Oversight Reform and Modernization (FORM) Act. The FORM Act would severely impair the Federal Reserve's ability to carry out its congressional mandate to foster maximum employment and stable prices and would undermine our ability to implement policies that are in the best interest of American businesses and consumers. This legislation would severely damage the U.S. economy were it to become law.

There are a number of harmful provisions in the FORM Act, but the provisions concerning the conduct of monetary policy are especially troubling. Section 2 of the bill would require the Federal Reserve to establish a mathematical formula or "directive policy rule" that would dictate how the Federal Open Market Committee (FOMC) adjusts the stance of monetary policy at every FOMC meeting. The Government Accountability Office (GAO) would be responsible for determining whether the rule adopted by the FOMC met all the criteria in the legislation. Any time the FOMC was judged not to be in compliance with the GAO-approved rule, the GAO would be required to conduct a full review of monetary policy and submit a report to the Congress. Moreover, the GAO would also be required to conduct a full review of monetary policy and report to the Congress any time the FOMC changed its policy rule.

These provisions are significantly flawed for a number of reasons. Most importantly, the provisions effectively cast aside the bipartisan approach toward monetary policy oversight developed by the Congress in the late 1970s. Under that approach, the Congress establishes the long-run objectives for monetary policy but affords the Federal Reserve a considerable degree of independence in how it goes about achieving those statutory goals, thus ensuring that the conduct of monetary policy is insulated from political influence. This framework is now recognized as a fundamental

principle of central banking around the world. The provisions of the FORM Act, in contrast, would effectively put the Congress and the GAO squarely in the role of reviewing short-run monetary policy decisions and in a position to, in real time, influence the monetary policy deliberations leading to those decisions.

Conducting monetary policy by strictly adhering to the prescriptions of a simple rule would lead to poor economic outcomes. There is no consensus among economists or policymakers about a simple policy rule that is best suited to cover a wide range of scenarios. For example, even during the period known as the Great Moderation, in the 1980s and 1990s, when a simple rule might have been expected to work well, the actual level of the federal funds rate often diverged substantially from the level prescribed by the reference rule included in the FORM Act. Indeed, for much of this period, monetary policy was actually tighter than what would have been the case under that rule.

Even more tellingly, no simple policy rule has yet been devised that would adequately address the effective lower bound on the policy rate--a constraint that has been binding in the United States since late 2008. Had the FOMC been compelled to operate under a simple policy rule for the past six and a half years, the unemployment experience of that period would have been substantially more painful than it already was, and inflation would be even further below the FOMC's 2 percent objective. Indeed, a recent study by Federal Reserve economists suggests that the current unemployment rate would still be above 6 percent and inflation would now be running somewhat below zero, if the FOMC had not taken the actions it did but rather had followed the reference rule and made it clear that it would do so in the future.[1] In other words, millions of Americans would have suffered unnecessary spells of joblessness over this period, generating enormous amounts of personal and collective damage that could have been avoided--and, in fact, was avoided because we had the latitude to use our available tools responsibly and forcefully.

In addition to allowing the GAO to conduct a review specifically related to the "directive policy rule," Section 13 of the FORM Act also allows GAO to more broadly review and analyze the monetary policy decisions of the Federal Reserve at any time. This provision would politicize monetary policy and bring short-term political pressures into the deliberations of the FOMC by putting into place real-time second guessing of policy decisions. Such action would undermine the independence of the Federal Reserve and likely lead to an increase in inflation fears and market interest rates, a diminished status of the dollar in global financial markets, and reduced economic and financial stability.

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[1] Engen, Eric M., Thomas Laubach, and David Reifschneider (2015). "The Macroeconomic Effects of the Federal Reserve's Unconventional Monetary Policies," Finance and Economic Discussion Series 2015-005. Board of Governors of the Federal Reserve System (U.S.). http://dx.doi.org/10.17016/FEDS.2015.005.

The Honorable Paul Ryan
The Honorable Nancy Pelosi
Page Three

The provision is based on a false premise--that the Federal Reserve is not subject to an audit. To the contrary, under existing law, the financial statements of the Federal Reserve System are audited annually by an independent accounting firm under the supervision of the Inspector General for the Board. These audited financial statements are made publicly available and provided to Congress annually. The GAO may also conduct an audit of the Board's financial statements and of transactions that the Federal Reserve conducts in the course of its lending and other activities. In addition, each week the Federal Reserve publishes its balance sheet and charts of recent balance sheet trends, as well as every security the Federal Reserve holds, along with each security's CUSIP number. Moreover, as specified in the Dodd-Frank Wall Street Reform and Consumer Protection Act, the Federal Reserve now releases detailed transaction level information for all open market operations and discount window lending with a two-year lag.

I am concerned about other provisions in the FORM Act as well, including the debilitating restrictions on the Federal Reserve's emergency lending authorities. In the face of a future crisis--where the collapse of the financial system is on the scale of the Great Depression or the recent financial crisis--I believe it is essential that the Federal Reserve have the emergency lending powers necessary in those circumstances to support the flow of credit to households and businesses and mitigate harm to the U.S. economy. The FORM Act would essentially repeal the Federal Reserve's remaining ability to act in a crisis. I am also deeply troubled by provisions related to the Federal Reserve's supervisory responsibilities, particularly those that would undermine the strength and effectiveness of our stress tests and impede our ability to advocate internationally for standards that are in the best interest of U.S. businesses and consumers.

Throughout my career and certainly during my many years working within the Federal Reserve System, I have been an advocate for greater openness and transparency. As Chair, I remain committed to these important issues. Accountability and transparency of public institutions are critical in a democratic society. Unfortunately, the FORM Act attempts to increase transparency and accountability through misguided provisions that would expose the Federal Reserve to short-term political pressures. For these reasons, I urge the House not to adopt the FORM Act. The bill would severely impair the Federal Reserve's ability to carry out its congressional mandate and would be a grave mistake, detrimental to the economy and the American people.

Sincerely,

Janet L. Yellen

Cc: The Honorable Jeb Hensarling
The Honorable Maxine Waters

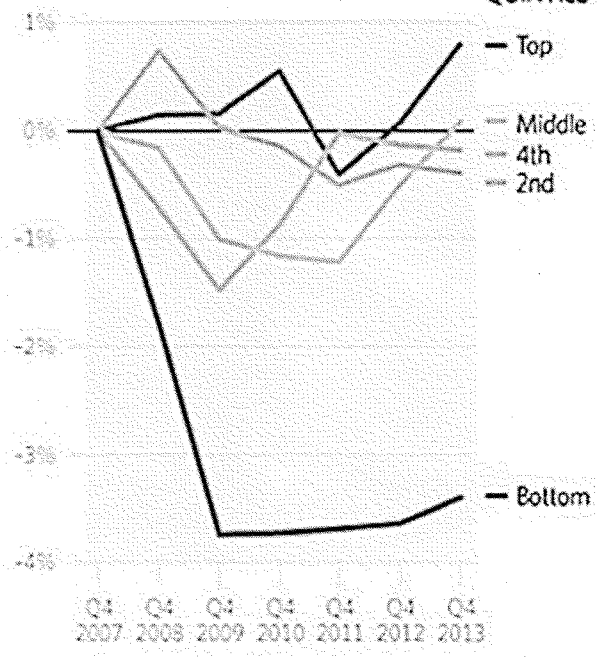
Submitted by Senator Bill Cassidy

CHART 3

Low-Income Workers Have Lost the Most Work Hours

While the top four quintiles have largely returned to pre-recession work hours, the bottom quintile lags far behind.

PERCENTAGE CHANGE IN AVERAGE WORK HOURS SINCE 2007, BY EARNINGS QUINTILE



Note: Figures shown are for the fourth quarter of the given year.
Source: Heritage Foundation calculations using data from the U.S. Census Bureau, Current Population Survey.

BG 2921 ☎ heritage.org

Questions for The Honorable Janet L. Yellen, Chair, Board of Governors of the Federal Reserve System from Chairman Coats:

1. Can you explain why in your testimony on the draft final rule implementing amendments enacted by the Dodd-Frank Act to the Federal Reserve's emergency lending authority under section 13(3), you state that the emergency lending programs created by the Fed during the crisis were to "provide liquidity to markets", when it seemed from the outside the firms were insolvent?

In my testimony regarding the final section 13(3) rule I indicated that "during the recent severe financial crisis, the Federal Reserve established several broad-based emergency lending programs to provide liquidity to markets to ensure that credit continued to be available to U.S. households and businesses for mortgages, auto loans, credit card loans, student loans, and other forms of credit." The programs that I was referring to include the Term Asset-backed Securities Loan Facility (TALF), which provided several thousand loans that provided liquidity to fund several billion dollars of student loans, car loans, small business loans, and other loans in the securitization market; the Commercial Paper Funding Facility (CPFF), which was a program with broad-based eligibility designed to provide liquidity to the commercial paper market; the Asset-backed Commercial Paper Money Market Mutual Fund Liquidity Facility (AMLF) and the Money Market Investor Funding Facility (MMIFF), which were programs with broad-based eligibility designed to provide liquidity to the money market fund sector; and the Primary Dealer Credit Facility (PDCF), which provided liquidity to all primary dealers in support of trading in the U.S. Government securities market. These programs provided liquidity to various markets to ensure continued economic activity during the financial crisis and were not constructed to provide funding to participants who were insolvent.

During the financial crisis, the Federal Reserve also provided emergency credit under section 13(3) to Bear Stearns and AIG. These types of emergency credits to troubled firms are no longer authorized under section 13(3) as a result of amendments made by the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act).

2. Can you elaborate on why the Fed's new rule defines an insolvent entity as one that's not "in bankruptcy, resolution under Title II of the Dodd-Frank Act, or any other Federal or State insolvency proceeding" is not a tautology? [It seems to say a firm is insolvent when you say it's insolvent, not when the market says a firm's insolvent.]

The definition of insolvency tied to bankruptcy resolution under Title II of the Dodd-Frank Act, or other federal or state insolvency proceedings is specifically provided in the Dodd-Frank Act. The final rule implementing the Dodd-Frank Act revisions to section 13(3) adds two additional measures of insolvency: (1) that the company generally not be paying undisputed debts as they become due during the 90 days preceding the date of borrowing and (2) that the Federal Reserve or Federal Reserve Bank otherwise determines that the person or entity is insolvent.

3. The Fed's new rule (p. 16 of http://www.federalreserve.gov/newsevents/press/bcreg/bcreg20151130a1.pdf) seems to define insolvency as "cash-flow insolvency", paying debts on time, but does not seem to address "balance sheet insolvency," when an entity's liabilities exceed its assets. Since a firm might be cash-flow solvent (i.e., "liquid") while balance sheet insolvent, can you explain why the rule as it's worded doesn't open the door for a repeat of what occurred during the recent crisis?

During a financial crisis, trading activity is typically substantially curtailed making the valuation of assets much less reliable and often resulting in the significant undervaluation of assets compared to the more accurate valuation for those same assets during more normal times. Thus, measures of insolvency based on asset valuations become much less reliable during a financial crisis. Nonetheless, the final rule permits the Federal Reserve to determine on any basis, including based on asset valuations, whether a firm is insolvent as appropriate. Other provisions of the final rule, working with the definition of insolvency, limit future emergency lending by the Federal Reserve. First, as required by the amendments to the Dodd-Frank Act, the final rule provides that emergency lending must be made for the purpose of providing liquidity to markets or sectors of the economy through broad-based programs or facilities that are designed to provide liquidity to an identifiable market or sector of the financial system. The final rule contains restrictions that would not permit emergency lending to aid a failing firm, including by lending to remove assets from a failing firm, as was done during the recent crisis in the case of the emergency loan to Bear Stearns, or to provide credit to prevent a firm from entering bankruptcy as was done in the case of the emergency credit facility established for AIG.

4. Custodial banks are reportedly finding it increasingly difficult to provide core custody services, particularly accepting cash deposits from investment funds and other institutional investors, due to perhaps unintended consequences of regulatory reforms. Such demand deposit accounts with custody banks are required to handle the cash flows associated with the operation of an investment fund, and have traditionally been available as a standard service under a custody agreement. Custody banks typically place certain types of such cash received from clients on deposit with the Federal Reserve, due to the high liquidity and essentially riskless nature of Fed deposits. The Federal Reserve's Supplementary Leverage Ratio, however, does not recognize the riskless nature of Fed deposits, and the inclusion of central reserve deposits in the SLR, and the attendant cost, is leading custody banks to push away customer deposits. Has the FRB evaluated the impact of emerging limitations on custody banks' ability to accept cash deposits on markets, financial stability, and investors, especially during times of financial stress?

Beginning in 2018, the Federal Reserve's regulatory capital rules require internationally-active banking organizations to hold at least 3 percent of total leverage exposure in tier 1 capital Supplementary Leverage Ratio (SLR) requirement. Total leverage exposure is calculated under the SLR requirement as the sum of certain off-balance sheet items and

all on-balance sheet assets.[1] Under the SLR requirement, a banking organization must hold a minimum amount of capital against on-balance sheet assets, including cash, and off-balance sheet exposures, regardless of the risk associated with the individual exposures. By requiring large banking organizations to hold more capital based on their size, the SLR increases their resiliency. Thus, the SLR requirement is designed under the principle that the risk a banking organization poses to the financial system is a factor of its size as well as the composition of its assets. Excluding select items, such as cash, from a banking organization's total leverage exposure would be inconsistent with this principle.

In addition, the Federal Reserve issued in April 2014, a final rule that imposed enhanced SLR requirements on U.S. banking organizations identified as global systemically important banking organizations (GSIBs). As indicated in the preamble to the final rule, the enhanced SLR requirements serve important safety and soundness goals. The requirements would reduce the likelihood of bank failures by requiring the banking organizations subject to the rule to hold additional capital.[2] In addition, "[by] further enhancing the capital strength of covered organizations, the enhanced [SLR requirements] could counterbalance possible funding cost advantages that these organizations may enjoy as a result of being perceived as 'too big to fail.'"[3]

The enhanced SLR requirements in the final rule will require U.S. top-tier bank holding companies identified as GSIBs to maintain an SLR of more than 5 percent to avoid restrictions on capital distributions and discretionary bonus payments to executive officers.[4] Insured depository institution subsidiaries of these bank holding companies must maintain at least a 6 percent SLR to be "well-capitalized" under the federal banking agencies' prompt corrective action framework.

In connection with the final rule, Federal Reserve staff estimated the impact of the rule on GSIBs, including on the two largest custody banks. Federal Reserve staff estimated a tier 1 capital shortfall across U.S. GSIBs of approximately $68 billion to meet a 5 percent SLR, but all internationally-active banking organizations firms were estimated to already meet the minimum 3 percent SLR requirement.[5] At that time, Federal Reserve staff also estimated the amount of capital required to meet a 3 percent SLR under stressed conditions (on a post-stress basis) and found it to be roughly equivalent to the amount of capital required to meet the 5 percent SLR on a pre-stress basis.

As noted above, the SLR requirement and the enhanced SLR requirements do not become effective until January 1, 2018. According to public disclosures of firms subject to these requirements, the GSIBs have made significant progress in complying with the enhanced SLR requirements.

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[1] See 79 FR 57725 (September 26, 2014), available at http://www.gpo.gov/fdsys/pkg/FR-2014-09-26/pdf/2014-22083.pdf.

[2] See 79 FR 24528, 24530 (May 1, 2015).

[3] See id.

[4] See 79 FR 24528 (May 1, 2014), available at http://www.gpo.gov/fdsys/pkg/FR-2014-05-01/pdf/2014-09367.pdf.

[5] See Staff memo to the Federal Reserve Board 'Draft final rule on enhanced supplementary leverage ratio (SLR) standards'; p.2, available at http://www.federalreserve.gov/aboutthefed/boardmeetings/20140408openmaterials.htm.

BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM
WASHINGTON, D. C. 20551

JANET L. YELLEN
CHAIR

March 3, 2016

The Honorable Mike Lee
United States Senate
Washington, D.C. 20510

Dear Senator:

Enclosed are my responses to questions 1 through 6 that you submitted following the December 3, 2015,[1] hearing before the Joint Economic Committee. A copy has also been forwarded to the Committee for inclusion in the hearing record. Responses to the remaining questions will be forthcoming.

Please let me know if I can be of further assistance.

Sincerely,

Janet L. Yellen

Enclosure

[1] Questions for the record related to this hearing were received on January 29, 2016.

Questions for The Honorable Janet L. Yellen, Chair, Board of Governors of the Federal Reserve System from Senator Lee:

1. At the FOMC meeting in June 2014[1], there were discussions of potential unintended consequences of the strategy to use an overnight reverse repo facility to set a floor for the Fed funds target range when the time comes to raise rates. Members discussed the potential for counterparties to shift investments towards the repo facility in times of financial stress, concerns that the Fed's increased role in financial intermediation could reshape the financial industry in ways that were difficult to anticipate, and concerns about conducting monetary policy operations with nontraditional counterparties. The list of primary dealers that the Fed has relied on in the past as a useful first level in transmitting interest rate changes to the broader market includes 22 financial institutions. By contrast, the list of reverse repo counterparties that the New York Fed keeps has 24 banks, 13 GSEs, and 108 money market funds, which are managed by 29 investment managers. What risks would the Fed be opening up to by expanding its footprint into the money market in this way?

As noted in the minutes of the June 2014 Federal Open Market Committee (FOMC) meeting (attached below), policymakers have discussed a number of potential issues regarding the use of an overnight reverse repurchase facility during the process of policy normalization. In order to enhance the effectiveness of the facility in supporting monetary policy implementation, the FOMC expanded the range of counterparties eligible to participate in overnight reserve repurchase agreement (ON RRP) operations to include institutions that account for a large portion of the lending activity in overnight funding markets. It is important to note that the Federal Reserve itself incurs no credit risk in conducting ON RRP transactions with this extended list of counterparties. However, as noted below, policymakers discussed the risk that a relatively large ON RRP program could induce significant changes in financial structure or patterns of financial intermediation that are difficult to anticipate.

To manage such risks, the FOMC established an offered rate in ON RRP transactions at the lower bound of the target range for the federal funds rate. With short-term interest rates generally higher than the Federal Reserve's ON RRP offered rate, the level of activity at the Federal Reserve's ON RRP operations has been fairly modest on average. By setting the offered rate and other key parameters of ON RRP operations in a way that keeps the level of ON RRP operations at relatively low levels, the Federal Reserve can mitigate the types of risks discussed in the FOMC minutes.

Memo: June 2014 FOMC Minutes

> While generally agreeing that an ON RRP facility could play an important role in the policy normalization process, participants discussed several potential unintended consequences of using such a facility and design features that could

[1] http://www.federalreserve.gov/monetarypolicy/files/fomcminutes20140618.pdf.

help to mitigate these consequences. Most participants expressed concerns that in times of financial stress, the facility's counterparties could shift investments toward the facility and away from financial and nonfinancial corporations, possibly causing disruptions in funding that could magnify the stress. In addition, a number of participants noted that a relatively large ON RRP facility had the potential to expand the Federal Reserve's role in financial intermediation and reshape the financial industry in ways that were difficult to anticipate. Participants discussed design features that could address these concerns, including constraints on usage either in the aggregate or by counterparty and a relatively wide spread between the ON RRP rate and the interest on excess reserves rate that would help limit the facility's size. Several participants emphasized that, although the ON RRP rate would be useful in controlling short-term interest rates during normalization, they did not anticipate that such a facility would be a permanent part of the Committee's longer-run operating framework. Finally, a number of participants expressed concern about conducting monetary policy operations with nontraditional counterparties.

2. In the July 2014 FOMC meeting[2], members agreed that the reverse repo facility should be limited in size and phased out when it is no longer needed. The test runs of this facility have had varying caps on a counterparty basis and an overall basis. What do you expect the caps to look like when this is fully operational, and do you expect them to be fixed or to vary from time to time?

The ON RRP facility became fully operational in December 2015, when the FOMC raised the target range for the federal funds rate. Previously, the FOMC had indicated that capacity for ON RRP transactions would be temporarily elevated at the commencement of policy firming in order to foster effective control of the federal funds rate. The FOMC also noted that it expected that it will be appropriate to reduce the capacity of the facility fairly soon after the commencement of policy firming.

Consistent with its earlier communications, the FOMC noted in December 2015, that capacity at the ON RRP facility would be limited only by the quantity of available Treasury securities held in the System Open Market Account. At the January 2016 FOMC meeting, nearly all FOMC participants indicated a preference for waiting a couple months or longer before making operational adjustments to the ON RRP facility, in part so that the Federal Reserve could gain additional experience with its implementation tools. Concerning the strategy that would be used to cap the ON RRP facility when the time came, most policymakers favored an approach in which a relatively high cap level would be imposed initially—though one that nonetheless would significantly reduce capacity relative to the current situation—with the intention of periodically making further reductions in the level of the cap as appropriate.

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[2] http://www.federalreserve.gov/monetarypolicy/files/fomcminutes20140730.pdf.

The individual counterparty caps have been maintained at $30 billion per counterparty. These individual caps have only rarely been binding.

3. When it comes time to wind down the reverse repo program, how do you expect the Fed's counterparties in this facility to react?

It likely will be the case that the ON RRP program can be wound down in a way that will not have large effects on the Federal Reserve's counterparties. Indeed, after the FOMC's tightening action in December 2015, take-up in ON RRP operations has been modest, and in general at levels close to those prevailing prior to liftoff. If short-term interest rates remain appreciably above the level of the ON RRP offered rate, the use of the facility by the Federal Reserve's counterparties is likely to remain moderate. Moreover, as policy normalization proceeds, ON RRP operations likely will become less important in controlling the level of the federal funds rate. When that stage is reached, the FOMC can encourage counterparties to transition away from ON RRP investments through appropriate adjustments of the parameters for ON RRP operations. For example, the FOMC could lower the offered rate in ON RRP operations relative to the target range for the federal funds rate. That step would likely reduce the incentives for counterparties to participate in ON RRP operations, resulting in a smooth winding down of the ON RRP facility.

4. At this point, how long do you expect for the reverse repo facility to be in place as a feature in the Fed's interest rate policy? Is this something that will be in place for just a few years and then phased out?

The FOMC has indicated that the facility will be phased out when it is no longer needed to help control the level of the federal funds rate. At present, ON RRP operations are an important complement to interest on reserves in supporting effective policy implementation. However, once the level of reserves in the banking system has been returned to more normal levels, ON RRP operations likely will not be necessary to control the level of the federal funds rate.

5. What do you expect the strategy for phasing out the reverse repo facility to look like?

See answer to question 3.

6. Would a wind down of the overnight reverse repo facility potentially reshape the financial industry again?

With usage of the ON RRP facility at relatively modest levels, the facility is not having a major influence on the structure of the financial industry or on overall patterns of borrowing and lending in short-term funding markets. As noted in the answer to question 1, the FOMC has discussed the potential "footprint" risks of a large ON RRP program and has established parameters for the program to guard against those risks. As described in the answer to question 3, when the FOMC judges that it is appropriate to phase out the ON RRP facility, it seems likely that this process can be carried out smoothly with relatively little impact on financial markets and institutions.

Questions for The Honorable Janet L. Yellen, Chair, Board of Governors of the Federal Reserve System from Senator Lee:

7. The Fed appears to be taking a one-size fits all approach to regulating large banks with a heavy preference on the bank holding company model to the exclusion of other alternative setups. Why is the Fed constricting competition among business models?

The Federal Reserve does not seek to constrict competition among business models; the objective of our supervision program is to ensure that institutions where we maintain regulatory and supervisory authority, are operated in a safe and sound manner with appropriate oversight, governance, and controls in place across the consolidated organization. The Federal Reserve continues to review and refine its supervisory approach toward large banks, which includes tailoring regulations among financial institutions depending on size, scope, and complexity of operations.

For domestic firms, the Federal Reserve does not encourage (or discourage) the creation of a BHC. It is noted that there are various benefits to creating a BHC, such as tax advantages, operational efficiencies, and the ability to conduct certain activities outside an insured depository institution, that lead banking organizations to independently decide to implement this structure. Within a BHC, a firm can implement a variety of structures to accommodate its business needs through ownership of a number of different legal entities (e.g. operating a single bank or multiple banks, retail-funded commercial bank, wholesale-funded commercial bank, broker-dealers, insurance subsidiaries, Edge Corporations, etc.). As noted, depending on the size and complexity of a BHC's operations, the Federal Reserve has a flexible framework to provide appropriate supervision under the current regulatory program. For foreign banking organizations (FBOs), the requirement to create an intermediate holding company which is subject to enhanced prudential standards, provides for a common approach to supervising large foreign institutions (greater than $50 billion in non-branch U.S. assets) that have risk profiles similar to large domestic BHCs.

As I have stated in the past, one-size-fits-all should not be the model for regulation. The Federal Reserve has made it a top priority to ensure that we appropriately tailor our regulation and supervision of banks to their size, complexity and risk. The Federal Reserve has taken a number of actions that reflect this position. For example, the Federal Reserve has implemented prudential regulations and supervision based on the size, scope, and range of activities of banking organizations. In fact, the scope and intensity of this approach to regulation and supervision varies based on the extent and complexity of activities conducted by the parent or its nonbank subsidiaries. The concept of tailoring of expectations continues to move forward across our large bank portfolios, as demonstrated by the recently issued Supervision and Regulation (SR) letters, SR 15-18 and SR 15-19, which provide for different supervisory expectations around capital planning and capital positions for BHCs considered large and non-complex compared to those designated as a large institution supervision coordinating committee or large and complex firm.

Additional supervisory guidance is currently in development, most notably related to liquidity risk management, which will further the Federal Reserve's efforts to tailor expectations among the large banking organizations that we supervise.

8. Does the Fed think that the bank holding company model is absolutely superior to other models, or is it simply that this model is most convenient for the Fed to regulate?

It is important to emphasize that there are a variety of operating models available to financial services firms and the Federal Reserve does not take a position that any organizational structure or model is necessarily superior to another. In fact, the holding company form is optional; banks are not legally required, nor in practice do they need, to have a parent holding company in order to operate.

The Federal Reserve, however, continues to view the BHC supervisory model as an important, effective and efficient program for implementing consolidated supervision. As detailed in SR 12-17, *Consolidated Supervision Framework for Large Financial Institutions,* our framework has two primary objectives: (1) enhancing the resiliency of financial firms, and (2) reducing the systemic impact when a firm fails or has a material weakness. As noted in the response to the previous question, this SR letter also discusses the concept of tailoring supervisory expectations based on the unique risk characteristics of each firm.

Firms select the holding company model for a variety of reasons. The holding company model provides flexibility for diverse configurations of interconnected operations offering distinct lines of business. Consolidating various operations under one umbrella facilitates efficiencies, economies of scale, synergies, and stability through diversification of business lines and expertise. Moreover, there are a number of benefits that financial institutions can achieve from employing a BHC structure with an enterprise-wide risk management framework that includes sound governance and oversight practices, consistent policies and procedures, consolidated management information system reporting, a system of robust internal controls, and comprehensive assessments of liquidity and capital across the consolidated organization.

The holding company framework also ensures that banking organizations have financial and managerial strength to operate in a safe and sound manner. Consolidated supervision is intended to provide a supervisor the tools necessary to understand, monitor, and, when appropriate, restrain the risks associated with an organization's consolidated or groupwide activities. Risks that cross legal entities and that are managed on a consolidated basis cannot be monitored properly through supervision directed at any one, or even several, of the legal entity subdivisions within the overall organization. To be fully effective, consolidated supervisors need the information and ability to identify and address risks throughout an organization. In this way the holding company structure facilitates accountability and oversight of enterprise-wide risks that could be overlooked by focusing on disparate lines of business. Without this type of consolidated supervision,

there is danger of conflicts of interest, contagion between subsidiaries, regulatory arbitrage, and other systemic risks. This framework allows the Federal Reserve to understand the financial and managerial strengths and risks within the consolidated organization as a whole, and gives the supervisor the statutory authority and ability to identify and resolve significant management, operational, capital or other deficiencies within the overall organization before they pose a danger to the organization's subsidiary insured banks.

These benefits help explain why many developed countries, including those of the European Union, have adopted consolidated supervision frameworks and why it is becoming the preferred approach to supervision worldwide. Indeed, most developed countries have laws and regulations to ensure the consolidated supervision of banks.

The Federal Reserve serves as the primary federal supervisor and regulator for a variety of financial institutions, including BHCs. As noted above, the Federal Reserve does not take a position that any organizational structure or model is superior to another. The supervision program and regulations that have been developed and implemented, and continue to be refined, reflect the Federal Reserve's ongoing goal to promote a safe and sound financial system.

BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM
WASHINGTON, D. C. 20551

JANET L. YELLEN
CHAIR

January 29, 2016

The Honorable Carolyn Maloney
House of Representatives
Washington, D.C. 20515

Dear Congresswoman:

Enclosed are my responses to questions 2 and 3 you submitted following the December 3, 2015,[1] hearing before the Joint Economic Committee. A copy has also been forwarded to the Committee for inclusion in the hearing record. Responses to the remaining questions will be forthcoming.

Please let me know if I can be of further assistance.

Sincerely,

Janet L. Yellen

Enclosure

[1] Questions for the record related to this hearing were received on December 11, 2015.

Questions for The Honorable Janet L. Yellen, Chair, Board of Governors of the Federal Reserve System from Representative Maloney:

2. During the hearing, you expressed concerns about the equilibrium real interest rate being very low, and potentially remaining very low for some time. Some well-respected economists have recently suggested that because of such prospects, the FOMC should raise its inflation target above 2 percent. A higher inflation target would give the FOMC a larger buffer during recessions, and reduce the probability of the target rate nearing the zero lower bound.

Do you agree with their assessments? And how did the FOMC determine that 2 percent, rather than some higher (or lower) number, is the optimal target?

As noted in the Federal Open Market Committee's (Committee) statement of its Longer-Run Goals and Policy Strategy, the Committee is firmly committed to fulfilling its statutory mandate from the Congress of promoting both maximum employment and price stability. The Committee judges that, inflation at the rate of 2 percent, as measured by the annual change in the price index for personal consumption expenditures, is most consistent over the longer run with our statutory mandate. As the Committee's statement on longer run goals emphasizes, this objective is symmetric, in that it would be a concern if inflation were running either persistently above or below 2 percent.

The Committee judged that a significantly lower inflation goal, such as 0 or 1 percent, would be associated with more adverse outcomes for employment and growth. Nominal interest rates cannot fall appreciably below zero, and so a lower inflation goal could limit the Federal Reserve's ability to provide monetary stimulus in periods of economic weakness. The result would be an elevated probability of falling into deflation, which can have severely negative consequences for economic growth. Setting the inflation target higher than 2 percent, and generating average inflation greater than 2 percent, would mean a somewhat higher level of nominal interest rates, on average, and thus would give the Federal Reserve somewhat more room to cut rates in the event of an adverse shock to demands for goods and services. However, higher average inflation is, as an empirical matter, associated with more variable inflation. Over time, more variable inflation rate would reduce the public's ability to make accurate longer-term economic and financial decisions, leading to costly resource misallocations and economic inefficiency. Reflecting these concerns, central banks across the globe typically target levels of inflation in the vicinity of 2 percent.

3. Many critics of the Fed's accommodative policies contend that low interest rates have fueled asset bubbles and financial instability. However, as you argued in a speech you gave in 2014: "monetary policy faces significant limitations as a tool to promote financial stability: Its effects on financial vulnerabilities, such as excessive leverage and maturity transformation, are not well understood and are less direct than a regulatory or supervisory approach; in addition, efforts to promote financial stability through adjustments in interest rates would increase the volatility of

inflation and employment. As a result, I believe a macroprudential approach to supervision and regulation needs to play the primary role."

In order to prevent another financial crisis, what are the areas of financial regulations that are currently in the most urgent need of strengthening? What existing regulations would pose the most significant threat to financial stability if they were to be weakened or removed?

Over the past several years, the Federal Reserve has been focused on implementing the Dodd-Frank Wall Street Reform and Consumer Protection Act and making other improvements to our regulation and supervision of the banking system--in particular our oversight of the largest, most interconnected banking firms. Since the crisis, our aim has been to regulate and supervise financial firms in a manner that promotes the stability of the financial system as a whole. We have introduced a series of requirements for large banking organizations that reduce the risks to the system and our economy. While at the same time, we have been careful to make measured changes in our approach to regulating and supervising smaller firms.

The Federal Reserve, in coordination with the other banking agencies, has revised regulations to increase capital requirements and liquidity buffers, particularly at the largest and most systemic institutions. There has also been significant progress in ensuring that these institutions can be resolved in an orderly way, an important part of ensuring better market discipline of large financial institutions. In addition, derivatives regulation has strengthened the financial system by requiring most standardized derivatives to be centrally cleared, by requiring non-cleared derivatives to be robustly margined, and by increasing transparency throughout derivatives markets.

We have made significant progress on very substantial reforms, especially related to capital and liquidity for the banking sector. But more remains to be done, including completing our work on long-term debt requirements for global systemically important banks and our work on the Net Stable Funding Ratio and single-counterparty credit limits for large bank holding companies.

Financial institutions and markets are, like all parts of the economy, the scene of constant innovation. As a result, the nature of systemic risk is also always shifting. Regulators must vigilantly monitor for new sources of risk as new regulations may lead to risks migrating beyond the regulated sectors. It is important for all regulators to work together to monitor the system on an ongoing basis. The Financial Stability Oversight Council provides one important venue to permit member agencies to monitor, discuss, and come to agreement on emerging risks to the financial system.

BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM
WASHINGTON, D. C. 20551

JANET L. YELLEN
CHAIR

February 8, 2016

The Honorable Carolyn Maloney
House of Representatives
Washington, D.C. 20515

Dear Congresswoman:

Enclosed is my response to question 1 that you submitted following the December 3, 2015[1] hearing before the Joint Economic Committee. On January 29, 2016, I provided responses to questions 2 and 3. A copy has also been forwarded to the Committee for inclusion in the hearing record. This constitutes completion of my responses to all of the written questions you submitted.

Please let me know if I can be of further assistance.

Sincerely,

Janet L. Yellen

Enclosure

[1] Questions for the record related to this hearing were received on December 11, 2015.

Questions for The Honorable Janet L. Yellen, Chair, Board of Governors of the Federal Reserve System from Representative Maloney:

1. Your predecessor, Ben Bernanke, has argued that fiscal policy over the recovery has been too contractionary and that budget cuts by Congress have put too much of a burden on the Fed to support the economy.

Looking forward, if fiscal policy were to be more expansionary—especially in ways that are productivity enhancing—how could that affect the pace of monetary policy normalization?

One of the headwinds for much of the economic recovery has come from changes in federal fiscal policy. Fiscal stimulus policies in 2008 and 2009, helped to support economic activity, but the effects of that stimulus eventually faded. Reductions in federal purchases (particularly for defense) and tax increases that went into effect at the beginning of 2013, along with the winding down of the temporary stimulus-related programs, helped reduce the federal budget deficit significantly over the past several years but also were a drag on the pace of economic growth. However, the restraint on economic growth from these earlier changes in federal fiscal policies are estimated to have faded. Given the federal budget policies in place, the Congressional Budget Office estimated that fiscal policy had little effect on economic growth last year.

Currently, the economy is close enough to full employment that monetary policy has begun the process of normalization. The Federal Open Market Committee takes fiscal policy decisions into account when making monetary policy decisions. To promote economic growth and stability in the longer term, it is important for fiscal policymakers to put the federal budget on a sustainable long-run path. We cannot reasonably expect the problem of fiscal imbalances to be solved by economic growth, but a more productive economy will ease the fiscal tradeoffs that policymakers face. I believe that, as a nation, we should be pursuing policies to support longer-run growth in productivity. Policies to strengthen education, to encourage entrepreneurship and innovation, and to promote capital investment, both private and public, can all be of great benefit.

BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM
WASHINGTON, D. C. 20551

JANET L. YELLEN
CHAIR

January 19, 2016

The Honorable Bob Casey
United States Senate
Washington, D.C. 20510

Dear Senator:

Enclosed are my responses to questions you submitted following the December 3, 2015,[1] hearing before the Joint Economic Committee. A copy has also been forwarded to the Committee for inclusion in the hearing record. Responses to the remaining questions will be forthcoming.

Please let me know if I can be of further assistance.

Sincerely,

Janet L. Yellen

Enclosure

[1] Questions for the record related to this hearing were received on December 11, 2015.

Questions for The Honorable Janet L. Yellen, Chair, Board of Governors of the Federal Reserve System from Senator Casey:

1. We need an economy that ensures all Americans have a fair shot- one where workers can find jobs that pay family sustaining wages. According to the Economic Policy Institute, from 1973 to 2014, net productivity rose 72.2 percent, while the hourly pay of typical workers essentially stagnated—increasing only 9.2 percent over 41 years (after adjusting for inflation). Can you describe how recent wage growth differed between high-wage jobs and low- and medium-wage jobs? Do you take the challenge of income inequality taken into account? And do you believe the current tightening of the labor market will translate to wage growth, particularly for low income working Americans?

According to data from the Bureau of Labor Statistics (BLS), low paid workers have experienced slower wage growth than workers with wages in the middle of the distribution or those at the top since the end of the Great Recession. Workers in the first quartile of the earnings distribution saw their wages and salaries rise about 1¼ percent per year between the third quarter of 2009 and the third quarter of 2015. In contrast workers with earnings in the third quartile and those with wages at the 90th percentile saw their wages rise about 1¾ percent per year over this same time period.

I have spoken on trends in inequality based on data from the Survey of Consumer Finances, a survey conducted by the Board, and other members of the Board have also addressed the issue on occasion. Of course, the tools of monetary policy are geared toward the aggregate economy and are not capable of targeting specific groups of people. That said, macroeconomic outcomes do have disparate effects on individuals across the wage distribution. In particular, workers at the lower end of the pay spectrum are harder hit by economic downturns. For instance, according to BLS, the unemployment rate of high school graduates age 25 and older rose by over 6 percentage points from its trough prior to the Great Recession to its peak, compared to an increase of about 3 percentage points for college graduates of the same age. Conversely, low wage workers benefit more as the economy moves toward full employment. As the labor market continues to tighten, I expect that real wage growth will pick up and that these aggregate gains will translate into increased real wage gains for low income working Americans.

2. Pennsylvania's unemployment rate is down to 5.1 percent, from a high of nearly 9 percent at the height of the great recession [8.7% from Feb-Apr 2010], while I am pleased to see our unemployment rates have dropped, labor force participation rates continue to hover at stubbornly low levels. Some of this is the result of older Americans retiring, but not all of it. How focused are you on labor force participation rates, and what kind of steps can be taken to improve outcomes? Is this something the Congress needs to look at and tackle in a more coordinated and concerted way?

I have been paying a great deal of attention to the decline in labor force participation in recent years. As I have mentioned in the past, for example in a speech I gave in December at the Economic Club of Washington, I believe that there are a significant

number of individuals now classified as out of the labor force who would find and accept jobs if the labor market were even stronger than it is today. As I noted in that speech, in October 2015 almost 2 million individuals classified as outside the labor force reported that they wanted and were available for work.

With regard to steps that can be taken to ameliorate the situation, one of the legs of the FOMC's dual mandate is maximum employment, which requires us to take into account those who are currently out of the labor force but could join under the right economic conditions. I am focused on setting monetary policy so that we fulfill this leg of the mandate, while also taking into account our inflation objective. Monetary policy primarily addresses the issue of labor force participation in the context of the business cycle. A variety of longer term structural factors, not only the aging of the population, but also changes in employment opportunities and fiscal policy also have an impact on labor force participation rates. Because the growth rate of the labor force has implications for how quickly standards of living increase, Congress may want to consider examining the issue more systematically.

BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM
WASHINGTON, D. C. 20551

JANET L. YELLEN
CHAIR

March 21, 2016

The Honorable Amy Klobuchar
United States Senate
Washington, D.C. 20510

Dear Senator:

Enclosed are my responses to questions you submitted following the December 3, 2015,[1] hearing before the Joint Economic Committee. A copy has also been forwarded to the Committee for inclusion in the hearing record.

Please let me know if I can be of further assistance.

Sincerely,

Janet L. Yellen

Enclosure

[1] Questions for the record related to this hearing were received on December 11, 2015.

Questions for The Honorable Janet L. Yellen, Chair, Board of Governors of the Federal Reserve System from Senator Klobuchar:

1. In addition to the crucial role that the Federal Reserve plays in monetary policy, it also plays a vital role in the regulation of banks and other large financial institutions. One issue that is getting attention is whether to modify the $50 billion asset threshold used to designate banks and nonbanks as systemically important financial institutions (SIFIs). In your role as a "prudential regulator," can you talk about how this threshold level could be modified or tailored to ensure that the Federal Reserve addresses the issue of systemic risk?

In implementing section 165 of the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act), the Federal Reserve Board has identified the following three categories of bank holding companies (BHCs) with $50 billion or more in total consolidated assets based on their size, complexity, and other indicators of systemic risk: (1) all BHCs with $50 billion or more in total consolidated assets; (2) BHCs with $250 billion or more in total consolidated assets or $10 billion or more in on-balance-sheet foreign assets (advanced approaches BHCs); and (3) the eight U.S. firms identified as global systemically important banks (GSIBs). The Federal Reserve has tailored its regulations to increase in stringency based on these categories. More specifically, all BHCs are subject to specific enhanced prudential standards, including risk-based and leverage capital requirements,[1] company-run and supervisory stress tests,[2] liquidity risk-management requirements,[3] resolution plan requirements,[4] and risk management requirements.[5] Advanced approaches BHCs are also subject to the advanced approaches risk-based capital requirements,[6] a supplementary leverage ratio,[7] more stringent liquidity requirements,[8] and a countercyclical capital buffer.[9] The GSIBs are further subject to risk-based capital surcharges,[10] an enhanced supplementary leverage ratio,[11] and more specific recovery planning guidance.[12]

As I have stated in the past, one-size-fits-all should not be the model for regulation. The Federal Reserve has made it a top priority to ensure that we appropriately tailor our regulation and supervision of banks to their size, complexity and risk. With regard to the Dodd-Frank Act, and particularly the requirements of section 165, I would not support any change that was accompanied by a restriction in our authority to apply prudential measures to banks where we found safety and soundness to be potentially at risk.

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[1] 12 CFR 252.32.
[2] 12 CFR part 252, subparts E and F.
[3] 12 CFR part 252.34.
[4] 12 CFR part 243.
[5] 12 CFR 252.33.
[6] 12 CFR part 217, subpart E.
[7] 12 CFR 217.10(c)(4).
[8] See 12 CFR part 249.
[9] 12 CFR 217.11(b).
[10] 12 CFR part 217, subpart H.
[11] 12 CFR 217.11(a)(2)(v), (a)(2)(vi), and (c) (effective January 1, 2018).
[12] Federal Reserve supervisory letter 14-8, available at http://www.federalreserve.gov/bankinforeg/srletters/sr1408.htm.

2. Community banks have raised concern about increasing regulatory complexity and paperwork required to show compliance. How can the Federal Reserve provide more support to help smaller community banks meet their compliance filing requirements?

The Federal Reserve has long maintained that our regulatory efforts should be designed to minimize regulatory burden consistent with the effective implementation of our statutory responsibilities. The Federal Reserve has worked to minimize regulatory burdens for community banks, by fashioning simpler compliance requirements and clearly identifying which provisions of new regulations are of relevance to smaller banks. In addition, the Federal Reserve and the other banking agencies have developed a number of compliance guides that are specifically designed to assist community banks' understanding of applicable regulatory requirements.

Generally, the Federal Reserve strives to balance efforts to ensure that supervision and regulation are calibrated appropriately for smaller and less risky institutions with our responsibility to ensure that consumer financial transactions are fair and transparent, regardless of the size and type of supervised institutions involved. Among other efforts, the Federal Reserve has implemented a new consumer compliance examination framework for community banks. While we have traditionally applied a risk-focused approach to consumer compliance examinations, the new program more explicitly bases examination intensity on the individual community bank's risk profile, weighed against the effectiveness of the bank's compliance controls. As a result, we expect that examiners will spend less time on low-risk compliance issues at community banks, increasing the efficiency of our supervision and reducing regulatory burden on many community banks.

To deepen its understanding of community banks and the specific challenges facing these institutions, the Federal Reserve Board (Board) meets twice a year with the Community Depository Institutions Advisory Council (CDIAC) to discuss the economic conditions and issues that are of greatest concern to community institutions. The CDIAC members are selected from representatives of community banks, thrift institutions, and credit unions who serve on local advisory councils at the twelve Federal Reserve Banks. The Board also has launched a number of outreach initiatives, including the establishment of its "Community Banking Connections" program, which is designed to enhance the dialogue between the Board and community banks. In addition, this program highlights key elements of the Board's supervisory process for community banks and provides clarity on supervisory expectations.

In 2014, under the auspices of the Federal Financial Institution Examination Council (FFIEC), the Federal Reserve, the Comptroller of the Currency and the Federal Deposit Insurance Corporation (the Agencies) began their decennial review of regulations as required by the Economic Growth and Regulatory Paperwork Reduction Act of 1996 (EGRPRA) with the release of four Federal Register notices requesting comments on their regulations that are applicable to insured depository institutions and their holding companies in 12 substantive categories: Applications and Reporting; Powers and Activities; International Operations; Banking Operations; Capital; the Community

Reinvestment Act; Consumer Protection; Directors, Officers and Employees; Money Laundering; Rules of Procedure; Safety and Soundness; and Securities. The final comment period closes on March 22, 2016. Additionally, as part of the EGRPRA review and throughout 2015, the Agencies held six outreach events across the country with over 1,030 participants attending in person, by telephone, or via livestream. The Agencies have received over 160 written comment letters in response to the Federal Register notices, in addition to the numerous comments obtained at the outreach sessions, and are in the process of conducting a systematic analysis and consideration of these comments in order to prioritize recommendations and to adopt changes as appropriate.

However, the Agencies have not waited to take action on certain issues. For example, upon authorization provided in the Fixing America's Surface Transportation Act, enacted on December 14, 2015, the Agencies moved quickly to raise the asset threshold from $500 million to $1 billion in total assets for banks and savings associations that are well capitalized and well managed to be eligible for an 18-month examination cycle.

Additionally, under the auspices of the FFIEC, the Agencies issued a public notice in September 2015 that established a multistep process for streamlining Call Report requirements. The notice included proposals to eliminate or revise several Call Report data items, announced an accelerated start of a statutorily required review of the Call Report, and began an assessment of the feasibility of creating a streamlined community bank Call Report. In addition to the formal EGRPRA process, the Agencies are continuing to engage in industry dialogue and outreach, to better understand significant sources of Call Report burden.

Also in April 2015, the Board approved a final rule that increased the asset threshold of its Small Bank Holding Company Policy Statement (policy statement) from $500 million to $1 billion, and applied the policy statement to savings and loan holding companies (SLHCs). The policy statement facilitates the transfer of ownership of small community banks and savings associations by allowing their holding companies to operate with higher levels of debt than would normally be permitted.

3. Under the Basel III agreement, banks will have to increase their capital reserve holdings. These requirements may weaken the ability of community banks to make loans to the small businesses and farms they serve. What can the Federal Reserve do to recognize the different risks posed to the financial system by community banks?

Community banking organizations play a critical role in the U.S. economy. The financial crisis showed that both the quality and quantity of capital were insufficient for certain banking organizations of all sizes, limiting the ability of bank organizations to continue operating and lending during this period of stress. In 2013, the Federal Reserve, the Federal Deposit Insurance Corporation, and the Office of the Comptroller of the Currency (the Agencies) adopted changes to their respective regulatory capital frameworks (revised capital rules) that were designed to strengthen the quality and quantity of capital and to increase risk-sensitivity while maintaining banking organizations' ability to lend and provide other financial services to their customers.

Prior to adopting the revised capital rules, the Agencies conducted an analysis showing that the vast majority of community banks already had sufficient capital to meet the revised capital rules on a fully phased-in basis.

While this analysis suggested that the impact of the revised capital rules on community banks and credit availability should be limited, the rules did take into account concerns from community banks about the potential regulatory burden of the rules. In particular, several significant and potentially burdensome elements of the revised capital rules do not apply to community banking organizations, including the requirement to recognize most elements of accumulated other comprehensive income in regulatory capital, the countercyclical capital buffer, the supplementary leverage ratio, and certain enhanced disclosure requirements. In addition, as mentioned in the previous question's response, the Federal Reserve in 2015, through revisions to the revised capital rules and the Policy Statement, exempted most bank holding companies and SLHCs with less than $1 billion in total consolidated assets from the revised capital rules, an increase from the previous threshold of $500 million.

The Federal Reserve strives to ensure that regulatory requirements and supervisory expectations of banking organizations are commensurate with their size, risk profile, condition, and complexity. The Federal Reserve also regularly explores ways to reduce or eliminate outdated or unnecessary requirements while maintaining a safe and sound banking system and preserving supervisory standards, such as actively participating in the decennial EGRPRA review as mentioned in more detail in the previous question's response, which identifies outdated, unnecessary, or unduly burdensome regulations imposed on insured depository institutions.