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THE SEMIANNUAL MONETARY POLICY REPORT TO THE CONGRESS

HEARING

BEFORE THE

COMMITTEE ON BANKING, HOUSING, AND URBAN AFFAIRS UNITED STATES SENATE

ONE HUNDRED SIXTEENTH CONGRESS

FIRST SESSION

ON

OVERSIGHT ON THE MONETARY POLICY REPORT TO CONGRESS PURSUANT TO THE FULL EMPLOYMENT AND BALANCED GROWTH ACT OF 1978

FEBUARY 26, 2019

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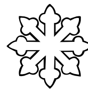

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THE SEMIANNUAL MONETARY POLICY REPORT TO THE CONGRESS

TUESDAY, FEBRUARY 26, 2019

U.S. SENATE,
COMMITTEE ON BANKING, HOUSING, AND URBAN AFFAIRS,
Washington, DC.

The Committee met, at 9:49 a.m., in room SD–106, Dirksen Senate Office Building, Hon. Mike Crapo, Chairman of the Committee, presiding.

OPENING STATEMENT OF CHAIRMAN MIKE CRAPO

Chairman CRAPO. The hearing will come to order.

We welcome you, Chairman Powell, to the Committee for the Federal Reserve's Semiannual Monetary Policy Report to Congress.

This hearing provides the Committee an opportunity to examine the current state of the U.S. economy, the Fed's implementation of monetary policy, and its supervisory and regulatory activities.

In the wake of the 2008 financial crisis, the Fed entered a period of unconventional monetary policy to support the U.S. economy, including drastically cutting interest rates and expanding its balance sheet.

I have long been concerned about the Fed's quantitative easing programs and the size of its balance sheet.

As economic conditions improved, the Fed began trying to normalize monetary policy, including by gradually reducing the size of its balance sheet.

The Fed's balance sheet grew to approximately $4.5 trillion from around $800 billion between 2007 and 2015 and now stands at around $4 trillion still.

During the press conference following the FOMC's most recent meeting, Chairman Powell provided additional clarity on the Fed's plans to normalize monetary policy, saying, "the ultimate size of our balance sheet will be driven principally by financial institutions' demand for reserves plus a buffer, so that fluctuations in reserve demand do not require us to make frequent sizable market interventions."

"Estimates of the level of reserve demand are quite uncertain, but we know that this demand in the postcrisis environment is far larger than before. Higher reserve holdings are an important part of the stronger liquidity position that financial institutions must now hold."

"The implication is that the normalization of the size of the portfolio will be completed sooner, and with a larger balance sheet, than in previous estimates."

Banks' reserve balances grew from $43 billion in January 2008 to a peak of $2.8 trillion in 2014 before falling to $1.6 trillion as of January 2019.

During this hearing, I look forward to understanding more about: what factors the Fed may consider in determining what is the appropriate size of the balance sheet; what factors have affected banks' demand for reserves, including the Fed's postcrisis regulatory framework; and what amount of reserves are estimated to be necessary for the Fed to achieve its monetary policy objective.

The state of the U.S. economy is a key consideration in the Fed's monetary policy decisions.

The U.S. economy remains strong with robust growth and low unemployment.

Despite everyone telling us prior to tax reform that annual growth would be stuck below 2 percent as far as the eye could see, the economy expanded, as we predicted, at an annualized rate of 3.4 percent in the third quarter of last year, following growth of 4.2 percent and 2.2 percent in the second and first quarters of 2018, respectively, according to the Bureau of Economic Analysis.

This strong growth, which is on track to continue to exceed previous expectations, will now provide our policymakers with much greater flexibility to address other fiscal challenges than if we were continuing to struggle with insufficient growth.

And according to the Bureau of Labor Statistics, the unemployment rate has remained low and steady around 4 percent while the U.S. economy added 223,000 jobs per month on average in 2018, as well as 304,000 jobs in the first month of this year.

People continue to enter the labor force with the labor participation rate increasing to 63.2 percent from 62.7 percent over the last year.

Reinforcing this strong employment environment, Fed Vice Chairman Rich Clarida said in a recent speech that "the labor market remains healthy, with an unemployment rate near the lowest level recorded in 50 years and with average monthly job gains continuing to outpace the increases needed over the longer run to provide employment for new entrants into the labor force."

Major legislation passed through this Committee and enacted last Congress supported economic growth and job creation.

The Economic Growth, Regulatory Relief, and Consumer Protection Act passed Congress with significant bipartisan support and was enacted to right-size regulation and redirect important resources to local communities for homebuyers, individuals, and small businesses.

I appreciate the work that the Fed has done so far to introduce proposals and finalize rules required by the law.

Overseeing the full implementation of that law and the Federal banking agencies' rules to right-size regulations will continue to be a top priority of the Committee in this Congress.

In particular, the Fed and other banking regulators should consider whether the Community Bank Leverage Ratio should be set at 8 percent as opposed to the current 9 percent; significantly tailor regulations for banks with between $100 billion and $250 billion in total assets with a particular emphasis on tailoring the stress testing regime; provide meaningful relief from the Volcker Rule for all

institutions, including by revising the definition of "covered funds" and eliminating the proposed accounting test; and examine whether the regulations that apply to the U.S. operations of foreign banks are tailored to the risk profile of the relevant institutions and consider the existence of home-country regulations that apply on a global basis.

The Committee will also look for additional opportunities to support policies that foster economic growth, capital formation, and job creation.

Turning for a moment to another issue, Senator Brown and I issued a press release on February 13 inviting stakeholders to submit feedback on the collection, use, and protection of sensitive information by financial regulators and private companies, including third parties that share information with regulators and other private companies.

Americans are rightly concerned about how their data is collected and used and how it is secured and protected. Americans need this kind of attention from this Committee and from the Fed and our other financial regulators.

Given the exponential growth and use of data, and the corresponding data breaches, it is also worth examining how the Fair Credit Reporting Act should work in a digital economy and whether certain data brokers and other firms serve a function similar to the original consumer reporting agencies.

The Banking Committee has plans to make this a major focus in this Congress, and we encourage our stakeholders to submit their feedback by the March 15 deadline.

Last, I want to take a moment to recognize one of our staff members who is retiring this week.

Dawn Ratliff is the Committee's Chief Clerk, and she will be retiring, as I said, at the end of the week.

She might not want me to say this, but Dawn has been in the Senate longer than most Senators. She has dedicated 27 years in these hallways and has been with the Senate Banking Committee since 2007, starting with then-Chairman Chris Dodd, and then working for Chairman Tim Johnson, then Chairman Shelby, and now myself.

Dawn is a Banking Committee institution. She is incredibly knowledgeable, helpful, and professional, respected and well liked by everyone with whom she works.

Dawn, your work on the Committee has truly made a lasting impact, and even though you will not be here following this week, you will not be forgotten anytime soon.

We wish you the best of luck in your well-earned retirement. Enjoy it.

[Applause.]

Chairman CRAPO. Senator Brown.

OPENING STATEMENT OF SENATOR SHERROD BROWN

Senator BROWN. Thank you, Chairman Crapo. And, Ms. Ratliff, thank you again for your service to our country—to this Committee and to our country and to the Senate. She has been instrumental in making this Committee run smoothly for over a decade. We will miss her, and congratulations on your retirement.

Chairman Powell, welcome back to the Committee. It has been a great week for Wall Street. The FDIC announced that banks made a record-breaking $237.7 billion in profits in 2018, almost a quarter trillion dollars in profits.

Corporations—led by the Nation's largest banks—bought back a record $1 trillion in stocks last year, conveniently boosting CEO compensation. The President's tax bill put $30 billion in the banks' pockets and continues to fuel even more buybacks and CEO bonuses.

But that is never enough for Wall Street. It continues to demand weaker rules so big banks can take bigger and more dangerous risks. And from the proposals the Fed has put out after the passage of S. 2155, it looks like the Fed and you are going along.

The economy looks great from a corner office on Wall Street, but it does not look so great from a house on Main Street.

Corporate profits are up. Executive compensation has exploded—all because of the productivity of American workers. But workers' wages have barely budged. Hard work simply does not pay off for the people fueling this growth.

Seven of the ten fastest-growing occupations do not pay enough to afford rent on a modest one-bedroom apartment, let alone save for a downpayment.

Household debt continues to rise, taking its toll on families. At the end of 2018—think about this for a minute. At the end of 2018, 7 million Americans with auto loans were at least 90 days past due on their payments. Seven million Americans with auto loans were at least 90 days past due on their payments, even though the President brags about unemployment being at record lows.

Borrowers of color have not recovered financially from the crisis. Too many Americans of all ages are saddled with mountains of student loan debt.

The Trump shutdown revealed another frightening reality: Too many Americans still live paycheck to paycheck, even with stable jobs.

After 35 days of no pay, of uncertainty, of hardship, those workers went back to their jobs and eventually received their pay. But more than a million Government contractors were not so lucky. We are talking in many cases about custodians and security guards and cafeteria workers making $12 to $15 an hour and going 35 days without pay and getting no compensation later like the 800,000 Government workers. We have heard a lot of talk about whether GDP will recover from the shutdown, not much about how workers will recover.

I give special thanks to Senator Smith for her work on trying to remedy this incredible injustice that damn near anybody talks about—damn near nobody talks about.

We have questioned for quite a while whether the economic recovery—now in its tenth year—has been felt by all Americans. Stagnating wages and increasing income inequality between Wall Street CEOs and working Americans point to an obvious answer.

Mr. Chairman, Chairman Powell, your comments at the February 6 Fed town hall, for educators confirmed this. A teacher asked about your major concerns for the economy, and your answer was: "We have some work to do more to make sure that prosperity

that we do achieve is widely spread . . . median and lower levels of income have grown, but much more slowly. And growth at the top has been very strong."

"Growth at the top has been very strong." In other words, the CEOs, the folks on Wall Street, they are doing just fine in this economy.

Chair Powell, the Fed has spent a decade bending over backwards to help banks, to help big corporations that have hoarded profits for themselves rather than investing in the millions of workers who actually make our companies successful.

We are late in this economic cycle. It is clear that record Wall Street profits will not be trickling down to workers before the next downturn.

Before the last crisis, we heard over and over again from Government officials and banks that the economy was doing fine 10 years ago. Regulators and Congress continued to weaken rules for Wall Street, continued to ignore the warning signs as families struggled to make ends meet.

As the severity of the financial crisis became clear, the Fed rushed to the aid of the biggest banks, but it did not devote even a fraction of that firepower to helping the rest of America. Ignoring working families was a policy failure then; it is a policy failure now.

Mr. Chairman, I hope we do not make the same mistake again. I look forward to your testimony and the new ideas for making hard work pay off for everyone in our economy.

Thank you.

Chairman CRAPO. Thank you, Senator Brown.

Chairman Powell, we welcome you here again. We appreciate your attention. We appreciate the report that you have provided to us, and you may make your statement about that report and whatever information you would like to present to us, and then we will proceed to some questions. Thank you.

Chairman Powell.

STATEMENT OF JEROME H. POWELL, CHAIRMAN, BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM

Mr. POWELL. Thank you and good morning. Chairman Crapo, Ranking Member Brown, and other Members of the Committee, I am happy to present the Federal Reserve's semiannual Monetary Policy Report to the Congress.

Let me start by saying that my colleagues and I strongly support the goals Congress has set for monetary policy—maximum employment and price stability. We are committed to providing transparency about the Federal Reserve's policies and programs. Congress has entrusted us with an important degree of independence so that we can pursue our mandate without concern for short-term political considerations. We appreciate that our independence brings with it the need to provide transparency so that Americans and their representatives in Congress understand our policy actions and can hold us accountable. We are always grateful for opportunities, such as today's hearing, to demonstrate the Fed's deep commitment to transparency and accountability.

Today I will review the current economic situation and outlook before turning to monetary policy. I will also describe several recent improvements to our communications practices to enhance our transparency.

The economy grew at a strong pace, on balance, last year, and employment and inflation remain close to the Federal Reserve's statutory goals of maximum employment and stable prices—our dual mandate.

Based on available data, we estimate that gross domestic product, or GDP, rose a little less than 3 percent last year following a 2.5-percent increase in 2017. Last year's growth was led by strong gains in consumer spending and increases in business investment. Growth was supported by increases in employment and wages, optimism among households and businesses, and fiscal policy actions. In the last couple of months, some data have softened but still point to spending gains this quarter. While the partial Government shutdown created significant hardship for Government employees and many others, the negative effects on the economy are expected to be fairly modest and to largely unwind over the next several months.

The job market remains strong. Monthly job gains averaged 220,000 in 2018, and payrolls increased an additional 304,000 in January. The unemployment rate stood at 4 percent in January, a very low level by historical standards, and job openings remain abundant. Moreover, the ample availability of job opportunities appears to have encouraged some people to join the workforce and some who otherwise might have left to remain in it. As a result, the labor force participation rate for people in their prime working years—which is to say the share of people ages 25 to 54 who are either working or actively looking for work—has continued to increase over the past year. In another welcome development, we are seeing signs of stronger wage growth.

The job market gains in recent years have benefited a wide range of families and individuals. Indeed, recent wage gains have been strongest for lower-skilled workers. That said, disparities persist across various groups of workers and different parts of the country. For example, unemployment rates for African Americans and Hispanics are still well above the jobless rates for whites and Asians. Likewise, the percentage of the population with a job is noticeably lower in rural communities than in urban areas, and that gap has widened over the past decade. The February *Monetary Policy Report* provides additional information on employment disparities between rural and urban areas.

Overall consumer price inflation, as measured by the 12-month change in the price index for personal consumption expenditures, is estimated to have been 1.7 percent in December, held down by recent declines in energy prices. Core PCE inflation, which excludes food and energy prices and tends to be a better indicator of future inflation, is estimated at 1.9 percent. At our January meeting, my colleagues and I generally expected economic activity to expand at a solid pace, albeit somewhat slower than in 2018, and the job market to remain strong. Recent declines in energy prices will likely push headline inflation further below the FOMC's longer-run

goal of 2 percent for a time, but aside from those transitory effects, we expect that inflation will run close to 2 percent.

While we view current economic conditions as healthy and the economic outlook as favorable, over the past few months we have seen some crosscurrents and conflicting signals. Financial markets have become more volatile toward year end, and financial conditions are now less supportive of growth than they were earlier last year. Growth has slowed in some major foreign economies, particularly China and Europe. And uncertainty is elevated around some unresolved Government policy issues, including Brexit and ongoing trade negotiations. We will carefully monitor these issues as they evolve.

In addition, our Nation faces important longer-term challenges. For example, productivity growth, which is what drives rising real wages and living standards over the longer term, has been low. Likewise, in contrast to 25 years ago, labor force participation among prime-age men and women is now lower in the United States than in most other advanced economies. Other longer-run trends, such as relatively stagnant incomes for many families and a lack of upward economic mobility among people with lower incomes, also remain important challenges. And it is widely agreed that the Federal Government debt is on an unsustainable path. As a Nation, addressing these pressing issues could contribute greatly to the longer-run health and vitality of the U.S. economy.

Over the second half of 2018, as the labor market kept strengthening and economic activity continued to expand strongly, the FOMC gradually moved interest rates toward levels that are more normal for a healthy economy. Specifically, at our September and December meetings we decided to raise the target range for the Federal funds rate by ¼ percentage point at each, putting the current range at 2¼ to 2½ percent.

At our December meeting, we stressed that the extent and timing of any further rate increases would depend on incoming data and the evolving outlook. We also noted that we would be paying close attention to global economic and financial developments and assessing their implications for the outlook. In January, with inflation pressures muted, the FOMC determined that the cumulative effects of these developments, along with ongoing Government policy uncertainty, warranted taking a patient approach with regard to future policy changes. Going forward, our policy decisions will continue to be data dependent and will take into account new information as economic conditions and the outlook evolve.

For guideposts on appropriate policy, the FOMC routinely looks at monetary policy rules that recommend a level for the Federal funds rate based on measures of inflation and the cyclical position of the U.S. economy. The February *Monetary Policy Report* gives an update on monetary policy rules, and I continue to find these rules to be helpful benchmarks, but, of course, no simple rule can adequately capture the full range of factors the Committee must assess in conducting policy. We do, however, conduct monetary policy in a systematic manner to promote our longer-run goals of maximum employment and stable prices. As part of this approach, we strive to communicate clearly about our monetary policy decisions.

We have also continued to gradually shrink the size of our balance sheet by reducing our holdings of Treasury and agency securities. The Federal Reserve's total assets declined about $310 billion since the middle of last year and currently stand at close to $4 trillion. Relative to their peak level in 2014, banks' reserve balances with the Federal Reserve have declined by around $1.2 trillion, a drop of more than 40 percent.

In light of the substantial progress we have made in reducing reserves, and after extensive deliberations, the Committee decided at our January meeting to continue over the longer run to implement policy with our current operating procedure. That is, we will continue to use our administered rates to control the policy rate, with an ample supply of reserves so that active management of reserves is not required. Having made this decision, the Committee can now evaluate the appropriate timing and approach for the end of balance sheet runoff. I would note that we are prepared to adjust any of the details for completing balance sheet normalization in light of economic and financial developments. In the longer run, the size of the balance sheet will be determined by the demand for Federal Reserve liabilities such as currency and bank reserves. The February *Monetary Policy Report* describes these liabilities and reviews the factors that influence their size over the longer run.

I will conclude by mentioning some further progress we have made in improving transparency. Late last year we launched two new publications: the first, the Financial Stability Report, shares our assessment of the resilience of the U.S. financial system; and the second, the Supervision and Regulation Report, provides information about our activities as a bank supervisor and regulator. Last month we began conducting press conferences after every FOMC meeting instead of every other one. This change will allow me to more fully and more frequently explain the Committee's thinking. Last November we announced a plan to conduct a comprehensive review of the strategies, tools, and communications practices we use to pursue our congressionally assigned goals. This review will include outreach to a broad range of stakeholders across the country. The February *Monetary Policy Report* provides further discussion of these initiatives.

Thank you, and I will be happy to respond to your questions.

Chairman CRAPO. Thank you very much, Chairman Powell.

As I mentioned in my opening statement, you said that the balance sheet normalization may end sooner with a larger balance than previously anticipated in the—if I understand it correctly, the ultimate size of the balance sheet will be principally driven by financial institutions' demand for reserves plus a buffer, correct?

Mr. POWELL. That is correct.

Chairman CRAPO. Reserves have increased from $43 billion in early 2008 to about $2.8 trillion in 2014, if I understand correctly, before falling now down to about $1.6 trillion currently. Do you have an estimate of the amount of reserves that are estimated to be necessary to achieve the Fed's monetary policy objective? And how does the Fed's postcrisis regulatory policy affect this amount?

Mr. POWELL. The quantity of reserves before the financial crisis, Mr. Chairman, was $20 billion, in that range, plus or minus, so a relatively small amount.

One of the important things we did after the financial crisis was require banking institutions, particularly the very largest ones, to hold quite large buffers of highly liquid assets. One of those assets that the banks like to hold to satisfy this requirement is bank reserves, so the demand for reserves is going to be very substantially higher than it was before the crisis and will not go back to those lower levels in any case.

We only have estimates based on market intelligence and discussions with financial institutions, and those estimates have actually gone up substantially just over the course of the last year or so. We do not have a precise notion, but, you know, we believe that the public estimates that are out there of around $1 trillion plus a buffer, as you mentioned in your remarks, will be, as a reasonable starting point, an estimate of where we might wind up.

Chairman CRAPO. All right. Thank you. As you know, I have been a strong critic of the quantitative easing the Fed has been engaged in, and I appreciate your explanation of how you intend to reach the appropriate balance of what the Fed's balance sheet should be. And I will continue to work with you on understanding how we get to the right spot as soon as we can.

You mentioned in your statement and in your report that the labor force participation rate has started to grow. That has been one of the reasons we have seen such low economic performance, in my opinion, in the past years. Do you expect that the labor force participation rate growth that we have seen will stabilize and even possibly increase as we continue to move forward?

Mr. POWELL. So labor force participation, if I can provide just a little bit of background, was an area where the U.S. was at least comparable to other well-off countries and in some cases at the high end as far as labor force participation by women was concerned.

We are now at the bottom end of the league table for both men and women, and it is a very troubling concern. A big part of it, though, is driven by something that we cannot really change, and that is just demographics. As the country ages, labor force participation should decline at a fairly steady level. Nonetheless, even allowing for that, we are lower than we need to be.

So the gains we have seen over the past year have been very positive and very welcome from our standpoint. We do not know how long they can be sustained, but we hope for a long time. I would just say that I think we need a broad policy focus on how to sustain labor force participation, including not just through Fed policy but through legislative policy as well.

Chairman CRAPO. And I agree. I think that that is a critical part of our ability to maintain the growth and strength of our economy.

I have lots of questions for you, but just one that I will have time for in the remaining amount of time I have, and this will get to regulatory relief and implementation of Senate bill 2155. As you know, Senate bill 2155 provides smaller institutions with relief from the Volcker Rule. Regardless, there are still significant issues with the rule for institutions of all sizes, and I and six of my Banking Committee colleagues wrote to our financial regulators in October of last year urging further revisions to the rule to address outstanding issues, such as the rule's "covered funds" definition and

its broad application to venture capital, other long-term investments, and loan creation. In addition, I am concerned that the proposed accounting test may make the Volcker Rule more complex than is necessary.

Can you commit to using your significant regulatory discretion provided by statute to promptly address these outstanding issues?

Mr. POWELL. Yes, we received comments on those issues and more, and we thought some of those comments were very well taken, and we are working hard to try to address them. And I assure you we will do our best to do that.

Chairman CRAPO. I appreciate that.

Senator Brown.

Senator BROWN. Thank you. Thank you again for being here, Chairman Powell.

Yesterday your predecessor, Janet Yellen, said she does not think President Trump has a grasp of macroeconomic policy. Is she right?

Mr. POWELL. I will not have any comment on that for you, Senator.

Senator BROWN. All right. I guess I am not surprised.

It is troubling that the former Fed Chair, the woman that sat in your job and was very good at that job, tells the press point blank that she does not think the President of the United States understands the economy. I think the American people continually and more and more understand that this President—that many Americans, GM workers in Youngstown and Hamtramck, for example, believe he has betrayed workers in this country. That is becoming clearer and clearer.

Let me shift to another question. Last week former Fed Chair Paul Volcker raised concerns that the culture of banking only focuses on the profits of the firm and the pay of the CEO. I share this concern that we should focus on workers. Since 1979—you know these numbers, Mr. Chairman—worker productivity has grown 70 percent. Compensation for those workers has grown by just 11 percent. Meanwhile, the top one-tenth of 1 percent saw their earnings grow by 343 percent. This disparity, as you know, is even worse for women and people of color.

So do you think, Mr. Chairman, the Fed's employment mandate is just to ensure that people are employed? Or do you think full employment implies a dignity of work, that is, meaning workers earn a salary and benefits that let them fully participate in the 2019 economy in our country?

Mr. POWELL. Our mandate, as you well know, is maximum employment, and we try to take that to heart. And, you know, our tool for trying to achieve that is monetary policy. And I think we are at a 50-year low in unemployment. There are many other issues in the country. You have mentioned some of them. But, honestly, to achieve some of the things you are talking about, we need other tools. It is not—the Fed cannot affect every social problem, as you well know.

Senator BROWN. Is that a social problem, that fewer and fewer people, even though they are employed, wages are stagnant, is that just a social problem?

Mr. POWELL. Well, wages, I would say wages do go into our assessment of maximum employment. We do look at wages, and I am

happy to say that wages, while they were very sluggish in the aftermath of the crisis, have now started to move up in a way that is more consistent with past history and with inflation and productivity——

Senator BROWN. But not even close to productivity, not even close to gains in productivity for most workers.

Mr. POWELL. So today—I know the chart you are talking about. You are talking about over the longer run. If you look at what—wages are now going up a little better than 3 percent. Inflation is right at 2. Productivity has been running—sorry. Inflation has been at 2. Productivity has been around 1. So 3 percent is about right from that narrow standpoint.

Wages have moved up. We welcome that. We do not find it troubling from an inflation standpoint at this point. So we do look very carefully at wages as we assess maximum employment, as we assess whether we are meeting our maximum employment goal.

Senator BROWN. Let me put it in a bit of a historical perspective. Will Rogers during the Great Depression provided a lesson I think we could learn from today. He said that, "Unlike water, money trickles up, not down." Of the Government's response to that economic crisis of the Great Depression, he said, "The money was all appropriated for the top in the hopes that it would trickle down to the needy. . . . Give it to the people at the bottom . . . the top will have it before night anyhow. But it will at least have passed through the poor fellow's hands. They saved the big banks but the little ones went up the flue."

This observation is 89 years old. It seems like the Fed still thinks, from your answer and from the behavior of the Fed, that the best way to help workers is to shore up big bank profits and hope the prosperity trickles down. Over the last decade, it has been creative in how it accomplishes this. I believe the Fed has the authority and the duty to be creative, to help workers share in the prosperity they create. My staff will follow up with your staff on ways of doing that.

One more question. It seems like "too big to fail" is alive and well. We are seeing a potential merger—we are seeing growth in most of the largest money center banks. Two regional banks, as you know, SunTrust and BB&T, each with over $200 billion in assets, decided to merge, saying it was too difficult for them to compete with the money center banks' investment in technology.

What message does the Fed send to regional and community banks about their future if the Fed eventually approves this merger?

Mr. POWELL. Well, we have a process that we go through in evaluating any merger. It is set forth in great detail in the law and in our guidance. We will go through that process carefully, fairly, and thoroughly and with a lot of transparency when we do get an application. We do not actually have an application yet on that matter. We expect to get it sometime in the next few weeks.

So we will do all of that. I would just say we have not prejudged anything, and we are going to do our work on that professionally, carefully, fairly, and transparently.

Senator BROWN. OK.

Chairman CRAPO. Senator Shelby.

Senator SHELBY. Thank you.

Chairman Powell, somebody is doing something right. I do not know if it is the President or you or a combination of everything. I think this is the best economy I have seen in my lifetime at this point.

Now, the question is: How do we keep it going? How do we keep it going? That is part of your job—not totally, but you are into the money. How do you gauge inflation, for example? You know, there are a lot of ways to do it. That is one. You were talking about price stability, maximum employment. Price stability, you are talking about the stability of the monetary policy, the value of our currency, and everything that goes with it. How do we keep this economy going, in your judgment?

Mr. POWELL. So I think you said it very well. We want to use our tools to sustain this expansion and keep the labor market strong and keep inflation near 2 percent. That is exactly what we are trying to do. And so we look around and what do we see? We see a labor market that is strong and continuing to strengthen. Job creation is strong. Wages are moving up. So that is a very healthy thing.

With inflation, we see muted inflation pressures. Even now with really historically low unemployment and a great recovery, an ongoing recovery in the labor markets, we still see muted inflation pressures, and that gives us the ability to be patient with monetary policy, and that is what we are going to do. The Committee has decided that with our policy rate in the range of neutral, with muted inflation pressures and with some of the downside risks that we have talked about, this is a good time to be patient and watch and wait and see how the situation evolves.

Senator SHELBY. How does the abundance of hydrocarbons that we have found in this country in recent years, which prices everything, how does that feed into the economy in a positive way?

Mr. POWELL. Well, in a couple of ways. One, it's a big industry. We have a very large energy industry now thanks really to shale. In addition, if you think about the—so that employs a lot of people, and that is a big thing in certain areas of the country. Five or six major areas of the country have a lot of employment and economic activity.

Interesting on inflation. If you look back to the 1970s, a lot of what set off the bad inflation outcomes in the 1970s was an oil shock. What we have in our very large domestic oil industry now is, in effect, a shock absorber, because when oil prices go up, American shale producers and other oil producers will produce more oil, and so that offsets that shock and will, you know, prevent that shock from driving inflation up here. So it has been a real positive for our economy from a number of perspectives.

Senator SHELBY. Mr. Chairman, how important is the certainty of good trade agreements to our economy and to the world economy?

Mr. POWELL. Well, uncertainty is the enemy of business, and businesses, they want a set of rules, they want an established, transparent set of rules, and they want to play by those rules, be able to make longer-term plans, investments, and hiring and that kind of thing.

At the same time, we need the trade—you know, of course, we are not responsible for trade. We do not comment on trade policy at all. But we have been hearing a lot from our contacts around the country really all year, this year and all last year, about uncertainty, and we do sense it has been holding back some decisions, probably had some minor effect on confidence and maybe activity. But, overall, certainty around trade and other Government policies is very important.

Senator SHELBY. As we look at our current account, the imbalance of trade with most of the world, does that concern you? And if it does, why?

Mr. POWELL. You know, the overall current account is set economically by the difference between savings and investment in our country. So it is really an identity that kind of works that way.

It tends to go up in good times. When Americans are, you know, at work and earning well and buying things and the economy is strong, we tend to buy things. Some of those things tend to be imported. The trade deficit and the current account balance can go down quickly in bad states of affairs.

Of course, over time we would like to see balance both in savings and investment and in the trade balance.

Senator SHELBY. I do not have much time left, but we have discussed this before, cost-benefit analysis. Last year when you came before the Committee, we discussed here the formation and the policy affecting this, an assessment unit to conduct cost-benefit analysis on regulations. Could you provide here an update on the work of the entity here? And what have you learned and what is going on?

Mr. POWELL. Yes, so that unit is up and running now, and it is a relatively new undertaking. Cost-benefit analysis is something we, of course, have done really always, and particularly in the last decade or so we have upped our game. Now we have a particular unit focused on it. We are very pleased with the progress it is making, and they are involved in the rulemakings and assessment of everything we do. So it is a positive development, and, you know, we look forward to making it ever stronger.

Senator SHELBY. My last question to you, in the few seconds I have left, is: What is the health of our banking system that you regulate at the Federal Reserve, our biggest banks?

Mr. POWELL. I think our banking system overall is quite strong, you know, record profits, no bank failures I think in 2018, much higher capital, much higher liquidity, better risk management; stress tests have really focused banks on understanding and managing their risks. We have better resolution planning overall. I think our banking system is strong and resilient. We never take it for granted. We are always looking for problems and cracks, but I would say overall our banking system is strong.

Senator SHELBY. Thank you.

Thank you, Mr. Chairman.

Chairman CRAPO. Senator Menendez.

Senator MENENDEZ. Welcome, Chairman. As the number of legitimate cannabis-related businesses grow across the United States, the vast majority of banks and credit unions are not offering services to these enterprises for legitimate fear of legal and reg-

ulatory risk. My home State of New Jersey is moving toward legalization of recreational marijuana, and I have concern that these new businesses as well as the existing medical marijuana businesses in the State will continue to find themselves shut out of the banking system. And when these businesses are forced to operate exclusively in cash, they create serious public safety risks in our communities.

Do you agree that financial institutions need clarity on this issue?

Mr. POWELL. I think it would be great to have clarity. Of course, financial institutions and their regulators and supervisors are in a very difficult position here with marijuana being illegal under Federal law and legal under a growing number of State laws. It puts financial institutions in a very difficult place and puts the supervisors in a difficult place, too. It would be nice to have clarity on that supervisory relationship.

Senator MENENDEZ. And in a corollary question, related to the provision of banking services is the ability for such businesses to secure insurance products, a necessity for those looking to secure financing. Would it be helpful for Congress to also consider the role of insurance companies as States move forward to legalization?

Mr. POWELL. I believe so, yes.

Senator MENENDEZ. OK. On a different question, on February 7th BB&T announced that it planned to purchase SunTrust in a deal that would result in the combined bank becoming the sixth largest commercial bank in the country with $434 billion in total assets. As you may know, in 2008 BB&T's Community Reinvestment Act rating was downgraded due to substantive violations of the Equal Credit Opportunity Act and the Fair Housing Act. BB&T's most recent CRA exam released last year also included a substantive violation of fair lending laws, a violation which likely should have resulted in another downgrade to the bank's CRA rating.

I want to be sure that the Federal Reserve is not following the OCC and deemphasizing its treatment of fair lending violations when it comes time to evaluate a proposed merger. What assurance can you give us that the Federal Reserve will treat these violations with the seriousness they deserve?

Mr. POWELL. We have not changed our policy on that, and we do consider—it comes in the law under convenience and needs of the communities served, and that includes consumer compliance and fair lending records and the record of performance under CRA. Those are all things that we do consider when we get a merger application.

Senator MENENDEZ. And when you are considering it, can you give us a sense of what the Federal Reserve's review of this bank's or any other bank's Community Reinvestment Act track record of compliance with fair lending laws will look like?

Mr. POWELL. We will look thoroughly at it. We will look at the rating, of course, which I believe is—I think it is satisfactory now. Banks that have an unsatisfactory or less than satisfactory rating I think have a hard time. But we will look at that, and we will also consider public comments and a full range of information. Any information that is presented to us we will consider.

Senator MENENDEZ. Well, I ask this question because it seems to me that, particularly at the OCC, we have—who has released a proposal without input from the Fed or FDIC contemplating sweeping changes to the implementation of the Community Reinvestment Act. In a speech last year, Governor Brainard said the Community Reinvestment Act was "more important than ever." He stressed that branches and deposit-taking ATMs remain an important way that banks engage with a community. You also highlighted recently the importance of enforcing the CRA and other laws that help ensure people have adequate access to financial services wherever they live.

Can we get your commitment to build consensus among the Fed Governors before moving forward with proposals to change implementation of the Community Reinvestment Act?

Mr. POWELL. Oh, yes.

Senator MENENDEZ. OK. I think it is important that you do everything in your power to try to achieve a unanimous vote on this issue, should the Fed decide to move forward. Many of us find this an incredibly important part of our law and an increasingly diminishing reality of financial institutions that somehow think that they do not really have to fully engage and implement the law and ultimately still get away with it. And so I think there has to be a strong message that that is not the case. I hope you will be able to deliver that message.

Mr. POWELL. We are unified in our commitment to, you know, the mission of CRA, and to any revisions that we do, we are going to want to see that they preserve that mission and enable banks to serve it more effectively.

Senator MENENDEZ. Thank you, Mr. Chairman.

Chairman CRAPO. Senator Toomey.

Senator TOOMEY. Thank you, Mr. Chairman.

Chairman Powell, welcome back. Good to see you again. Let me just start by once again compliment you and your colleagues on taking us a long way toward normalizing monetary policy. In my view, this was long overdue, but you have been pursuing what strikes me as a prudent, thoughtful, and data-informed process of getting back to normal. So I want to thank you for that.

A quick regulatory question, if I could. I was pleased with the interagency proposal that was released by the Fed and the other agencies dealing with S. 2155 and specifically the tailoring of capital and liquidity requirements, enhanced prudential standards.

I think the comment period closed in January on this proposal. Can you assure us that it is a high priority to finalize these rules?

Mr. POWELL. It is a very high priority. S. 2155 implementation is probably our highest priority, and we are pushing ahead.

Senator TOOMEY. Any idea of a timeframe by which we could expect to see finalized rules there?

Mr. POWELL. I would not want to put a date—I mean, there are so many rules. There are a dozen rules that we have comments on right now. I can come back to you with——

Senator TOOMEY. OK. But I am glad to hear it is a priority.

Mr. POWELL. It is.

Senator TOOMEY. We are obviously eager, and we think you are—I think you are heading in the right direction.

Unrelated, as you know, the private sector has set up a real-time payment system, and I think a real-time payment system is a terrific innovation that is very, very good for our economy. My understanding is all depository institutions have access to it on an equal footing, as they should. To the extent that that is the case, do you believe it is necessary for the Fed to develop an alternative or competing real-time payment system?

Mr. POWELL. That is a judgment that we have not made. We sought comment on that question, and we had a range of views, and it is something we are thinking about. We are mindful that, you know, we do not—under the Monetary Control Act, for example, we have to find that the services we provide are capable of being paid for and also not something that the private sector can adequately provide.

Senator TOOMEY. Right.

Mr. POWELL. So we are looking at that very question.

Senator TOOMEY. I would be interested in just hearing what your thoughts are as you go forward on that. It does seem to me that the private sector is providing a perfectly viable and affordable and reasonable mechanism here.

On another topic, as you know, there has been recent discussions both, I think, inside and certainly outside the Fed about whether the Fed ought to reconsider the way it thinks about inflation, and specifically, I guess the way I understand this discussion, whether the Fed ought to target a price level rather than a change in the price level, and specifically if there were an extended period of time when inflation ran below a target, would it make sense for the Fed to intentionally attempt to exceed the target modestly or by enough so that over a long period of time you would hit the average.

My first reaction is to be pretty concerned about that. Intentionally running at an inflation rate above the target rate worries me given that historically inflation has been much harder to control and high inflation has been a bigger problem than low inflation. But I wonder what your thoughts are about this topic.

Mr. POWELL. These are questions, as you know, that are going to be the subject of careful consideration over the course of this year and beyond in our thinking.

You know, the issue that we face is that rates have come down—long and short rates have come down really over the last 40 years and are now much—they are just much lower, real rates and, of course, inflation—add inflation back in, nominal rates as well, the implication of that being that in a typical downturn, the odds are much more—much higher that we will wind up back at the zero lower bound again. And in that situation, that fact there has the potential to drag inflation expectations down over time.

In our thinking, inflation expectations are now the most important driver of actual inflation. So we are trying to think—and, really, the economics profession has been thinking about it for 20 years, since the experience of Japan in the late 1990s, thinking of ways to make that inflation 2-percent target credible, highly credible, so that inflation kind of averages around 2 percent rather than only averaging 2 percent in good times and then averaging way less than that in bad times, which would draw expectations down.

No decisions have been made. You raise a—there are plenty of questions and concerns to be addressed, but there is also a problem that I think we owe it to the public to try think our way through the best possible way to address that problem so that we can carry out our mandate.

Senator TOOMEY. Yeah, I understand the logic. I understand the problem that you are wrestling with. I would just urge great, great caution on this for many, many reasons, not the least of which, for whatever period of time the Fed decided it would exceed the goal so that it averages the goal—first of all, during that period of time, presumably you do not have price stability. Certainly not zero. You would be intentionally running above even the goal.

I have got other questions, but I see I am out of time. I just want to urge caution on that one, Mr. Chairman.

Chairman CRAPO. Senator Tester.

Senator TESTER. Thank you, Mr. Chairman, Ranking Member Brown. Thank you for being here, Chairman Powell. I appreciate your service, appreciate the work you are doing.

I want to talk a little bit about the Government shutdown that we just came through that cost the economy $11 billion, and I think that is a conservative figure. There is at least one in this Government that wants to use Government services and public employees as a pawn when they do not get their way.

But what I want to ask you about is we are faced with a debt ceiling coming up March 1. Could you walk us through quickly, if you could, the economic impacts of failing to increase that debt ceiling?

Mr. POWELL. Well, the failure to increase the debt ceiling creates a lot of uncertainty in the first instance, and then when you actually get up to the point where the Government runs out of cash and does not pay its bills—we never passed that point yet. That is kind of a bright line, and I hope we never do pass it. But there is a lot of uncertainty that is generated and a lot of distraction from what is otherwise a pretty good economy.

Senator TESTER. What would happen to our interest rates on $22 trillion worth of debt if we were not to do what we needed to do with the debt ceiling?

Mr. POWELL. It is beyond even considering. The idea that the United States would not honor all of its obligations and pay them when due is just something that cannot even be considered.

Senator TESTER. Would it double?

Mr. POWELL. It would go up. But I think, you know, we have the best credit rating; you know, we borrow at very low rates, and the world believes in our full faith and credit. And I think that is not something I would——

Senator TESTER. It would have draconian effects on our economy overall.

Mr. POWELL. Potentially. Very hard to predict and possibly large negative effects.

Senator TESTER. But there are some in this body, quite frankly, that say it would be no big deal. Do you agree with that?

Mr. POWELL. No, I do not. I think it would be a very big deal not to pay all of our bills when and as due. I think that is something the U.S. Government should always do.

Senator TESTER. I agree. Senator Shelby talked about the certainty of trade agreements. I will not ask you to grade this Administration's trade policies, but from your perspective, how is this Administration's trade policy affecting our economy—positively or negatively?

Mr. POWELL. You know, again, we do not play a role in trade negotiations. I think it would be inappropriate for me to comment on their trade policy, either directly or indirectly. As I mentioned, you know, we have been hearing and everyone has been hearing from business about it, and particularly I would think in your State, hearing about trade.

Senator TESTER. Exactly. And in my real job, I farm, and I can tell you, as we prepare for planting this spring, I cannot tell you any commodity or any livestock that is going to make us much money, if any.

And so I believe the Minneapolis Fed came out and said that bad ag loans, we are seeing an uptick—a serious uptick, I might add—in farm foreclosures. Are you concerned about that? Do you think it is a direct result of trade, or is it something else?

Mr. POWELL. I actually did see that piece. As you know far better than I, the agricultural economy has been under a lot of pressure for really 5 years now. It is just low crop prices, sustained low crop prices, and that has not changed, and that has driven up, you know, bankruptcies under Chapter 12, foreclosures, and all kinds of bad things. So, I mean, I think the bigger picture is just crop prices have been low. Obviously, the trade issues have not helped this year.

Senator TESTER. OK. And the Fed also suggested that farm bankruptcies have not peaked yet, that we have not seen the potential negative impact on rural America that these low commodity prices—and might I add, before that 5 years, we had some of the best ever when we had some trade going on.

Do you agree with the assessment that the Federal Reserve study suggests that we have not seen the peak of farm bankruptcies yet?

Mr. POWELL. I did read that, whatever it was, an article or a blog post, and it did say that. It sounded plausible to me.

Senator TESTER. OK. We in agriculture got a bailout. It was pretty serious dollars overall, but it did not amount to much by the time it got to the ground, truthfully, as compared to what production ag is losing in products. But we also hear from more than just agriculture. We hear from small businesses, and the small businesses are telling me that the big guys can afford to stay in business because of these trade wars, but they are going to be out of business. And we are not talking about family farms now, which is absolutely affecting—my previous question. But do you believe that the trade policies impact smaller businesses greater than the big ones?

Mr. POWELL. I do not know the answer to that. It is a fair question.

Senator TESTER. OK. Well, I have got some other questions I will put in for the record.

I want to thank you for being here today. I will tell you that the economy is booming, but there are a lot of flags that are coming

up that I am seeing that are canaries in the coal mine, so to speak, and I hope—you are a smart guy. Hopefully you are able to pay attention to those to avoid any pitfalls.

Thank you.

Chairman CRAPO. Senator Rounds.

Senator ROUNDS. Thank you, Mr. Chairman. Good morning, Chairman Powell.

Mr. POWELL. Good morning.

Senator ROUNDS. It is good to see you once again, and thank you very much for coming in today.

Before I begin my questions, I wanted to take a moment to underscore the importance of the Insurance Policy Advisory Committee that the Fed is required to establish pursuant to S. 2155. As you are aware, South Dakotans have a very strong interest in preserving our State-based insurance regulatory system. I look forward to working with you and the new Committee to find ways that we can promote the interests of our State-based system. So I appreciate that.

I have got a series of questions that I think I am just going to put them in as questions for the record and ask you to respond later on. Very seldom do we get an opportunity to have the Chairman of the Fed come in in front of literally the country and to share his thoughts about the direction of our country, in many cases the financial systems that we have here and so forth. And I got to thinking, this is probably an opportunity that we should not let go by to talk about the impact of the Federal Government and its spending with regard to monetary policy as well.

In particular, it seems that Congress has a tendency to only make changes in the way it does business when there is a crisis at hand, and I would like to give you another particular to perhaps visit with us and offer if not direction, at least an observation as to what happens when Congress fails to take care of some of the safety net programs that we have in this country. And I want to begin by simply recognizing that we have $22 trillion in debt, and clearly that debt is being financed. That means there is competition for those dollars.

The Federal Reserve, on the other hand, it actually manages through regular meetings and discussions—and the quantitative easing is an example of one where you as an organization have very carefully selected how you will work that through, how you will refinance and so forth. But you manage it on a regular basis.

Congress has a tendency with its budget and the money that it spends to not even look at a number of the expenditures. Today with our budget, we have about 31 percent of the budget that we actually vote on. We vote on defense and nondefense discretionary spending. We do not vote on nor do we appear to manage Social Security, Medicare, Medicaid, or interest on the debt, about 70—well, close to 70 percent of all of that which we spent every single year.

Every single year for as far as we can see, we are going to run significant deficits. Would you care to comment on the way that Congress manages or does not manage the safety nets—Social Security, Medicare, and Medicaid—and what impact that has on our economy as a Nation?

Mr. POWELL. I should start by saying that we try to stay in our lane, which is monetary policy, bank regulation, financial stability, and we have no supervisory role or really role as a commentator. We do not score bills. There is JCT, there is CBO, there is OMB, and we do not do those jobs.

But I will say, as I said in my statement, that the U.S. Federal Government is on an unsustainable fiscal path, by which is meant that debt as a percentage of GDP is growing and now growing sharply, growing quickly, faster, and that is unsustainable by definition. We need to stabilize debt to GDP.

The timing of doing that, the ways of doing it, through revenue, through spending, all of those things are not for the Fed to decide.

Senator ROUNDS. But as perhaps, for lack of a better term, one of the chief economists in the Nation, to be able to give advice to the folks that are out there, to the country as a whole about the things that we have in our future and about the threats to our future, Social Security will go bankrupt unless we start managing it. Is that a fair statement, on the current trajectory?

Mr. POWELL. I think if I could say it this way: I think what happens over time is that we wind up spending more and more of our precious revenues to service the debt, to pay interest to people who own the debt, as opposed to investing in the things that we really need—education—all the things that we need to be investing in so that we can compete in the global economy.

I think, you know, on the spending side, the thing in my personal thinking—again, this is not the Fed's role—and I think in many people's thinking, the thing that drives our fiscal unsustainability, the single biggest thing is just health care delivery. We deliver health care outcomes that are pretty average for a well-off country, but we spend 17 percent of GDP doing it. Everyone else spends on average 10 percent of GDP. That is a trillion-plus, way more than a trillion dollars every year that we spend in delivering health care. So if I were in your seats—and I am not—I think that is a good place to look. It is not that benefits themselves are too generous. It is that we deliver them in highly inefficient ways, particularly health care.

Senator ROUNDS. If I could—and I know I am out of time, but I will just say, in other words, what you are saying is if we actually managed—if we actually managed the resources that we had, we could probably do a better job than what we do today, where we just simply do not even include it in our regular budget that we vote on on a year-to-year basis.

Mr. POWELL. Again, I cannot—I am not here to criticize Congress, but I do think it is a profitable thing to do.

Senator ROUNDS. Thank you.

Thank you, Mr. Chairman.

Chairman CRAPO. Thank you. I will agree with you, Senator Rounds.

Senator Smith.

Senator SMITH. Thank you, and it is wonderful to see you again. I appreciated very much our conversation in my office the other day.

I want to follow up a little bit on what Senator Tester was asking about regarding the economic issues in rural areas. And I appre-

ciate your interest in this discussion, and this was featured in the *Monetary Policy Report* that you put out.

You know, it strikes me that if you look at the overall positive numbers in our economy, it is a good thing. But when you unbundle those strong numbers, you see inequities and gaps, as you have pointed out, around race and gender and then also around rural areas. In Minnesota, it is interesting. You know, we have some rural counties where the unemployment rate is close to 2 percent. And then we have other rural counties where the unemployment rate is more like 6 or 7 percent.

So your *Monetary Policy Report* highlights the impact of what is happening with rural workers without a college degree, in particular, and the impact on labor force participation and how employment-to-population ratios have recovered dramatically for college-educated people but less so for noncollege people. And I am really worried about this disparity that it is causing.

So can you tell us, in your judgment, why is this gap widening in rural areas?

Mr. POWELL. I thought the box is very interesting, and you will note that, like so many economic problems, there is no really clear or easy answer. But the way I would say it is the gap between rural and urban areas in unemployment is not so big. It really shows up in labor force participation.

Senator SMITH. Right.

Mr. POWELL. That is where it shows up. So when we think about low labor force participation, the first thing that comes to mind is educational levels, because people in the population, the broader population, lower educational levels tend to be associated with lower labor force participation. But even accounting for that, that does not account for much, really, of the disparity. So, you know, it can be that rural areas are more associated with manufacturing activities, which have had less recovery than the service sector, which is now much larger than the manufacturing sector.

In addition, it all may be affected by people leaving rural areas, in other words, people who leave rural areas to go to an urban area where there are better job opportunities. So it is something, you know, that we are still working on understanding, but it is a fairly stark disparity, and I think we all see it.

Senator SMITH. Right.

Mr. POWELL. I was in Mississippi a couple of weeks ago and certainly saw it there in a rural area.

Senator SMITH. So when people are leaving, does that suggest then that the population that is left is older and——

Mr. POWELL. Or perhaps less able to find a job, less able to take part in the labor force. So some of the people who have job skills may have left that area, leaving the remaining population with lower labor force participation. That may be part of it.

Senator SMITH. So would that not suggest that it would be smart on our part—this is not a Fed policy, but it is a policy to increase our emphasis and our investment in, you know, career and technical education, the kind of training that you need in order to fill those manufacturing jobs in rural areas?

Mr. POWELL. So I do think that we could use a national focus on labor force participation, and that would be certainly one piece of

it. We do not really have the tools. I can identify it as a problem, and it is a serious problem, but I think that is a profitable place to look.

Senator SMITH. The other thing I wonder is maybe people are not coming back into the workforce because they cannot afford to. In rural Minnesota, you cannot afford child care and it is not readily available. So I wonder if that is not part of the problem, that the jobs that are there are not paying. So how come wages do not go up? If there is a demand for labor, people potentially are there, why don't wage go up?

Mr. POWELL. As I mentioned earlier, wages have moved up from their very low levels of increase earlier. I would not say that they are going up quickly now, but they are going up at a more healthy rate.

There are some things in the Federal Tax Code where people lose their benefits with their first dollar of earnings, which, again, it is not our job, but that does not sound like you want people to go back to work.

Senator SMITH. That is counterproductive, right.

Mr. POWELL. You want them to be rewarded for going back to work, and it seems like that is something we could look at—you could look at.

Senator SMITH. Right. Thank you very much, Chairman Powell. I know I am out of time. I want to just note that I appreciated the question that Senator Tester was asking about farm bankruptcies, which is a real concern in Minnesota and across the whole northern swath of States. I am going to follow up with a written question about how you see those farm bankruptcies potentially affecting the overall economic strength of the country, especially in rural areas.

Mr. POWELL. Thank you.

Senator SMITH. Thank you, Mr. Chair.

Chairman CRAPO. Senator McSally.

Senator MCSALLY. Thank you, Mr. Chairman. Chairman Powell, good to see you again.

I want to continue actually on the line of discussion that you have been on. In our conversation when we met, we talked about this labor force participation issue, and everywhere I go in Arizona, in the more metropolitan areas anyway, companies are—the economy is doing great, the optimism is there, but they are lacking for workers. They are just screaming for workers. And it is really up and down the skill set. It is not just in the trade craft, although that often tends to be those areas. And so what we are seeing is this labor force participation rate is going up a little bit, ticking up, but there is clearly still this gap that is maybe holding back even more economic growth because of the mismatch of not having the workers for the jobs that are there.

So can you just give some additional perspective on that? And, you know, what within your power and within our power do you think that we can do in order to incentivize increasing that number, get more people off the sidelines, get them the skills that they need in order to continue to provide more opportunities for people we represent?

Mr. POWELL. Sure. So this strong labor market and strong economy that we have at the aggregate level is, as you mentioned, pulling people back into the labor force or encouraging them to stay in the labor force and not leave. So this is very, very positive for us. Labor force participation has gone back up above 63 percent, and to be in the labor force, by the way, you have either got to have a job or have looked for a job in the last 4 weeks. So if you have not looked for a job in the last 4 weeks and you are not employed, you are not considered unemployed.

So this is very, very positive, and we hope it is sustained, but, you know, that is sort of a strong labor market, pulling people back in. Even with that, though, our labor force participation rates are lower than other countries that have anything like our level of wealth and income and economic activity. And it is not easy to say why, but I do think—and I think that the Fed's ability to—our ability to address this is really just a function of trying to keep us at maximum employment. There are plenty of people and it is younger people, particularly younger men, particularly less well educated younger men, but also people across the gender spectrum and the income spectrum and age spectrum. We just have low labor force participation, and I think it is—you know, we want the economy to grow, and we want that prosperity to be widely spread. Labor force participation gets both of those things almost better than anything, and so I think it is something that ought to be a high focus for people who have different tools than ours.

Senator MCSALLY. I agree with you, and not necessarily within your tools, but just based on your perspective. What do you think is holding that back? What is your perspective and what else can we do in order to remove those barriers for people to, you know, get back in the labor force, to be working to support their families, themselves, and meet their full potential?

Mr. POWELL. Part of it would be probably education and skills gaps. Part of it would be the opioid crisis. You know, there just would be a range of things, and I would think that there are also—as we were discussing a minute ago, there also are some disincentives to go to work that are built into benefit programs. I met with a group of women in West Virginia last year who were in an apprenticeship program for carpentry, electrical, plumbing, steel work, and that kind of thing. And the hardest thing they had to do was to go to work in this program, which has 100 percent placement and which paid, you know, 9 or 10 bucks an hour, because that was less than the very meager benefits they were already getting. So they had to take a pay cut to go back to work. And they did it anyway. They did it anyway, which was pretty inspiring. But I think we ought to have policies that reward and support labor force participation.

Again, they are not ours. I should not get into the prescriptive business, but I think it is really important for the country.

Senator MCSALLY. Thank you, and I do want to follow up on the rural–urban gap. We have got a lot of rural counties. I visited many of them this week in Arizona, and we are seeing the same thing where there is that disconnect in wage growth and in labor force participation in those rural areas. Do you take that into account in Fed policy? And, again, other perspectives of what else we

might be able to do on our side or on your side in order to not have that gap widening for those in the rural areas?

Mr. POWELL. We do in the general sense that we are learning and we have learned this year that there is more slack in the labor market because people are coming back in. If people were not coming back in, then the unemployment rate would be substantially lower. But they are, or they are staying in. So labor force participation is rising in either case, and that tells us that there is more room to grow, and that certainly has implications for monetary policy.

In terms of the urban and rural, we look at those disparities. We look at all different kinds of disparities. In a general way, they inform our thinking about the state of the economy, and particularly maximum employment, which is not—there is no one number that you can look at. You have to look at a range of indicators, and that would be one of them.

Senator MCSALLY. OK, great. Thank you.

Chairman CRAPO. Senator Jones.

Senator JONES. Thank you, Mr. Chairman. Chairman Powell, thank you for being here today. I really appreciate it.

I want to stay on the urban versus rural divide a little bit. Obviously, we see you have got Senators on this Committee who have a lot of urban areas, and it seems like that there is one factor that may come into play that is not quite so obvious that we have talked about, and that is health care.

In 2017, the Atlanta Fed set out to study the urban–rural divide in the Southeast, and one of the factors they kept noticing was the impact on residents' health on the economic output to simplify what is obviously a very complex issue.

According to that Fed study in Atlanta, while the portion of workers who say they are too sick or disabled to work is roughly 6 percent nationally, that rises to over 12 percent and higher in the rural South.

So from your perspective, what role do you think that health outcomes play in economic growth, particularly in rural America?

Mr. POWELL. I think poor health outcomes are very much associated with a lot of social issues, including low labor force participation and lots of other economic issues, you know, low lifetime earnings and many, many different things. And those are obviously more prevalent now in rural areas, as you pointed out.

Senator JONES. And I would assume you would agree that if health care is not accessible in those areas—for instance, in Alabama we have seen rural hospitals closing left and right, seven or eight in the last 7 or 8 years—with the absence of health care, it may contribute to the people leaving those rural areas and into urban areas. Would you agree with that?

Mr. POWELL. It is hard to say whether—you know, people have been leaving for some time. Some of these counties, as you obviously know, have lost half their population in the last four or five decades.

Senator JONES. Individually, if the States were to develop policies that would expand health care in these communities, give affordable health care, access to health care, what would you expect the economic impact to be?

Mr. POWELL. Well, I think people who—health care is going to—you know, in principle would allow people to remain in the labor market, would get them back in the labor market and keep them from getting sick and being out of the labor market. So that would be a positive for the economy.

Senator JONES. I appreciate that. I promise you we are not going to ask you to testify in front of the HELP Committee.

Senator Tester made a comment as he was finishing up that despite—and there is a lot of good economic news. Everybody agrees there is a lot of great economic news out there. But I think a lot of folks also, as in Senator Tester's words, see canaries in the coal mine. Do you see any? Other than the obvious of the debt that we have, do you see any canaries in the coal mine that we need to be looking for in this Congress?

Mr. POWELL. I would say that the outlook for the U.S. economy is a positive one, is a favorable one. There are always risks, and right now I would say that the predominant risks to our economy are slowing global growth, as I mentioned, particularly China and Europe. We have seen a significant slowing in growth really over the course of the past year, and it seems to be ongoing. And that can create a headwind for the United States economy. I talked about Brexit. That is an event risk which could have implications for us.

Here domestically, again, I think the outlook is generally a favorable one.

Senator JONES. OK. Thank you, Mr. Chairman. And Senator Shelby asked you about the state of health of our big banks, which you gave a pretty favorable report on. But in December of this year, right as the Government was shutting down, the Secretary of the Treasury issued a press release, and he had this call with all of the big banks to discuss their liquidity and to make sure that things were OK. The next day, I think he had a call with you and some of the other regulators. And that sent some alarm bells, I think, throughout the country and folks up here.

Can you kind of walk through those 2 days and what was the purpose? What did you see was the purpose of the Secretary of the Treasury 4 days into the shutdown attempting to reassure folks, I guess, that the banking system was OK?

Mr. POWELL. Let me say, of course, I would not comment on the Secretary at all. But, you know, our financial system, as I mentioned earlier, is very strong, record profits, no bank failures last year, capital is much higher, liquidity is much higher, risk management is much better. You know, we never take this for granted. We keep watching carefully and looking for problems. But I can say that what I was thinking in those days was, you know, we had significant volatility in the markets, and I was just, you know, wondering, looking and asking the question, does that have any broader implications for the economy or for the financial system? And the answer I felt was no, but it is something that you are—part of the job is to ask that question, which I was.

Senator JONES. All right. Thank you, Mr. Chairman. I appreciate you being here.

Thank you, Mr. Chairman.

Chairman CRAPO. Senator Kennedy.

Senator KENNEDY. Mr. Chairman, thank you for coming today. My good friend Senator Brown lamented the fact that our financial institutions are making profits now. That is a good thing, right?

Mr. POWELL. We need a profitable financial system to have a well-capitalized financial system.

Senator KENNEDY. Well, is it better if banks are making money or losing money from a macroeconomic standpoint?

Mr. POWELL. I think we want banks to be profitable and strong and well capitalized, and they have been.

Senator KENNEDY. OK. I want to talk about the Government shutdown. Tell me if I get this wrong. CBO estimates an $11 billion impact to our economy. We will recover about $8 billion, so the net loss to our economy is $3 billion. Does that sound about right?

Mr. POWELL. All I know about that is that is what I have read.

Senator KENNEDY. OK. That is what I have read, too. You got to trust somebody. I will take CBO at their word.

We have got about a $21 trillion economy. Is that right?

Mr. POWELL. That sounds about right.

Senator KENNEDY. OK. So as a percentage of our economy, that $3 billion loss is one-half of 1 percent. Is that about right?

Mr. POWELL. You did that math very quickly, Senator. I am going to trust you on that.

Senator KENNEDY. Good. OK. That is an infinitesimal impact, is it not?

Mr. POWELL. That is very small.

Senator KENNEDY. OK. Let us talk about the economy. Some economists said that if we passed the Tax Cuts and Jobs Act, our economy would overheat. Those economists were wrong, were they not?

Mr. POWELL. The economy did not overheat, has not overheated.

Senator KENNEDY. We are having growth without inflation. Is that correct?

Mr. POWELL. We have inflation right at our target.

Senator KENNEDY. About 2.2 percent?

Mr. POWELL. Right around 2 percent, 1.9 percent.

Senator KENNEDY. OK. And we have had more business investment. Is that correct?

Mr. POWELL. We have had solid investment, very solid in the first part of last year and reasonably good in the second half of last year, and I think the outlook is for continued reasonable levels of business investment.

Senator KENNEDY. And wages are up. Is that correct?

Mr. POWELL. Yes, they are. As I mentioned, you have wages now—all of our wage measures have moved up to 3 percent or a little better, which is a very good thing to see.

Senator KENNEDY. I want to get your opinion on—and I am not trying to ask you to make policy, but I am asking you as the Fed Chair, what could we have done in hindsight to encourage more business investment in plants and machinery and equipment and software which would have created more jobs and hopefully increased productivity? Specifically, let me ask you this: There is legislation to prohibit share buybacks. Is that a good thing? I know share buybacks have a positive economic impact. But if you had legislation that cut business taxes but also said you cannot use

that money to buy back shares, you have to invest it in your company or pay shareholders dividends, what would you think about legislation like that, just from an economic standpoint?

Mr. POWELL. Well, I think it is—first of all, that kind of a decision is really not in our hands.

Senator KENNEDY. I know.

Mr. POWELL. It is really for you to make.

Senator KENNEDY. I am asking you as an economist.

Mr. POWELL. So I would say the goal—I guess I would just say the goal of having prosperity be widely shared I think is one that we all share. I think the thing about share—when you talk about companies and what they do with their profits and how they allocate capital, in our system we have always left those decisions to the private sector, to private hands.

Senator KENNEDY. Right.

Mr. POWELL. And I would want to understand the consequences of changing that, and I would want to look at whether there are not other ways to achieve the goals that I think we all want, which is to have prosperity be widely shared.

Senator KENNEDY. OK. Are there other ideas you might have to make sure prosperity is more widely shared?

Mr. POWELL. I think it ties to some of the things we have been talking about here. You know, labor force participation is just a win for the overall economy. The economy will grow faster, and the people who are not taking part tend to be the ones with lower education, who are the edges of the labor force. So we are underperforming as a Nation on this compared to our peer group.

Senator KENNEDY. Why?

Mr. POWELL. It is a good question. It is a problem that stands out here compared to other countries, and——

Senator KENNEDY. Is it because we pay people too much not to work, or is it because people do not have the skills, or is it because they do not have access to the jobs? This is my last one, Mr. Chairman.

Mr. POWELL. You know, I think there is a range of perspectives on this, and there is a range of—there is some wisdom in a lot of different ideas, and I think the best thing to do would be to get some proposals that would have broad support and work on those.

I do think quite a bit of it is skills, education, aptitude, and also not having disincentives in the Tax Code where people lose their benefits, for example, with the first dollar of pay. That seems like a disincentive to work that—and none of this, by the way, is in the Fed's hands, but since you ask.

Senator KENNEDY. You are doing a great job. Thank you.

Mr. POWELL. Thank you, Senator.

Chairman CRAPO. Senator Warren.

Senator WARREN. Child care. Thank you, Mr. Chairman. Thank you, Chairman Powell, for being here.

Earlier this month, two giant banks, SunTrust and BB&T, announced that they intended to merge. This new too-big-to-fail institution would have about $450 billion in assets and become the sixth largest bank in the United States.

Now, as you know, bank acquisitions and mergers do not go through on their own. They have to be approved first by the Fed.

So last spring I wrote you a letter asking for data on the number of merger and acquisition applications received by the Fed and the number that had been approved over the last 10 years.

Chairman Powell, when you answered my letter in May of 2018, how many merger and acquisition applications from the banks had you received since 2006? Do you remember?

Mr. POWELL. No, I do not have the numbers in front of me.

Senator WARREN. Would 3,819 sound right?

Mr. POWELL. Yes.

Senator WARREN. Good. OK. And do you remember how many of those 3,819 applications you denied?

Mr. POWELL. No, I do not.

Senator WARREN. Would zero sound right?

Mr. POWELL. If you say so.

Senator WARREN. Well, you said so. It is your letter.

Chairman Powell, has the Board denied any applications since you responded to my letter in May?

Mr. POWELL. I would just—if I can offer a little context——

Senator WARREN. Well, let us get this part out, because that is what I am trying to do is build some context here.

Mr. POWELL. I do not believe we have. I think what happens is that we—people do not apply or they withdraw their applications.

Senator WARREN. That is exactly what I am going to talk about. So zero percent of the applications for mergers and acquisitions since 2006 have been denied. Now, that does not mean that all potential mergers and acquisitions make it through the process. Thirteen percent of applications are withdrawn before they get a decision. According to your letter, Chairman Powell, "Prospective applicants may discuss a proposed transaction with Federal Reserve System staff prior to filing, and applicants will be discouraged from filing applications where it is apparent that the applications would not meet all of the statutory factors required for approval."

So if you think that a proposed merger will not be approved, you discourage the bank from following through. Is that right?

Mr. POWELL. In some cases. I think that would be in cases where it is clear that there is a statutory problem, you know, for example, in some cases——

Senator WARREN. OK, but you approve 100 percent of those that go ahead and apply, so I assume they are getting some——

Mr. POWELL. Unless they are withdrawn. Unless they are withdrawn.

Senator WARREN. That is what I said. So you encourage them to withdraw if they are not going to get an approval.

Mr. POWELL. But they can file and then withdraw.

Senator WARREN. But the point is they withdraw if they are not going to get it because of a conversation you had that is a nonpublic conversation.

So this is a formal process required by regulation. In order to do an approval, people who object to the merger have an opportunity to file a protest. That is how the process is supposed to work. That would include, for example, communities that are worried that local banks may close following a merger or acquisition; employees who are concerned about losing their jobs; State officials that may be concerned about decreasing competition and so on.

So, Chairman Powell, you have explained that consultation with a bank starts, can start before the merger is announced publicly. When is it that the public can actually file protests, before or after the merger is announced?

Mr. POWELL. So I think the process is that we receive an application for a merger—which we have not received yet. We expect to receive it, I am told, sometime next month. And——

Senator WARREN. And when will the public have a chance to——

Mr. POWELL. Certainly then.

Senator WARREN. And that is true in all of these, right? The public does not get a chance to comment until after the application is already filed. But the application is only filed after the banks have had a chance to have this quiet conversation with the Fed.

I just want to get this straight. You and the banks get together in the back room and grease the wheels before the merger is announced. And if you are not going to approve the merger, you tell the bank in advance, and then they go figure out something else. If the public wants a chance to weigh in, they have to wait until you have already made a decision. No wonder you approved 100 percent of the merger applications. Not a single no. Your approval process itself appears to be a rubber stamp, that everything is happening behind closed doors.

So the question I have is about the SunTrust and BB&T merger. Is this one just going to be another rubber stamp? You have already made the decision behind closed doors before the public gets a chance to weigh in?

Mr. POWELL. No, not at all. We are going to conduct a very fair and open, transparent process. I think, you know, our obligations under the statute are clear and they are quite broad. We will be hearing from groups of all kinds and going through our process carefully and thoroughly.

Senator WARREN. So it is just that in the last 3,819 merger applications, which were all approved without a single one for which you said no, this time you are going to be listening to comments from the public that might cause you to say no?

You know, I just have to say I will bet that SunTrust and BB&T looked at that 100 percent merger success rate and saw what everyone else sees, and that is that the Fed works for big, rich banks that want to get bigger and want to get richer, and then everyone else pays the price for diminished competition, for worse service, for higher prices, for employee layoffs, for the risk that we have yet another too-big-to-fail bank on our hands.

I just think it is time that we put down the rubber stamp and that we really let the public and everyone else weigh in before we create yet another too-big-to-fail bank.

Thank you, Mr. Chairman.

Chairman CRAPO. Senator Cotton.

Senator COTTON. Thank you, Chairman Powell, for being here. I want to start talking about stress tests for midsize banks.

Reform legislation that the Congress passed to the Dodd–Frank Act last Congress increased the threshold for stress tests from $10 billion banks to $100 billion banks. Can you tell us why so many of us still hear from banks in that window, larger than $10 billion

but smaller than $100 billion, are still hearing from their examiners that they need to undergo such stress tests?

Mr. POWELL. Well, let me say the law, the new law, is that banks between 10 and 100 do not have to—are exempt from the DFAST stress tests. That should be crystal clear. I think you are referring to the guidance.

Senator COTTON. Yes.

Mr. POWELL. Which we are in the process of looking at and revising and, I would think, addressing that issue.

Senator COTTON. OK. But to be perfectly clear, banks between $10 billion and $100 billion are not required to undergo Dodd–Frank stress tests.

Mr. POWELL. Correct.

Senator COTTON. When I was in Afghanistan and Iraq, young soldiers used to complain about the rules of engagement, and if you looked at the rules of engagement that the four-star commanders had issued, they are actually pretty flexible. That had been filtered down in a different way to the front lines, though. Do you think it is possible that your guidance that you just gave gets filtered down to examiners on the front line in a slightly different way?

Mr. POWELL. I think that is something that happens, yes, and, again, we are looking at—there is this guidance that is still outstanding. Some of these banks are still going to want to do stress testing, and we are not going to discourage that. It is actually a good practice. But we are going to be looking at that guidance to make sure that there is no question that banks between $10 and $100 billion in assets are not required by law to do stress tests.

Senator COTTON. OK. Thank you. These examiners, they hold a lot of power in their hands, obviously, when they are on the front lines and they are in one of these smaller community banks. And when they say something may be voluntary, you know, that is heard by the banker in a different way than they may intend it. It reminds me of my old basketball coach who used to have voluntary shoot-arounds before school and on some afternoons. And it just so happened that the players that reported to those voluntary shoot-arounds tended to be the ones that got playing time on Tuesday and Friday night.

Mr. POWELL. We try to communicate, and I think our examiners do a good job, basically, but, you know, we know we need to work hard to make sure that the message gets out clearly, and we find that our people do listen. So we are alert to that.

Senator COTTON. Thank you.

I want to turn now to a different question. I know there has been some talk here about the unemployment rate, which is pretty low, and the labor force participation rate, which is increasing. I want to talk about wages and wage growth. There was some recent data out from the Bureau of Labor Statistics. It was highlighted in a recent *Wall Street Journal* article that said, despite these factors, income to employees in the form of pay and benefits continues to decrease. It is down to 52.7 percent of our gross domestic income. It was as high as 59 percent in the 1970s and 57 percent in 2001. By the same token, business income, profits to businesses, whether it be the biggest corporations or small businesses, have gone from 12 percent to up to 20 percent.

Can you give me your thoughts on why we are seeing more income going into the hands of owners in this country and less into the hands of workers?

Mr. POWELL. Yes, so that is the labor share of income, is what you are talking about, and really, if you look back through history, it zigs and zags, but it generally zigged and zagged at a higher level. And then right around the year 2000, labor's share went down sharply for about 10 years and then, broadly speaking, has been about flat since then. You know, it goes up and it goes down, but it is basically flat. And the question is, Why? It is a really good question, and there are a lot of different answers. Honestly, there is no clear, easy answer.

As a separate matter, wages are actually growing at a level that makes sense. The problem is the level. It is not the growth rate. Wages and benefits are growing at around 3 percent, a little better. That is a healthy growth rate in an economy with 1 percent productivity increase and 2 percent inflation. The problem is there were 10 years when that did not happen, from 2000 until 2010. So, you know, it can have to do with a lot—globalization is a big answer there. That was right around the time of China joining the WTO. Some researchers will connect it to that. So, in any case, you know, we welcome these wage increases for this reason.

Senator COTTON. Well, I do as well, and I hope that we will continue to see them and see a little bit more of that growing economic pie going into the hands of our workers.

Thanks.

Chairman CRAPO. Senator Cortez Masto.

Senator CORTEZ MASTO. Thank you. Chairman Powell, thank you for being here again.

I have concerns about discrimination in lending, so I want to ask you a follow-up question to the record that I submitted last time you were here, and it involves the Federal Reserve's responsibility to enforce the fair lending laws.

I asked you how the Fed would improve its oversight of fair lending rules. In your response, you mentioned that Fed examiners evaluate each financial institution for fair lending compliance.

So I guess my specific question is: How would examiners evaluate whether a lender might steer consumers to higher-priced loans? In your written response, you mentioned credit scores, loan-to-value ratios, and lending products, but can you expand on what the examiners would consider to ensure against consumers being steered to high-priced loans?

Mr. POWELL. So I think examiners who examine for that I believe are trained to look for patterns of that nature.

Senator CORTEZ MASTO. Specific criteria. Is there anything specific that they look to that you are aware of?

Mr. POWELL. You know, I have a general understanding of this, but I should come back to you with more details.

Senator CORTEZ MASTO. OK, and thank you. I appreciate that. And I would also like to know, as you come back and answer this question, would examiners consider incentive pay tied to higher-priced loans as a red flag or a pattern? Would the existence of bonuses for bank staff that provided a loan with higher fees and in-

terest rates be a red flag to these examiners? So if you could expand on that in writing, that would be fantastic. I appreciate that.

Mr. POWELL. Happy to do that.

Senator CORTEZ MASTO. Thank you.

The other issue that is important for me because it is an issue in Nevada and across the country is affordable housing. In your response to my submitted questions for the record, I asked you if the rapid rise of housing costs was encouraging your consumer price models to assume a higher threat of inflation than actually existed.

Do you think that the Fed's raising interest rates was a factor in rising house costs?

Mr. POWELL. Well, I think that higher interest rates certainly played into higher mortgage rates, and that will have had an effect.

Senator CORTEZ MASTO. What about the costs of building that apartment or house?

Mr. POWELL. Yeah, I think materials costs and—what you hear from builders is labor shortages, particularly skilled labor shortages, and you also hear higher materials costs, some of which are affected by tariffs, of course. So you hear them under tremendous cost pressure, and I think that was flowing through into higher prices, and that was, you know, making the affordability calculus a little bit more challenging for buyers at the same time rates were going up, and I think all together that picture, you know, slowed down housing construction in the last year or so.

Rates are now down a little bit, about 50 basis points, and so we are seeing a little bit—starting to see a little bit of a pickup there.

Senator CORTEZ MASTO. How would you compare the impact of the higher interest rates on construction to that of the higher prices for goods that may be caused by tariffs?

Mr. POWELL. You know, I think that the higher costs—it depends on—from the standpoint of the consumer, what matters is what does the house cost. I think you will find that the interest rate has an important—is a very important thing from the consumer's standpoint. But in setting the price of the house, it is not the interest rates. It is really the cost of materials and labor.

Senator CORTEZ MASTO. And then you talked about——

Mr. POWELL. And land.

Senator CORTEZ MASTO. ——the higher cost of labor. Could that higher cost of labor also be due to curbing immigration and the lack of labor because of that?

Mr. POWELL. It certainly could in construction, particularly in some regions. I visited Houston not so long ago, and I think a big part of their construction labor force was from immigration. I think they were feeling shortages there for that reason.

Senator CORTEZ MASTO. Thank you.

Last summer, the Federal Reserve economist noted that high levels of student debt was preventing Millennials from buying a home. Other studies have found that Millennials faced housing supply constraints, beginning their careers in a poor labor market, and high student loan burdens which have made it difficult for them to buy a home.

What was the response to the Federal Reserve's assertion that student debt prevented at least 400,000 Millennials from buying a home?

Mr. POWELL. What was the response?

Senator CORTEZ MASTO. Yes.

Mr. POWELL. It is just research, and I think there is a growing amount of research that shows that student loans, of course, have been growing very, very fast in the last few years, and——

Senator CORTEZ MASTO. Was that the right number, the 400,000?

Mr. POWELL. I do not know that number.

Senator CORTEZ MASTO. Did you get a sense was it too high, too low? Was that——

Mr. POWELL. I do not know that number. I will tell you it is a trillion and a half dollars in outstanding student loans, and there is research that shows that for students who cannot discharge—cannot service their loans or discharge them, that those loans can weigh on them over a long period of time and have real effects on their economic and personal lives over time.

Senator CORTEZ MASTO. And ability at actually home ownership. Is that correct?

Mr. POWELL. Yes.

Senator CORTEZ MASTO. Thank you. Thank you, Chairman, for being here.

Mr. POWELL. Thank you.

Chairman CRAPO. Thank you.

Senator Moran.

Senator MORAN. Mr. Chairman, thank you very much. Mr. Chairman, thank you very much.

Let me start with what I think is a straightforward question followed by a much more complicated one. Eighteen of my Senate colleagues joined me in a letter calling on regulators to provide a more significant reduction in the reporting burden of our smallest banks in the first and third calendar quarters, as required by Section 205 of 2155. We are looking for a greater difference in those reporting requirements than what has been proposed.

According to the current proposal, banks with less—those smallest assets would save only an average of 71 minutes per quarter. So not a significant change based upon the proposed rules. Can you speak to whether you think our concerns about our smallest banks and their call reports have been addressed?

Mr. POWELL. Senator, as you mentioned, that rule, we put that rule out for comment. We got a lot of comments and got your letter, and we are carefully reviewing those comments. I think what we are trying to balance is—we are trying to find the right balance, and we will certainly take into account the comments that we get.

Senator MORAN. Well, I appreciate that. I would want you to do that. But if the end result of 2155 is as modest as this appears to be, we have not achieved our goal. That cannot be the congressional intent, at least in this instance on this topic. So let me reiterate that.

Then let me talk about what I think is at least a difficult topic for me to have a conversation with you about just because of its complexity. A key goal of this legislation was to provide qualifying community banks relief from the complexities and burdens of current risk-based capital rules. But we, of course, want to ensure that they maintain a high quality of capital consistent with the current rules.

The recent interagency proposal for community bank leverage ratio allows certain banks with less than $10 billion in total assets to elect to use the CBLR instead of the current risk-based capital requirements if the CBLR ratio is above 9 percent, the current ratio required being 5 percent. So under the new proposed framework, a bank would be considered less than well capitalized if it fell below 9 percent and has not opted out of the CBLR, that would then trigger certain restrictions and requirements.

As currently written, the proposal seems to dangle the incentive of reduced regulatory burden but with capital requirements 4 percent higher for our small banks to qualify.

Would it not make sense to leave the existing PCA framework unchanged, allowing small banks to maintain well-capitalized status and begin reporting capital ratios under the current risk-based capital rules when CBLR falls below the 9 percent?

Mr. POWELL. That is another rule that we have out for comment, obviously, and—Senator, can I ask, is that a comment that you have——

Senator MORAN. If we have not, we can or will.

Mr. POWELL. I would encourage you to do so. You know, these are—we think these are really important tailoring proposals, and they are obviously mandated by S. 2155, and we want to get them right. So I understand your question, and, you know, we will look carefully at that.

Senator MORAN. Are all of the financial institution regulators working well together in implementation of 2155?

Mr. POWELL. I believe so, yes. I think we share the goal of, first of all, putting a very high priority on implementing S. 2155, but also on tailoring. For smaller banks, I think all of us feel that there is a lot we can do without undermining safety and soundness, and we want to find those things and do them.

Senator MORAN. I appreciate that approach. I have had many conversations with regulators for as long as I have been on this Committee and in the Senate, and it is something that has always—and I am not suggesting this at all about you, but it is always something that is highlighted certainly when talking to me about its importance. But it is hard to find change that has occurred voluntarily by regulators to make the burdens less on our community banks, and that is why 2155 was so appealing to me, is that we had failed generally to get regulators to change their behaviors, and 2155 seems to me to be the option, the only option that I have seen that actually might force change when it has been so reluctantly to arrive. So I care a lot about that.

In the 15 seconds I have left, I would remind you that agriculture, as you and I visited about last time we talked, is in significant—faces significant challenges. I want to make certain that our community banks, our relationship bankers do not lose the ability to consider character and history, remind you that we have generational bankers along with generational farmers whose grandfather bankers have taken care of grandfather farmers and down through the generations. That has continued, and our community bankers know who has character, who has ability to pay, who has the history to demonstrate that, and we cannot tie their strings or the agricultural challenges the economy faces today, ag

country's problems will be significantly exacerbated if you take away the ability to take into account those factors that are not crossing a "T" and dotting an "I."

Thank you.

Mr. POWELL. Thank you.

Chairman CRAPO. Senator Van Hollen.

Senator VAN HOLLEN. Thank you, Mr. Chairman. And, Chairman Powell, thank you for your service.

I want to focus for a moment on the impact of the tax bill, the tax bill that passed about a year ago, and especially taking a look at the banking industry, because I think in no other sector is it clearer as to what a huge giveaway this tax cut was to big financial interests. I do not know if you saw the Bloomberg analysis that was conducted earlier this month. They looked at the 23 U.S. banks that the Federal Reserve says are most important to our economy and concluded that those 23 banks got a $21 billion tax break windfall. Did you see that analysis?

Mr. POWELL. I do not know that I did.

Senator VAN HOLLEN. And would you be surprised to learn that they used much of that windfall for a major stock buyback?

Mr. POWELL. I honestly do not know. First of all, I know that the tax cut reduced taxes for big companies that were very profitable quite substantially.

Senator VAN HOLLEN. Well, they did, and, again, it was a $21 billion windfall, and a lot of it used for, you know, stock buybacks that helped a lot of the executives.

What is interesting is that during that same period of time we saw a loss of 4,300 jobs among those 23 banks. Does that surprised you—big tax break, and yet a loss of jobs among the big banks?

Mr. POWELL. You know, it must be several million people we are talking about, so it is——

Senator VAN HOLLEN. But, of course, it was sold on the promise that we would see all these new jobs generated. I do want to ask you about the increase in wages. Obviously, it is always good to see an increase in wages. Of course, nominal wages are only half the equation, right? You also have to look at rising costs when you look at real wages. And isn't it the case that when you look at real wages and the rise in real wages during the last term of the Obama administration, real wages rose faster during that period of time than they have since the beginning of the Trump administration, even with the tax cut? Isn't that the case?

Mr. POWELL. You know, I just do not look at it in terms of those timeframes. I would say that—the way I would say it about wages, if you look back to 2012, if you look at the four major wage and benefit increases, things that we track, it was around 2 percent. All of them were right around 2 percent. Now they are at 3 percent or a little better, and part of that is just that the labor market has continued to improve since that time.

Senator VAN HOLLEN. Sure. No, of course. But as you testified, you have also seen an uptick in inflation and costs, right? So the result for a real American is how much of the increased wages that are coming in, what the purchasing power of that will be. Anyway, if you could take a look at that and get back and confirm whether or not that is true. The figures I have got suggest that you saw a

more rapid increase in real wages, again, during the last term of the Obama administration, which just gets to the point about, you know, there is a lot of hype about the tax cuts.

Let me ask you about student loans. My colleague just asked you about that. You just testified that we have got $1.5 trillion in student loans. I think that the Fed just reported that delinquent U.S. student loans reached a record $166 billion in the fourth quarter of 2018. You indicated this is putting a lot of stress on students who were trying to get out there and buy their apartments or rent their apartments.

Would you be in favor of allowing students to discharge their debts in bankruptcy just like banks can?

Mr. POWELL. So I think it is important that students be in a position to borrow, to invest in their education. It is important that they get proper disclosure about what the risks are and what the success rates are and that kind of thing. It is not a Fed—someone asked me in this Committee a year or so ago that question, and I did answer it directly. But I would say it is not really for the Fed——

Senator VAN HOLLEN. Well, let me ask you, is the impact of student debt in your view impacting the economy in a negative way, the fact that these students are, you know, stuck as soon as they graduate trying to pay back loans that they apparently cannot repay?

Mr. POWELL. Yes, I think for students who cannot repay their loans, there is a growing amount of research that shows that those people can have, you know, longer-term negative economic effects. Of course, some people invest in their education and borrow money to do it, and it works out very well for them as well. But for those who do not, it can be quite a negative——

Senator VAN HOLLEN. Well, there are a lot of people who cannot right now.

Mr. POWELL. That is right.

Senator VAN HOLLEN. You just reported a record delinquency rate in the last quarter.

The last thing I would say, Mr. Chairman, while I have the Chairman of the Federal Reserve here, is I am going to keep after you and your colleagues on this faster payments issue. It makes no sense to me that Mexico, South Africa, soon the entire European Union will have immediate ability to clear payments while we do not. A check cashed on Friday will not clear until the middle of next week. And millions of Americans are paying a lot more in terms of late fees and, you know, payday loan interest rates at sort of loan shark rates because of that. So I hope you will give the same attention to that issue as you are giving to some of the other issues you discussed this morning.

Mr. POWELL. Thank you. We will.

Chairman CRAPO. Senator Perdue.

Senator PERDUE. Thank you, Mr. Chairman. And thank you, Chairman, for being here and for your perseverance. These are big committees. You have been here a long time. I have two questions for you.

One, I am always amazed at the economic experts in this Committee and the revisionist views of history, so let me just throw

some facts out in leading to a question for you. This recovery is real. We are growing about 100 basis points more than the last Administration just after 2 years. CBO says if you grow four-tenths of 1 percent, you more than pay for this tax bill. So those are two facts.

The second thing is median income is at a historic high. It is the highest it has ever been in the United States. Five million new jobs have been created, lowest unemployment in 50 years, lowest African American unemployment ever measured, lowest Hispanic unemployment ever measured.

My concern, though, is with labor issue, with export issues, and interest rate issues. We have nine Fed fund increases over the last 2 years or so, 2½ years, and with our debt—and this is the question I am trying to get to, and you know where I am going here. I appreciate the time you gave me recently in a private conversation. The Federal debt really bothers me, and its overhang on the economy and our ability to drive the economic wherewithal of every American. The national debt is the greatest threat to national security, according to our military experts, and yet today we just turned $22 trillion of national debt, if you include all the debt that we have as a Government.

As I understand it, there is about $200 trillion of debt in the world; $60 trillion of that is sovereign. We have about a third of that. Five percent of the world's population has about a third of all sovereign debt.

So the question I have—and the projection is in the next—that increase is 2¼ percent, with our size debt technically is about $450 billion of new interest that we have loaded in there. And yet of that $60 trillion of sovereign debt in the world, about $11 trillion of that is laid out at negative interest rates. Much of that is in the euro zone.

My question is: Are there carry-on contagion issues out there that could negatively impact this recovery and the continuation of this recovery independent of what we do fiscally or monetarily here in the U.S. due to these negative interest rates around the world?

Mr. POWELL. I think the negative interest rates that you are seeing are a reflection of kind of a risk-off mood and slower growth in China and Europe in particular. Europe had a good strong year in 2017 and then really slowed down over the course of 2018, and we are seeing some more of that now. So that is, I think, what you are seeing. I think it really is through slower—slower global growth for the United States can be a headwind, just as very strong—2017 was a year of synchronized strong growth really around the world. It was a very good year, and we were feeling a tailwind for that. That has now turned into a bit of a headwind for us.

Our economy, though, I think the outlook for our economy is still a favorable one, still a positive one. But, nonetheless, this will be a headwind.

Senator PERDUE. There is a growing debate in Congress now among some of my colleagues about advocating a change in how monetary and fiscal policy work together, and these people are advocating a modern monetary theory. They want a spend-now, spend-later, spend-often policy that would use massive annual defi-

cits to fund these tremendously expensive policy proposals such as Medicare for All, free college for all, make every structure in the U.S. energy efficient in 10 years, and a universal basic income whether you are working or not.

Under this landscape, it is proposed that the Fed would keep interest rates artificially low and that fiscal policy would then be driven by Congress and theoretically manage the business cycle.

What obstacles do you anticipate seeing, and how successful has fiscal policy been in terms of managing either inflation or interest rates?

Mr. POWELL. Let me say I have not really seen a carefully worked out, you know, description of what it meant by MMT, what you are mentioning. It may exist, but I have not seen it. I have heard some pretty extreme claims attributed to that framework, and I do not know whether that is fair or not. But I will say this: The idea that deficits do not matter for countries that can borrow in their own currency I think is just wrong. I think U.S. debt is fairly high at a level of GDP and, much more importantly than that, it is growing faster than GDP, fairly significantly faster. We are not even close to primary balance, which means, you know, the deficit before interest payments. So we are going to have to either spend less or raise more revenue.

In addition, you know, to the extent people are talking about using the Fed as a—our role is not to provide support for particular policies. It is to—and that is central banks everywhere. It is to try to, you know, achieve maximum employment and stable prices. So that is really what it is, and I think decisions about spending and controlling spending and paying for it are really for you.

Senator PERDUE. Thank you.

Chairman CRAPO. Senator Schatz.

Senator SCHATZ. Thank you, Mr. Chairman. Chairman Powell, thank you for your service. Thank you for your stewardship.

PG&E, California's largest utility, filed bankruptcy last month, partly as a result of liability costs from climate-related disasters. The damage from 2017 and 2018 wildfires exceeded $30 billion, more than PG&E's assets and insurance coverage combined. Climate risks threaten many sectors of our economy: real estate, agriculture, fisheries, industries with extensive supply chains. They are all at risk.

Take coastal real estate as just one example. The U.S. Government currently estimates that storms, floods, erosion, rising sea level now threaten approximately $1 trillion in national wealth held in coastal real estate. According to Freddie Mac, "Some of the varied impacts of climate change may not be insurable." More than 300,000 coastal homes are at risk of chronic inundation by 2045, a timeframe that falls well within the timeframe of the 30-year mortgage. These properties are worth about $117 billion and contribute nearly $1.5 billion toward the property tax base. Banks, insurance companies, and other financial institutions are all exposed to these risks, and that is why the Bank of England recently announced that it is planning to include the impact of climate change in its bank stress tests next year.

So here is a simple question. It is not a "gotcha" question. Do you agree that climate change creates financial risks for the individual financial institutions and for our financial system as a whole?

Mr. POWELL. So let me say we do not formally or directly include climate change in our supervision, but we do, actually, require financial institutions, particularly those who are more exposed to natural disasters and that kind of thing, we do require them to understand and manage that particular operating risk.

So, for example, if you are a bank on the southern coast of Florida and you are subject to hurricanes, we definitely require you to have plans and risk management things in place to deal with those sorts of things. So you would pick up natural disasters and that kind of thing which are associated with climate change.

Senator SCHATZ. Do you think your processes and your staff and your sort of approach to this, which has been built properly over many, many years and pursuant to the statute, do you think you are moving fast enough to acknowledge the accelerating risks of climate change over the last 2 or 3 years? Do you think there is room for you to do a scrub of whether or not you are fulfilling your statutory mandate? Because I get that you are supposed to pick up any risks related to natural disasters. The question is whether you have really loaded in the latest information from the scientific community to go back to these banks, to go back to REITs, to go back to lenders who have either stranded assets or assets in the coastal area or whose supply chain is particularly dependent on a certain kind of weather pattern which is not materializing anymore. Do you think you are doing enough in this space?

Or let me phrase it another way. Are you confident that you are doing enough in this space?

Mr. POWELL. You know, it is a little bit like cyber risk. You know, should you ever be confident that you are doing enough in that space? So I think we—you know, I think we are open—we are clear-eyed about the nature of coastal risks and natural disaster risks and that kind of thing. But it is a fair question, and, you know, we will go back and look at it again.

Senator SCHATZ. Could you please respond in writing as it relates to this specific question?

Mr. POWELL. Sure.

Senator SCHATZ. The Bank of England and 29 central banks and bank supervisors from around the world are moving toward incorporating climate risk into their supervision of financial institutions. You know that another part of the Federal Reserve's mandate is to engage with its counterparts abroad to address systemic risk. Do you think the Federal Reserve should be engaging with its international counterparts on this question?

Mr. POWELL. We are in those meetings. We are involved in those bodies. As I mentioned, we do not formally take climate change into account in our risks, but I think the consequences are things that we do supervise for.

Senator SCHATZ. I just think that you have been extraordinary in terms of your ability to withstand political pressure and look at the data and do what is right for the health of the economy. I do not want this to be an exception. I understand that talking about climate change is fraught with partisan peril and will attract the

ire of a certain category of people and institutions. But your job is to measure risk, and I would submit that you are not measuring that risk sufficiently.

One final question, if you will indulge me, Chairman Crapo, and that is, has anybody either directly or indirectly communicated with you about rates from the White House?

Mr. POWELL. That is kind of a broad question.

Senator SCHATZ. It is a broad question.

Mr. POWELL. You know, I do not really talk about—it is probably not appropriate to discuss our—my private conversations with other Government officials, any other Government officials. I would say I am completely committed to conducting monetary policy in a way that is nonpolitical and in a way that serves all of the American public. You know, and I am very comfortable and confident that that is exactly what the Fed is going to do.

Senator SCHATZ. Thank you.

Chairman CRAPO. Senator Reed.

Senator REED. Mr. Chairman, thank you for your distinguished service.

Senator Brown brought up in his comments your February 6 town hall, where you made it clear that we have to work to make prosperity more dispersed throughout society. You also indicated that many of the policies are beyond the purview of the Federal Reserve, but most of them are clearly in the purview of Congress. If you could, just give us your top three issues that we have to deal with or can deal with to make equality much more realized in this country.

Mr. POWELL. Senator, I will go back again to labor force participation, which is just—it is a big win for the overall economy, and it is also—the people who are not taking part in the labor force are by and large the less well educated and less skilled or people who may be in areas where opioids are prevalent and that kind of thing.

So I think a bipartisan focus, a focus on labor force participation would bring in a lot of policies that would help deal with, you know, what I see as the problems, which are, you know, sort of relatively stagnant growth in incomes, in median incomes, and also relatively low mobility. Education, of course, would be at the top of every list, I think, in addressing these issues as well.

Senator REED. And this could require resources that we would have to commit, and I think you are aware we are on the cusp of another debate about sequestration and the share of resources to defense and nondefense. And, in fact, we are looking at very draconian numbers in terms of the situation with the BCA. But you would argue that we do have an obligation to make a significant investment in domestic programs in order to provide for this equality?

Mr. POWELL. I think that it would be great for our country and for our economy if we could address these issues. Easy for me to say. I do not have to find the resources.

Senator REED. Thank you.

Let me just turn to another topic which I am very much involved with: the Military Lending Act. As you know, it puts a 36 percent cap on interest rates that are charged to men and women in the

uniform of the United States. The Federal Reserve is one of the independent regulators charged with its enforcement.

Unfortunately, what we have seen from the CFPB particularly is a retreat. They are no longer supervising this; they are no longer using this in their supervisory activities. They will enforce a complaint, but the complaints are seldom made. Most young soldiers do not even realize, or sailors or marines, that they have this ability to complain. We are looking at DOD and OMB exempting an insurance product for auto dealers which might result in interest payments far in excess of 36 percent.

Can you commit your continued, strong, and persistent enforcement to the letter of the Military Lending Act?

Mr. POWELL. Yes, it will be a priority for us. I commit to that.

Senator REED. Thank you very much.

There is another issue, too, that I think you have touched upon, and that is cybersecurity. It seems to be the ubiquitous complaint of everyone, not just in the financial sector but every sector. And it seems to me, too, that typically those who are going to exploit cyber look for the back door, not the front door. They look for the small institution, not the big Wall Street bank that is spending $200 million a year on cyberprotections.

How are you dealing with that? How are you and your colleagues dealing with that, going out and making sure that community banks and other smaller institutions that might be more vulnerable are taking the appropriate steps? Is that part of your expected procedures? Are you looking closely at cybersecurity?

Mr. POWELL. Yes, we are, and it is hard because, of course, the big banks are attacked, too, but they have the resources to deal with it. And so we deal through FFIEC, you know, which is a body of the regulators to promulgate guidance. We supervise for that guidance, and with the smaller banks, it is very important, and, you know, that is a way—we see that as a real vulnerability, for example, for the payment system. But we have also got to be mindful of the burden on smaller banks. But it is something we are very focused on.

Senator REED. Are you focused to the extent of conducting, you know, red-on-blue exercises, i.e., you know, seeing what is working out there, seeing where all the connectivity exists or does not exist? Are you doing that or getting any access to organizations that are doing that?

Mr. POWELL. We do tabletop exercises, let us say, and these are led by the Treasury Department. This has been a major focus for Treasury, and appropriately so, and we take part in them. There is always the feeling with cyber that you are just not doing enough.

Senator REED. Right. Well, in fact, that feeling is justified.

Mr. POWELL. It probably is.

Senator REED. Unfortunately.

Mr. POWELL. Yeah.

Senator REED. Thank you again for your service, Mr. Chairman. I appreciate it very much.

Mr. POWELL. Thank you, Senator.

Chairman CRAPO. Thank you, and I am not quite done yet, Mr. Chairman. I have a couple more questions.

I would like to go back to the issue of wages. This has been discussed by a number of the Senators with you. In your testimony and in some of your answers, you indicated that wage growth is at about 3 percent, and there was some comment by one of the Senators, at least, that the nominal wage growth—or that the current rate of wage growth may or may not be keeping up with inflation, if I understand the question you were asked correctly. But if I understand your answers, isn't wage growth today growing at a faster rate than inflation?

Mr. POWELL. Yes. Real wages are going up at—you have to look at the average over a year or so, and you have got to look at a broad range of indicators. There is no question that wages are going up in real terms by roughly the amount of the productivity increase, which is appropriate.

Chairman CRAPO. And in your use of the term "wages," do you include benefits? Or is there a separate calculation on how benefits——

Mr. POWELL. There are four different—there are countless measures of wages, of compensation, let us say. One of them that includes wages and benefits is the Employee Compensation Index, and that might be our single favorite one. It is one of four major ones that we look at. So that one does include benefits, and it, too, is showing growth in excess of right around 3 percent, maybe in the low 3's now.

Chairman CRAPO. All right. Thank you.

We have also—in fact, I had discussed with you earlier some aspects of the labor force participation rate. Now, I understand that just the retirement—or the Baby Boomers retiring is one of the biggest downward pressures in our labor force participation rate, and I started to have a discussion with you in my earlier questions about now that we have seen that labor force participation rate start to increase, whether that would be stable or not. Could you just discuss a little more with me your evaluation of what it looks like for us in terms of labor force participation in general? And I may follow up on that a little bit.

Mr. POWELL. Yes. So I would say it is very gratifying to see U.S. labor force participation actually move up by 0.5 over the course of the last year as the labor market has gotten just stronger and stronger and stronger. So that has been a great thing to see.

Given the level of job creation that we have had, if labor force participation had not gone up, then the unemployment rate would now be much lower than it is. So the unemployment rate has actually gone up to 4 percent from 3.7 percent, but this is only a good thing because it means people are coming back into the labor force.

The real thing, though, is even with these increases, we still lag other countries. We still lag other countries who have higher labor force participation. You pointed out, correctly, that the aging of the population is decreasing labor force participation at a trend rate, and that trend rate is about 0.2 or maybe 0.25 percent every year. So for us just to hold participation flat is actually a gain against a longer-run trend. And really for the last—really since 2013, since the latter part of 2013, labor force participation has been flat to slightly up, which, again, is really good to see. But, honestly, that is just a consequence of having a really good labor market.

I think if you are going to have that be sustained through good times and bad and put us on a more competitive footing with other countries, it is going to need more than a good labor market. It is going to need policies that reach out and, you know, give people the skills and aptitudes to be able to be sustainably in the labor market.

Chairman CRAPO. All right. Thank you. I cannot remember where I read this, but someone commented recently that today, the way our labor market is working, if a person wants to work, there is a job for them. Do you tend to agree with that observation?

Mr. POWELL. Generally speaking, although, you know, if you are in some regions, for example, there are regions of the country which are very poor and do not have job creation. I will tell you where that comes from. The level of job openings is now at or above the level of unemployed people. So you can say in a sense if you are looking for a job, there is at least numerically one job. But there are lots of people who—you know, probably millions of people who are out of the labor force and in a perfect world, in a better world, would be in the labor force. They are in their prime working years, and they are not in the labor force because of some kind of a problem or issue, and I think those are the people we want to get back.

Chairman CRAPO. All right. Thank you.

Just to switch topics for a minute, we have seen, I think you indicated, a little bit under 3 percent growth in our GDP in the last year. I guess on Thursday we are going to get some economic analysis that will give us some statistics on that.

One of my colleagues indicated today that, with regard to the tax bill that was passed, there was a lot said—I am not going to ask you to comment on this. I am just putting some facts out there. There was a lot said about how the tax bill would generate a $1.4 trillion deficit. That projection assumed somewhere in the neighborhood of 1.9 or 2 percent growth in the economy. And it was indicated at the time from all of the analysis we got that, if we just had four-tenths of a percentage rate of growth above that, there would not be any deficit involved with the tax legislation. And, of course, we have seen far more than four-tenths of growth so far in terms of the performance of the economy.

So that leads to my question, and I know that you do not have a crystal ball, but you do analyze what it looks like for the economy. And my question relates to given what we have seen, we have seen a growth of about almost a percentage point in the GDP over the last 12 months, or previous growth rates, if I understand it right. Do you have a projection or do you have anything that you can share with us about what you see moving forward as to whether the economy will continue to perform? I know you said that it may slow down a little bit this year. But do you have a projection as to what it would likely look like over the next few years in terms of GDP growth?

Mr. POWELL. I think a good place to start with that question is what makes up growth, and it really boils down to more hours worked and then more output per hour. That is really all there is. And more hours worked is really a function of population growth. Population growth has slowed—or let us say it this way: The trend

growth in the labor force, given aging and given immigration and everything we have, is only about five-tenths right now. And, actually, if immigration is going to be even lower, then it is going to be below five-tenths. Immigration has made up, you know, half of that five-tenths. So that is one piece of it. It is 0.5 percent trend labor force growth. The rest is just productivity. No one can forecast productivity growth with any confidence. All we can really do is create policies that will, you know, encourage investment, encourage innovation, and all those sorts of things, and let productivity happen as it will. It is something that just happens.

But if you look at longer-term averages, it has been very difficult to predict. But you would have to have sustained high productivity—if you are going to have five-tenths labor force growth, you would have to have, you know, very high sustained productivity, higher than we have seen, frankly, to get really high levels of growth. That is why I think it is so important to focus on both of those two things—labor force participation and also productivity. That is the closest to anything we can focus on to raise our potential growth rate.

Chairman CRAPO. Well, thank you. And in terms of increasing labor force participation, I know there are a lot of factors. One that has been brought up here today already is to perhaps change our policy at the policy level so that a person who takes a job, who is not currently employed, a person who is willing to go take one of those jobs and become productive in the labor force does not actually economically suffer from that decision based on the safety net program support that the Government is already providing.

I am not going to ask you to comment on policy, but is it correct that if we were to eliminate or reduce the incentive to stay unemployed because of the disadvantage economically of relying on wages rather than benefits, we would increase labor force participation?

Mr. POWELL. I think incentives do matter, and I think—I mean, I would think if you go back to work, your pay should only go up, in my perfect-world thinking. Again, easy for me to say, but that is how I would say it.

Chairman CRAPO. All right. Thank you.

Switching gears one more time, and then I will wrap it up. Housing finance reform. As I am sure you have seen, there is a very significantly increased emphasis on housing finance reform, both on this Committee and I think in Congress in general, as well as at the level of the Administration. In 2017, you gave a speech in which you outlined a few principles that you saw for how we should approach housing finance reform, and I am just going to quote what you said: "Do whatever we can to make the possibility of future housing bailouts as remote as possible; to change the system to attract large amounts of private capital, and that any guarantee should be explicit and transparent and should apply to securities, not to institutions; and to identify and build upon areas of bipartisan agreement."

Do you still agree with those principles and how to approach it?

Mr. POWELL. I sure do.

Chairman CRAPO. Good. I agree with them, too. Strongly. And we are going to be very aggressively trying to put together a bipartisan

solution to this here on this Committee and in Congress in general. And I just would like to ask you, first of all, if you will commit to work with this Committee in our efforts to build the right solution to this issue; and then, second, any other comments you might want to make about how our Nation should approach housing finance reform. And I would ask you also to discuss how getting this fixed could impact our economy and could impact growth.

Mr. POWELL. So I do think—and I said this in those remarks. I think that this is one of the big unfinished pieces of business in kind of the postcrisis reform period. Fannie and Freddie had to be taken over by the Government fairly early on in the financial crisis. It was a big part of the financial crisis. And I think we have—I think the proposals that you have had in the past and I am sure the one you will have this year, I think they all have the right elements there. It is just a question of getting something done. And I think it would be really good for the economy to get this off the Fed's—sorry, off the Federal Government's balance sheet and get a lot of private capital between the taxpayer and the housing risk, if you will.

So I think it would be a very positive thing for the economy, and, of course, we will be delighted to work with you. I think we have some very strong, experienced staffers in the housing area, and we would be happy to provide whatever expert help we can.

Chairman CRAPO. All right. Thank you. And I know I said that was the last one, but this is really the last one. Again, shifting subjects, you have testified today that there are some pretty positive things going on in our economy right now and that we are in a relatively good position on a lot of factors.

In terms of risks to our economy, could you just tell me what you think are some of the bigger risks we should keep in mind?

Mr. POWELL. I do think that the baseline outlook is a good one, favorable one. There are always risks, though, and as I mentioned, I do see the foreign risks as particularly relevant right now. So global growth has slowed. It has slowed in China. It has slowed particularly in the advanced economies and particularly in Europe.

When growth is booming around the world, we feel that as a tailwind. When growth is slowing, we feel it as a headwind. And I think we are feeling some of that now, and we may feel more of it. So that is a risk.

Brexit is an event risk, which should not in the end have much of an effect on our economy, but it is something we are monitoring very carefully.

You know, domestically, I think we are in good shape. Unemployment is low. Confidence is still at positive levels. So I feel like, you know, we have the makings of a good outlook, and as I said, our Committee is really monitoring the crosscurrents, we call them, which are really the risks. And for now we are going to be patient with our policy and allow things to take time to clarify.

Chairman CRAPO. All right. Well, thank you. And I know I speak on behalf of the Committee. We appreciate the dedication of you and the other Governors at the Federal Reserve. We all want to have this economy stay strong and grow stronger, and we look forward to making sure that we can achieve the right policies and help together to make that happen.

My last closing comment would be I echo the concerns—or not the concerns, really, but the issues raised by some of my colleagues about the implementation of S. 2155. I know you are working very—you just said it was the highest priority maybe at the Fed right now on the oversight level. But I would just encourage you to move ahead expeditiously on those issues. A number have been raised already. I will reiterate our concern that we move as quickly as we can on the implementation of the requirements and the principles of S. 2155 with regard to those financial facilities, banks under $100 billion, and getting the stress testing levels for them at the right point.

If you want to comment on that, you are welcome to. If not, I will wrap up the hearing.

Mr. POWELL. I might add one thing to my last comment, if I could.

Chairman CRAPO. Sure.

Mr. POWELL. I would want to leave you with the thought that when I say we are going to be patient, what that really means is that we are in no rush to make a judgment about changes in policy. We are going to be patient. We are going to allow the situation to evolve, and also the balance of risks and allow the data to come in. And I think we are in a very good place to do that.

Chairman CRAPO. All right. Thank you. I appreciate that perspective, and once again, thank you for being here with us today.

That does conclude the questioning for today's hearing, and for Senators who wish to submit questions for the record, those questions are due on March 5th, Tuesday.

Chairman Powell, we ask that you respond to those questions as promptly as you can. Once again, thank you for being here, and this hearing is adjourned.

Mr. POWELL. Thank you, Senator.

[Whereupon, at 12:15 p.m., the hearing was adjourned.]

[Prepared statements, responses to written questions, and additional material supplied for the record follow:]

PREPARED STATEMENT OF CHAIRMAN MIKE CRAPO

We welcome Chairman Powell to the Committee for the Federal Reserve's Semiannual Monetary Policy Report to Congress.

This hearing provides the Committee an opportunity to examine the current state of the U.S. economy, the Fed's implementation of monetary policy, and its supervisory and regulatory activities.

In the wake of the 2008 financial crisis, the Fed entered a period of unconventional monetary policy to support the U.S. economy, including drastically cutting interest rates and expanding its balance sheet.

I have long been concerned about the Fed's quantitative easing programs and the size of its balance sheet.

As economic conditions improved, the Fed began trying to normalize monetary policy, including by gradually reducing the size of its balance sheet.

The Fed's balance sheet grew to $4.5 trillion from around $800 billion between 2007 and 2015, and now stands at around $4 trillion.

During the press conference following the FOMC's most recent meeting, Chairman Powell provided additional clarity on the Fed's plans to normalize monetary policy, saying " . . . the ultimate size of our balance sheet will be driven principally by financial institutions' demand for reserves, plus a buffer so that fluctuations in reserve demand do not require us to make frequent sizeable market interventions."

> Estimates of the level of reserve demand are quite uncertain, but we know that this demand in the postcrisis environment is far larger than before. High reserve holdings are an important part of the stronger liquidity position that financial institutions must now hold . . .
>
> . . . The implication is that the normalization of the size of the portfolio will be completed sooner, and with a larger balance sheet, than in previous estimates.

Banks' reserve balances grew from $43 billion in January 2008 to a peak of $2.8 trillion in 2014 before falling to $1.6 trillion as of January 2019.

During this hearing, I look forward to understanding more about: what factors the Fed may consider in determining what is the appropriate size of the balance sheet; what factors have affected banks' demand for reserves, including the Fed's postcrisis regulatory framework; and what amount of reserves are estimated to be necessary for the Fed to achieve its monetary policy objective.

The state of the U.S. economy is a key consideration in the Fed's monetary policy decisions.

The U.S. economy remains strong with robust growth and low unemployment.

Despite everyone telling us prior to tax reform that annual growth would be stuck below 2 percent as far as the eye could see, the economy expanded at an annualized rate of 3.4 percent in the third quarter of last year, following growth of 4.2 percent and 2.2 percent in the second and first quarters of 2018, respectively, according to the Bureau of Economic Analysis.

This strong growth, which is on track to continue to exceed previous expectations, will now provide our policymakers with much greater flexibility to address other fiscal challenges than if we were continuing to struggle with insufficient growth.

And, according to the Bureau of Labor Statistics, the unemployment rate has remained low and steady around 4 percent while the U.S. economy added 223,000 jobs per month on average in 2018, as well as 304,000 jobs in the first month of this year.

People continue to enter the labor force with the labor participation rate increasing to 63.2 percent from 62.7 percent over the last year.

Reinforcing this strong employment environment, Fed Vice Chairman Rich Clarida said in a recent speech that "the labor market remains healthy, with an unemployment rate near the lowest level recorded in 50 years and with average monthly job gains continuing to outpace the increases needed over the longer run to provide employment for new entrants to the labor force."

Major legislation passed through this Committee and enacted last Congress supported economic growth and job creation.

The Economic Growth, Regulatory Relief and Consumer Protection Act passed Congress with significant bipartisan support and was enacted to right-size regulation and redirect important resources to local communities for homebuyers, individuals, and smaller businesses.

I appreciate the work the Fed has done so far to introduce proposals and finalize rules required by the law.

Overseeing the full implementation of that law and the Federal banking agencies' rules to right-size regulations will continue to be a top priority of the Committee this Congress.

In particular, the Fed and other banking regulators should consider whether the Community Bank Leverage Ratio should be set at 8 percent as opposed to the proposed 9 percent; significantly tailor regulations for banks with between $100 billion and $250 billion in total assets with a particular emphasis on tailoring the stress testing regime; provide meaningful relief from the Volcker Rule for all institutions, including by revising the definition of "covered funds" and eliminating the proposed accounting test; and examine whether the regulations that apply to the U.S. operations of foreign banks are tailored to the risk profile of the relevant institutions and consider the existence of home country regulations that apply on a global basis.

The Committee will also look for additional opportunities to support policies that foster economic growth, capital formation, and job creation.

Turning for a moment to another issue, Senator Brown and I issued a press release on February 13 inviting stakeholders to submit feedback on the collection, use, and protection of sensitive information by financial regulators and private companies, including third parties that share information with regulators and other private companies.

Americans are rightly concerned about how their data is collected and used, and how it is secured and protected.

Given the exponential growth and use of data, and corresponding data breaches, it is also worth examining how the Fair Credit Reporting Act should work in a digital economy, and whether certain data brokers and other firms serve a function similar to the original consumer reporting agencies.

The Banking Committee plans to make this a major focus this Congress, and we encourage stakeholders to submit feedback by our March 15 deadline.

Lastly, I want to take a moment to recognize one of our staff members who is retiring this week.

Dawn Ratliff is the Committee's Chief Clerk, and she will be retiring at the end of the week.

She has dedicated 27 years in these hallways, and has been with the Senate Banking Committee since 2007, starting with then-Chairman Chris Dodd, and then working for Chairman Tim Johnson, Chairman Shelby, and now myself.

Dawn is a Banking Committee institution—she is incredibly knowledgeable, helpful, and professional, respected and well-liked by everyone with whom she works.

Dawn, your work on the Committee has truly made a lasting impact, and even though you will be gone, you will not be forgotten anytime soon.

We wish you the best of luck in your well-earned retirement. Enjoy it.

PREPARED STATEMENT OF SENATOR SHERROD BROWN

Thank you, Chairman Crapo.

I also want to thank our Chief Clerk Dawn Ratliff for her service to this Committee and the public. She has been instrumental in making the Committee run smoothly for over a decade. Dawn, we will miss you, and congratulations on your retirement.

Chairman Powell, welcome back to the Committee.

It has been a great week for Wall Street.

The FDIC announced that banks made a record-breaking $237.7 billion in profits in 2018, almost a quarter trillion dollars.

Corporations—led by the Nation's largest banks—bought back a record $1 trillion in stocks last year, conveniently boosting their CEOs compensation. The President's tax bill put $30 billion in the banks' pockets, and continues to fuel even more buybacks and CEO bonuses.

But that's never enough for Wall Street—it continues to demand weaker rules, so big banks can take bigger and more dangerous risks. And from the proposals the Fed has put out after the passage of S. 2155, it looks like you are going along.

The economy looks great from a corporate headquarters on Wall Street, but it doesn't look so good from a house on Main Street.

Corporate profits are up. Executive compensation has soared. And that's all because of the productivity of American workers. But workers' wages have barely budged. Hard work isn't paying off for the people fueling all this growth.

Seven of the 10 fastest growing occupations don't pay enough to afford rent on a modest one-bedroom apartment, let alone save for a downpayment.

Household debt continues to rise, taking its toll on families. At the end of 2018, seven million Americans with auto loans were 90 or more days past due on their payments—a record, even though unemployment is at decade lows.

Borrowers of color have not recovered financially from the crisis. And too many Americans of all ages are saddled with a mountain of student loan debt.

The President's Government shutdown also revealed another frightening reality—too many Americans, still live paycheck to paycheck, even those with stable jobs.

After 35 days of uncertainty and hardship, those workers went back to their jobs and eventually received their pay. But more than a million Government contractors weren't so lucky. We're talking in many cases about custodians and security guards and cafeteria workers making $12 or $15 an hour. We have heard a lot of talk about whether GDP will recover from the shutdown, and not enough about how workers will recover.

We have questioned for quite a while whether the economic recovery—now in its 10th year—has been felt by all Americans. Stagnating wages and increasing income inequality between Wall Street CEOs and working Americans point to an obvious answer.

Chair Powell, your comments at the February 6th Fed town hall for educators confirmed this. A teacher asked about your major concerns for the U.S. economy, and you answered:

> We have some work to do more to make sure that prosperity that we do achieve is widely spread. (. . .) median and lower levels of income have grown, but much more slowly. And growth at the top has been very strong.

"Growth at the top has been very strong." In other words, the CEOs, the folks on Wall Street, they're all doing just fine.

Chair Powell, the Fed has spent a decade bending over backwards to help banks and big corporations that have hoarded profits for themselves rather than investing in the millions of workers who actually make our companies successful.

We are late in this economic cycle, and it is clear that record Wall Street profits won't be trickling down to workers before the next downturn.

Before the last crisis, we heard over and over again from Government officials and banks that the economy was doing fine. Regulators and Congress continued to weaken rules for Wall Street, and ignored the warning signs as families struggled to make ends meet.

As the severity of the financial crisis became clear, the Fed rushed to the aid of the biggest banks, but it did not devote even a fraction of that firepower to helping the rest of America. Ignoring working families was a policy failure then, and it is a policy failure now.

Chair Powell, I hope we don't make the same mistake again. I look forward to your testimony and new ideas for making hard work pay off for everyone in our economy.

PREPARED STATEMENT OF JEROME H. POWELL

CHAIRMAN, BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM

FEBRUARY 26, 2019

Good morning. Chairman Crapo, Ranking Member Brown, and other Members of the Committee, I am happy to present the Federal Reserve's Semiannual Monetary Policy Report to the Congress.

Let me start by saying that my colleagues and I strongly support the goals Congress has set for monetary policy—maximum employment and price stability. We are committed to providing transparency about the Federal Reserve's policies and programs. Congress has entrusted us with an important degree of independence so that we can pursue our mandate without concern for short-term political considerations. We appreciate that our independence brings with it the need to provide transparency so that Americans and their representatives in Congress understand our policy actions and can hold us accountable. We are always grateful for opportunities, such as today's hearing, to demonstrate the Fed's deep commitment to transparency and accountability.

Today I will review the current economic situation and outlook before turning to monetary policy. I will also describe several recent improvements to our communications practices to enhance our transparency.

Current Economic Situation and Outlook

The economy grew at a strong pace, on balance, last year, and employment and inflation remain close to the Federal Reserve's statutory goals of maximum employment and stable prices—our dual mandate.

Based on the available data, we estimate that gross domestic product (GDP) rose a little less than 3 percent last year following a 2.5 percent increase in 2017. Last year's growth was led by strong gains in consumer spending and increases in business investment. Growth was supported by increases in employment and wages, optimism among households and businesses, and fiscal policy actions. In the last couple of months, some data have softened but still point to spending gains this quarter. While the partial Government shutdown created significant hardship for Government workers and many others, the negative effects on the economy are expected to be fairly modest and to largely unwind over the next several months.

The job market remains strong. Monthly job gains averaged 223,000 in 2018, and payrolls increased an additional 304,000 in January. The unemployment rate stood at 4 percent in January, a very low level by historical standards, and job openings remain abundant. Moreover, the ample availability of job opportunities appears to have encouraged some people to join the workforce and some who otherwise might have left to remain in it. As a result, the labor force participation rate for people in their prime working years—the share of people ages 25 to 54 who are either working or looking for work—has continued to increase over the past year. In another welcome development, we are seeing signs of stronger wage growth.

The job market gains in recent years have benefited a wide range of families and individuals. Indeed, recent wage gains have been strongest for lower-skilled workers. That said, disparities persist across various groups of workers and different parts of the country. For example, unemployment rates for African Americans and Hispanics are still well above the jobless rates for whites and Asians. Likewise, the percentage of the population with a job is noticeably lower in rural communities than in urban areas, and that gap has widened over the past decade. The February *Monetary Policy Report* provides additional information on employment disparities between rural and urban areas.

Overall consumer price inflation, as measured by the 12-month change in the price index for personal consumption expenditures (PCE), is estimated to have been 1.7 percent in December, held down by recent declines in energy prices. Core PCE inflation, which excludes food and energy prices and tends to be a better indicator of future inflation, is estimated at 1.9 percent. At our January meeting, my colleagues and I generally expected economic activity to expand at a solid pace, albeit somewhat slower than in 2018, and the job market to remain strong. Recent declines in energy prices will likely push headline inflation further below the Federal Open Market Committee's (FOMC) longer-run goal of 2 percent for a time, but aside from those transitory effects, we expect that inflation will run close to 2 percent.

While we view current economic conditions as healthy and the economic outlook as favorable, over the past few months we have seen some crosscurrents and conflicting signals. Financial markets became more volatile toward year end, and financial conditions are now less supportive of growth than they were earlier last year. Growth has slowed in some major foreign economies, particularly China and Europe. And uncertainty is elevated around several unresolved Government policy issues, including Brexit and ongoing trade negotiations. We will carefully monitor these issues as they evolve.

In addition, our Nation faces important longer-run challenges. For example, productivity growth, which is what drives rising real wages and living standards over the longer term, has been too low. Likewise, in contrast to 25 years ago, labor force participation among prime-age men and women is now lower in the United States than in most other advanced economies. Other longer-run trends, such as relatively stagnant incomes for many families and a lack of upward economic mobility among people with lower incomes, also remain important challenges. And it is widely agreed that Federal Government debt is on an unsustainable path. As a Nation, addressing these pressing issues could contribute greatly to the longer-run health and vitality of the U.S. economy.

Monetary Policy

Over the second half of 2018, as the labor market kept strengthening and economic activity continued to expand strongly, the FOMC gradually moved interest rates toward levels that are more normal for a healthy economy. Specifically, at our September and December meetings we decided to raise the target range for the Federal funds rate by ¼ percentage point at each, putting the current range at 2¼ to 2½ percent.

At our December meeting, we stressed that the extent and timing of any further rate increases would depend on incoming data and the evolving outlook. We also noted that we would be paying close attention to global economic and financial developments and assessing their implications for the outlook. In January, with inflation pressures muted, the FOMC determined that the cumulative effects of these developments, along with ongoing Government policy uncertainty, warranted taking a patient approach with regard to future policy changes. Going forward, our policy decisions will continue to be data dependent and will take into account new information as economic conditions and the outlook evolve.

For guideposts on appropriate policy, the FOMC routinely looks at monetary policy rules that recommend a level for the Federal funds rate based on measures of inflation and the cyclical position of the U.S. economy. The February *Monetary Policy Report* gives an update on monetary policy rules. I continue to find these rules to be helpful benchmarks, but, of course, no simple rule can adequately capture the full range of factors the Committee must assess in conducting policy. We do, however, conduct monetary policy in a systematic manner to promote our long-run goals of maximum employment and stable prices. As part of this approach, we strive to communicate clearly about our monetary policy decisions.

We have also continued to gradually shrink the size of our balance sheet by reducing our holdings of Treasury and agency securities. The Federal Reserve's total assets declined about $310 billion since the middle of last year and currently stand at close to $4.0 trillion. Relative to their peak level in 2014, banks' reserve balances with the Federal Reserve have declined by around $1.2 trillion, a drop of more than 40 percent.

In light of the substantial progress we have made in reducing reserves, and after extensive deliberations, the Committee decided at our January meeting to continue over the longer run to implement policy with our current operating procedure. That is, we will continue to use our administered rates to control the policy rate, with an ample supply of reserves so that active management of reserves is not required. Having made this decision, the Committee can now evaluate the appropriate timing and approach for the end of balance sheet runoff. I would note that we are prepared to adjust any of the details for completing balance sheet normalization in light of economic and financial developments. In the longer run, the size of the balance sheet will be determined by the demand for Federal Reserve liabilities such as currency and bank reserves. The February *Monetary Policy Report* describes these liabilities and reviews the factors that influence their size over the longer run.

I will conclude by mentioning some further progress we have made in improving transparency. Late last year we launched two new publications: The first, Financial Stability Report, shares our assessment of the resilience of the U.S. financial system, and the second, Supervision and Regulation Report, provides information about our activities as a bank supervisor and regulator. Last month we began conducting press conferences after every FOMC meeting instead of every other one. The change will allow me to more fully and more frequently explain the Committee's thinking. Last November we announced a plan to conduct a comprehensive review of the strategies, tools, and communications practices we use to pursue our congressionally assigned goals for monetary policy. This review will include outreach to a broad range of stakeholders across the country. The February *Monetary Policy Report* provides further discussion of these initiatives.

Thank you. I am happy to respond to questions.

RESPONSES TO WRITTEN QUESTIONS OF SENATOR BROWN FROM JEROME H. POWELL

Q.1. Last month I sent the Board of Governors a letter asking it to reevaluate the countercyclical capital buffer, currently set at zero. Banks are doing well, but there are certainly growing risks in the economy. Now is the time to ensure that the banks have enough capital for those eventual bad times, and many of your colleagues on the Board and at the Reserve Banks agree. I have not received a response.

When will the Fed raise the buffer?

A.1. As stated in the Federal Reserve Board's (Board) policy statement, we will raise the countercyclical capital buffer when systemic vulnerabilities are meaningfully above normal.[1] At this time, the Board assesses the resilience of the financial system overall to be strong. Our forward-looking stress tests indicate that the institutions at the core of the financial system—the Nation's largest banks—will be able to continue to support lending and economic activity during severe macroeconomic and stressed market scenarios. The Board recently voted to maintain the level of the countercyclical capital buffer at zero.[2]

Q.2. Earlier this month the Board suspended stress testing for bank holding companies between $100 billion and $250 billion in total assets. Meanwhile you have not finalized rules for how this same group of banks will be regulated after passage of S. 2155.

Will you commit to me that these institutions will be required to participate in the 2020 stress testing cycle?

A.2. As noted in the October 31, 2018, Notice of Proposed Rulemaking, domestic bank holding companies subject to Category IV standards (those with total assets between $100–$250 billion and less than $75 billion in cross-jurisdictional activity, nonbank assets, weighted short-term wholesale funding, and off-balance sheet exposure) would be subject to supervisory stress testing on a 2-year cycle. The exemption from the 2019 stress test cycle for domestic bank holding companies with assets of between $100 and $250 billion with a limited risk profile was intended to provide these banks with immediate burden relief, consistent with the requirement in S. 2155 that they be subject to periodic rather than annual stress tests. Under the Board's current rules, these banks will be subject to stress tests in 2020.

Q.3. Related, in the form letters to each of the firms exempted from the stress tests, the Board indicated that in assessing the company's risk profile, the Board takes into consideration the company's size, scope of operations, activities, and systemic importance. Yet, these factors vary greatly between all of the exempted firms—for example: nonbank assets range from $0.2 billion to $65.6 billion; off balance sheet exposures range from $4.7 billion to $45.8 billion, and cross-jurisdictional activity range from $0.1 billion to

[1] Regulatory Capital Rules; The Federal Reserve Board's Framework for Implementing the U.S. Basel III Countercyclical Capital Buffer, 12 CFR Part 217, Appendix A.

[2] Minutes of the Federal Open Market Committee, November 7–8, 2018, p.8. For additional detail on the Federal Reserve's framework for assessing vulnerabilities in the U.S. financial system, see Board (2018), *Financial Stability Report*, November 28, *https://www.federalreserve.gov/publications/files/financial-stability-repmt-201811.pdf.*

$48.1 billion. It looks like the Board categorically exempted companies within a certain asset threshold without considering each firm's particular risk profile.

How does the Board explain why all of these firms, which range in complexity, have received the same treatment when it comes to 2019 stress testing?

A.3. On February 5, 2019, the Board provided certain domestic bank holding companies with assets of between $100 billion and $250 billion and certain U.S. intermediate holding company subsidiaries of foreign banking organizations with assets of less than $250 billion relief from all regulatory requirements related to annual supervisory and company-run stress testing for the 2019 stress test cycle and from the requirement to submit a capital plan to the Board on April 5, 2019. In providing this relief, the Board considered each firm's asset size, cross-jurisdictional activity, reliance on short-term wholesale funding, nonbank assets, and off-balance sheet exposure. These factors may, individually or in combination, reflect greater complexity and risk to a banking organization and can, depending on the firm, result in greater risk to the financial system. The Board also considered reports of examination and other supervisory information, including a 2018 review of each film's Comprehensive Capital Analysis and Review (CCAR) capital plan and capital planning processes, and the results of the Board's 2018 Dodd–Frank Annual Stress Testing (DFAST) supervisory stress test, as well as other publicly reported information. Each of these firms received notice in 2018 that the Federal Reserve did not object to its capital plan or planned capital actions. Our analysis suggested that the 2018 DFAST stress tests remained an adequate assessment of the risks of each of these firms and that no firm had risks that would warrant an additional DFAST stress test in 2019.

Q.4. The Fed has recently finalized proposals to make stress testing more transparent, providing more information to the financial institutions in advance.

Why is the Fed making it easier for the largest, most complex banks to pass their stress tests, which are one of the most important tools enacted after the crisis to ensure that institutions have enough capital to withstand a severe economic shock?

A.4. The model disclosure enhancements increase the transparency of the stress test, but do not make the stress test exercise easier for firms. The stress test is one of our most important and effective tools. The high level of credibility of the stress test has been built over the years, in part, through careful and regular efforts to improve the transparency of the test.

We believe that our new disclosures would further enhance the public's understanding of the DFAST and CCAR supervisory stress test models without undermining the effectiveness of the tool. The new model disclosures include more detail about these supervisory models and methodologies, which may help the public understand and interpret the results of the stress test and thereby improve public and market confidence in the financial system.

These disclosures may facilitate public comments on the models, including those from academic experts, which could lead to data

improvements and a better understanding of the risks of particular loan types. They also may help financial institutions better understand the capital implications of changes to their business activities by providing general information about how the Federal Reserve's models treat broad classes of assets.

We carefully designed the new model disclosures to avoid allowing firms to see the full models. In particular, the amount of detail we provide in the model disclosures would not facilitate a firm making incremental modifications to its business practices that have little effect on its risk profile, but could materially change its DFAST and CCAR supervisory stress test results.

The information in the model disclosures also is not detailed enough to enable a firm to minimize stress test losses by optimizing credit allocations across geographies or industries, as that type of regulatory arbitrage could have unintended consequences for credit availability.

We will continue to seek feedback on our DFAST and CCAR stress test from a wide range of stakeholders. The Board recently announced that it will host a stress testing conference in July that will be open to the public. During the conference, we expect that a number of stakeholders, including academics, public interest representatives, and financial sector representatives, will share their thoughts on certain aspects of the stress test program, including our current level of transparency.

Q.5. In response to my question related to maximum employment, you replied that wages are considered as part of the maximum employment mandate.

Does the Fed consider the level of wages and benefits and whether those levels allow the employee to fully participate in the economy?

A.5. The Federal Open Market Committee considers a wide variety of economic indicators in assessing the level of maximum employment, including information on wages and benefits. The appropriate level of wages and benefits for any given type of work is best left to the interactions between firms demanding and workers supplying that type of work under the regulations and institutions that govern behavior in the labor market. Average increases in wages and benefits in the economy provide, in conjunction with many other macroeconomic indicators, information about the balance between the overall demand and supply of labor and the presence, or absence, of inflationary pressures. The increase in the pace of wage gains over the past few years has been a welcome development that has signaled a strengthening in the labor market and helped move inflation toward our 2 percent objective.

Q.6. In your testimony, you describe that real wages are slightly rising, but indicate that some of the longer-term challenges to our economy are stagnant incomes and lack of upward economic mobility.

Do you expect wages to continue to rise in ways that are meaningful to address concerns about stagnant incomes and lack of economic mobility? How much will wages need to rise to reverse this trend?

A.6. In the aggregate, the pace of wage gains has been gradually improving. With wages now rising at a rate of roughly 3 percent per year, and with inflation near 2 percent, we should see real wage gains of about 1 percent per year. That is slightly better than the pace we saw through most of the current expansion, and cumulated over time, such gains are meaningful. One important reason we have not seen larger real wage increases is that productivity growth has been relatively weak during this economic recovery.

I would emphasize that those are aggregate wage figures, which apply to Americans as a whole, but do not speak to issues of income distribution or of economic mobility. As you know, I believe those issues are of central importance to the well-being of American families; together with productivity, they determine living standards for the bulk of our population. I encourage policymakers to devote attention to policies to help strengthen productivity growth as well as improve mobility and income distribution. Such policies are largely beyond the scope of monetary policy, but the Federal Reserve is committed to fulfilling the maximum employment element of our congressional mandate.

Q.7. As inflation hovers near the Fed's target, a recent San Francisco Fed report noted that one component of that, "acyclical" inflation, had large effects. The report indicated cellular telephone services and financial services charges and fees including "charges for deposit accounts, credit card services, and ATMs . . . " made up about half of the increase in that component.[1] Financial services fees rose by 10 percent in the year prior to this report, and likely disproportionately affected lower income workers and their families.

Are you concerned that financial services fees make up a significant portion of inflation? If financial services fees are a significant contributor to inflation, and the Fed is responsible both for monetary policy and regulation of financial services, how is the Fed coordinating its efforts to ensure that inflation is not disproportionately borne by workers whose incomes have been stagnant for years?

A.7. The measure of financial service charges and fees that was noted in the Federal Reserve Bank of San Francisco report encompasses charges and fees associated with deposit accounts and credit cards (e.g., overdraft and ATM fees, membership fees), as well as some other items such as postal money orders. The price index for this expenditure category posted large increases in late 2017 and early 2018, contributing noticeably to inflation over the 12-month period noted in the report. Notably, that increase followed a period of smaller price increases. Considering the 5-year period ending December 2018, increases in this category of prices averaged 3.1 percent per year, which is above overall inflation, but not enormously so.

We recognize that bank fees can be a burden on low-income Americans. In 2017, according to an FDIC survey, about one-quarter of unbanked households indicated that high bank account fees were among the reasons they did not have an account. Other more commonly cited reasons were not having enough money to keep in

[1] *https://www.frbsf.org/economic-research/files/el2018-26.pdf*

an account and a lack of trust in banks. Federal financial regulations require specific disclosure of fees and terms for bank deposits, as well as for other financial products like credit cards and prepaid cards, but these regulations generally do not limit the size of those fees. [3]

Q.8. Following up on the numerous questions related to the BB&T and SunTrust merger, the Bank Holding Company Act requires that the Fed evaluate the competitive effects of mergers, acquisitions, and other transactions when determining whether to approve these applications. The factors for consideration include the effect of the acquisition or merger to lessen competition in any section of the country.

How has the Fed considered this factor in the past, and what criteria does the Fed use to evaluate the effect of a merger on the competition in any section of the country?

A.8. The Bank Holding Company Act requires the Board to analyze any application by a company seeking to control a bank or bank holding company, including through merger or acquisition, to determine whether the proposal would substantially lessen competition in any section of the country. A similar analysis is required under the Home Owners' Loan Act regarding applications by companies to control savings and loan holding companies or thrifts. Courts have held that the antitrust standards embodied in the banking laws were intended to incorporate the antitrust standards of the Clayton Act.

The Board analyzes the competitive effects of the proposal in the context of local geographic banking markets where the applicant and the target compete. In order to perform the required competitive analysis, the Board performs an initial screen similar to the screen used by the U.S. Department of Justice (DOJ), in which deposits of the institutions are used to calculate market shares and market concentration. In applications in which consummation of the proposal would result in market shares or concentration levels below certain specified thresholds, a Reserve Bank may approve the transaction under authority delegated by the Board. However, if the structural effects exceed the initial screening thresholds, the Board further analyzes the proposal and determines whether the transaction can be approved.

In its analysis of market concentration under the Bank Holding Company Act, the Board's review includes a close examination of the behavior of commercial banks, thrift institutions, and credit unions in the local banking market to determine the extent to which they compete with each other. The review also includes factors that might mitigate the structural effects of a proposed merger or acquisition, including the number of institutions remaining in the market, the likelihood of entry into the market, the financial viability of the target institution, any proposed branch divestiture that the applicant offers to reduce the potential anticompetitive ef-

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[3] See Regulation DD (Truth in Savings Act) at *https://www.ecfr.gov/cgi-bin/text-idx?c=ecfr&tpl=/ecfrbrowse/Titlel2/12cfr1030__main__02.tpl*. See Regulation Z (Truth in Lending Act) at *https://www.ecfr.gov/cgi-bin/text-idx?c=ecfr&tpl=/ecfrbrowse/Titlel2/l2cfr1026__main__02.tpl*.

fect of the merger or acquisition in affected markets, and other factors.

In order to advance transparency concerning competitive analysis of banking mergers and acquisitions, the Board and DOJ, in 2014, jointly released a set of Frequently Asked Questions and responses,[4] which are posted on the Board's public website.

Q.9. At the hearing you stated that, "S. 2155 implementation is probably our highest priority, and we are pushing ahead." The Fed appears to have ceased work completely on several rule proposals that would have increased regulation of large Wall Street banks. These include proposed rules on bonus payments for top executives and on capital for merchant banking and commodities activities.

Why did the Board shift away from finalizing rules that would strengthen regulation, even apparently abandoning proposed rules, and instead prioritize activity on rules that would weaken regulation? Is the Fed currently considering any rulemakings that would strengthen regulation?

A.9. The Board, along with the other Federal banking agencies, has spent almost a decade building the postcrisis regulatory regime. The regulatory policies implemented since the financial crisis have improved the safety and soundness of the financial system. The U.S. banking system is significantly better capitalized as a result of postcrisis regulatory capital requirements and stress testing. At this point, the agencies have completed the bulk of the work of postcrisis regulation; however, the agencies are still in the process of implementing a small number of important measures to strengthen the regulatory framework.

Recently, the Board has examined the regulations put into place in light of our supervisory experience. We, at the Federal Reserve, intend to maintain the core elements of the postcrisis framework to protect the financial system's strength and resiliency, while also seeking ways to enhance effectiveness of our regulations. The Federal Reserve is committed to continuing to evaluate the effects of regulation on financial stability and on the broader economy and to making appropriate adjustments. The Board also is committed to enhancing the transparency and efficiency with which the Federal Reserve supervises and regulates firms under our jurisdiction.

In order to enhance the strength and resiliency of the U.S. financial system, the Board has requested comment on the following proposed rulemakings: the Reduction of Interconnectedness and Contagion Risks of G–SIBs and the Net Stable Funding Ratio. When the comment periods on these proposals close, staff will consider the comments received and work towards the final proposed rules, as appropriate.

Other actions the Board has recently taken to strengthen the regulatory framework for financial organizations it regulates include finalizing a number of rulemakings such as Single-Counterparty Credit Limits and the Large Financial Institution Rating system.

[4] See *https://www.federalreserve.gov/newsevents/pressreleases/bcreg20141009a.htm.*

RESPONSES TO WRITTEN QUESTIONS OF SENATOR ROUNDS FROM JEROME H. POWELL

Q.1. I'm concerned that the community bank leverage ratio created pursuant to S. 2155, as drafted, does little to provide actual relief for community banks.

The Fed, OCC, and FDIC established the leverage ratio at the very upper end of the threshold allowed under S. 2155. The 9 percent capital level that the regulators settled on is well above the status quo for well-capitalized banks and would do little to help any institution with assets under $10 billion. It's hard for me to understand why any bank would jump through the new hoops established by the regulators when the trade-off is a much higher threshold for Prompt Corrective Action.

I'm concerned that the regulators did not do a sufficient job of consulting with our State banking supervisors as required under 2155. You are likely aware that the Conference of State Banking Supervisors sent you a letter on February 14th laying out its concerns in great detail.

How are you working with State regulators on the implementation of the community bank leverage ratio?

A.1. Section 201 of the Economic Growth, Regulatory Relief, and Consumer Protection Act (EGRRCPA) directs the Federal banking agencies (agencies) to establish a community bank leverage ratio (CBLR) of not less than 8 percent and no more than 10 percent for community banking organizations with less than $10 billion in total consolidated assets that also meet certain qualifying criteria. Under the CBLR proposed rule,[1] a firm with a CBLR above 9 percent would be considered to have met the capital ratio requirements for purposes of the agencies' capital rule and for purposes of being well capitalized under the agencies' prompt corrective action (PCA) rules of section 38 of the Federal Deposit Insurance Act.

The proposed 9 percent calibration of the CBLR, in conjunction with the qualifying criteria and simplified definitions, seeks to strike a balance among the following objectives: maintaining strong capital levels in the banking system, ensuring safety and soundness, and providing appropriate regulatory burden relief to as many banking organizations as possible. For example, an 8 percent CBLR would allow more banking organizations to opt into the CBLR framework but could allow a large number of banking organizations to hold less regulatory capital than they do today.

The proposal is not expected to require a material change to the amount of capital held by qualifying firms that opt into the community bank leverage ratio framework because these firms generally hold capital well in excess of the minimum requirements. The agencies are currently reviewing all public comments on the proposal, including those related to the proposed calibration, and will consider them before finalizing the CBLR.

Before issuing the proposal, the agencies consulted on several occasions with State bank regulators, as well as the Conference of State Bank Supervisors, to ensure their views were considered. The agencies very much appreciate the perspectives provided by the

[1] See 84 FR 3062 (February 8, 2019).

State bank regulators and plan to continue consulting with them before finalizing the CBLR.

Q.2. Why are the agencies applying a new prompt-corrective-action framework to banks that fall below the 9 percent community bank leverage ratio threshold instead of simply requiring them to report risk-based capital?

A.2. The CBLR proposal seeks to provide material burden relief, in the form of significantly simpler capital requirements and shorter reporting schedules, while maintaining safety and soundness in the banking system. The agencies believe that one way of achieving this outcome is by giving a community banking organization the flexibility to opt-in to and opt-out of the CBLR when the firm deems it appropriate. Consistent with section 201 of EORRCPA, the proposal establishes procedures for a CBLR firm that falls below 9 percent to be assigned a "proxy" PCA category based on the level of its CBLR. If we were to require a firm that has opted-in to the CBLR framework but that falls below the 9 percent CBLR to immediately revert to the current capital rule's requirements (including the substantially longer and more complex reporting requirements), we would be reducing the firm's flexibility by not allowing it to remain in the simpler regime.

Under the proposal, a firm can opt-out of the CBLR framework and revert to the current capital rule at any time and for any reason. The agencies provided this optionality because they believed a CBLR firm would appreciate the flexibility to either revert to the current capital rule or remain subject to the CBLR as opposed to immediately being required to revert to the capital rule and associated regulatory reporting if the firm's CBLR drops below 9 percent. Without this flexibility, firms may feel compelled to maintain their current regulatory capital and reporting apparatus in case their CBLR drops below 9 percent.

The comment period for the CBLR proposal ended on April 9, 2019. The agencies are currently reviewing comments from the public on all aspects of the proposed rule, including the optionality embedded in the proposal, and will consider them before finalizing the rule.

Q.3. Why is the Federal Reserve Board lowering capital standards for the largest U.S. banking organizations while at the same time increasing leverage capital requirements for community banking organizations?

A.3. The agencies have proposed changes to prudential requirements that would better align regulations with a firm's size, risk profile, and systemic footprint, consistent with EGRRCPA. Under the proposals, the largest firms, such as U.S. OSIBs, would continue to be subject to the most stringent requirements.

The CBLR proposal is an optional framework designed to reduce compliance burden for qualifying community banking organizations. The CBLR proposal is not intended to materially change the amount of capital currently required to be held under the risk-based and leverage-based capital requirements.

Q.4. You may recall that I've had a longstanding dialogue with the Fed regarding the rule on the standardized approach for measuring

counterparty credit risk, or SA–CCR. I first raised this issue at Vice Chairman Quarles' confirmation hearing in July 2017, going on 2 years ago, and have written to you about it as well as asked about it in open hearings since that time.

Because I believe it's easier to establish rules making our financial system safer outside of a crisis, I was glad to see that a draft SA–CCR rule was published last October. The draft, however, falls short. It failed to include initial margin exposure, a point that Vice Chairman Quarles ignored when responding to my previous questions for the record. The draft rule was also overbearing in several key areas, such as how it treats hedging risk for commodities.

Can you please share your thoughts on where the SA–CCR rule currently stands and tell us whether or not the rule is ever going to be finalized?

A.4. With respect to initial margin in the supplementary leverage ratio (SLR), the Standardized Approach to Counterparty Credit Risk (SA–CCR) proposal requests comment on an alternative approach that would permit greater recognition of initial margin for cleared transactions under the SLR. The comment period on the SA–CCR proposal ended on March 18, and the Board of Governors (Board), the Office of the Comptroller of the Currency (OCC) and the Federal Deposit Insurance Corporation (FDIC) are now reviewing the comments, including with respect to the treatment of commodities and the treatment of initial margin under the SLR.

Q.5. Last August, a number of my colleagues and I sent you a letter about the G–SIB surcharge. Our letter said in part that we hoped you would examine excessive capital requirements in the U.S. given the successful implementation of postcrisis reforms.

In response, you wrote back saying, "The Board is conducting a comprehensive review of the regulations in the core areas of postcrisis reform, including capital, stress testing, liquidity, and resolution. The objective of this review is to consider the effect of those regulatory frameworks on the resiliency of the financial system, including improvements in the resolvability of banking organizations, and on credit availability and economic growth."

In addition, when responding to a question from Senator Shelby during our recent hearing, you said that our banking system overall is quite strong, there have been no banking failures in 2018, and that the system has much higher capital, liquidity, and risk management than in years past.

Can you please provide an update on the comprehensive review from your earlier letter?

Will there be an output—such as a report—as the result of this review?

When will it conclude, and will the public have the opportunity to comment?

A.5. In connection with postcrisis reforms and recent statutory developments, the Board has been evaluating its regulations for simplicity, efficiency, and transparency. Board staff are in the process of reviewing core elements of the Board's regulatory framework. The Board will consider this analysis when developing future regulatory proposals. In addition, on October 31, 2018, the Board issued the proposals to tailor requirements for certain banking organiza-

tions while also ensuring the continued safety and soundness of their operations.[2] These proposed rulemakings seek public comment on separate proposals for tailoring enhanced prudential standards, tailoring of capital and liquidity requirements, and modifying stress testing requirements for certain banking organizations. In developing these proposals, the Board considered the expected impact of the rulemakings and sought comment from the public on this question and all other aspects of the proposals.

Q.6. We all recognize that the Federal Reserve plays a critical role in ensuring the safety and soundness of the U.S. financial system and that you are constantly evolving your thinking on potential risks. Last year, I asked how you are considering evaluating bank practices in areas that are beyond the scope of the traditional supervision process. You responded that there a variety of ways the Federal Reserve ensures it understands what best practices should look like at the firms you supervise.

That said, it remains unclear how decisions concerning technology, HR management, and general corporate strategy present clear safety and soundness issues. At some level, it seems the Federal Reserve's view is that anything could create risk and therefore you are able to dictate practices to firms.

Consider, for instance, use of new cloud technologies to store customer data. Such a decision by bank management is no different than those made by other private companies—retailers, credit card companies, or even a local utility. These are private companies, with very engaged boards and investors, and well-informed senior management teams.

As you develop expectations for firms in these types of areas, will you make certain that there is sufficient stakeholder engagement and that you are appropriately deferring to the judgments of private entities and not dictating what such entities must do on matters outside your traditional areas of expertise?

A.6. As emerging and evolving risks become more relevant to safety and soundness supervision, the Federal Reserve incorporates a broad range of views into shaping potential policy. This engagement happens during the research and development phase, where outreach and information gathering is conducted, and also through public comment periods when proposed rules are published.

Q.7. I was pleased to see that S. 2155 included Section 402, which would exempt cash that custody banks store at the Fed from their leverage ratio calculation. Shortly before S. 2155 was signed into law, however, the Fed released a new rule changing that same calculation.

In response to a question from the record from last November, Vice Chairman Quarles said, "staff is evaluating the April 2018 proposal in light of the statutory change."

Can you elaborate on Vice Chairman Quarles' response?

A.7. The Board, along with the OCC and FDIC, plan to issue a joint proposal in April 2019, to implement Section 402(b) of the EGRRCPA. The comment period on the proposal would end 60 days after publication in the *Federal Register*.

[2] See 83 FR 61408 (Nov. 29, 2018); 83 FR 66024 (Dec. 21, 2018); 84 FR 4002 (Feb. 14, 2019).

The April 2018 proposal to recalibrate the enhanced supplementary leverage ratio (eSLR) standards was calibrated based on the definition of the existing denominator of that ratio. At that time, the denominator included central bank deposits for all firms. The April 2018 proposal noted that any subsequent and significant changes to the SLR would likely necessitate the Board to reconsider the proposal recalibration, as it was not intended to materially change the aggregate amount of capital in the banking system.

As you note, section 402(b) directs the agencies to allow custodial banking organizations to exclude qualifying central bank deposits from the SLR, and therefore, would meaningfully modify the SLR as applied to these firms. Accordingly, as the Board weighs any recalibration of the eSLR, the Board will consider the potential changes to capital levels at custodial banking organizations resulting from the implementation of section 402, as well as the expected impact on the aggregate level of capital in the banking system.

Q.8. Are instructions for the latest Comprehensive Capital Analysis and Review tests forthcoming? When will they be released and why have they been held up this year?

A.8. The instructions for the 2019 Comprehensive Capital Analysis and Review (CCAR) were released on March 6, 2019. While the CCAR instructions have been released in prior years on or around the beginning of February, the release of this year's instructions was postponed to incorporate into them the Board's final rule limiting the use of CCAR's qualitative objection.

Q.9. In a recent press conference, you mentioned that the Fed would make an announcement on changes to the countercyclical capital buffer "in early 2019". The Fed has yet to take further action.

When will you make your announcement on the countercyclical capital buffer?

A.9. The Board recently voted to maintain the level of the countercyclical capital buffer (CCyB) at zero.[3]

RESPONSES TO WRITTEN QUESTIONS OF SENATOR PURDUE FROM JEROME H. POWELL

Q.1. In April 2017, at the Global Financial Forum, you commented that capital rules should not disincentivize derivatives clearing or serve as an impediment to end users hedging risk. These products are critical risk management tools for farmers, ranchers, and other businesses in Georgia and across the country.

Unfortunately, the supplementary leverage ratio (SLR) is limiting access to derivatives risk management opportunities for the agricultural community in my State and discouraging the central clearing of standardized swap products by futures commission merchants (FCMs) registered with the CFTC. Since 2008, according to the CFTC, the number of firms providing clearing services has declined from 88 to 55 in 2018.

[3] The Board voted 4–1 to maintain the level of the CCyB at zero. See *https://www.federalreserve.gov/newsevents/pressreleases/bcreg20190306c.*

In December 2018, I introduced legislation to correct this unintended consequence, and to ensure regulators properly recognize the risk-reducing nature of client initial margin for a cleared derivative transaction. Ultimately, this will provide much-needed relief to farmers and other consumers and free up capital for our main street economy. As you also know, the Fed, along with the FDIC and OCC are currently soliciting comments as they seek to implement a new approach for calculating the exposure amount of derivatives contracts under the agencies' regulatory capital rules. The CFTC Commissioners recently submitted a joint comment that raises my very concerns.

Do you share my concerns about SLR and what steps can you take to address the concerns above into consideration as you move through the joint-comment process?

Will you commit to taking the concerns above into consideration as you move through the joint-comment process?

A.1. The Federal Reserve Board (Board) is reviewing a number of its rules and regulations to address any unintended consequences and undue regulatory burden, including for the provision of central clearing services. In this regard, on October 30, 2018, the Board, along with the Office of the Comptroller of the Currency and the Federal Deposit Insurance Corporation (the agencies), issued a joint notice of proposed rulemaking to implement the standardized approach for counterparty credit risk (SA–CCR), to determine the exposure amount of a derivative contract. SA–CCR introduces a new methodology for calculating exposure amount in both the risk-based capital rules and the supplementary leverage ratio (SLR) rule. The proposal specifically requests comment on whether the agencies should permit greater recognition of margin for purposes of the SLR. The comment period closed March 18. We will take your concerns into account as we review comments on the rule.

RESPONSES TO WRITTEN QUESTIONS OF SENATOR TILLIS FROM JEROME H. POWELL

Q.1. In October of last year, the Federal Reserve (Fed) issued a request for public comment on "actions the Federal Reserve could take to support faster payments in the United States." We understand the Fed has been working collaboratively with the banks and other private-sector stakeholders for years on how best to facilitate faster payments. As you noted at a recent press conference, the Fed has thus far been "more of a convener, bringing industry and the public and public interest groups . . . around the table and . . . playing a constructive role" in encouraging the private sector in this area. In October, however, the Fed issued a request for public comment indicating that it could instead decide to enter the market for faster payments as a direct competitor of the private sector solutions with its own Real-Time Gross Settlement" (RTGS) system.

Is it possible the Fed's proposal could hamper and delay, rather than facilitate, the arrival of real-time payments?

A.1. In its October 2018 *Federal Register* Notice requesting public comment (2018 FRN), the Board of Governors of the Federal Reserve System (Board) specifically sought feedback on whether potential Federal Reserve action(s) in faster payments settlement

would hasten or inhibit financial services industry adoption of faster payment services. The potential actions, which would facilitate real-time interbank settlement of faster payments, build on collaborative work with the payment industry through the Federal Reserve System's Strategies for Improving the U.S. Payment System initiative. Real-time settlement avoids interbank credit risk by aligning the speed of interbank settlement with the speed of underlying payments. As a result, broad use of real-time settlement for faster payments could enhance the overall safety of the faster payments market in the United States. Development of a nationwide real-time interbank settlement infrastructure by the Federal Reserve could encourage more banks to develop faster payment services, creating more choice for consumers, households, and businesses.

The 2018 FRN sought feedback on what operational and technical adjustments the private sector would need to make in order to operate in a 24x7x365 settlement environment and potential challenges and related costs the industry could face in the process of transitioning to such an environment.

As part of its central mission, the Federal Reserve has a fundamental responsibility to ensure that there is a flexible and robust infrastructure supporting the U.S. payment system on which the private sector can develop innovative payment services that serve the broadest public interests.

The Federal Reserve is committed to working together with the private sector to achieve nationwide access to faster payments and will continue to explore collaborative efforts to promote the safety and efficiency of faster payments and to support the modernization of the financial services sector's provision of payment services.

Q.2. Please explain why the Fed is proposing the creation of a Government-run real-time payments system when the private sector has already created one that is up and running?

A.2. The potential actions outlined in the 2018 FRN are intended to promote the safety and efficiency of faster payments in the United States and to support the modernization of the financial services sector's provision of payment services. The Federal Reserve has long supported these objectives in its existing services, which provide nationwide access to check, Automated Clearing House (ACH), and wire services to banks of all sizes. The Federal Reserve has provided services (check, ACH, wire) alongside private-sector service providers since its inception, and the Board has established policies and processes to avoid conflicts of interest across the various roles played by the Federal Reserve. [1]

Q.3. The Fed's own policy statement on "The Federal Reserve in the Payments System" requires that the Fed satisfy three conditions before proposing a new service. Among those is a finding that the private sector "cannot be expected to provide such service with reasonable effectiveness, scope, and equity." Has the Fed made this finding, and, if so, on what grounds was it made?

A.3. In response to the 2018 FRN, the Board received over 400 comment letters from a broad range of market participants and in-

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[1] See *https://www.federalreserve.gov/paymentsystems/pfs_standards.htm.*

terest groups, including consumer groups. The Board is carefully considering all of the comments received before determining whether any potential action is appropriate, as well as the timing of such potential action. Any resulting action would be pursued in alignment with the provisions of the Federal Reserve Act, the Monetary Control Act, and longstanding Federal Reserve principles and criteria for the provision of payment services. The criteria specify that the Federal Reserve must expect to (1) achieve full cost recovery over the long run, (2) provide services that yield a public benefit, and (3) provide services that other providers alone cannot be expected to provide with reasonable effectiveness, scope, and equity.

Q.4. How long would it take for the Fed to create its real-time system?

A.4. The Federal Reserve is not committing to any specific actions at this time, and there are several potential approaches that could help achieve the objective of safe, efficient, and ubiquitous faster payments. Any implementation period will depend on what actions, if any, the Board decides to take.

Q.5. Would the Fed's proposed RTGS and the existing private sector real-time payments network be interoperable and, if so, why—specifically—do you believe that will be the case?

A.5. The 2018 FRN asked for feedback on specific areas, including interoperability with existing or potentially new Real-Time Gross Settlement (RTGS) service providers. The Board received responses to such questions and is assessing the comments. The Federal Reserve recognizes that a decision to undertake a 24x7x365 RTGS settlement service will require close partnership and collaboration with a wide range of industry stakeholders.

Q.6. If you believe the systems would interoperate, would such interoperability require the private sector system to significantly alter its current design?

A.6. As noted, the Board recognizes that a decision to undertake the proposed actions, in particular the development of a 24x7x365 RTGS settlement service, will require close partnership and collaboration with industry stakeholders. Based on the comments received, the Board is assessing the implications for various industry stakeholders including banks, service providers, merchants, and financial technology providers. One important consideration relates to interoperability, which can involve different layers of a payment message (e.g., rules, standards, processing). The Board is assessing the options for interoperability between a Federal Reserve RTGS settlement service and existing or potentially new RTGS service providers across these layers for achieving nationwide access to faster payments in the United States.

Q.7. As currently structured, CECL presents major capital volatility risk, affecting pricing and availability of lending for 30-year mortgages and to borrowers of lower credit quality, especially during downturns. It is highly procyclical. There have been proposals made that before implementing this major accounting change, there should be a quantitative impact study (QIS) conducted to look into these concerns. The 3-year phase in that the Fed recently finalized does not address this underlying procyclicality issue.

Do you see any harm in conducting such a QIS?

A.7. We recognize the importance of evaluating the quantitative impact of a policy change. Prior to finalizing the current expected credit loss (CECL) accounting standard, the Financial Accounting Standards Board followed its established process, which included cost-benefit analysis and extensive outreach with all stakeholders, including users, preparers, auditors, and regulators. Furthermore, various economists, institutions, and independent organizations have produced impact analyses of CECL with varying conclusions.

We have reviewed these analyses and performed additional internal studies to support the 3-year phase-in referenced in your question as well as the Board's announcement that it will maintain the current modeling framework for loan allowances in its supervisory stress test through 2021. Institutions subject to the Board's Comprehensive Capital Analysis and Review (CCAR) will be required to incorporate CECL into their own stress tests starting in the 2020 cycle. However, the Board will not issue supervisory findings on those institutions' allowance estimations in the CCAR exercise through 2021.

Given the importance of the CECL accounting standard to the institutions we supervise and the banking industry as a whole, we are committed to closely monitoring implementation and studying the effect of the accounting standard on the banking system to determine if further changes to the regulatory framework are appropriate.

Q.8. The Fed has not undertaken any effort to update its rules to provide a pathway to margin eligibility for companies traded over-the-counter (OTC) since NASDAQ became an exchange in 2006. Margin eligibility of OTC-traded stocks can be an important part of the growth of small and emerging companies, as it helps to improve the market quality of those securities, impacts an investor's willingness to purchase those securities, and as a result, has a direct impact on capital formation. U.S. investors in the ADRs for Roche and other large, international OTC traded firms are also negatively impacted by the Fed's inaction on this issue.

Will you commit to following up with me on the actions the Fed will take to revive the margin list for certain OTC securities—those that have similar characteristics to those traded on NASDAQ before it became an exchange?

A.8. As you note, the List of Over-the-Counter Margin Stocks (OTC List) is no longer published by the Federal Reserve Board (Board), and, in fact, the OTC List's publication ceased in 1998. Board staff have continued to monitor OTC market developments in the years since. Any expansion of the types of securities that are margin-eligible would require the Board's careful consideration of the benefits of such an approach, weighed against the potential increase in burdens on banks and other lenders.

We will be sure to take your concerns into account as we look into potential approaches that may be considered, while ensuring any changes would not pose additional regulatory burden.

RESPONSES TO WRITTEN QUESTIONS OF SENATOR MORAN FROM JEROME H. POWELL

Q.1. With cash flow dwindling in the farm sector amid ongoing trade disputes, the volume of non–real estate farm debt continues to increase at a rapid pace, driven by the growth in operating loans which have reached a historically large average size. Bankruptcies across the Farm Belt are rising past the highest level in at least 10 years.

Lower farm incomes, the uncertainties about ag trade, and the growth of lending volumes has interest rates on ag loans trending ever higher. The rapidly increasing combination of higher leverage and rising rates continue to put pressure on operations across the Farm Belt.

With financial performance at agricultural banks remaining relatively strong and the value of farm real estate continuing to provide ongoing support, what actions are you and regulators considering to help alleviate mounting pressure on the farm sector experiencing difficulties beyond their control?

A.1. The agricultural industry is experiencing uncertainty, as commodity prices were suppressed in 2018 and trade issues continue to put pressure on economic growth. Some producers may be well-positioned to withstand the prolonged challenges facing today's agricultural sector, but others are more susceptible to financial stress. As regulators, it is essential to ensure that banks have appropriate processes to effectively measure and mitigate risks while maintaining safe and sound operations and serving the needs of the agricultural communities in which they operate.

In 2011, the Federal Reserve issued guidance to the industry on "Supervisory Expectations for Risk Management of Agriculture Credit Risk". This guidance applies in all economic environments, but is especially helpful to banks during periods of economic stress. It reminds bankers that "the identification of a troubled borrower does not [prohibit] a banker from working with the borrower," and it provides a road map for lenders to work prudently with troubled borrowers in a way that serves the long-term interests of all stakeholders. With respect to the Community Reinvestment Act (CRA), the current regulations consider bank activities in their assessment areas, including bank activities in the assessment areas that are responsive to the needs of those that have been affected by disasters.

In acknowledgement of the concerns and uncertainties surrounding the outlook of agricultural conditions, the Federal Reserve has taken measures to maintain an ongoing dialogue between regulators, bankers, and agricultural communities. On a quarterly basis, we conduct Agricultural Credit Conditions Surveys that gather comments from bankers located in various Reserve Bank Districts [1] with significant agricultural exposure. Our FedLinks and Community Banking Connections website [2] and publications, which could be useful to all banks, aim to improve the understanding of supervisory expectations and provide tools to help community

[1] Our survey is aimed at areas of the country with high concentrations of agricultural lending by community banks, located primarily in Chicago, St. Louis, Minneapolis, Kansas City, and Dallas.

[2] See, *https://communitybankingconnections.org/fedlinks*.

banks across the United States. Additionally, we invite bankers and agriculture industry professionals to the annual National Agricultural Credit Conference, hosted by the Federal Reserve Bank of Kansas City, which provides a forum for those in the industry to discuss current developments. The most recent conference was held at the Board of Governors of the Federal Reserve System on March 25, 2019. All of these outreach efforts allow the Federal Reserve to hear diverse perspectives and receive feedback from both the industry and public. They also enable the Federal Reserve to have a better understanding of credit conditions and challenges in agricultural markets so that supervisory reviews can be tailored, as appropriate.

In addition to the supervisory process, the Federal Reserve System strives to incorporate perspectives from all regions of the country and from a broad range of industries, including agriculture, into its regular monetary policy deliberations and its assessments of the U.S. economy. We receive input on agricultural conditions from business contacts across the country through our boards of directors at regional Reserve Banks, various advisory councils, and surveys, in addition to reports from staff who track developments in U.S. agriculture.

Q.2. One parallel I suggest you and regulators explore and consider for lenders is the regulatory relief granted to financial institutions in areas affected by natural disasters, such as favorable Community Reinvestment Act consideration, extension of repayment terms, restructuring existing loans, and easing terms for new loans.

Would you and your staff be willing to work with my staff and I to develop the legislation necessary to provide regulators with this authority?

A.2. As always, we are available to provide technical assistance to Members of Congress and their staffs. For this particular issue, our staff can inform you and your staff about past initiatives that the Board and the other Federal banking agencies (agencies) have taken to provide regulatory assistance to our supervised institutions affected by a major natural disaster. On an interagency basis, the agencies issue statements to encourage institutions operating in a disaster area to meet the financial services needs of their communities. For example, on October 10, 2018, the agencies and the Conference of State Bank Supervisors issued a statement that provides an overview of supervisory practices for institutions affected by Hurricane Michael. [3] More recently, the agencies and relevant State regulators issued interagency statements on supervisory practices regarding financial institutions and their customers related to the flooding in the Midwest and wildfires in California. [4]

[3] See, *https://www.federalreserve.gov/newsevents/pressreleases/bcreg20181010a.htm*.

[4] See, *https://www.federalreserve.gov/newsevents/pressreleases/bcreg20190325a.htm*, and *https://www.federalreserve.gov/newsevents/pressreleases/bcreg20181115b.htm*.

RESPONSES TO WRITTEN QUESTIONS OF SENATOR WARNER FROM JEROME H. POWELL

Q.1. *Community Reinvestment Act*—As you noted in a speech a couple weeks ago at the HBCU Mississippi Valley State University, the loss of a branch often means "more than the loss of access to financial services; it also meant the loss of financial advice, local civic leadership, and an institution that brought needed customers to nearby businesses." I couldn't agree more. You rightly mention the Community Reinvestment Act as an important tool to encourage banking services in underserved areas.

As regulators consider updates to the regulations implementing the Community Reinvestment Act, how can we make sure we that we protect the folks most likely to be significantly affected by branch closures—low income families, families of color, rural families?

A.1. Public comment and the Federal Reserve's outreach to banks and community stakeholders have clearly conveyed that bank branches are an important venue for banks to engage with their communities. Commenters have emphasized the high value that bank branches have for retail customers, small business owners, local leaders, and community developers, especially in underserved communities.

One opportunity in modernizing the Community Reinvestment Act (CRA) regulations is to better define the area in which the agencies evaluate a bank's CRA activities, while retaining a focus on the credit needs of local communities. There is a complex balance between the profitability of branches and the needs of local communities to interact with bank personnel needs to be kept in mind as revisions to the regulations are considered. Additionally, it would be useful to find ways to recognize how technology offers meaningful and cost-efficient opportunities to serve consumers and communities. [1]

As the Federal Reserve works with the Office of the Comptroller of the Currency and the Federal Deposit Insurance Corporation (the Agencies) to develop a notice of proposed rulemaking, it is important to ensure that any modernization of assessment areas keeps in focus the goal of encouraging banks to seek out opportunities to create incentives for CRA capital to effectively meet the credit and banking needs of underserved communities and consumers.

Q.2. Beyond the Community Reinvestment Act, what other tools do you as a regulator have to promote access to bank branches?

A.2. The Federal Reserve has dedicated staff in each Reserve Bank throughout the country who work collaboratively to engage relevant stakeholders; to understand issues and challenges in low- and moderate-income (LMI) communities; and to provide research, insights, and technical assistance to support community and economic development programs.

[1] The Agencies have been aware of the impact of technology on the delivery of banking services for many years now. In 2016, the Agencies provided guidance on how examiners will evaluate the availability and effectiveness of alternative (nonbranch) product and service deliver mechanisms. That guidance can be found at in the Interagency and Answer Guidance on Community Reinvestment (Q&A §__.24(d)(3), *https://www.govinfo.gov/content/pkg/FR-2016-07-25/pdf/2016-16693.pdf.*

For example, staff facilitate roundtable discussions between banks, nonprofit organizations, and Government officials to support awareness of community needs and CRA-eligible activities, and to provide information on possible policy options and practices that may help serve the banking needs in LMI communities. In addition, staff work to advance Federal Reserve policymakers' understanding of labor markets, housing markets, and other economic and financial conditions across populations and geographies. By engaging a broad range of stakeholders, staff obtain diverse views on issues affecting the economy and financial markets. This information helps banks identify opportunities to serve the credit and financial services needs of their communities.

Q.3. *Cybersecurity Harmonization*—Many financial institutions are subject to cybersecurity supervision from a number of State and Federal regulators. Not only are these institutions subject to, at times, differing requirements from these regulators, there is often not even a shared lexicon among regulators, so that when one regulator says "effective data security," they actually mean something different from what another regulator means by the same phrase.

Are there efforts underway to harmonize the cybersecurity lexicon used by State and Federal regulators? How is that effort progressing?

A.3. The Federal Reserve, in collaboration with other regulatory agencies, continues to identify opportunities to harmonize the cybersecurity lexicon used by State and Federal regulators. Specifically, the Federal Reserve chairs a working group of the Financial and Banking Information Infrastructure Committee (FBIIC)[2] that is working to harmonize the cybersecurity lexicon by using the National Institute of Standards and Technology (NIST) as the primary source of cyberterms and definitions going forward.

Q.4. What about an effort to harmonize standards?

A.4. The FBIIC provides a forum for member agencies to discuss regulatory and supervisory practices, including opportunities for harmonization and to leverage existing standards, such as the NIST Cybersecurity Framework. As discussed above, the Federal Reserve chairs a FBIIC working group that is engaged in identifying opportunities to further harmonize cyber-related standards and supervisory activities for firms subject to the authority of multiple regulators.

In addition, the agencies, with supervisory responsibility for the banking sector, collectively engage in efforts to promote uniformity in the supervision of those financial institutions through the Federal Financial Institutions Examination Council (FFIEC). The FFIEC, established in 1979, includes the Board of Governors of the Federal Reserve System (Board), Office of the Comptroller of the Currency (OCC), Federal Deposit Insurance Corporation (FDIC), National Credit Union Administration, Consumer Financial Protection Bureau and the State Liaison Committee. The FFIEC promotes uniformity in the supervision of financial institutions

[2] The FBIIC consists of 18 Federal and State member organizations that collectively engage in supervisory activities for the banking, investment, and insurance sectors.

through the development of joint examination procedures, principles, standards, and report forms.

Q.5. *Real Time Payments*—I fully support the adoption in the United States of a real time payments (RTP) system. Such a system brings with it terrific promise for innovation in financial services that meet customer demands to make payments cheaply and instantly.

In its 2013 Strategies for Improving the U.S. Payment System, the Federal Reserve said that it "would not consider expanding its service provider role unless it determines that doing so is necessary to bring about significant improvements to the payment system and that actions of the private sector alone will likely not achieve the desired outcomes for speed, efficiency, and safety in a timely manner" and unless "other providers alone could not be expected to provide this capability with reasonable effectiveness, scope, and equity"—phrases that the Federal Reserve has repeated elsewhere.

I can understand how the provision by the Federal Reserve of a 24/7/365 real time liquidity management tool that would support a private sector RTP solution—as contemplated in the Federal Reserve's recent proposal—would meet the test that the Federal Reserve has consistently outlined for its operational involvement. A 24/7/365 liquidity management tool would help alleviate otherwise potentially destabilizing liquidity demands that overnight RTPs could generate.

The development of a real time gross settlement (RTGS) system, however, seems to be a different matter in terms of meeting the requirements the Fed set forth in its 2013 Strategies for Improving the U.S. Payment System and the requirements of the Monetary Control Act.

With regard to the possible development of an RTGS system, has the Federal Reserve made a determination that Federal Reserve provision of RTGS services meets this test? If so, on what basis?

A.5. The potential actions outlined in the Board's October 2018 *Federal Register* Notice request for comment (2018 FRN) are intended to promote the safety and efficiency of faster payments in the United States and to support the modernization of the financial services sector's provision of payment services. The Federal Reserve has provided services alongside the private-sector service providers since its inception that have supported both objectives while providing nationwide access to check, Automated Clearing House (ACH), and wire services to banks of all sizes.

The Board has received over 400 comment letters from a broad range of market participants and interest groups, including consumer groups in response to the 2018 FRN seeking public input on potential actions the Federal Reserve might take in regard to supporting faster payments in the United States. The Board is carefully considering all of the comments received before determining whether any action is appropriate or the timing of such potential action. Any resulting action the Board decides to take would be pursued in alignment with the provisions of the Federal Reserve Act, the Monetary Control Act, and longstanding Federal Reserve policies and processes created to avoid conflicts of interest across the various roles of the Federal Reserve.

In particular, the Congress, in part motivated to encourage and ensure fair competition between the Federal Reserve and the private sector, passed in 1980, the MCA, requiring that the Federal Reserve fully recover costs in providing payment services over the long run and adopt pricing principles to avoid unfair competition with the private sector. The Board also has established additional criteria for the provision of new or enhanced payment services that specify the Federal Reserve must expect to (1) achieve full cost recovery over the long run, (2) provide services that yield public benefit, and (3) provide services that other providers alone cannot be expected to provide with reasonable effectiveness, scope, and equity. In addition to these criteria, for new services or service enhancements, the Board also conducts a competitive impact analysis to determine whether there will be a direct and material adverse effect on the ability of other service providers to compete effectively in providing similar services. [3]

Q.6. The Federal Reserve has also consistently supported the implementation of RTP system by 2020. I understand there is a fully operational private sector clearing and settlement solution that has significant adoption by depository institutions. Would a Federal Reserve-provided RTGS infrastructure be implemented by 2020? If not, how long would such an infrastructure take to become fully operational?

A.6. The Federal Reserve is not committing to any specific actions at this time, and there are several potential approaches that could help achieve the objective of safe, efficient, and ubiquitous faster payments. Any implementation period will depend on what actions, if any, the Board decides to take. Analysis of the input received in response to the Board's 2018 FRN is currently underway. The Board is in the process of carefully considering all of the comments received before the determining whether any action is appropriate or the timing of such potential action(s).

Q.7. Given the Fed's long-held goal of getting to real-time payments by 2020, is there a risk that the Fed's suggestion that it might, at some time in the future, enter the real-time payments market—as a direct competitor of existing private-sector alternatives—delay, rather than facilitate, adoption of real-time payments?

A.7. In its 2018 FRN request for public comment on actions the Board specifically sought feedback on whether potential Federal Reserve action(s) in faster payments settlement would hasten or inhibit financial services industry adoption of faster payment services. The potential actions, which would facilitate real-time interbank settlement of faster payments, build on collaborative work with the payment industry through the Federal Reserve System's Strategies for Improving the U.S. Payment System (SIPS) initiative. Real-time settlement avoids interbank credit risk by aligning the speed of interbank settlement with the speed of underlying payments. As a result, broad use of real-time settlement for faster payments could enhance the overall safety of the faster payments

[3] See "The Federal Reserve in the Payments System" (issued 1984; revised 1990), Federal Reserve Regulatory Service 9-1558.

market in the United States. Development of a nationwide, real-time interbank settlement infrastructure by the Federal Reserve could encourage more banks to develop faster payment services, creating more choice for consumers, households, and businesses.

The 2018 FRN sought feedback on what operational and technical adjustments the private sector would be required to make to operate a 24x7x365 settlement environment and potential challenges and related costs the industry could face in the process of transitioning to such an environment.

As part of its central mission, the Federal Reserve has a fundamental responsibility to ensure that there is a flexible and robust infrastructure supporting the U.S. payment system on which the private sector can develop innovative payment services that serve the broadest public interests.

The Federal Reserve is committed to working together with the private sector to achieve nationwide access to faster payments and will continue to explore collaborative efforts to promote the safety and efficiency of faster payments and to support the modernization of the financial services sector's provision of payment services.

Q.8. *Brexit: Financial Stability Monitoring*—I'm glad to see the news that the Federal Reserve is now publishing semiannual financial stability reports. I think it's critical that the Federal Reserve, and the other financial regulators and FSOC, continue to monitor for new and emerging threats to financial stability. One of the items the Fed has highlighted in its financial stability report is Brexit.

What are the key economic and financial risks associated with the possibility that Britain crashes out of the EU?

A.8. European Union (EU) leaders agreed at their April 10 summit to grant the United Kingdom (U.K.) a Brexit extension until October 31, 2019. Although this extension reduced uncertainty in the near term, it is unclear how Brexit will play out. The EU and the U.K. Governments reached a deal last November that would set the terms of U.K. withdrawal from the EU, and introduce a basis for new relations, but the U.K. Parliament has not ratified this agreement. The possibility remains that the U.K. could leave the EU without a ratified agreement. U.K. authorities have warned that, under such a no-deal scenario, there likely would be logistical issues as the two economies jump from a seamless trading environment to one involving tariffs, rules of origin of products, and border inspections. Planned measures to address such issues likely would not eliminate all such disruptions, which might have a significant near-term effect on the U.K. economy and on some of the EU economies that trade most heavily with the U.K.

The direct trade impacts on the United States likely would be minimal. A no-deal scenario could generate some European financial stresses that could spill over to global financial markets, including in the United States. However, U.S. financial institutions have had a long time to prepare, with oversight from U.S., U.K., and EU regulators, for potential spillovers resulting from Brexit. More generally, U.S. banks currently are well capitalized, and their exposures to Europe are fairly small relative to their capital levels.

Q.9. What is the Fed doing to prepare for such an event?

A.9. Board staff has monitored and analyzed the U.K. expected withdrawal from the EU, including the possibility of a no-deal scenario. As part of these efforts, staff has discussed preparedness for a variety of scenarios with financial institutions and closely monitored political, economic, and financial sector developments. Staff has also coordinated with other domestic financial regulatory agencies and the U.S. Department of the Treasury as well as engaged with relevant authorities in the U.K. and EU, as appropriate. In particular, Board staff has consulted regularly with the Bank of England and its Prudential Regulation Authority.

Q.10. With which Federal agencies is the Fed working in preparation?

A.10. As mentioned in response above, Board staff has coordinated and consulted with colleagues at several Federal agencies, including the U.S. Department of the Treasury, Commodity Futures Trading Commission, Securities and Exchange Commission, OCC, and FDIC.

RESPONSES TO WRITTEN QUESTIONS OF SENATOR SCHATZ FROM JEROME H. POWELL

Q.1. The U.S. Government's Fourth National Climate Assessment says climate change will "cause substantial net damage to the U.S. economy throughout this century," with annual losses in some sectors projected to exceed the current GDP of many U.S. States. Climate-related extreme weather will "increasingly affect our trade and economy, including import and export prices." It will also disrupt operations and supply chains, and "lead to large-scale shifts in the availability and prices of many agricultural products across the world."

Has the Federal Reserve specifically examined data in the National Climate Assessment on the economic impact of different climate change scenarios?

A.1. The longer-term predicted impacts of climate change are generally beyond the scope of monetary policy. Although it is important for us to understand how weather is affecting the economy in real time and respond accordingly, monetary policy is not well suited to address longer-term economic disruptions associated with severe weather events. Longer-term predictions such as those in the Fourth National Climate Change Assessment report are an issue for Congress and the Administration to consider.

Q.2. Has the Federal Reserve examined any data, produced by the U.S. Government or by others, on the economic impact of increasingly severe weather and climate events, such as flooding, sea level rise, drought, wildfires, and deadly storms?

A.2. The Federal Reserve takes into account the severity of weather events in assessing current economic conditions as part of our deliberations about the appropriate stance of monetary policy. For example, our staff has relied on data from the Federal Emergency Management Agency and the Department of Energy to gauge the disruptions to oil and gas extraction, petroleum refining, and petrochemical and plastic resin production in the wake of hurricanes that affected the Gulf region. Our staff regularly uses daily meas-

ures of temperatures and snowfall from National Oceanic and Atmospheric Administration (NOAA) weather stations to understand better, how severe weather may be affecting economic activity in specific areas. In addition, our staff recently has begun to use credit and debit card transaction data to gauge how specific types of severe weather events might affect consumer spending in areas affected by those events.

Q.3. Have you considered how different climate change scenarios would impact the Federal Reserve's statutory mandate to stabilize prices, maximize employment, and moderate long-term interest rates?

A.3. As I have noted previously, while Congress has entrusted the matter of addressing climate change to other agencies, the Federal Reserve uses its authorities and tools to prepare financial institutions for vulnerabilities, including severe weather events. Over the short-term, severe weather events have the potential to inflict serious damage to the lives of individuals and families, to devastate local economies and even temporarily affect national economic output and employment. The Federal Reserve, in its conduct of monetary policy and related decision making, is concerned with short- and medium-term developments that may change materially over quarters and a relatively small number of years, rather than the decades associated with longer-term changes.

Q.4. Have you considered how different climate change scenarios would impact the Federal Reserve's statutory mandate to promote the safety and soundness of supervised institutions and the stability of the overall financial system?

A.4. The Federal Reserve Board (Board) has supervisory and regulatory authority over a variety of financial institutions and activities, with the goal of promoting a safe, sound, efficient, and accessible financial system that supports the growth and stability of the U.S. economy. In carrying out the responsibility to promote the safety and soundness of individual financial institutions that we supervise, we assess, among other things, supervised firms' ability to identify, measure, monitor, and control risks, including those related to severe weather events. The Federal Reserve has particular tools and mechanisms for monitoring the financial system.

One of the most critical elements of safety and soundness is a financial institution's ability to absorb substantial unexpected losses and continue to lend to households and businesses. Severe weather events are one potential source of such losses, especially for firms with exposures concentrated in regions that are likely to experience those events. We routinely examine banks' management of concentration risk and recommend or, if necessary, enforce, enhancements, including additional capital, where warranted. For example, our supervisors consider any evidence of a rising incidence of severe weather events, including coastal flooding, in those areas where it is a factor.

To that end, the Board issued supervisory guidance in 1996, to ensure that bank management takes into account all relevant risks in their underwriting and review practices. Our guidance with respect to credit underwriting and asset quality provides supervisors the flexibility necessary to address risks from severe weather

events.[1] In addition, our guidance also specifically addresses lending to sectors where assessments of these risks are critical for due diligence and underwriting.[2]

The Board also ensures that financial institutions that are core clearing and settlement organizations, or play significant roles in critical financial markets maintain sound practices to ensure that they can recover and resume their activities supporting these markets following a severe weather event. In addition, the Board has provided guidance to banking institutions directly affected by an event that results in a Presidential declaration of a major disaster. The supervisory approach described in the guidance provides examiners flexibility to conduct supervisory activities and formulate supervisory responses that take into account the issues confronting institutions impacted by such events.

Q.5. Does the Federal Reserve coordinate with other central banks and bank supervisors around the world to discuss best practices for managing emerging risks? If no, why not? If yes, have climate risks to financial institutions been discussed?

A.5. In its role promoting financial stability, the Federal Reserve cooperates and coordinates with many other central banks and bank supervisors and regulators, both bilaterally and through international standard setting bodies, such as the Basel Committee on Banking Supervision and the Financial Stability Board (FSB). We discuss climate risks frequently with our international central bank colleagues. Our engagement is intended to help identify and address vulnerabilities in the global financial system and to develop stronger regulatory and supervisory policies in order to help ensure a more stable and resilient global financial system.

Additionally, the Federal Reserve Board is an active participant in the proceedings of the FSB, which was established after the financial crisis to strengthen financial systems and increase the stability of international financial markets, and has undertaken relevant work in this area. Of particular interest are efforts to promote enhanced risk management disclosure by financial institutions. In this regard, the FSB established in 2015 the Task Force on Climate-related Financial Disclosures (TCFD), a global, industry-led effort to develop recommendations for consistent climate-related financial disclosures, for use by companies in providing information to investors, lenders, insurers, and others. The TCFD considers the physical, liability, and transition risks associated with climate change and what constitutes effective financial disclosures across industries.

Q.6. Your counterpart in the United Kingdom, Mark Carney, recently announced that the Bank of England is planning to include the impact of climate change in its bank stress tests as early as

[1] See, e.g., 12 CFR Part 208, App. D-1 to Part 208 ("Interagency Guidelines Establishing Standards for Safety and Soundness"); Board of Governors of the Federal Reserve System, "SR 96-36: Guidance on Evaluating Activities Under the Responsibility of U.S. Branches, Agencies, and Nonbank Subsidiaries of Foreign Banking Organizations (FBOs)" (Dec. 19, 1996), *https://www.federalreserve.gov/boarddocs/srletters/1996/sr9636.htm*; Federal Deposit Insurance Corporation, "Uniform Financial Institutions Rating System", 62 FR 752 (Jan. 6, 1997).

[2] See, e.g., Board of Governors of the Federal Reserve System, "Commercial Bank Examination Manual", §§2142.1 ("Agricultural Credit Risk Management"), 2150.1 ("Energy Lending—Reserve-Based Loans") (rev. Oct. 2018), *https://www.federalreserve.gov/publications/files/cbem.pdf*.

next year. The Bank of England is taking this step because it believes that responding to climate-related financial risks "helps ensure the Bank can fulfil its mission to maintain monetary and financial stability."

Are you aware of the Bank of England's plans to incorporate climate risk into bank stress testing?

A.6. The Board is aware of the Bank of England's (BOE) plans to incorporate severe weather risk into bank stress testing. The BOE has said it will conduct this analysis as part of its exploratory scenario either next year or 3 years hence. As we understand, banks cannot pass or fail these exploratory scenarios; instead, the scenarios are designed to increase transparency and to focus on specific issues.

Q.7. Do you think it would be productive for the Federal Reserve to learn more about the Bank of England's efforts to incorporate climate risks into bank stress testing?

If not, please explain why the Federal Reserve does not think it is worth learning more about how climate risks could impact the safety and soundness of financial institutions or the stability of the financial system.

A.7. Federal Reserve staff meet regularly to exchange views with our counterparts at the BOE and other global regulators. We look forward to seeing the structure of and results of the exercise, should the BOE ultimately decide to conduct these tests.

Q.8. In his September 2010 testimony before the Financial Crisis Inquiry Commission, former Federal Reserve Chairman Ben Bernanke said the most prominent trigger of the 2007–08 global financial crisis "was the prospect of significant losses on residential mortgage loans." Chairman Bernanke explained, "When house prices declined, the equity of those homeowners was quickly wiped out; in turn, 'underwater' borrowers who owed more than their houses were worth were much more likely to default on their mortgage payments."

The National Climate Assessment found it is likely that "between $66 billion and $106 billion worth of real estate will be below sea level by 2050; and $238 billion to $507 billion, by 2100." It is reasonable to expect that frequent and intense coastal property damage under such scenarios will drastically reduce property values.

We do not need to wait to 2050 to see the impact of climate change on property values. Coastal flooding from sea level rise is already eroding property values. A recent analysis by First Street Foundation estimated that property value losses from coastal flooding in 17 States totaled almost $16 billion from 2005 to 2017. [3]

Has the Federal Reserve assessed the risks that extreme weather events pose to the U.S. housing market?

A.8. The Board conducts an active research program on a broad array of topics in economics and finance. As part of this broader research mission, research staff write working papers and publish ar-

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[3] First Street Foundation, "Rising Seas Erode $15.8 billion in Home Value From Maine to Mississippi", February 27, 2019, available at: *https://assets.floodiq.com/2019/02/9ddfda5c3f7295fd97d60332bb14c042-firststreet-floodiq-mid-atlantc-release.pdf.*

ticles in peer-reviewed journals. This research includes studies on a number of topics that pertain to modeling the economic effects of severe weather events, modeling uncertainty and risks from such events in financial markets, and estimating the effects of these events on consumer and business activity, as well as on local and aggregate real estate markets. In recent years, Board economists have authored more than 30 papers on the impact of climate change on the financial sector and undertaken research on the economics of weather, natural disasters, climate policy, and related risks.

Q.9. How does the Federal Reserve assess the risk of natural disasters that are increasing in frequency and severity on the loan portfolios of supervised financial institutions and the financial system as a whole?

A.9. The Board's framework for monitoring the stability of the U.S. financial system distinguishes between shocks to and vulnerabilities of the financial system.[4] Shocks are typically surprises and are inherently difficult to predict. Vulnerabilities tend to build up over time and are the aspects of the financial system that are most expected to cause widespread problems in times of stress. Thus, in our framework, severe weather events are treated as shocks to the system. For example, the possibility of large losses to property and casualty insurers from historically atypical timing, intensity, or frequency of hurricane damages represents one such potential shock. If that shock led to significant strains on capital positions of affected firms, those losses could expose or exacerbate other vulnerabilities, such as funding risks, through the firms' connections to the broader financial system.

While the Board's framework provides a systematic way to assess financial stability, some potential risks do not fit neatly into that framework. Some potential risks are difficult to quantify, especially if they materialize over such a long horizon that methods beyond near-term analysis and monitoring are appropriate. Accordingly, we rely on ongoing research by academics, our staff, and other experts to improve our understanding and measurement of such longer-run or difficult-to-quantify risks.

RESPONSES TO WRITTEN QUESTIONS OF SENATOR VAN HOLLEN FROM JEROME H. POWELL

Q.1. One of the fundamental economic challenges of our times is to make sure that America families actually benefit from economic growth. There is a growing gap between skyrocketing corporate profits and CEO salaries on one side, and stagnant pay for typical workers on the other side. At the same time, President Trump is implementing policies that make the situation even worse, such as huge tax cuts for millionaires and big corporations, while taking credit for economic trends that predate his Administration.

During the hearing, I asked you about data showing that for the typical American worker, weekly earnings are growing slower under President Trump than they were during President Obama's

[4] See Board of Governors of the Federal Reserve System, "Financial Stability Report" (May 2019), *https://www.federalreserve.gov/publications/files/financial-stability-report-201905.pdf.*

second term, after adjusting for inflation. According to the Bureau of Labor Statistics, the median usual weekly earnings for full-time wage and salary workers was $333 in the 4th quarter of 2012, just before President Obama's second term began. At the end of President Obama's second-term, in the 4th quarter of 2016, this figure was $349. Two years into President Trump's term, in the 4th quarter of 2018, it is $355. All of these figures are 1982–1984 constant dollars.

Is it correct that median usual weekly earnings for workers were increasing at an average rate of 1.18 percent per year during President Obama's second term, compared to 0.86 percent since President Trump took office?

A.1. It is correct that, according to both of the measures you report, inflation-adjusted labor compensation, in the aggregate, increased a little more rapidly from 2012:Q4 to 2016:Q4 than from 2016:Q4 to 2018:Q4.

I would emphasize that the result you describe—faster real wage gains during the 2012–2016 period—depends importantly on the fact that oil prices fell between 2014 and 2016 and partially rebounded after that. That 2014–2016 drop in oil prices fed through to prices of gasoline and other energy products, and so boosted households' purchasing power at that time. Because energy prices can be so variable, it is useful to look at real wage gains over somewhat longer periods, to help avoid having transitory energy price movements dominate the calculations.

Q.2. During the hearing, you identified the Employment Cost Index (ECI) as your single favorite source for compensation data that includes both wages and benefits. The Employment Cost Index for total compensation of all civilian workers was 117.8 in the 4th quarter of 2012, 128.0 in the 4th quarter of 2016, and 135.2 in the 4th quarter of 2018, when indexed to a base of 100 for December of 2005.

At the same time, inflation measured by the Consumer Price Index for All Urban Consumers (CPI–U), was 231.369 in the 4th quarter of 2012, 242.164 in the 4th quarter of 2016, and 252.759 in the 4th quarter of 2018, when indexed to a base of 100 for 1982–1984 dollars.

Is it correct that ECI was increasing at an average annual rate of 2.10 percent during President Obama's second term, with CPI–U increasing at an average annual rate of 1.15 percent during this period, meaning that 0.94 percent of the average annual increase in ECI could be attributed to real compensation growth?

A.2. See response to Question 1.

Q.3. Is it also correct that ECI has increased at an average annual rate of 2.77 percent since President Trump took office, with CPI–U increasing at an average annual rate of 2.16 percent during this period, meaning that 0.60 percent of the increase in ECI can be attributed to real compensation growth?

A.3. See response to Question 1.

RESPONSES TO WRITTEN QUESTIONS OF SENATOR CORTEZ MASTO FROM JEROME H. POWELL

Q.1. *Inequality*—A few weeks ago, you told a group of teachers you were concerned that income growth for middle- and working-class Americans "has really decreased," while "growth at the top has been very strong. We want prosperity to be widely shared. We need policies to make that happen."

If Congress were able to pass policies that would increase the paychecks and bank accounts of working families—raise the minimum wage, invest in infrastructure, subsidize housing and child care for low-wage workers, support for unions, and make health care and college more affordable—what would the impact on the economy be? Would you see higher economic growth? Greater workforce participation? Changes to unemployment? Inflation increases?

Are there Nations that have better fiscal policies that lead to higher wages you would recommend we consider? Which countries and which policies lead to higher wages do you think?

A.1. Specific fiscal policy or labor market policy proposals that are most appropriate for the United States are best decided by Congress. Generally speaking, however, policies aimed at increasing workforce participation and raising productivity have the best chance at boosting economic growth and raising living standards for Americans across the economic spectrum.

We at the Federal Reserve can play a role by conducting monetary policy so as to fulfill our dual mandate of maximum employment and stable prices. In this way, we can ensure that the conditions are in place to keep labor demand high and stable for as many workers as possible, which in turn allows workers to find jobs that best match their abilities and that provide them with the greatest opportunity to increase their skills, productivity, and earnings more easily.

Q.2. *Economic Mobility*—Earlier this month in your speech to teachers, you pointed out that the United States used to be a global leader in mobility—the ability of people born into poverty to move up to the middle class or even the wealthiest echelons of society. You said that is no longer true. You said "The U.S. lags now in mobility. And that's not our self-image as a country, nor is it where we want to be."

Are there Nations that have better fiscal policies that lead to more economic mobility you would recommend we consider? Which countries and which policies lead to greater economic mobility?

A.2. Research by a number of economists suggests that intergenerational economic mobility in the United States lags that of many other advanced economies. The reasons behind this are complex and not well understood. The Federal Reserve can do its part by working to achieve its dual mandate of maximum employment and price stability, as full employment improves the resources available to lower income households.

Q.3. During the hearing, you mentioned a carpentry program for women that paid more in benefits than they would receive from the job for which they were training. Please provide details on this program: where it was located, for which jobs and which types of pro-

grams through which the recipients received benefits that provided and income of more than "$9 or $10 an hour."

A.3. Last year, I visited West Virginia Women Work, a nonprofit in Morgantown, West Virginia, founded in 2000 to help women explore, train, and secure employment in nontraditional occupations, especially the skilled trades. The organization developed the Step Up for Women Construction Pre-Apprenticeship, a program designed to prepare women for entry-level construction jobs and apprenticeships. Additional information on this program is available on the West Virginia Women Work's website at: *http://wvwomenwork.org/stepup*.

Q.4. *Bank Profits*—Banks and other financial firms made more than $500 billion in profits in the first three quarters of 2018. Banks made a record $237 billion in the fourth quarter of 2018. These are record profits.

It seems that finance (banks, insurance, and real estate) earned more than 26 percent of all domestic corporate profits during those first three quarters of last year. Only about 6 percent of the private sector workforce is employed in finance but their share of corporate profits is about $1 in every $4 dollars.

Are those figures correct? How much profits did the finance sector earn in 2018? What did finance earn compared to other private sectors such as manufacturing and real estate? What percent of corporate profits did finance earn? What share of people are employed in finance compared to other sectors?

What is the impact on the economy when financial firms earn such an outsized percentage of corporate profits?

The Federal Reserve tracks a number of indicators of our Nation's economic prosperity. If you were to prioritize the top five indicators of economic prosperity, would bank profitability be in the top five?

A.4. Data from the Bureau of Economic Analysis (BEA) indicates that, in the first three quarters of 2018, the corporate financial sector (including finance, insurance, bank, and other holding companies, but excluding Federal Reserve Banks) reported profits of $387 billion at an annual rate of 1.9 percent of U.S. gross domestic product (GDP), on average. [1] Data from the Federal Deposit Insurance Corporation (FDIC) indicates that FDIC-insured commercial banks and savings institutions earned profits of $237 billion in all of 2018.

During the first three quarters of 2018, the corporate financial sector accounted on average for 24.8 percent of profits generated by the domestic corporate sector, according to data from the BEA. During the postrecession period, there has been no discernible increasing or decreasing trend in the fraction of corporate domestic profits generated by the financial sector or in other domestic sectors. For example, the manufacturing sector has been responsible, on average, for 22 percent of the domestic corporate sector's profits. The manufacturing sector's share was 14.9 percent in the first quarter after the last recession (2009 Q3). Its share then reached

[1] On March 28, 2019, the BEA reported the profits for the fourth quarter of $372 billion at an annual rate of 1.8 percent of GDP.

a peak value of 28.1 percent in the last quarter of 2013, and in the third quarter of 2018, its share was 18.4 percent.

Data from the Bureau of Labor Statistics (BLS) indicate that the financial corporate sector's share of total private employment has declined slightly since the financial crisis, from 5.4 percent in 2009 to 4.9 percent in 2018. Over the same period, the share of manufacturing sector employment also has declined a bit, from 10.8 percent to 10 percent. By contrast, the professional, scientific, and technical services sector's share of total private employment has increased from 15.3 percent to 16.6 percent.

Total profits relative to the number of total employees in the corporate financial sector was $62,250 per employee in the third quarter of 2018. This relatively high profitability per worker is typical of sectors that rely on intangible assets to create value. Intangible assets include, but are not limited to, reputational and institutional capital, brand value, and patents. As an example, in the third quarter of 2018, the profit-to-employees ratio for information technology and chemicals (dominated by pharmaceuticals)—two intangible-intensive sectors—were $57,619 per employee and $56,915 per employee, respectively.

It is difficult to assess the range of economic consequences derived from the degree of profitability of the financial sector, particularly because the size and profitability of the corporate sector are themselves the result of other economic forces. For example, the corporate financial sector has increased in importance in the U.S. economy during the postwar period. Academic research suggests that this rise is itself a consequence of the increase in the volume of intermediation to support economic activity, especially business credit, equity, and household credit. [2]

In general, profits in the banking sector are important to the extent that they contribute to building and maintaining the capital adequacy of the financial system. We view the resilience of bank capital as a fundamental element of financial stability and the health of the credit markets that support the U.S. economy. More generally, in the Federal Open Market Committee's (FOMC) conduct of monetary policy, to best achieve its maximum employment objective and its symmetric 2-percent inflation objective, the Committee takes into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations, and financial and international developments. Bank profitability is only one of numerous factors that influence the FOMC's assessment of overall economic conditions.

Q.5. *Buybacks*—We need investments that help families prosper. Instead, the majority of the Trump and GOP tax bill has gone to share buybacks—$171 billion worth have been announced so far in 2018—more than double 2017's total. This keeps stock markets high. *Financial Times*' columnist, Rana Foroohar, refers to the buybacks as a "financial shell game of issuing their own [corporate] debt at very cheap rates and handing the money back to their investors as buybacks and dividends, while also buying up the high-

[2] See Thomas Philippon, "Has the U.S. Finance Industry Become Less Efficient?" *American Economic Review*, 105(4), 2015.

er-yielding bonds of riskier companies at a favorable spread and holding those assets offshore."

What happens when the buybacks stop?

A.5. While it is too early to conclude the overall effects of the 2017 tax legislation on firm investment and share repurchase decisions, it is likely that companies allocated at least some portion of earnings repatriated from abroad to share buybacks following changes in the tax treatment of foreign earnings. In dollar volume, share buybacks in 2018 were up substantially from 2017 and are at their highest annual level on record since 1983. However, when measured relative to operating earnings, share buybacks appear somewhat closer to their historical range. For the first three quarters of 2018, buybacks for nonfinancial companies averaged about 22 percent of companies' operating income, and we estimate, based on partial data available to date, that buybacks were 26 percent of operating income in the fourth quarter. By comparison, share buybacks also averaged 22 percent of operating income from 2014 to 2016, but buybacks fell to 16 percent of operating income in 2017.

Companies generally repurchase shares when they deem these repurchases to be the highest value use of those particular funds for the company. U.S. companies have been quite profitable in recent decades and those profits have allowed companies to accumulate cash, pay dividends, and repurchase shares, in addition to investing and hiring.

A reduction in share repurchases would not, however, necessarily translate into an increase in investment. For example, in lieu of share buybacks, a given company may choose to distribute funds to shareholders by other means (e.g., regular or special dividends) or retain a larger share of the funds by accumulating cash or other liquid assets.

Q.6. *Discrimination in Lending*—These questions follow up on our discussion during the hearing about how Fed examiners evaluate financial institution for fair lending compliance.

Please expand on the type of indicators or red flags examiners look for in determining compliance with the Equal Credit Opportunity Act or the Fair Lending Act? It's not just credit scores and loan-to-value ratios. What types of lending products? Would examiners consider incentive pay tied to higher-priced loans? Would the existence of bonuses for bank staff that provided a loan with higher fees and interest rates be a red flag? Please be specific and comprehensive in your response.

A.6. The Federal Reserve's fair lending supervisory program reflects our commitment to promoting financial inclusion and ensuring that the financial institutions under our supervision fully comply with applicable Federal consumer protection laws and regulations. For all State member banks, we enforce the Fair Housing Act which provides us authority to review all Federal Reserve regulated institutions for potential discrimination with respect to mortgages, including potential redlining, pricing, and underwriting discrimination. For State member banks of $10 billion dollars or less in assets, we also enforce the Equal Credit Opportunity Act (ECOA), which provides us authority to review these State member

banks for potential discrimination concerning any credit product. Together, these laws prohibit discrimination on the basis of race, color, national origin, sex, religion, marital status, familial status, age, handicap/disability, receipt of public assistance, and the good faith exercise of rights under the Consumer Credit Protection Act (collectively, the "prohibited basis").

We evaluate fair lending risk at every consumer compliance exam based on the risk factors set forth in the Federal Financial Institutions Examination Council's interagency fair lending examination procedures.[3] These procedures include risk factors related to potential discrimination in pricing, underwriting, redlining, and steering. Our examiners commonly review mortgage products and consumer products reportable under the Home Mortgage Disclosure Act for fair lending risk, although a State member bank's lending record will determine the loan products that are reviewed in a particular exam.

The presence of any financial incentives, including incentive pay tied to higher-price loans or bonuses for staff originating such loans, is a risk factor that the Federal Reserve considers, consistent with the interagency fair lending procedures. Since April 2011, Regulation Z's mortgage loan originator compensation rule has prohibited banks from providing financial incentives based on the terms or conditions of a loan, including the price. Although this rule has decreased the risk of financial incentives influencing mortgage pricing, it has not eliminated such risk. In our outreach efforts to State member banks and the public, including in our publication, *Consumer Compliance Supervision Bulletin*,[4] we have been clear in explaining how fair lending risk may be increased by financial incentives. During our consumer compliance exams, we continue to evaluate any financial incentives in place at a State member bank for compliance with both Regulation Z and the fair lending laws by reviewing the bank's compensation structure along with any other existing fair lending risk factors.

Q.7. *Climate Change*—Chapter 3 of the *Monetary Report* includes a section on Uncertainty and Risks. It includes uncertainty about the funds rate and the impact of trade and tariffs but nothing about climate change. A recent paper by V.V. Chari of the Federal Reserve of Minneapolis[5] urged social scientists to take the findings of climate scientists about the effects of global warming on the atmosphere, climate, land, and oceans and understand and communicate the consequences of these physical changes on the economic, social, and political well-being of humanity.

Central Banks and economists have a role to play to guide policy recommendations to respond to climate change. Last year, William Nordhaus and Paul Romer received the Nobel Memorial Prize in Economic Sciences for pioneering the analysis of the economic effects of climate change.

[3] See *https://www.ffiec.gov/pdf/fairlend.pdf.*

[4] See *www.federalreserve.gov/publications/2018-july-consumer-compliance-supervision-bulletin.htm.*

[5] Chari, V.V., "The Role of Uncertainty and Risk in Climate Change Economics". The Federal Reserve Bank of Minneapolis: Research Division. December 2018. Available at: *https://www.minneapolisfed.org/research/sr/sr576.pdf.*

Do you agree with Janet Yellen who, along with 3,300 economists, signed a statement supporting a carbon tax to prevent devastating droughts, fires, and hurricanes? [6]

A.7. I think that it is appropriate for the details of fiscal policy decisions to be left to Congress and the Administration.

Q.8. What role will the Federal Reserve play in communicating the effects of alternative policies aimed at addressing climate change? Will the Fed include economic models to respond?

A.8. Addressing climate change is a responsibility that Congress has entrusted to other agencies. That said, the Federal Reserve uses its authorities and tools to prepare financial institutions for severe weather events. Over the short term, these events have the potential to inflict serious damage on the lives of individuals and families, devastate local economies (including financial institutions), and even temporarily affect national economic output and employment. As such, these events may affect economic conditions, which we take into account in our assessment of the outlook for the economy.

RESPONSES TO WRITTEN QUESTIONS OF SENATOR SMITH FROM JEROME H. POWELL

Q.1. In November, the Minneapolis Fed reported that the number of farms filing for Chapter 12 bankruptcy has doubled in Ninth District States over the past 4 years. We have watched this problem evolve for years. The overproduction of certain commodities like grains and dairy has led to low prices which, combined with recent trade disputes, has made it nearly impossible for family farms to turn a profit. In the years following the Great Recession, low interest rates made it easier for farmers to take on debt, upgrade equipment and facilities, and buy new land. Steadily rising interest rates in the last 3 years have made it more difficult for farmers with already small margins to pay off their debts. The Beige Book put out by the Minneapolis Fed in the fourth quarter of 2018 says that approximately three in five lenders reported seeing a decrease in farm incomes and in capital spending. It is clear that downturns in the farm economy can have big impacts on consumer spending and regional economic prosperity.

How do you expect the rise in farm bankruptcies to impact the state of our economy, both regionally and nationally?

A.1. The U.S. farm economy has remained in a prolonged downturn for the past several years, alongside persistently low agricultural commodity prices. Nationally, farm income is expected to rise in 2019 due, in part, to Government support programs announced in recent months. Some agricultural prices have also increased significantly due to widespread weather disruptions that affected planting in May and June. Looking ahead, however, agricultural commodity prices and farm incomes are generally expected to remain low beyond 2019.

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[6] Jackson, Hugh, "Did AOC Nudge Economists (Including 12 From Nevada) To Back a Carbon Tax?" *Nevada Current*. February 20, 2019. Available at: *https://www.nevadacurrent.com/2019/02/20/did-aoc-nudge-economists-including-12-from-nevada-to-back-a-carbon-tax.*

Amid reduced incomes, financial stress in the agricultural sector has continued to build at a gradual pace. At commercial banks, delinquencies on farm loans have increased slightly in recent years, but remain less than in 2010, and well below those of the 1980s, a period often referred to as the U.S. farm crisis, which included a number of bank failures and other significant challenges in rural communities.

Similar to the uptick in delinquencies on farm loans, farm bankruptcies also have edged higher since 2014. Nationally, Chapter 12 bankruptcy filings have increased from 360 in 2014 to 498 in 2018. The increase in bankruptcies appears to be most pronounced in States with a high concentration of dairies, as well as States focused on corn and soybean production. In Minnesota, for example, there were an average of thirteen Chapter 12 filings per year from 2014 to 2017, increasing to twenty-six in 2018.

Despite the ongoing challenges of low farm incomes and an uptick in farm bankruptcies, measures of solvency have generally remained strong, and the increase in bankruptcies appears to be having a limited effect on broader economic conditions. The debt-to-asset ratio for the U.S. farm sector is expected to rise only slightly in 2019 to 13.9 percent, as farm real estate values remain relatively stable. Although the severe planting delays this spring may affect financial conditions for some producers, Government payments will provide some support and, thus far, there appears to be limited impacts on broader regional economies. Moreover, unemployment has remained historically low, even in rural areas focused on agriculture, where job growth has been weaker in recent years. As these conditions evolve, the Board of Governors of the Federal Reserve System (Board) will continue to monitor developments in agriculture and the potential for implications in other segments of the national or regional economy.

Q.2. Can you speak to how future changes in the Federal funds rate may impact the agricultural economy?

A.2. While it cannot be said with certainty what actions will be taken in response to the future state of the economy, the Federal Reserve System strives to incorporate perspectives from all regions of the country and from a broad range of industries, including agriculture, into its regular monetary policy deliberations and its assessments of the U.S. economy. We receive input on agricultural conditions from business contacts across the country through our boards of directors at the Federal Reserve Banks, various advisory councils, and surveys, in addition to reports from staff who track developments in U.S. agriculture.

Although interest rates on farm loans are typically not indexed or explicitly tied to the Federal funds rate, the rates on these loans have increased in recent years. The increases have been relatively modest, and some financial stress has been mitigated by the relative strength of farm real estate values. Since the end of 2015, the average interest rate on farm operating loans at commercial banks has increased about 1.9 percent, but still remains less than prevailing interest rates on these farm loans as recently as 2012.

Interest expenses on farm debt also account for a relatively small share of overall expenses in the U.S. farm sector. Moreover, despite

the modest increase in interest rates, farm real estate values have remained relatively strong and have supported farm borrower balance sheets.

Q.3. Wage growth has been stagnant for many Americans over the last decade or longer. One of the causes of this concerning slowdown has been a decline in worker productivity growth—only about 1 percent annually over the last decade. This figure is well below historic norms and is not, in my estimation, sustainable if we want strong, long-term wage growth.

Why is there slower growth in productivity?

A.3. The reasons for the slowing in productivity growth over the last decade or so are not clear. Some explanations assign a large role to the Great Recession and its aftermath, which dramatically reduced the level of investment in equipment, software, and research and development, and which also likely reduced credit available for business startups. Other research suggests, instead, that the slowing occurred prior to the Great Recession and may be due to a relative scarcity of new, general-purpose, high-impact technologies. If the slowdown has been due largely to factors associated with the Great Recession, then as the expansion continues, productivity growth should pick up. Last year, productivity did rise at a relatively robust rate of nearly 2 percent, but we would need to see this higher rate of growth persist before concluding that the period of low growth was behind us.

Q.4. To what extent, if any, is this slowdown affected—either now or potentially in the future—by high levels of stock buybacks crowding out investment in workforce, technology and capital improvements?

A.4. Companies generally repurchase shares when they deem these repurchases to be the highest value use of those particular funds for the company. U.S. companies have been quite profitable in recent decades, and those profits have allowed companies to accumulate cash, pay dividends, and repurchase shares, in addition to investing and hiring. Businesses without profitable investment opportunities are more likely to return income to shareholders than invest. Shareholders are then free to invest the funds in businesses that have profitable investment opportunities.

Q.5. Around the world, countries have begun shifting to nearly instantaneous, 24/7 payment systems. But while consumers can send money in pseudo–real time using apps like Venmo, those transactions are only instantaneous for the consumer—they're usually not fully settled for the bank or retailer until days later. Two years ago, the Fed's Faster Payments Task Force embraced a goal of having a true, ubiquitous, 24/7 real-time payment system in the United States by 2020—which is necessary to keep pace with foreign countries that are developing or already implementing similar systems. Last year, the Fed sought comments on how to implement a faster payments system, and asked what role, if any, the Fed should play in developing it.

Do you think the United States is on track to meet the Task Force's goal of having a ubiquitous real-time payment system in place by 2020?

A.5. The Faster Payments Task Force (FPTF), an industry work group established by the Federal Reserve in 2015, called on all stakeholders in its 2017 final report to facilitate a vision of "a payment system in the United States that is faster, ubiquitous, broadly inclusive, safe, highly secure, and efficient by 2020." The Federal Reserve continues to applaud the FPTF's aspirational goal and the industry's progress to date. Also as part of that final report, the FPTF requested that "the Federal Reserve develop a 24x7x365 settlement service" and to assess other operational roles "to support ubiquity, competition, and equitable access to faster payments." The Federal Reserve agreed to consider both requests of the FPTF, and the Board sought, in an October 2018 *Federal Register* Notice, public input on potential actions the Federal Reserve might take in regard to supporting faster payments in the United States.

While those requests focused on infrastructure needs in the United States to support faster payments, the FPTF also identified a need for ongoing industry collaboration to build the foundation for a highly functioning faster payments ecosystem and asked the Federal Reserve to facilitate an industry group to establish a governance framework. Late last year, the industry announced the formation of the U.S. Faster Payments Council to develop collaborative approaches to accelerate U.S. adoption of faster payments.

All of these efforts by the Federal Reserve and industry are intended to create a strong foundation for collective efforts to promote the safety and efficiency of faster payments in the United States and to support the modernization of the financial services sector's provision of payment services.

Q.6. With the 2020 deadline quickly approaching, when do you expect the Fed to take next steps on this issue?

A.6. The Board has received over 400 comment letters from a broad range of market participants and interest groups, including consumer groups, in response to the October 2018 *Federal Register* Notice. The Board is carefully considering all of the comments received before determining whether any action is appropriate or the timing of such potential action. Any resulting action the Board decides to take would be pursued in alignment with existing, longstanding Federal Reserve principles and criteria for the provision of payment services.

Q.7. Are you monitoring actions of foreign countries to develop real-time payment systems, and if so, how are those developments informing your decision making?

A.7. Globally, the Federal Reserve is not unique in considering settlement infrastructure to support faster payments—several jurisdictions around the world have undertaken similar processes and implemented settlement infrastructures to support real-time payments in their jurisdictions. The Federal Reserve has been actively monitoring these efforts and considering the models for faster payment settlement in other countries, including real-time gross settlement (RTGS) and deferred net settlement (DNS), as part of its analysis.

Q.8. You remarked recently that income inequality is our country's biggest economic challenge in the next decade—and said that: "We

want prosperity to be widely shared," and, "We need policies to make that happen." I agree with this assessment. Many have pointed to the recent strength in both the U.S. stock market and overall GDP growth as evidence that Americans are doing better. But I'm not sure these are the right indicators to be looking at to assess how the average American family is faring these days. The recent stock market highs and tax cut legislation do not benefit the average American household to nearly the same extent as it benefits the very wealthiest households. In 2016, the top 10 percent of American households owned 84 percent of all stocks, and the top 20 percent received about 70 percent the benefits of the 2017 tax bill. Banks have done well in this economy too—with last years' profits up 44 percent from 2017, including $29 billion in profits attributable to the Trump tax cuts alone. But instead of steering these profits and tax windfalls toward new investment in jobs and technology, banks and corporations have instead rewarded wealthy investors with record stock buybacks—over $1 trillion worth in 2018.

Would you say that the 2017 tax bill, on balance, has increased or decreased income and wealth inequality in the U.S., and would you consider it an example of a policy that creates the "widely shared prosperity" that you called for recently?

A.8. For a number of reasons, estimates of the distributional effects of the Tax Cuts and Jobs Act of 2017 are subject to considerable uncertainty. For example, the changes in the personal income tax laws were very complicated and have affected different families in various ways, in part reflecting the new limits on deductibility of State and local income taxes and the end of personal exemptions. Similarly, the distributional effects of corporate income taxes are very complex. A corporate income tax cut may benefit working people if the tax cut induces more investment that results in higher productivity and real wages. But estimating the magnitude of these effects from tax cuts is highly uncertain. More generally, policies to reduce economic inequality, including tax policies, are appropriate for Congress to decide.

Q.9. How committed is the Fed to studying the macroeconomic effects of our record-high levels of inequality, and how are the findings being incorporating into the Fed's policymaking and its assessment of the economic outlook?

A.9. The Federal Reserve tries to understand the root causes and economy-wide implications of the uneven distribution of income and wealth. For example, we support two household surveys, the annual Survey of Household Economics and Decision Making (SHED) and the triennial Survey of Consumer Finances (SCF), to study household finances. In addition, we recently released the Distributional Financial Accounts, which we also hope will add to our understanding of changes in the income and wealth distributions. And, we have included analyses of various forms of economic disparities in several recent issues of the Federal Reserve's *Monetary Policy Report*. With regard to monetary policy, the Federal Reserve is limited in the extent to which its tools can specifically address inequality. However, our dual mandate includes maximum employment, which has a direct impact on the most vulnerable families

who depend on their labor income. More generally, and regardless of its effects on growth, inequality is an important and complicated issue that is appropriately addressed by Congress.

Q.10. Recent Bureau of Labor Statistics data has shown unemployment rates to be approaching record lows—hovering around 4 percent. But the headline picture obscures key compositional effects. When these numbers are broken down by race, we see significant disparities, with notably higher unemployment rates for African Americans and other traditionally marginalized communities. Compared to white unemployment, which remains below 4 percent, black and hispanic workers face 6.8 percent and 4.9 percent unemployment rates, respectively. These disparities reflect structural barriers but also demonstrate that there is some slack in the labor market with the potential to reintegrate traditionally marginalized individuals into the labor force. The Fed has suggested previously that as a whole, the economy is at or near full employment.

Are communities of color at full employment as well?

A.10. The unemployment rate has fallen sharply in recent years for all major racial and ethnic groups. In particular, the unemployment rate of African Americans recently reached its lowest level on record (data began being collected in the early 1970s). Despite these encouraging developments, as you note, the unemployment rate of black workers remains well above that of whites. This troubling differential in unemployment rates is not new; it has persisted for several decades, regardless of the state of the business cycle. Indeed, one relevant study [1] prepared by Federal Reserve staff made two important findings. First, the black–white unemployment rate gap is highly cyclical, widening in recessions and narrowing in expansions. That said, beyond the cyclical variation, there has been very little secular improvement in this gap in the past four decades. Second, the black–white unemployment rate gap—as well as its cyclicality—is primarily driven by large and persistent differences in the rate of job loss (rather than in the rate of job finding) between black and white workers. In particular, in economic downturns, black workers lose their jobs at a much higher rate than white workers, perpetuating large gaps in unemployment rates.

One important implication is that the Federal Reserve can be most helpful by focusing on our dual mandate of fostering full employment and price stability. Setting monetary policy that is not consistent with the dual mandate could lead to high price inflation or financial imbalances, and thereby set the stage for an economic downturn, which would appear to be especially harmful to African American workers. Meanwhile, progress to further narrow the differentials in unemployment rates by race and ethnicity is more likely to be found in structural policies aimed at addressing longer-run disparities. This is an important issue that is appropriately addressed by Congress.

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[1] Cajner, Tomaz, Tyler Radler, David Ratner, and Ivan Vidangos (2017), "Racial Gaps in Labor Market Outcomes in the Last Four Decades and Over the Business Cycle", *Finance and Economics Discussion Series 2017-071*. Washington: Board of Governors of the Federal Reserve System, *https://www.federalreserve.gov/econres/feds/files/2017071pap.pdf.*

Q.11. How does the Federal Reserve and the FOMC consider disparities in the headline unemployment data when it comes to fulfilling its maximum employment mandate?

A.11. In setting monetary policy to be consistent with the dual mandate of maximum employment and price stability for the economy as a whole, the Federal Open Market Committee (FOMC) considers a range of experiences and economic outcomes across the country. For example, at every FOMC meeting, Reserve Bank presidents describe economic conditions in their Districts, and the Committee reviews a wide range of information on the strength of the labor market, including data on the labor market conditions experienced by different demographic groups. Similarly, in advance of every FOMC meeting, Federal Reserve staff provide to the Committee their review of labor market developments, including analyses of labor market conditions across groups defined by age, gender, race, and ethnicity. Finally, Federal Reserve staff regularly conduct research aimed at better understanding differences in economic outcomes across demographic groups; the study cited previously is one example.

Q.12. One of most important powers given to FSOC in Dodd–Frank was the ability to subject nonbank financial institutions to the same enhanced regulatory scrutiny as the largest banks. This power is crucial for keeping our financial system safe. Large nonbank firms like AIG played a major role in crashing our economy in 2008 through their risky bets and excessive leverage, and they were able to do so largely beyond the reach of the existing regulatory regime. Despite the importance of this regulatory power, as of October 2018, all four nonbank SIFIs have been dedesignated—leaving no nonbank institution, no matter how large or how risky, under higher scrutiny from regulators to protect our Nation's financial stability. Most recently, both MetLife and Prudential have successfully fought to shed their enhanced SIFI oversight—but not by significantly deleveraging and radically changing their business models like GE Capital and AIG did. The Treasury Department under Secretary Mnuchin proposed in a 2017 report that FSOC's systemic risk oversight of nonbanks should shift to an activities-based approach rather than an entity-based approach, which would make it more difficult and time-consuming to place SIFI status on a nonbank entity. Former Chair Yellen, however, argued in a Brookings interview last month that individual nonbank entities do pose systemic risks, and when they do so it is important to supervise and regulate them.

Do you today believe that no nonbank financial institution currently warrants SIFI-level enhanced supervision, and do you agree with the 2017 Treasury report proposing to make it more difficult for FSOC to impose SIFI designations on nonbank entities?

A.12. Maintaining stability of the U.S. financial system remains a top priority for the Federal Reserve. The Federal Reserve actively monitors potential risks to U.S. financial stability in a variety of ways, including reviewing the resilience of key financial intermediaries. As noted in the Federal Reserve's *Financial Stability Report*, the largest U.S. banks remain strongly capitalized; the leverage of broker-dealers is substantially below precrisis levels; in-

surance companies appear to be in relatively strong financial positions; and hedge fund leverage appears to have declined. [2]

In terms of nonbank designations, the Financial Stability Oversight Council's (FSOC's) October 2018 decision to rescind the designation of Prudential Financial, Inc. (Prudential) was based upon its reevaluation of the risks posed by the firm. This reevaluation determined that the original designation likely overstated the negative consequences of potential asset liquidation should Prudential experience material financial distress. For MetLife, Inc., in March 2016, the U.S. District Court overturned FSOC's determination that MetLife poses a threat to U.S. financial stability. It should be noted that, in the summer of 2017, MetLife shrank substantially by spinning off a portion of its U.S. retail life insurance and annuity segment into Brighthouse Financial.

The FSOC published proposed amendments to its guidance on nonbank financial company determinations for public comment on March 6, 2019. The proposed guidance, which was drafted following the 2017 Treasury report, promotes an activities-based approach for identifying and mitigating risks to financial stability. However, FSOC also maintains the important tool of designating individual entities as systemically important in cases where the activities-based approach cannot address the potential risks or threats. The proposed guidance represents a disciplined framework that can more effectively identify and address underlying sources of risk to financial stability.

Still, individual nonbank entities can pose systemic risks, and therefore it is critical that FSOC maintains the option to designate these firms when appropriate. The activities-based approach described in the proposed guidance is intended to enhance the FSOC's process for evaluating individual nonbank financial companies for designation by increasing transparency, analytical rigor, and public engagement. It is viewed as a valuable complement to entity designations, rather than a substitute for the current entity-based approach of managing systemic risk.

Q.13. In the same Brookings interview, former Chair Yellen stated that the Trump administration's support for the SIFI designation standards from the MetLife court would, "all but eliminate the chances of future designations"—do you agree with this assessment, and is it a concern for you?

A.13. As I noted in my response above, we continue to believe that individual nonbank entities can pose systemic risks. The proposed activities-based is viewed as a valuable complement to entity designations, rather than as a replacement for the current entity-based approach of managing systemic risk.

Q.14. In your testimony, you said "there are some things in the Federal tax code where people lose their benefits with their first dollar of earnings," and you noted this effect could cause individuals to avoid entering the labor market.

Specifically, which tax credits were you referring to?

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[2] See "Federal Reserve Board Financial Stability Report" (April 2019), *https://www.federalreserve.gov/publications/files/financial-stability-report-201905.pdf.*

A.14. In general, safety-net programs are typically designed so that benefits fall as incomes rise. As a consequence, for low- and moderate-income households, any improvement to household finances from increased work is partially offset by the loss of benefits that occurs as household income rises. Researchers have found that programs with a rapid phase-out of benefits and the interaction among various safety-net programs sometimes leads to relatively high effective marginal tax rates. This, in turn, may discourage work, particularly for potential second earners. Researchers have found that programs where the phase-out range is relatively long reduce potential disincentive effects.

It is up to Congress to determine how best to ensure safety-net programs provide the lowest work disincentives as possible while still achieving the social goals of the programs. For our part, the Federal Reserve is focused on pursuing our congressionally mandated goals of maximum employment and price stability, and making the best decisions we can in the interest of the public.

RESPONSES TO WRITTEN QUESTIONS OF SENATOR SINEMA FROM JEROME H. POWELL

Q.1. Arizonans continue to be concerned about the Administration's trade policy. This unnecessary trade war hurts Arizona farmers and businesses, stifling job creation. On February 17th, the Commerce Department submitted its national security report to the President under Section 232 of the Trade Expansion Act.

While the details of this report aren't public and the President is not necessarily bound by the report's recommendations, it is possible that this report recommends additional tariffs on automobiles and automobile parts, levied as high as 25 percent.

What is your assessment on the effect these additional tariffs would have on investment, the labor market, and the economy overall—both in Arizona and nationally?

Modeling all but certain retaliatory tariffs from impacted Nations, which have historically targeted American farmers and agriculture.

What is your assessment on the collective effect this decision to escalate the trade war would have on investment, the labor market, and the economy overall—both in Arizona and nationally?

A.1. In response to both of your questions, it is important to note that the Federal Reserve Board is responsible for formulating monetary policy to achieve price stability and maximum sustainable employment. Matters of trade policy are the responsibility of Congress and the Administration.

In pursuit of our mandated objectives, we monitor the effects of various developments, including trade policy, on the economy. Tariff increases, by both the United States and other countries, already have affected individual businesses and industries. As indicated in the Federal Open Market Committee minutes and the Beige Book, our business contacts report that trade policy developments are increasing input costs and creating policy uncertainty, causing some firms to delay investments.

Similarly, potential tariffs on the auto industry could raise input costs and could cause some firms to delay plans for investment or

hiring. Such tariffs also may disrupt the extensive supply chains that link the auto industries in the United States, Canada, and Mexico. Consumers could face higher prices for new automobiles. However, the particular effects would depend on the precise implementation of tariffs and may be mitigated by certain types of agreements with Canada and Mexico.

Retaliatory tariffs by other countries have impacted certain U.S. industries, most notably agriculture, with farmers facing lower demand and prices for their crops, such as soybeans. Additional retaliatory tariffs could put further strain on farmers and other affected businesses.

The overall process of trade negotiations is ongoing, and it is unclear how it will play out. If the end result is a world with higher tariffs in many countries, then experience suggests there will be negative effects for the U.S. economy as we miss out on some of the benefits of trade. However, if the end result is a world with lower trade barriers and a more level playing field, then the U.S. economy should benefit.

ADDITIONAL MATERIAL SUPPLIED FOR THE RECORD

For use at 11:00 a.m., EST
February 22, 2019

MONETARY POLICY REPORT

February 22, 2019

Board of Governors of the Federal Reserve System

LETTER OF TRANSMITTAL

BOARD OF GOVERNORS OF THE
FEDERAL RESERVE SYSTEM

Washington, D.C., February 22, 2019

THE PRESIDENT OF THE SENATE
THE SPEAKER OF THE HOUSE OF REPRESENTATIVES

The Board of Governors is pleased to submit its *Monetary Policy Report* pursuant to section 2B of the Federal Reserve Act.

Sincerely,

Jerome H. Powell

Jerome H. Powell, Chairman

Statement on Longer-Run Goals and Monetary Policy Strategy

Adopted effective January 24, 2012; as amended effective January 29, 2019

The Federal Open Market Committee (FOMC) is firmly committed to fulfilling its statutory mandate from the Congress of promoting maximum employment, stable prices, and moderate long-term interest rates. The Committee seeks to explain its monetary policy decisions to the public as clearly as possible. Such clarity facilitates well-informed decisionmaking by households and businesses, reduces economic and financial uncertainty, increases the effectiveness of monetary policy, and enhances transparency and accountability, which are essential in a democratic society.

Inflation, employment, and long-term interest rates fluctuate over time in response to economic and financial disturbances. Moreover, monetary policy actions tend to influence economic activity and prices with a lag. Therefore, the Committee's policy decisions reflect its longer-run goals, its medium-term outlook, and its assessments of the balance of risks, including risks to the financial system that could impede the attainment of the Committee's goals.

The inflation rate over the longer run is primarily determined by monetary policy, and hence the Committee has the ability to specify a longer-run goal for inflation. The Committee reaffirms its judgment 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 the Federal Reserve's statutory mandate. The Committee would be concerned if inflation were running persistently above or below this objective. Communicating this symmetric inflation goal clearly to the public helps keep longer-term inflation expectations firmly anchored, thereby fostering price stability and moderate long-term interest rates and enhancing the Committee's ability to promote maximum employment in the face of significant economic disturbances. The maximum level of employment is largely determined by nonmonetary factors that affect the structure and dynamics of the labor market. These factors may change over time and may not be directly measurable. Consequently, it would not be appropriate to specify a fixed goal for employment; rather, the Committee's policy decisions must be informed by assessments of the maximum level of employment, recognizing that such assessments are necessarily uncertain and subject to revision. The Committee considers a wide range of indicators in making these assessments. Information about Committee participants' estimates of the longer-run normal rates of output growth and unemployment is published four times per year in the FOMC's Summary of Economic Projections. For example, in the most recent projections, the median of FOMC participants' estimates of the longer-run normal rate of unemployment was 4.4 percent.

In setting monetary policy, the Committee seeks to mitigate deviations of inflation from its longer-run goal and deviations of employment from the Committee's assessments of its maximum level. These objectives are generally complementary. However, under circumstances in which the Committee judges that the objectives are not complementary, it follows a balanced approach in promoting them, taking into account the magnitude of the deviations and the potentially different time horizons over which employment and inflation are projected to return to levels judged consistent with its mandate.

The Committee intends to reaffirm these principles and to make adjustments as appropriate at its annual organizational meeting each January.

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Note: This report reflects information that was publicly available as of noon EST on February 21, 2019. Unless otherwise stated, the time series in the figures extend through, for daily data, February 20, 2019; for monthly data, January 2019; and, for quarterly data, 2018:Q4. In bar charts, except as noted, the change for a given period is measured to its final quarter from the final quarter of the preceding period.

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Summary

Economic activity in the United States appears to have increased at a solid pace, on balance, over the second half of 2018, and the labor market strengthened further. Inflation has been near the Federal Open Market Committee's (FOMC) longer-run objective of 2 percent, aside from the transitory effects of recent energy price movements. In this environment, the FOMC judged that, on balance, current and prospective economic conditions called for a further gradual removal of policy accommodation. In particular, the FOMC raised the target range for the federal funds rate twice in the second half of 2018, putting its level at 2¼ to 2½ percent following the December meeting. In light of softer global economic and financial conditions late in the year and muted inflation pressures, the FOMC indicated at its January meeting that it will be patient as it determines what future adjustments to the federal funds rate may be appropriate to support the Committee's congressionally mandated objectives of maximum employment and price stability.

Economic and Financial Developments

The labor market. The labor market has continued to strengthen since the middle of last year. Payroll employment growth has remained strong, averaging 224,000 per month since June 2018. The unemployment rate has been about unchanged over this period, averaging a little under 4 percent—a low level by historical standards—while the labor force participation rate has moved up despite the ongoing downward influence from an aging population. Wage growth has also picked up recently.

Inflation. Consumer price inflation, as measured by the 12-month change in the price index for personal consumption expenditures, moved down from a little above the FOMC's objective of 2 percent in the middle of last year to an estimated 1.7 percent in December, restrained by recent declines in consumer energy prices. The 12-month measure of inflation that excludes food and energy items (so-called core inflation), which historically has been a better indicator of where overall inflation will be in the future than the headline measure that includes those items, is estimated to have been 1.9 percent in December—up ¼ percentage point from a year ago. Survey-based measures of longer-run inflation expectations have generally been stable, though market-based measures of inflation compensation have moved down some since the first half of 2018.

Economic growth. Available indicators suggest that real gross domestic product (GDP) increased at a solid rate, on balance, in the second half of last year and rose a little under 3 percent for the year as a whole—a noticeable pickup from the pace in recent years. Consumer spending expanded at a strong rate for most of the second half, supported by robust job gains, past increases in household wealth, and higher disposable income due in part to the Tax Cuts and Jobs Act, though spending appears to have weakened toward year-end. Business investment grew as well, though growth seems to have slowed somewhat from a sizable gain in the first half. However, housing market activity declined last year amid rising mortgage interest rates and higher material and labor costs. Indicators of both consumer and business sentiment remain at favorable levels, but some measures have softened since the fall, likely a reflection of financial market volatility and increased concerns about the global outlook.

Financial conditions. Domestic financial conditions for businesses and households have become less supportive of economic growth since July. Financial market participants' appetite for risk deteriorated markedly in the latter part of last year amid investor concerns

about downside risks to the growth outlook and rising trade tensions between the United States and China. As a result, Treasury yields and risky asset prices declined substantially between early October and late December in the midst of heightened volatility, although those moves partially retraced early this year. On balance since July, the expected path of the federal funds rate over the next several years shifted down, long-term Treasury yields and mortgage rates moved lower, broad measures of U.S. equity prices increased somewhat, and spreads of yields on corporate bonds over those on comparable-maturity Treasury securities widened modestly. Credit to large nonfinancial firms remained solid in the second half of 2018; corporate bond issuance slowed considerably toward the end of the year but has rebounded since then. Despite increases in interest rates for consumer loans, consumer credit expanded at a solid pace, and financing conditions for consumers largely remain supportive of growth in household spending. The foreign exchange value of the U.S. dollar strengthened slightly against the currencies of the U.S. economy's trading partners.

Financial stability. The U.S. financial system remains substantially more resilient than in the decade preceding the financial crisis. Pressures associated with asset valuations eased compared with July 2018, particularly in the equity, corporate bond, and leveraged loan markets. Regulatory capital and liquidity ratios of key financial institutions, including large banks, are at historically high levels. Funding risks in the financial system are low relative to the period leading up to the crisis. Borrowing by households has risen roughly in line with household incomes and is concentrated among prime borrowers. While debt owed by businesses is high and credit standards—especially within segments of the loan market focused on lower-rated or unrated firms—deteriorated in the second half of 2018, issuance of these loans has slowed more recently.

International Developments. Foreign economic growth stepped down significantly last year from the brisk pace in 2017. Aggregate growth in the advanced foreign economies slowed markedly, especially in the euro area, and several Latin American economies continued to underperform. The pace of economic activity in China slowed noticeably in the second half of 2018. Inflation pressures in major advanced foreign economies remain subdued, prompting central banks to maintain accommodative monetary policies.

Financial conditions abroad tightened in the second half of 2018, in part reflecting political uncertainty in Europe and Latin America, trade policy developments in the United States and its trading partners, as well as concerns about moderating global growth. Although financial conditions abroad improved in recent weeks, alongside those in the United States, on balance since July 2018, global equity prices were lower, sovereign yields in many economies declined, and sovereign credit spreads in the European periphery and the most vulnerable emerging market economies increased somewhat. Market-implied paths of policy rates in advanced foreign economies generally edged down.

Monetary Policy

Interest rate policy. As the labor market continued to strengthen and economic activity expanded at a strong rate, the FOMC increased the target range for the federal funds rate gradually over the second half of 2018. Specifically, the FOMC decided to raise the federal funds rate in September and in December, bringing it to the current range of 2¼ to 2½ percent.

In December, against the backdrop of increased concerns about global growth, trade tensions, and volatility in financial markets, the Committee indicated it would monitor global economic and financial developments and assess their implications for

the economic outlook. In January, the FOMC stated that it continued to view sustained expansion of economic activity, strong labor market conditions, and inflation near the Committee's 2 percent objective as the most likely outcomes. Nonetheless, in light of global economic and financial developments and muted inflation pressures, the Committee noted that it will be patient as it determines what future adjustments to the target range for the federal funds rate may be appropriate to support these outcomes. FOMC communications continued to emphasize that the Committee's approach to setting the stance of policy should be importantly guided by the implications of incoming data for the economic outlook. In particular, the timing and size of future adjustments to the target range for the federal funds rate will depend on the Committee's assessment of realized and expected economic conditions relative to its maximum-employment objective and its symmetric 2 percent inflation objective.

Balance sheet policy. The FOMC continued to implement the balance sheet normalization program that has been under way since October 2017. Specifically, the FOMC reduced its holdings of Treasury and agency securities in a gradual and predictable manner by reinvesting only principal payments it received from these securities that exceeded gradually rising caps. Consequently, the Federal Reserve's total assets declined by about $260 billion since the middle of last year, ending the period close to $4 trillion.

Together with the January postmeeting statement, the Committee released an updated Statement Regarding Monetary Policy Implementation and Balance Sheet Normalization to provide additional information about its plans to implement monetary policy over the longer run. In particular, the FOMC stated that it intends to continue to implement monetary policy in a regime with an ample supply of reserves so that active management of reserves is not required. In addition, the Committee noted that it is prepared to adjust any of the details for completing balance sheet normalization in light of economic and financial developments.

Special Topics

Labor markets in urban versus rural areas. The recovery in the U.S. labor market since the end of the recession has been uneven across the country, with rural areas showing markedly less improvement than cities and their surrounding metropolitan areas. In particular, the employment-to-population ratio and labor force participation rate in rural areas remain well below their pre-recession levels, while the recovery in urban areas has been more complete. Differences in the mix of industries in rural and urban areas—a larger share of manufacturing in rural areas and a greater concentration of fast-growing services industries in urban areas—have contributed to the stronger rebound in urban areas. (See the box "Employment Disparities between Rural and Urban Areas" in Part 1.)

Monetary policy rules. In evaluating the stance of monetary policy, policymakers consider a wide range of information on the current economic conditions and the outlook. Policymakers also consult prescriptions for the policy interest rate derived from a variety of policy rules for guidance, without mechanically following the prescriptions of any specific rule. The FOMC's approach for conducting systematic monetary policy provides sufficient flexibility to address the intrinsic complexities and uncertainties in the economy while keeping monetary policy predictable and transparent. (See the box "Monetary Policy Rules and Systematic Monetary Policy" in Part 2.)

Balance sheet normalization and monetary policy implementation. Since the financial crisis, the size of the Federal Reserve's balance sheet has been determined in large part by its decisions about asset purchases for

economic stimulus, with growth in total assets primarily matched by higher reserve balances of depository institutions. However, liabilities other than reserves have grown significantly over the past decade. In the longer run, the size of the balance sheet will be importantly determined by the various factors affecting the demand for Federal Reserve liabilities. (See the box "The Role of Liabilities in Determining the Size of the Federal Reserve's Balance Sheet" in Part 2.)

Federal Reserve transparency and accountability. For central banks, transparency provides an essential basis for accountability. Transparency also enhances the effectiveness of monetary policy and a central bank's efforts to promote financial stability. For these reasons, the Federal Reserve uses a wide variety of communications to explain its policymaking approach and decisions as clearly as possible. Through several new initiatives, including a review of its monetary policy framework that will include outreach to a broad range of stakeholders, the Federal Reserve seeks to enhance transparency and accountability regarding how it pursues its statutory responsibilities. (See the box "Federal Reserve Transparency: Rationale and New Initiatives" in Part 2.)

Part 1
Recent Economic and Financial Developments

Domestic Developments

The labor market strengthened further during the second half of 2018 and early this year . . .

Payroll employment gains have remained strong, averaging 224,000 per month since June 2018 (figure 1). This pace is similar to the pace in the first half of last year, and it is faster than the average pace of job gains in 2016 and 2017.

The strong pace of job gains over this period has primarily been manifest in a rising labor force participation rate (LFPR)—the share of the population that is either working or actively looking for work—rather than a declining unemployment rate.[1] Since June 2018, the LFPR has moved up about ¼ percentage point and was 63.2 percent in January—a bit higher than the narrow range it has maintained in recent years (figure 2). The improvement is especially notable because the aging of the population—and, in particular, the movement of members of the baby-boom cohort into their retirement years—has otherwise imparted a downward influence on the LFPR. Indeed, the LFPR for individuals between 25 and 54 years old—which is much less sensitive to population aging—has

1. The observed pace of payroll job gains would have been sufficient to push the unemployment rate lower had the LFPR not risen. Indeed, monthly payroll gains in the range of 115,000 to 145,000 appear consistent with an unchanged unemployment rate around 4.0 percent and an unchanged LFPR around 62.9 percent (which are the June 2018 values of these rates). If instead the LFPR were declining 0.2 percentage point per year—roughly the influence of population aging—the range of job gains needed to maintain an unchanged unemployment rate would be about 40,000 per month lower. There is considerable uncertainty around these estimates, as the difference between monthly payroll gains and employment changes from the Current Population Survey (the source of the unemployment rate and LFPR) can be quite volatile over short periods.

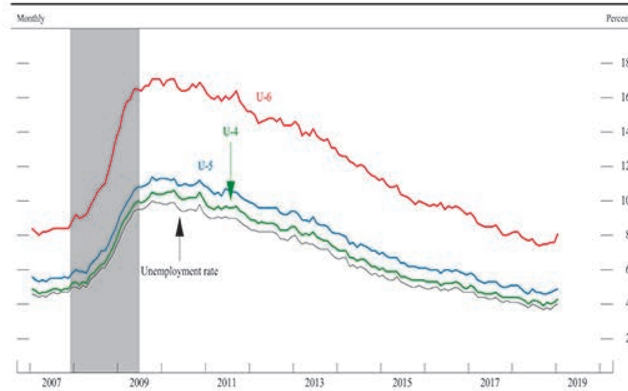
1. Net change in payroll employment

Note: The data are 3-month moving averages.
Source: Bureau of Labor Statistics via Haver Analytics.

2. Labor force participation rates and employment-to-population ratio

Note: The data are monthly. The prime-age labor force participation rate is a percentage of the population aged 25 to 54. The labor force participation rate and the employment-to-population ratio are percentages of the population aged 16 and over.
Source: Bureau of Labor Statistics via Haver Analytics.

3. Measures of labor underutilization



NOTE: Unemployment rate measures total unemployed as a percentage of the labor force. U-4 measures total unemployed plus discouraged workers, as a percentage of the labor force plus discouraged workers. Discouraged workers are a subset of marginally attached workers who are not currently looking for work because they believe no jobs are available for them. U-5 measures total unemployed plus all marginally attached to the labor force, as a percentage of the labor force plus persons marginally attached to the labor force. Marginally attached workers are not in the labor force, want and areavailable for work, and have looked for a job in the past 12 months. U-6 measures total unemployed plus all marginally attached workers plus total employed part time for economic reasons, as a percentage of the labor force plus all marginally attached workers. The shaded bar indicates a period of business recession as defined by the National Bureau of Economic Research.

SOURCE: Bureau of Labor Statistics via Haver Analytics.

improved considerably more than the overall LFPR, including a ½ percentage point rise since June 2018.[2]

At the same time, the unemployment rate has remained little changed and has generally been running a little under 4 percent.[3] Nevertheless, the unemployment rate remains at a historically low level and is ½ percentage point below the median of the Federal Open Market Committee (FOMC) participants' estimates of its longer-run normal level (figure 3).[4] Combining the movements in both unemployment and labor force participation,

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2. Since 2015, the increase in the prime-age LFPR for women was nearly 2 percentage points, while the increase for men was only about 1 percentage point. In January, the LFPR for prime-age women was slightly above where it stood in 2007, whereas for men it was still about 2 percentage points below.

3. The unemployment rate in January was 4.0 percent, boosted somewhat by the partial government shutdown, as some furloughed federal workers and temporarily laid-off federal contractors are treated as unemployed in the household employment survey.

4. See the Summary of Economic Projections in Part 3 of this report.

the employment-to-population ratio for individuals 16 and over—the share of that segment of the population who are working—was 60.7 percent in January and has been gradually increasing since 2011.

Other indicators are also consistent with a strong labor market. As reported in the Job Openings and Labor Turnover Survey (JOLTS), the job openings rate has moved higher since the first half of 2018, and in December, it was at its highest level since the data began in 2000. The quits rate in the JOLTS is also near the top of its historical range, an indication that workers have become more confident that they can successfully switch jobs when they wish to. In addition, the JOLTS layoff rate has remained low, and the number of people filing initial claims for unemployment insurance benefits has also remained low. Survey evidence indicates that households perceive jobs as plentiful and that businesses see vacancies as hard to fill.

. . . and unemployment rates have fallen for all major demographic groups over the past several years

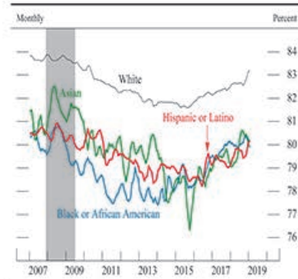
The flattening in unemployment since mid-2018 has been evident across racial and ethnic groups (figure 4). Even so, over the past several years, the decline in the unemployment rates for blacks or African Americans and for Hispanics has been particularly notable, and the unemployment rates for these groups are near their lowest readings since these series began in the early 1970s. Differences in unemployment rates across ethnic and racial groups have narrowed in recent years, as they typically do during economic expansions, after having widened during the recession; on net, unemployment rates for African Americans and Hispanics remain substantially above those for whites and Asians, with differentials generally a bit below pre-recession levels.

The rise in LFPRs for prime-age individuals over the past few years has also been apparent in each of these racial and ethnic groups. Nonetheless, the LFPR for whites remains

4. Unemployment rate by race and ethnicity

NOTE: Unemployment rate measures total unemployed as a percentage of the labor force. Persons whose ethnicity is identified as Hispanic or Latino may be of any race. The shaded bar indicates a period of business recession as defined by the National Bureau of Economic Research.
SOURCE: Bureau of Labor Statistics via Haver Analytics.

5. Prime-age labor force participation rate by race and ethnicity



NOTE: The prime-age labor force participation rate is a percentage of the population aged 25 to 54. Persons whose ethnicity is identified as Hispanic or Latino may be of any race. The data are seasonally adjusted by Board staff and are 3-month moving averages. The shaded bar indicates a period of business recession as defined by the National Bureau of Economic Research.
SOURCE: Bureau of Labor Statistics.

higher than that for other groups (figure 5). Important differences in economic outcomes persist across other characteristics as well (see, for example, the box "Employment Disparities between Rural and Urban Areas," which highlights that there has been less improvement since 2010 in the LFPR and employment-to-population ratio for prime-age individuals in rural areas compared with urban areas).

Increases in labor compensation have picked up recently but remain moderate by historical standards . . .

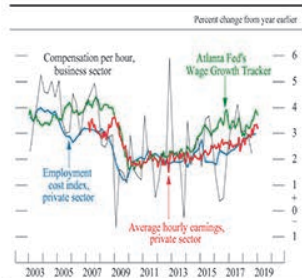
Most available indicators suggest that growth of hourly compensation has stepped up further since June 2018 after having firmed somewhat over the past few years; however, growth rates remain moderate compared with those that prevailed in the decade before the recession. Compensation per hour in the business sector—a broad-based measure of wages and benefits, but one that is quite volatile—rose 2¼ percent over the four quarters ending in 2018:Q3, about the same as the average annual increase over the past seven years or so (figure 6). The employment cost index, a less volatile measure of both wages and the cost

to employers of providing benefits, increased 3 percent over the same period, while average hourly earnings—which do not take account of benefits—increased 3.2 percent over the 12 months ending in January of this year; the annual increases in both of these measures were the strongest in nearly 10 years. The measure of wage growth computed by the Federal Reserve Bank of Atlanta that tracks median 12-month wage growth of individuals reporting to the Current Population Survey showed an increase of 3.7 percent in January, near the upper end of its readings in the past three years and well above the average increase in the preceding few years.[5]

. . . and have likely been restrained by slow growth of labor productivity over much of the expansion

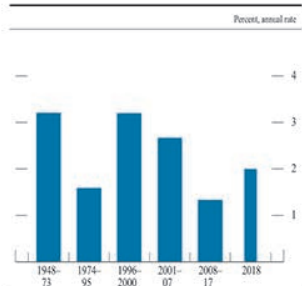
These moderate rates of compensation gains likely reflect the offsetting influences of a strong labor market and productivity growth that has been weak through much of the expansion. From 2008 to 2017, labor productivity increased a little more than 1 percent per year, on average, well below the average pace from 1996 to 2007 of nearly 3 percent and also below the average gain in the 1974–95 period (figure 7). Although considerable debate remains about the reasons for the slowdown over this period, the weakness in productivity growth may be partly attributable to the sharp pullback in capital investment during the most recent recession and the relatively slow recovery that followed. More recently, however, labor productivity is estimated to have increased almost 2 percent at an annual rate in the first three quarters of 2018—still moderate relative to earlier periods, but its fastest three-quarter gain since 2010. While it is uncertain whether this faster rate of growth will persist, a sustained pickup in productivity growth, as well as additional labor market strengthening, would likely support stronger gains in labor compensation.

6. Measures of change in hourly compensation



Note: Business-sector compensation is on a 4-quarter percentage change basis and extends through 2018:Q3. For the private-sector employment cost index, change is over the 12 months ending in the last month of each quarter; for private-sector average hourly earnings, the data are 12-month percent changes and begin in March 2007; for the Atlanta Fed's Wage Growth Tracker, the data are shown as a 3-month moving average of the 12-month percent change.
Source: Bureau of Labor Statistics via Haver Analytics; Federal Reserve Bank of Atlanta, Wage Growth Tracker.

7. Change in business-sector output per hour



Note: Changes are measured from Q4 of the year immediately preceding the period through Q4 of the final year of the period. The bar for 2018 reports growth from 2017:Q4 through 2018:Q3 at an annual rate.
Source: Bureau of Labor Statistics via Haver Analytics.

5. The Atlanta Fed's measure differs from others in that it measures the wage growth only of workers who were employed both in the current survey month and 12 months earlier.

Employment Disparities between Rural and Urban Areas

The U.S. labor market has recovered substantially since 2010. For people in their prime working years (ages 25 to 54), the unemployment rate has moved down steadily to levels below the previous business cycle peak in 2007, the labor force participation rate (LFPR) has retraced much of its decline, and the share of the population who are employed—known as the employment-to-population ratio, or EPOP ratio—has returned to about its level before the recession. However, the labor market recovery has been uneven across the country, with "rural" (or nonmetro) areas showing markedly less improvement than cities and their surroundings (metro areas).[1]

The extent of the initial decline and subsequent improvement in the EPOP ratio varied by metropolitan status. The gap between the EPOP ratios in rural and larger urban areas is now noticeably wider than it was before the recession, and the cyclical recovery started later in rural areas. Specifically, as shown in figure A, the prime-age EPOP is now slightly above its pre-recession level in larger urban areas, whereas it is just below its pre-recession average in smaller urban areas and much below its pre-recession level in rural areas.[2]

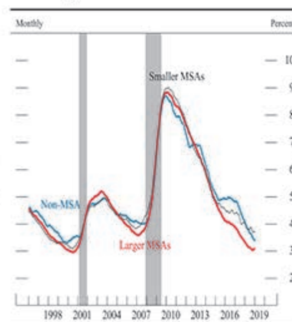
The EPOP ratio can usefully be viewed as summarizing both the LFPR—that is, the share of the population that either has a job or is actively looking for work—and the unemployment rate, which measures the share of the labor force without a job and actively searching.[3] The divergence in rural and urban EPOP ratios during the economic expansion almost entirely reflects divergences in LFPRs rather than in unemployment rates (figures B and C). In particular, the rural and urban unemployment rates have tracked each

(continued)

A. Employment-to-population ratios

NOTE: Data are for persons aged 25 to 54. Larger metropolitan statistical areas (MSAs) consist of 500,000 people or more, and smaller MSAs consist of 100,000 to 500,000 people. The shaded bars indicate periods of business recession as defined by the National Bureau of Economic Research.
SOURCE: References listed in box note 2.

B. Unemployment rates



NOTE: Data are for persons aged 25 to 54. Larger metropolitan statistical areas (MSAs) consist of 500,000 people or more, and smaller MSAs consist of 100,000 to 500,000 people. The shaded bars indicate periods of business recession as defined by the National Bureau of Economic Research.
SOURCE: References listed in box note 2.

1. For convenience, we refer to metropolitan counties with strong commuting ties to an urbanized center as "urban" and nonmetropolitan counties that lack such ties as "rural."

2. For all figures in this discussion, the raw data are from the U.S. Census Bureau, Current Population Survey; note that the Bureau of Labor Statistics is involved in the survey process for the Current Population Survey. Calculations of the series shown are as described in Alison Weingarden (2017), "Labor Market Outcomes in Metropolitan and Non-metropolitan Areas: Signs of Growing Disparities," FEDS Notes (Washington: Board of Governors of the Federal Reserve System, September 25), www.federalreserve.gov/econres/notes/feds-notes/labor-market-outcomes-in-metropolitan-and-non-metropolitan-areas-signs-of-growing-disparities-20170925.htm. The figures show 12-month moving averages of the monthly time-series.

3. Specifically, the EPOP ratio equals (LFPR) x (1 – unemployment rate), where LFPR is defined as "labor force/population" and the unemployment rate is defined as "persons unemployed/labor force." These numbers are multiplied by 100 for presentation purposes in the figures.

other fairly closely in this expansion, though they have diverged a little in the past few years. In contrast, the difference between rural and urban LFPRs has widened significantly over the past decade.

On average, people in rural areas tend to have fewer years of schooling than people in urban areas, and because the EPOP ratio tends to be lower for individuals with less education, this demographic difference has contributed to the persistent rural–urban divide. However, these educational differences do not appear responsible for the fact that the gap between rural and urban EPOP ratios have widened. Figure D shows that, in recent years, rural and urban EPOP ratios diverged substantially even within educational categories, similar to the divergence in EPOPs more generally. The left panel of figure D shows that the EPOP ratio of non-college-educated adults ages 25 to 54 has been much lower in rural areas than in urban ones beginning in 2012. The right panel of figure D shows that the EPOP ratio of college-educated adults used to be *higher* in rural areas than in urban ones, but that is no longer so. Thus, the recent widening of the rural–urban disparity in EPOP ratios has not been primarily driven by differences in years of education.

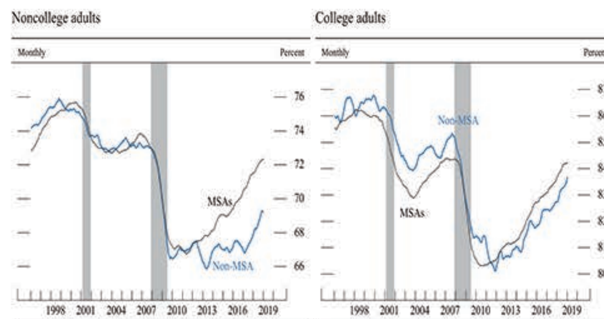
Nevertheless, because the recovery in the EPOP ratio for non-college-educated adults in rural areas

(continued on next page)

C. Labor force participation rates

NOTE: Data are for persons aged 25 to 54. Larger metropolitan statistical areas (MSAs) consist of 500,000 people or more, and smaller MSAs consist of 100,000 to 500,000 people. The shaded bars indicate periods of business recession as defined by the National Bureau of Economic Research.
SOURCE: References listed in box note 2.

D. Employment-to-population ratios



NOTE: Data are for persons aged 25 to 54. MSA is metropolitan statistical area. The shaded bars indicate periods of business recession as defined by the National Bureau of Economic Research.
SOURCE: References listed in box note 2.

Employment Disparities *(continued)*

has been particularly weak, it is likely that broader macroeconomic trends—including the ongoing shift in labor demand that has favored individuals with more education—have had more adverse consequences for the populations in rural areas than in urban areas. For example, manufacturing, where employment has stagnated, accounts for a larger share of employment in rural areas than in urban areas, while fast-growing services industries, such as health-care and professional services that tend to employ workers with more education, are more concentrated in urban areas. Indeed, employment in manufacturing has not yet fully recovered from the recession. And, despite the strength in the past two years, the share of total employment in manufacturing has remained near its post-recession low.

The fact that most of the EPOP divergence is seen in labor force participation rather than unemployment rates suggests that many rural workers who experienced a permanent job loss, perhaps due to a factory closing, decided to eventually exit the labor force rather than continue their job search. Some individuals who had been working, despite ongoing health problems, may have responded to job loss and poor reemployment opportunities by applying for Social Security Disability Insurance (SSDI) benefits, and, in fact, take-up increased a little more in rural areas than it did in urban ones over the past decade.[4]

When regions are faced with adverse changes in labor demand, some residents may respond by migrating to more prosperous areas. The more out-migration that occurs from areas with relatively fewer labor market opportunities, the smaller should be the observed decline in local-area EPOPs.[5] However, some research suggests that the average migration response to adverse demand shocks has decreased in recent decades, which could amplify the labor market effects of local shocks and lead to persistent disparities in EPOP ratios across areas.[6]

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4. This increase could reflect growing public health problems (which expands the pool of individuals who qualify for SSDI) and sluggish labor demand in rural areas (which increases the propensity of individuals to apply for SSDI benefits).

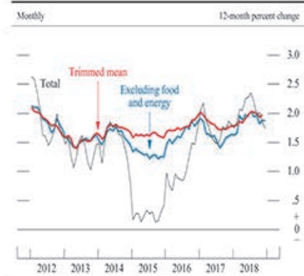
5. Although a higher rate of rural out-migration would help close the EPOP gap, depopulation might exacerbate economic difficulties for those who remain in rural areas.

6. See, for example, Mai Dao, Davide Furceri, and Prakash Loungani (2017), "Regional Labor Market Adjustment in the United States: Trend and Cycle," *Review of Economics and Statistics*, vol. 99 (May), pp. 243–57.

Price inflation is close to 2 percent

Consumer price inflation has fluctuated around the FOMC's objective of 2 percent, largely reflecting movements in energy prices. As measured by the 12-month change in the price index for personal consumption expenditures (PCE), inflation is estimated to have been 1.7 percent in December after being above 2 percent for much of 2018 (figure 8).[6] Core PCE inflation—that is, inflation excluding consumer food and energy prices—is estimated to have been 1.9 percent in December. Because food and energy prices are often quite volatile, core inflation typically provides a better indication than the total measure of where overall inflation will be in the future. Total inflation was below core inflation for the year as a whole not only because of softness in energy prices, but also because food price inflation has remained relatively low.

8. Change in the price index for personal consumption expenditures



NOTE: The data for total and excluding food and energy extend through December 2018; final values are staff estimates. The trimmed data extend through November 2018.

SOURCE: For trimmed mean, Federal Reserve Bank of Dallas; for all else, Bureau of Economic Analysis; all via Haver Analytics.

Core inflation has moved up since 2017, when inflation was held down by some unusually large price declines in a few relatively small categories of spending, such as mobile phone services. The trimmed mean PCE price index, produced by the Federal Reserve Bank of Dallas, provides an alternative way to purge inflation of transitory influences, and it may be less sensitive than the core index to idiosyncratic price movements such as those noted earlier. The 12-month change in this measure did not decline as much as core PCE inflation in 2017, and it was 2.0 percent in November.[7] Inflation likely has been increasingly supported by the strong labor market in an environment of stable inflation expectations; inflation last year was

6. The partial government shutdown has delayed publication of the Bureau of Economic Analysis's estimate for PCE price inflation in December, and the numbers reported here are estimates based on the December consumer and producer price indexes.

7. The trimmed mean index excludes whichever prices showed the largest increases or decreases in a given month. Note that over the past 20 years, changes in the trimmed mean index have averaged about ¼ percentage point above core PCE inflation and 0.1 percentage point above total PCE inflation.

also boosted slightly by the tariffs that were imposed throughout 2018.

Oil prices have dropped markedly in recent months . . .

As noted, the slower pace of total inflation in late 2018 relative to core inflation largely reflected softening in consumer energy prices toward the end of the year. After peaking at about $86 per barrel in early October, the price of crude oil subsequently fell sharply and has averaged around $60 per barrel this year (figure 9). The recent decline in oil prices has led to moderate reductions in the cost of gasoline and heating oil. Supply factors, including surging oil production in Saudi Arabia, Russia, and the United States, appear to be most responsible for the recent price declines, but concerns about weaker global growth likely also played a role.

9. Spot and futures prices for crude oil

Note: The data are weekly averages of daily data and extend through February 20, 2019.
Source: ICE Brent Futures via Bloomberg.

. . . while prices of imports other than energy have also declined

After climbing steadily since their early 2016 lows, nonfuel import prices peaked in May 2018 and declined for much of the rest of 2018 in response to dollar appreciation, lower foreign inflation, and declines in commodity prices. In particular, metal prices fell markedly in the second half of 2018, partly reflecting concerns about prospects for the global economy (figure 10). Nonfuel import prices, before accounting for the effects of tariffs on the price of imported goods, had roughly a neutral influence on U.S. price inflation in 2018.

10. Nonfuel import prices and industrial metals indexes

Note: The data for nonfuel import prices are monthly. The data for industrial metals are a monthly average of daily data and extend through February 20, 2019.
Source: For nonfuel import prices, Bureau of Labor Statistics; for industrial metals, S&P GSCI Industrial Metals Spot Index via Haver Analytics.

Survey-based measures of inflation expectations have been stable . . .

Expectations of inflation likely influence actual inflation by affecting wage- and price-setting decisions. Survey-based measures of inflation expectations at medium- and longer-term horizons have remained generally stable over the second half of 2018. In the Survey of Professional Forecasters, conducted by the Federal Reserve Bank of Philadelphia, the median expectation for the annual rate of increase in the PCE price index over the

next 10 years has been very close to 2 percent for the past several years (figure 11). In the University of Michigan Surveys of Consumers, the median value for inflation expectations over the next 5 to 10 years has been around 2½ percent since the end of 2016, though this level is about ¼ percentage point lower than had prevailed through 2014. In contrast, in the Survey of Consumer Expectations, conducted by the Federal Reserve Bank of New York, the median of respondents' expected inflation rate three years hence—while relatively stable around 3 percent since early 2018—is nonetheless at the top of the range it has occupied over the past couple of years.

. . . while market-based measures of inflation compensation have come down since the first half of 2018

Inflation expectations can also be gauged by market-based measures of inflation compensation. However, the inference is not straightforward, because market-based measures can be importantly affected by changes in premiums that provide compensation for bearing inflation and liquidity risks. Measures of longer-term inflation compensation—derived either from differences between yields on nominal Treasury securities and those on comparable-maturity Treasury Inflation-Protected Securities (TIPS) or from inflation swaps—moved down in the fall and are below levels that prevailed earlier in 2018 (figure 12).[8] The TIPS-based measure of 5-to-10-year-forward inflation compensation and the analogous measure from inflation swaps are now about 1¾ percent

11. Median inflation expectations

NOTE: The Michigan survey data are monthly and extend through February 2019; the February data are preliminary. The SPF data for inflation expectations for personal consumption expenditures are quarterly and begin in 2007:Q1.
SOURCE: University of Michigan Surveys of Consumers; Federal Reserve Bank of Philadelphia, Survey of Professional Forecasters (SPF).

12. 5-to-10-year-forward inflation compensation

NOTE: The data are weekly averages of daily data and extend through February 15, 2019. TIPS is Treasury Inflation-Protected Securities.
SOURCE: Federal Reserve Bank of New York; Barclays; Federal Reserve Board staff estimates.

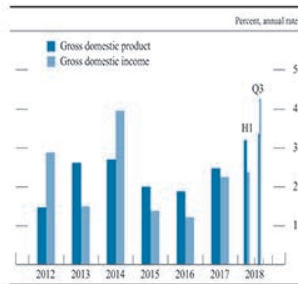
8. Inflation compensation implied by the TIPS breakeven inflation rate is based on the difference, at comparable maturities, between yields on nominal Treasury securities and yields on TIPS, which are indexed to the total consumer price index (CPI). Inflation swaps are contracts in which one party makes payments of certain fixed nominal amounts in exchange for cash flows that are indexed to cumulative CPI inflation over some horizon. Inflation compensation derived from inflation swaps typically exceeds TIPS-based compensation, but week-to-week movements in the two measures are highly correlated.

and 2¼ percent, respectively, with both measures below their respective ranges that persisted for most of the 10 years before the start of the notable declines in mid-2014.[9]

Real gross domestic product growth was solid, on balance, in the second half of 2018

Real gross domestic product (GDP) rose at an annual rate of 3½ percent in the third quarter, and available indicators point to a moderate gain in the fourth quarter.[10] For the year, GDP growth appears to have been a little less than 3 percent, up from the 2½ percent pace in 2017 and the 2 percent pace in the preceding two years (figure 13). Last year's growth reflects, in part, solid growth in household and business spending, on balance, as well as an increase in government purchases of goods and services; by contrast, housing-sector activity turned down last year. Private domestic final purchases—that is, final purchases by households and businesses, which tend to provide a better indication of future GDP growth than most other components of overall spending—likely posted a strong gain for the year.

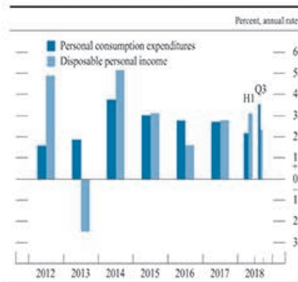
13. Change in real gross domestic product and gross domestic income



SOURCE: Bureau of Economic Analysis via Haver Analytics.

Some measures of consumer and business sentiment have recently softened—likely reflecting concerns about financial market volatility, the global economic outlook, trade policy tensions, and the government shutdown—and consumer spending appears to have weakened at the end of the year. Nevertheless, the economic expansion continues to be supported by steady job gains, past increases in household wealth, expansionary fiscal policy, and still-favorable domestic financial conditions, including

14. Change in real personal consumption expenditures and disposable personal income



SOURCE: Bureau of Economic Analysis via Haver Analytics.

9. As these measures are based on CPI inflation, one should probably subtract about ¼ percentage point—the average differential with PCE inflation over the past two decades—to infer inflation compensation on a PCE basis.

10. The initial estimate of GDP by the Bureau of Economic Analysis for the fourth quarter was delayed because of the partial government shutdown and will now be released on February 28.

moderate borrowing costs and easy access to credit for many households and businesses.

Ongoing improvements in the labor market continue to support household income and consumer spending . . .

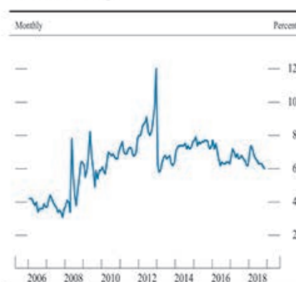
Real consumer spending picked up after some transitory weakness in the first half of 2018, rising at a strong annual rate of 3½ percent in the third quarter and increasing robustly through November (figure 14). However, despite anecdotal reports of favorable holiday sales, retail sales were reported to have declined sharply in December. Real disposable personal income—that is, income after taxes and adjusted for price changes—looks to have increased around 3 percent over the year, boosted by ongoing improvements in the labor market and the reduction in income taxes due to the implementation of the Tax Cuts and Jobs Act (TCJA). With consumer spending rising at about the same rate as gains in disposable income in 2018 through the third quarter (the latest data available), the personal saving rate was roughly unchanged, on net, over this period (figure 15).

. . . although wealth gains have moderated and consumer confidence has recently softened

While increases in household wealth have likely continued to support consumer spending, gains in net worth slowed last year. House prices continued to move up in 2018, boosting the wealth of homeowners, but the pace of growth moderated (figure 16). U.S. equity prices are, on net, similar to their levels at the end of 2017. Still, the level of equity and housing wealth relative to income remains very high by historical standards (figure 17).[11]

11. Indeed, in the third quarter of 2018—the most recent period for which data are available—household net worth was seven times the value of disposable income, the highest-ever reading for that ratio, which dates back to 1947. However, following the decline in stock prices since the summer, this ratio has likely fallen somewhat.

15. Personal saving rate

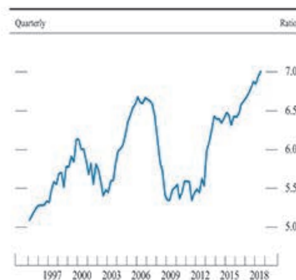


NOTE: Data extend through November 2018.
SOURCE: Bureau of Economic Analysis via Haver Analytics.

16. Prices of existing single-family houses

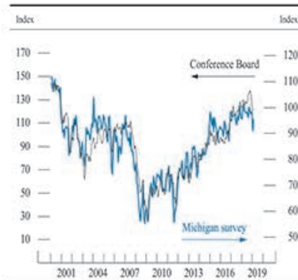
NOTE: The data for the S&P/Case-Shiller index extend through November 2018. The data for the CoreLogic index extend through December 2018.
SOURCE: CoreLogic Home Price Index; Zillow; S&P/Case-Shiller U.S. National Home Price Index. The S&P/Case-Shiller Index is a product of S&P Dow Jones Indices LLC and/or its affiliates. (For Dow Jones Indices licensing information, see the note on the Contents page.)

17. Wealth-to-income ratio



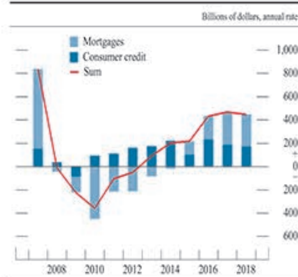
NOTE: Data extend through 2018:Q3. The series is the ratio of household net worth to disposable personal income.
SOURCE: For net worth, Federal Reserve Board, Statistical Release Z.1, "Financial Accounts of the United States"; for income, Bureau of Economic Analysis via Haver Analytics.

18. Indexes of consumer sentiment



NOTE: The data are monthly. Michigan data extend through February 2019; the February data are preliminary. The Conference Board data are indexed to 100 in 1985. The Michigan survey data are indexed to 100 in 1966.
SOURCE: University of Michigan Surveys of Consumers; Conference Board.

19. Changes in household debt



NOTE: Changes are calculated from year-end to year-end except 2018 changes, which are calculated from 2017:Q3 to 2018:Q3.
SOURCE: Federal Reserve Board, Statistical Release Z.1, "Financial Accounts of the United States."

20. Change in real private nonresidential fixed investment

SOURCE: Bureau of Economic Analysis via Haver Analytics.

Consumer sentiment as measured by the Michigan survey flattened out at a high level through much of 2018, and the sentiment measure from the Conference Board survey climbed through most of the year, with both measures posting their highest annual averages since 2000 (figure 18). However, consumer sentiment has turned down since around year-end, on net, with the declines primarily reflecting consumers' expectations for future conditions rather than their assessment of current conditions. Consumer attitudes about car buying have also weakened. Nevertheless, these indicators of consumers' outlook remain at generally favorable levels, likely reflecting rising income, job gains, and low inflation.

Borrowing conditions for consumers remain generally favorable despite interest rates being near the high end of their post-recession range

Despite increases in interest rates for consumer loans and some reported further tightening in credit card lending standards, financing conditions for consumers largely remain supportive of growth in household spending, and consumer credit growth in 2018 expanded further at a solid pace (figure 19). Mortgage credit has continued to be readily available for households with solid credit profiles. For borrowers with low credit scores, mortgage underwriting standards have eased somewhat since the first half of 2018 but remain noticeably tighter than before the recession. Financing conditions in the student loan market remain stable, with over 90 percent of such credit being extended by the federal government. Delinquencies on such loans, though staying elevated, continued to improve gradually on net.

Business investment growth has moderated after strong gains early in 2018 . . .

Investment spending by businesses rose rapidly in the first half of last year, and the available data are consistent with growth having slowed in the second half (figure 20).

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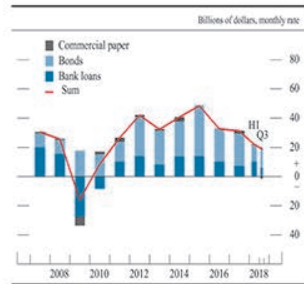
The apparent slowdown reflects, in part, more moderate growth in investment in equipment and intangibles as well as a likely decline in investment in nonresidential structures after strong gains earlier in the year. Forward-looking indicators of business spending—such as business sentiment, capital spending plans, and profit expectations from industry analysts—have softened recently but remain positive overall. And while new orders of capital goods flattened out toward the end of last year, the backlog of unfilled orders for this equipment has continued to rise.

. . . as corporate financing conditions tightened somewhat but remained accommodative overall

Spreads of yields on nonfinancial corporate bonds over those on comparable-maturity Treasury securities widened modestly, on balance, since the middle of 2018 as investors' risk appetite appeared to recede some. Nonetheless, a net decrease in Treasury yields over the past several months has left interest rates on corporate bonds still low by historical standards, and financing conditions appear to have remained accommodative overall. Aggregate net flows of credit to large nonfinancial firms remained solid in the third quarter (figure 21). The gross issuance of corporate bonds and new issuance of leveraged loans both fell considerably toward the end of the year but have since rebounded, mirroring movements in financial market volatility.

21. Selected components of net debt financing for nonfinancial businesses

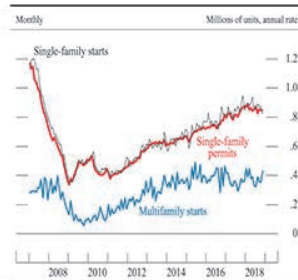


Source: Federal Reserve Board, Statistical Release Z.1, "Financial Accounts of the United States."

Respondents to the January Senior Loan Officer Opinion Survey on Bank Lending Practices, or SLOOS, reported that lending standards for commercial and industrial (C&I) loans remained basically unchanged in the fourth quarter after having reported easing standards over the past several quarters. However, banks reported tightening lending standards on all categories of commercial real estate (CRE) loans in the fourth quarter on net.

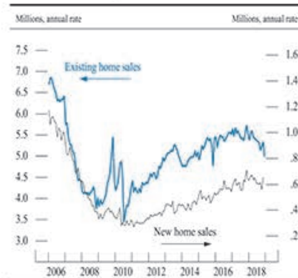
Meanwhile, financing conditions for small businesses have remained generally

22. Private housing starts and permits



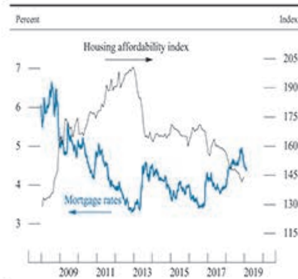
NOTE: The data extend through November 2018.
SOURCE: U.S. Census Bureau via Haver Analytics.

23. New and existing home sales



NOTE: Data are monthly. New home sales extends through November 2018 and includes only single-family sales. Existing home sales extends through December 2018 and includes single-family, condo, townhome, and co-op sales.
SOURCE: For new home sales, U.S. Census Bureau; for existing home sales, National Association of Realtors; all via Haver Analytics.

24. Mortgage rates and housing affordability



NOTE: The housing affordability index data are monthly through December 2018, and the mortgage rate data are weekly through February 14, 2019. At an index value of 100, a median-income family has exactly enough income to qualify for a median-priced home mortgage. Housing affordability is seasonally adjusted by Board staff.
SOURCE: For housing affordability index, National Association of Realtors; for mortgage rates, Freddie Mac Primary Mortgage Market Survey.

accommodative. Lending volumes to small businesses rebounded a bit in recent months, and indicators of recent loan performance stayed strong.

Activity in the housing sector has been declining

Residential investment declined in 2018, as housing starts held about flat and sales of existing homes moved lower (figures 22 and 23). The drop in residential investment reflects rising mortgage rates—which remain higher than in 2017 despite coming down some recently—as well as higher material and labor building costs, which have likely restrained new home construction. Consumers' perceptions of homebuying conditions deteriorated sharply over 2018, consistent with the decline in the affordability of housing associated with both higher mortgage rates and still-rising house prices (figure 24).

Net exports likely subtracted from GDP growth in 2018

After a strong performance in the first half of last year supported by robust exports of agricultural products, real exports declined in the third quarter, and available indicators suggest only a partial rebound in the fourth quarter (figure 25). At the same time, growth in real imports seems to have picked up in the second half of 2018. As a result, real net exports—which lifted U.S. real GDP growth during the first half of 2018—appear to have subtracted from growth in the second half. For the year as a whole, net exports likely subtracted a little from real GDP growth, similar to 2016 and 2017. The nominal trade deficit and the current account deficit in 2018 were little changed as a percent of GDP from 2017 (figure 26).

Federal fiscal policy actions boosted economic growth in 2018 . . .

Fiscal policy at the federal level boosted GDP growth in 2018, both because of lower income and business taxes from the TCJA and

because federal purchases appear to have risen significantly faster than in 2017 as a result of the Bipartisan Budget Act of 2018 (figure 27).[12] The partial government shutdown, which was in effect from December 22 through January 25, likely held down GDP growth in the first quarter of this year somewhat, largely because of the lost work of furloughed federal government workers and temporarily affected federal contractors.

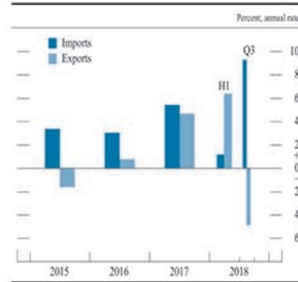
The federal unified deficit widened in fiscal year 2018 to 3¾ percent of nominal GDP because receipts moved lower, to roughly 16½ percent of GDP (figure 28). Expenditures edged down, to 20¼ percent of GDP, but remain above the levels that prevailed in the decade before the start of the 2007–09 recession. The ratio of federal debt held by the public to nominal GDP equaled 78 percent at the end of fiscal 2018 and remains quite elevated relative to historical norms (figure 29). The Congressional Budget Office projects that this ratio will rise over the next several years.

. . . and the fiscal position of most state and local governments is stable

The fiscal position of most state and local governments is stable, although there is a range of experiences across these governments. After several years of slow growth, revenue gains of state governments strengthened notably as sales and income tax collections have picked up over the past few quarters. At the local level, property tax collections continue to rise at a solid clip, pushed higher by past house price gains. After declining a bit in 2017, real state and local government purchases grew moderately last year, driven largely by a boost in construction but also reflecting modest growth in employment at these governments.

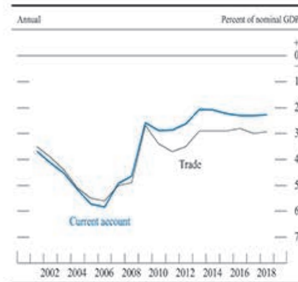
12. The Joint Committee on Taxation estimated that the TCJA would reduce average annual tax revenue by a little more than 1 percent of GDP starting in 2018 and for several years thereafter. This revenue estimate does not account for the potential macroeconomic effects of the legislation.

25. Change in real imports and exports of goods and services



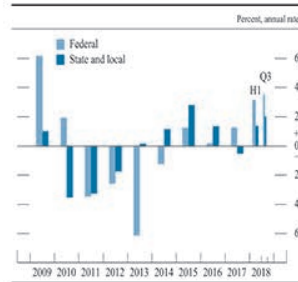
Source: Bureau of Economic Analysis via Haver Analytics.

26. U.S. trade and current account balances



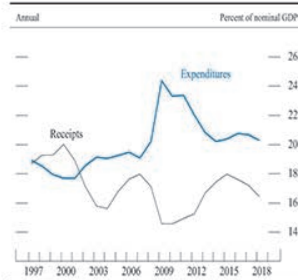
Note: Data for 2018 are the average of the first three quarters of the year, at an annualized rate. GDP is gross domestic product.
Source: Bureau of Economic Analysis via Haver Analytics.

27. Change in real government expenditures on consumption and investment



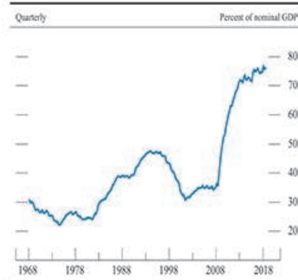
Source: Bureau of Economic Analysis.

28. Federal receipts and expenditures



NOTE: The receipts and expenditures data are on a unified-budget basis and are for fiscal years (October through September); gross domestic product (GDP) data are for the four quarters ending in Q3.
SOURCE: Office of Management and Budget via Haver Analytics.

29. Federal government debt held by the public



NOTE: The data extend through 2018:Q3. The data for gross domestic product (GDP) are at an annual rate. Federal debt held by the public equals federal debt less Treasury securities held in federal employee defined benefit retirement accounts, evaluated at the end of the quarter.
SOURCE: For GDP, Bureau of Economic Analysis via Haver Analytics; for federal debt, Federal Reserve Board, Statistical Release Z.1, "Financial Accounts of the United States."

Financial Developments

The expected path of the federal funds rate over the next several years has moved down

Despite the further strengthening in the labor market and continued expansion in the U.S. economy, market-based measures of the expected path for the federal funds rate over the next several years have declined, on net, since the middle of last year (figure 30). Various factors contributed to this shift, including increased investor concerns about downside risks to the global economic outlook and rising trade tensions, as well as FOMC communications that were viewed as signaling patience and greater flexibility in the conduct of monetary policy in response to adverse macroeconomic or financial market developments.

Survey-based measures of the expected path of the policy rate through 2020 also shifted down, on net, relative to the levels observed in the first half of 2018. According to the results of the most recent Survey of Primary Dealers and Survey of Market Participants, both conducted by the Federal Reserve Bank of New York just before the January FOMC meeting, the median of respondents' modal projections for the path of the federal funds rate implies two additional 25 basis point rate increases in 2019. Relative to the December survey, these increases are expected to occur later in 2019. Looking further ahead, respondents to the January survey forecast no rate increases in 2020 and in 2021.[13] Meanwhile, market-based measures of uncertainty about the policy rate approximately one to two years ahead were little changed, on balance, from their levels at the end of last June.

13. The results of the Survey of Primary Dealers and the Survey of Market Participants are available on the Federal Reserve Bank of New York's website at https://www.newyorkfed.org/markets/primarydealer_survey_questions.html and https://www.newyorkfed.org/markets/survey_market_participants, respectively.

The nominal Treasury yield curve continued to flatten

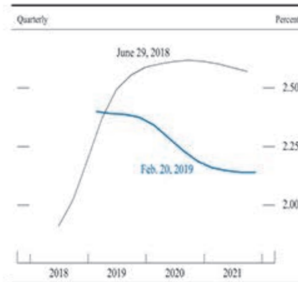
The nominal Treasury yield curve flattened somewhat further since the first half of 2018, with the 2-year nominal Treasury yield little changed and the 5- and 10-year nominal Treasury yields declining about 25 basis points on net (figure 31). At the same time, yields on inflation-protected Treasury securities edged up, leaving market-based measures of inflation compensation moderately lower. In explaining movements in Treasury yields since mid-2018, market participants have pointed to developments related to the global economic outlook and trade tensions, FOMC communications, and fluctuations in oil prices. Option-implied volatility on swap rates—an indicator of uncertainty about Treasury yields—declined slightly on net.

Consistent with changes in yields on nominal Treasury securities, yields on 30-year agency mortgage-backed securities (MBS)—an important determinant of mortgage interest rates—decreased about 20 basis points, on balance, since the middle of last year and remain low by historical standards (figure 32). Meanwhile, yields on both investment-grade and high-yield corporate debt declined a bit (figure 33). As a result, the spreads on corporate bond yields over comparable-maturity Treasury yields are modestly wider than at the end of June. The cumulative increases over the past year have left spreads for high-yield and investment-grade corporate bonds close to their historical medians, with both spreads notably above the very low levels that prevailed a year ago.

Broad equity price indexes increased somewhat

Broad U.S. stock market indexes increased somewhat since the middle of last year, on net, amid substantial volatility (figure 34). Concerns over the sustainability of corporate earnings growth, the global growth outlook, international trade tensions, and some Federal

30. Market-implied federal funds rate path



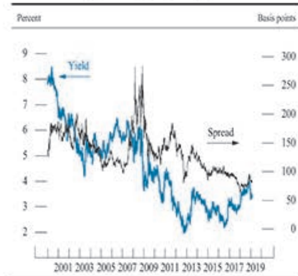
NOTE: The federal funds rate path is implied by quotes on overnight index swaps—a derivative contract tied to the effective federal funds rate. The implied path as of February 20, 2019, is compared with that as of June 29, 2018. The path is estimated with a spline approach, assuming a term premium of 0 basis points. The current path extends through November 2021 and the previous one through September 2021.

SOURCE: Bloomberg; Federal Reserve Board staff estimates.

31. Yields on nominal Treasury securities

SOURCE: Department of the Treasury via Haver Analytics.

32. Yield and spread on agency mortgage-backed securities



NOTE: The data are daily. Yield shown is for the Fannie Mae 30-year current coupon, the coupon rate at which new mortgage-backed securities would be priced at par, or face, value. Spread shown is to the average of the 5- and 10-year nominal Treasury yields.

SOURCE: Department of the Treasury; Barclays Live.

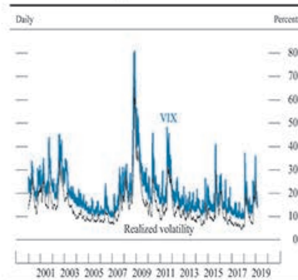
33. Corporate bond yields, by securities rating

NOTE: Investment-grade is the 10-year triple-B, which reflects the effective yield of the ICE BofAML 7-to-10-year triple-B U.S. Corporate Index (C4A4). High-yield is the 10-year high-yield and reflects the effective yield of the ICE BofAML 7-to-10-year U.S. Cash Pay High Yield Index (J4A0).
SOURCE: ICE Bank of America Merrill Lynch Indices, used with permission.

34. Equity prices

SOURCE: Standard & Poor's Dow Jones Indices via Bloomberg. (For Dow Jones Indices licensing information, see the note on the Contents page.)

35. S&P 500 volatility



NOTE: The VIX is a measure of implied volatility that represents the expected annualized change in the S&P 500 index over the following 30 days. For realized volatility, five-minute returns are used in an exponentially weighted moving average with 75 percent of weight distributed over the past 20 days.
SOURCE: Cboe Volatility Index® (VIX®) accessed via Bloomberg.

Reserve communications that were perceived as less accommodative than expected weighed on investor sentiment for a time. There were considerable differences in stock returns across sectors, reflecting their varying degrees of sensitivities to energy price declines, trade tensions, and rising interest rates. In particular, stock prices of companies in the utilities sector—which tend to benefit from falling interest rates—and in the health-care sector outperformed broader indexes. Conversely, stock prices in the energy sector substantially underperformed the broad indexes, as oil prices dropped sharply. Basic materials—a sector that was particularly sensitive to concerns about the global growth outlook and trade tensions—also underperformed. Bank stock prices declined slightly, on net, as the yield curve flattened and funding costs rose. Measures of implied and realized stock price volatility for the S&P 500 index—the VIX and the 20-day realized volatility—increased sharply in the fourth quarter of last year to near the high levels observed in early February 2018 amid sharp equity price declines. These volatility measures partially retraced following the turn of the year, with the VIX returning to near the 30th percentile of its historical distribution and with realized volatility ending the period close to the 70th percentile of its historical range (figure 35). (For a discussion of financial stability issues, see the box "Developments Related to Financial Stability.")

Markets for Treasury securities, mortgage-backed securities, and municipal bonds have functioned well

Available indicators of Treasury market functioning have generally remained stable since the first half of 2018, with a variety of liquidity metrics—including bid-ask spreads, bid sizes, and estimates of transaction costs—displaying few signs of liquidity pressures. Liquidity conditions in the agency MBS market were also generally stable. Overall, the functioning of Treasury and agency MBS markets has not been materially affected by

the implementation of the Federal Reserve's balance sheet normalization program over the past year and a half. Credit conditions in municipal bond markets have remained stable since the middle of last year, though yield spreads on 20-year general obligation municipal bonds over comparable-maturity Treasury securities were modestly higher on net.

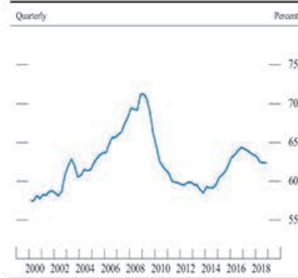
Money market rates have moved up in line with increases in the FOMC's target range

Conditions in domestic short-term funding markets have also remained generally stable since the beginning of the summer. Increases in the FOMC's target range were transmitted effectively through money markets, with yields on a broad set of money market instruments moving higher in response to the FOMC's policy actions in September and December. The effective federal funds rate moved to parity with the interest rate paid on reserves and was closely tracked by the overnight Eurodollar rate. Other short-term interest rates, including those on commercial paper and negotiable certificates of deposits, also moved up in light of increases in the policy rate.

Bank credit continued to expand, and bank profitability improved

Aggregate credit provided by commercial banks expanded through the second half of 2018 at a stronger pace than the one observed in the first half of last year, as the strength in C&I loan growth more than offset the moderation in the growth in CRE loans and loans to households. In the fourth quarter of last year, the pace of bank credit expansion was about in line with that of nominal GDP, leaving the ratio of total commercial bank credit to current-dollar GDP little changed relative to last June (figure 36). Overall, measures of bank profitability improved further in the third quarter despite a flattening yield curve, but they remain below their pre-crisis levels (figure 37).

36. Ratio of total commercial bank credit to nominal gross domestic product



Note: Data for 2018:Q4 are estimated.
Source: Federal Reserve Board, Statistical Release H.8, "Assets and Liabilities of Commercial Banks in the United States"; Bureau of Economic Analysis via Haver Analytics.

37. Profitability of bank holding companies

Note: The data are quarterly and are seasonally adjusted. The data extend through 2018:Q3.
Source: Federal Reserve Board, Form FR Y-9C, Consolidated Financial Statements for Bank Holding Companies.

Developments Related to Financial Stability

The Federal Reserve Board's financial stability monitoring framework

The framework used by the Federal Reserve Board to monitor financial stability distinguishes between shocks to and vulnerabilities of the financial system. Shocks, such as sudden changes to financial or economic conditions, are typically surprises and are inherently difficult to predict, whereas vulnerabilities tend to build up over time and are the aspects of the financial system that are most expected to cause widespread problems in times of stress. Some vulnerabilities are cyclical in nature, rising and falling over time, while others are structural, stemming from longer-term forces shaping the nature of credit intermediation. As a result, the framework focuses primarily on monitoring vulnerabilities and emphasizes four broad categories based on academic research.[1]

1. Elevated valuation pressures are signaled by asset prices that are high relative to economic fundamentals or historical norms and are often driven by an increased willingness of investors to take on risk. As such, elevated valuation pressures imply a greater possibility of outsized drops in asset prices.

2. Excessive borrowing by businesses and households leaves them vulnerable to distress if their incomes decline or the assets they own fall in value.

3. Excessive leverage within the financial sector increases the risk that financial institutions will not have the ability to absorb losses when hit by adverse shocks.

4. Funding risks expose the financial system to the possibility that investors will "run" by withdrawing their funds from a particular institution or sector. Facing a run, financial institutions may need to sell assets quickly at "fire sale" prices, thereby incurring substantial losses and potentially even becoming insolvent. Historians and economists often refer to widespread investor runs as "financial panics."

While this framework provides a systematic way to assess financial stability, some potential risks do not fit neatly into it because they are novel or difficult to quantify, such as cybersecurity or developments in crypto-assets. In addition, some vulnerabilities are difficult to measure with currently available data, and the set of vulnerabilities may evolve over time. Given these limitations, we continually rely on ongoing research by the Federal Reserve staff, academics, and other experts.

Since the publication of the Federal Reserve Board's first *Financial Stability Report* on November 28, 2018, some areas where valuation pressures were a concern have cooled, particularly those related to below-investment-grade corporate debt.[2] Regulatory capital and liquidity ratios of key financial institutions, especially large banks, are at historically high levels. Funding risks in the financial system are low relative to the period leading up to the crisis. Borrowing by households has risen roughly in line with household incomes and has been concentrated among prime borrowers. Nonetheless, debt owed by businesses is high, and credit standards, especially within segments of the loan market focused on lower-rated or unrated firms, deteriorated in the second half of 2018.

Asset valuations increased to the high end of their historical ranges in many markets over 2017 and the first half of 2018, supported by the solid economic expansion and an apparent increase in investors' appetite for risk. However, compared with July 2018, around the time of the previous *Monetary Policy Report*, valuation pressures have eased somewhat in the equity, corporate bond, and leveraged loan markets. Over the same period, amid substantial market volatility, the forward equity price-to-earnings ratio of S&P 500 firms, a metric of valuations in equity markets, declined a touch, on net, and it currently stands just below the top quartile of its historical distribution (figure A). Spreads on both investment- and speculative-grade corporate bonds over comparable-maturity Treasury securities widened modestly to levels close to the medians of their historical ranges since 1997 (figure B). Spreads on newly issued leveraged loans widened markedly in the fourth quarter of 2018. In real estate markets, commercial real estate prices have been growing faster than rents for several years, leaving valuations stretched.

Since the 2007–09 recession, household debt and business debt have diverged (figure C). Over the past several years, borrowing by households has stayed in line with income growth and has been concentrated among borrowers with strong credit histories.

(continued)

1. For a review of the research literature in this area and further discussion, see Tobias Adrian, Daniel Covitz, and Nellie Liang (2015), "Financial Stability Monitoring," *Annual Review of Financial Economics*, vol. 7 (December), pp. 357–95.

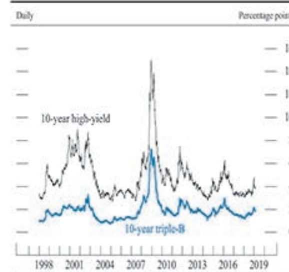
2. See Board of Governors of the Federal Reserve System (2018), *Financial Stability Report* (Washington: Board of Governors, November), https://www.federalreserve.gov/publications/2018-november-financial-stability-report-purpose.htm.

A. Forward price-to-earnings ratio of S&P 500 firms

NOTE: Aggregate forward price-to-earnings ratio of S&P 500 firms. Data are based on expected earnings for 12 months ahead. The plus sign shows daily data corresponding to February 20, 2019.

SOURCE: Federal Reserve Board staff calculations using Refinitiv (formerly Thomson Reuters), IBES Estimates.

B. Corporate bond spreads to similar-maturity Treasury securities

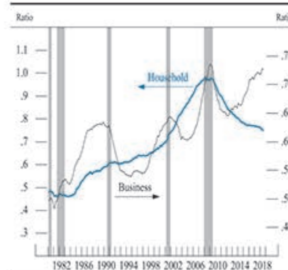


NOTE: The 10-year triple-B reflects the effective yield of the ICE BofAML 7-to-10-year triple-B U.S. Corporate Index (C4A4), and the 10-year high-yield reflects the effective yield of the ICE BofAML 7-to-10-year U.S. Cash Pay High Yield Index (J4A0). Treasury yields from smoothed yield curve estimated from off-the-run securities.

SOURCE: ICE Data Indices, LLC, used with permission; Department of the Treasury.

By contrast, borrowing by businesses, including riskier firms, has expanded significantly. For speculative-grade and unrated firms, the ratio of debt to assets has increased steadily since 2010 and remains near its historical peak. Further, growth in debt to businesses with lower credit ratings and with already elevated levels of borrowing, such as high-yield bonds and leveraged loans, has been substantial over the past

C. Business- and household-sector credit-to-GDP ratio



NOTE: Data are quarterly and extend through 2018:Q3. The shaded bars indicate periods of business recession as defined by the National Bureau of Economic Research. GDP is gross domestic product.

SOURCE: Federal Reserve Board, Statistical Release Z.1, "Financial Accounts of the United States"; Bureau of Economic Analysis via Haver Analytics, national income and product accounts, Table 1.1.5: Gross Domestic Product; Board staff calculations.

two years (figure D). Issuance of these instruments slowed significantly in November and December 2018 because of the sharply higher spreads demanded by investors to hold them, but issuance has rebounded somewhat in early 2019.

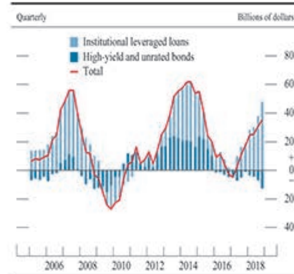
Credit standards for new leveraged loans deteriorated over the second half of 2018. The share of newly issued large loans to corporations with high leverage—defined as those with ratios of debt to EBITDA (earnings before interest, taxes, depreciation, and amortization) above 6—increased through 2018 to levels exceeding previous peaks observed in 2007 and 2014, when underwriting quality was notably poor. In addition, issuance of covenant-lite loans—loans with few or no traditional maintenance covenants—remained high during the second half of 2018, although this elevated level may reflect, in part, a greater prevalence of investors who do not traditionally monitor and exercise loan covenants.[3] Nonetheless, the strong economy has helped sustain solid credit performance of leveraged loans in 2018, with the default rate on such loans near the low end of its historical range.

(continued on next page)

3. Collateralized loan obligations, which are predominantly backed by leveraged loans, have grown rapidly over the past year and, as of year-end 2018, purchase about 60 percent of leveraged loans at origination. Similarly, mutual funds hold about 20 percent of leveraged loans.

Financial Stability *(continued)*

D. Net issuance of risky business debt



NOTE: Total net issuance of risky debt is the sum of the net issuance of speculative-grade and unrated bonds and leveraged loans. The data are four-quarter moving averages.

SOURCE: Mergent, Fixed Investment Securities Database (FISD); S&P Global, Leveraged Commentary & Data.

The credit quality of nonfinancial high-yield corporate bonds was roughly stable over the past several years, with the share of high-yield bonds outstanding that are rated B3/B- or below staying flat and below the financial crisis peak. In contrast, the distribution of ratings among investment-grade corporate bonds deteriorated. The share of bonds rated at the lowest investment-grade level (for example, an S&P rating of triple-B) reached near-record levels. As of December 2018, around 42 percent of corporate bonds outstanding were at the lowest end of the investment-grade segment, amounting to about $3 trillion.

Vulnerabilities from financial-sector leverage continue to be low relative to historical standards, in part because of regulatory reforms enacted since the financial crisis. Core financial intermediaries, including large banks, insurance companies, and broker-dealers, appear well positioned to weather economic stress. As of the third quarter of 2018, regulatory capital ratios for the U.S. global systemically important banks remained well above regulatory requirements and were close to historical highs. Those banks will be subject to the 2019 Dodd-Frank Act stress tests and Comprehensive Capital Assessment and Review. Consistent with the Federal Reserve Board's public framework, this year's scenarios feature a larger increase in unemployment and a deeper recession than in 2018 as well as typically large declines in financial asset prices. Capital levels at insurance companies and broker-dealers also remained relatively robust by historical standards. A range of indicators suggest that hedge fund leverage was roughly unchanged over 2018; however, comprehensive data, available with a significant time lag, from early 2018 showed that leverage remained at the upper end of its range over the past eight years.

Vulnerabilities associated with funding risk—that is, the financing of illiquid assets or long-maturity assets with short-maturity debt—continue to be low, in part because of the post-crisis implementation of liquidity regulations for banks and the 2016 money market reforms.[4] Banks are holding higher levels of liquid assets, while their use of short-term wholesale funding as a share of liabilities is near historical lows. Assets under management at prime funds, institutions that proved vulnerable to runs in the past, have risen somewhat in recent months but remained far below pre-reform levels.

Potential downside risks to international financial stability include a downturn in global growth, political and policy uncertainty, an intensification of trade tensions, and broadening stress in emerging market economies (EMEs). In many advanced foreign economies, financial conditions tightened somewhat in the second half of 2018, partly reflecting a deterioration in the fiscal outlook of Italy and Brexit uncertainty. The United Kingdom and the European Union (EU) have not yet ratified the terms for the United Kingdom's March 2019 withdrawal from the EU (Brexit). Without such a withdrawal agreement, there will be no transition period for important trade and financial interactions between U.K. and EU residents, and, despite preparations for a "no-deal Brexit," a wide range of economic and financial activities could be disrupted. EMEs also experienced heightened financial stress in the second half of 2018. Although that stress has receded somewhat more recently, many EMEs continue to harbor important vulnerabilities, reflecting one or more of substantial corporate leverage, fiscal concerns, or excessive reliance on foreign funding.

4. See U.S. Securities and Exchange Commission (2014), "SEC Adopts Money Market Fund Reform Rules," press release, July 23, https://www.sec.gov/news/press-release/2014-143.

International Developments

Economic activity in most foreign economies weakened in the second half of 2018

After expanding briskly in 2017, foreign GDP growth moderated in 2018. While part of this slowdown is likely due to temporary factors, it also appears to reflect weaker underlying momentum against the backdrop of somewhat tighter financial conditions, increased policy uncertainty, and ongoing debt deleveraging.

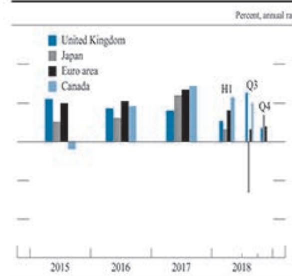
The growth slowdown was particularly pronounced in advanced foreign economies

Real GDP growth in several advanced foreign economies (AFEs) slowed markedly in the second half of the year (figure 38). This slowdown was concentrated in the manufacturing sector against the backdrop of softening global trade flows. In Japan, real GDP contracted in the second half of 2018, as economic activity, which was disrupted by a series of natural disasters in the third quarter, rebounded only partly in the fourth quarter. Growth in the euro area slowed in the second half of the year: Transportation bottlenecks and complications in meeting tighter emissions standards for new motor vehicles weighed on German economic activity, while output contracted in Italy. Although some of these headwinds appear to be fading, recent indicators—especially for the manufacturing sector—point to only a limited recovery of activity in the euro area at the start of 2019.

Inflation pressures remain contained in advanced foreign economies . . .

In recent months, headline inflation has fallen below central bank targets in many major AFEs, reflecting large declines in energy prices (figure 39). In the euro area and Japan, low headline inflation rates also reflect subdued core inflation. In Canada and the United Kingdom, instead, core inflation rates have been close to 2 percent.

38. Real gross domestic product growth in selected advanced foreign economies



NOTE: The data for the euro area, Japan, and the U.K. incorporate preliminary estimates for 2018:Q4. The data for Canada extend through 2018:Q3.

SOURCE: For the United Kingdom, Office for National Statistics; for Japan, Cabinet Office, Government of Japan; for the euro area, Eurostat; for Canada, Statistics Canada; all via Haver Analytics.

39. Consumer price inflation in selected advanced foreign economies

NOTE: The data for the euro area incorporate the flash estimate for January 2019. The data for the United Kingdom extend through January 2019. The data for Canada and Japan extend through December 2018.

SOURCE: For the United Kingdom, Office for National Statistics; for Japan, Ministry of International Affairs and Communications; for the euro area, Statistical Office of the European Communities; for Canada, Statistics Canada; all via Haver Analytics.

. . . prompting central banks to withdraw accommodation only gradually

With underlying inflation still subdued, the Bank of Japan and the European Central Bank (ECB) kept their short-term policy rates at negative levels. Although the ECB concluded its asset purchase program in December, it signaled an only very gradual removal of policy accommodation going forward. The Bank of England (BOE) and the Bank of Canada, which both began raising interest rates in 2017, increased their policy rates further in the second half of 2018 but to levels that are still low by historical standards. The BOE noted that elevated uncertainty around the United Kingdom's exit from the European Union (EU) weighed on the country's economic outlook.

40. Equity indexes for selected foreign economies

NOTE: The data are weekly averages of daily data and extend through February 20, 2019.
SOURCE: For euro area, DJ Euro Stoxx Index; for Japan, TOPIX Stock Index; for United Kingdom, FTSE 100 Stock Index; all via Bloomberg.

Political uncertainty and slower economic growth weighed on AFE asset prices

Moderation in global growth, protracted budget negotiations between the Italian government and the EU, and developments related to the United Kingdom's withdrawal from the EU weighed on AFE asset prices in the second half of 2018 (figure 40). Broad stock price indexes in the AFEs fell, interest rates on sovereign bonds in several countries in the European periphery remained elevated, and European bank shares underperformed, although these moves have partially retraced in recent weeks. Market-implied paths of policy in major AFEs and long-term sovereign bond yields declined somewhat, as economic data disappointed (figure 41).

41. Nominal 10-year government bond yields in selected advanced economies

NOTE: The data are weekly averages of daily benchmark yields and extend through February 20, 2019.
SOURCE: Bloomberg.

Growth slowed in many emerging market economies

Chinese GDP growth slowed in the second half of 2018 as an earlier tightening of credit policy, aimed at restraining the buildup of debt, caused infrastructure investment to fall sharply and squeezed household spending (figure 42). However, increased concerns about a sharper-than-expected slowdown in

growth, as well as prospective effects of trade policies, prompted Chinese authorities to ease monetary and fiscal policy somewhat. Elsewhere in emerging Asia, growth remained well below its 2017 pace amid headwinds from moderating global growth. Tighter financial conditions also weighed on growth in other EMEs—notably, Argentina and Turkey.

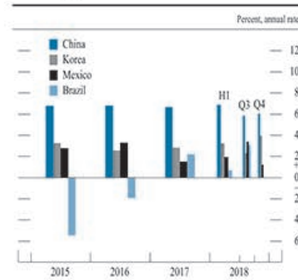
Economic activity strengthened somewhat in Mexico and Brazil, but uncertainty about policy developments remains elevated

In Mexico, economic activity increased at a more rapid rate in the third quarter after modest advances earlier in the year. However, growth weakened again in the fourth quarter, as perceptions that the newly elected government would pursue less market-friendly policies led to a sharp tightening in financial conditions. Amid a sharp peso depreciation and above-target inflation, the Bank of Mexico raised its policy rate to 8.25 percent in December. Brazilian real GDP growth rebounded in the third quarter after being held down by a nationwide trucker's strike in May, and financial markets have rallied on expectations that Brazil's new government will pursue economic policies that support growth. However, investors continued to focus on whether the new administration would pass significant fiscal reforms.

Financial conditions in many emerging market economies were volatile but are, on net, little changed since July

Financial conditions in the EMEs generally tightened in the second half of 2018, as investor concerns about vulnerabilities in several EMEs intensified against the backdrop of higher policy uncertainty, slowing global growth, and rising U.S. interest rates. Trade policy tensions between the United States and China weighed on asset prices, especially in China and other Asian economies. Broad measures of EME sovereign bond spreads over U.S. Treasury yields rose, and benchmark EME equity indexes declined. However,

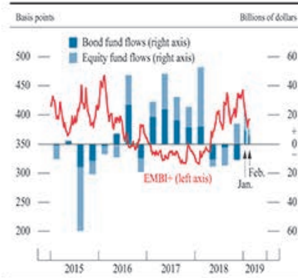
42. Real gross domestic product growth in selected emerging market economies



NOTE: The data for China are seasonally adjusted by Board staff. The data for Korea, Mexico, and Brazil are seasonally adjusted by their respective government agencies. The data for Korea and Mexico incorporate preliminary estimates for 2018:Q4. The data for Brazil extend through 2018:Q3.

SOURCE: For China, China National Bureau of Statistics; for Korea, Bank of Korea; for Mexico, Instituto Nacional de Estadistica y Geografia; for Brazil, Instituto Brasileiro de Geografia e Estatistica; all via Haver Analytics.

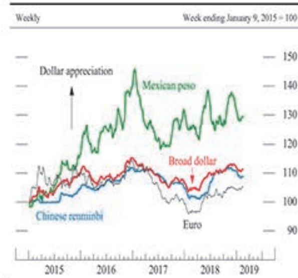
43. Emerging market mutual fund flows and spreads



NOTE: The bond and equity fund flows data are quarterly sums of weekly data from January 1, 2015, to December 31, 2018, and monthly sums of weekly data from January 1, 2019, to February 20, 2019. The fund flows data exclude funds located in China. The J.P. Morgan Emerging Markets Bond Index Plus (EMBI+) data are weekly averages of daily data and extend through February 19, 2019.

SOURCE: For bond and equity fund flows, EPFR Global; for EMBI+, J.P. Morgan Emerging Markets Bond Index Plus via Bloomberg.

44. U.S. dollar exchange rate indexes



NOTE: The data, which are in foreign currency units per dollar, are weekly averages of daily data and extend through February 20, 2019. As indicated by the arrow, increases in the data represent U.S. dollar appreciation, and decreases represent U.S. dollar depreciation.

SOURCE: Federal Reserve Board, Statistical Release H.10, "Foreign Exchange Rates."

financial conditions improved significantly in recent months, supported in part by more positive policy developments—including the U.S.-Mexico-Canada Agreement and progress on U.S.–China trade negotiations—and FOMC communications indicating a more gradual normalization of U.S. interest rates. EME mutual fund inflows resumed in recent months after experiencing outflows in the middle of 2018 (figure 43). While movements in asset prices and capital flows have been sizable for a number of economies, broad indicators of financial stress in EMEs are below those seen during other periods of stress in recent years.

The dollar appreciated slightly

The foreign exchange value of the U.S. dollar is bit a higher than in July (figure 44). Concerns about the global outlook, uncertainty about trade policy, and monetary policy normalization in the United States contributed to the appreciation of the dollar. The Chinese renminbi depreciated against the dollar slightly, on net, amid ongoing trade negotiations and increased concerns about growth prospects in China. The Mexican peso has been volatile amid ongoing political developments and trade negotiations but has, on net, declined only modestly against the dollar. Sharp declines in oil prices also weighed on the currencies of some energy-exporting economies.

Part 2
Monetary Policy

The Federal Open Market Committee continued to gradually increase the federal funds rate in the second half of last year

From late 2015 through the first half of last year, the Federal Open Market Committee (FOMC) gradually increased its target range for the federal funds rate as the economy continued to make progress toward the Committee's congressionally mandated objectives of maximum employment and price stability. In the second half of 2018, the FOMC continued this gradual process of monetary policy normalization, raising the federal funds rate at its September and December meetings, bringing the target range to 2¼ to 2½ percent (figure 45).[14] The FOMC's decisions to increase the federal funds rate reflected the solid performance of the U.S. economy, the continued strengthening of the labor market, and the fact that inflation had moved near the Committee's 2 percent longer-run objective.

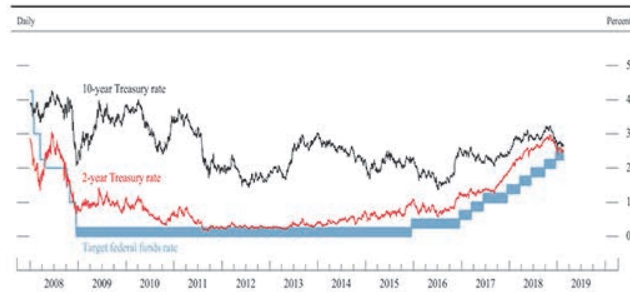
14. See Board of Governors of the Federal Reserve System (2018), "Federal Reserve Issues FOMC Statement," press release, September 26, https://www.federalreserve.gov/newsevents/pressreleases/monetary20180926a.htm; and Board of Governors of the Federal Reserve System (2018), "Federal Reserve Issues FOMC Statement," press release, December 19, https://www.federalreserve.gov/newsevents/pressreleases/monetary20181219a.htm.

Looking ahead, the FOMC will be patient as it determines what future adjustments to the target range for the federal funds rate may be appropriate

With the gradual reductions in the amount of policy accommodation to date, the federal funds rate is now at the lower end of the range of estimates of its longer-run neutral level—that is, the level of the federal funds rate that is neither expansionary nor contractionary.

Developments at the time of the December FOMC meeting, including volatility in financial markets and increased concerns about global growth, made the appropriate extent and timing of future rate increases more uncertain than earlier. Against that backdrop, the Committee indicated it would monitor global economic and financial developments and assess their implications for the economic outlook. In the Summary

45. Selected interest rates



Note: The 2-year and 10-year Treasury rates are the constant-maturity yields based on the most actively traded securities.
Source: Department of the Treasury; Federal Reserve Board.

of Economic Projections (SEP) from the December meeting—the most recent SEP available—participants generally revised down their individual assessments of the appropriate path for monetary policy relative to their assessments at the time of the September meeting.[15]

In January, the Committee stated that it continued to view sustained expansion of economic activity, strong labor market conditions, and inflation near the Committee's symmetric 2 percent objective as the most likely outcomes. Nonetheless, in light of global economic and financial developments and muted inflation pressures, the Committee will be patient as it determines what future adjustments to the federal funds rate may be appropriate to support these outcomes.

Future changes in the federal funds rate will depend on the economic outlook as informed by incoming data

The FOMC has continued to emphasize that the actual path of monetary policy will depend on the evolution of the economic outlook as informed by incoming data. Specifically, in deciding on the timing and size of future adjustments to the federal funds rate, the Committee will assess realized and expected economic conditions relative to its objectives of maximum employment and 2 percent inflation. This assessment will take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial and international developments.

In addition to evaluating a wide range of economic and financial data and information gathered from business contacts and other informed parties around the country, policymakers routinely consult prescriptions for the policy interest rate from a variety of rules, which can serve as useful guidance to the FOMC. However, many practical considerations make it undesirable for the FOMC to mechanically follow the prescriptions of any specific rule. Consequently, the FOMC's framework for conducting systematic monetary policy respects key principles of good monetary policy and, at the same time, provides flexibility to address many of the limitations of these policy rules (see the box "Monetary Policy Rules and Systematic Monetary Policy").

The FOMC has continued to implement its program to gradually reduce the Federal Reserve's balance sheet

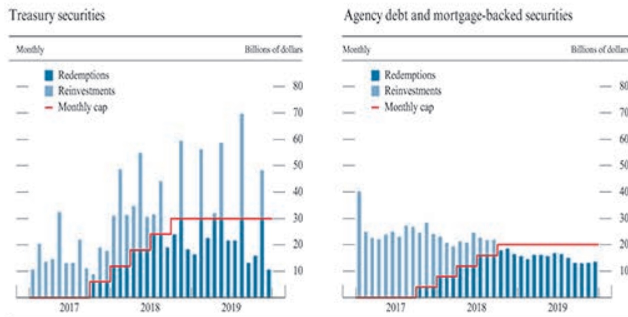
The Committee has continued to implement the balance sheet normalization program that has been under way since October 2017.[16] Under this program, the FOMC has been reducing its holdings of Treasury and agency securities in a gradual and predictable manner by decreasing its reinvestment of the principal payments it received from these securities. Specifically, such payments have been reinvested only to the extent that they exceeded gradually rising caps (figure 46).

In the third quarter of 2018, the Federal Reserve reinvested principal payments from its holdings of Treasury securities maturing during each calendar month in excess of $24 billion. It also reinvested in agency mortgage-backed securities (MBS) the amount of principal payments from its holdings of agency debt and agency MBS received during each calendar month in excess of $16 billion. In the fourth quarter, the FOMC increased the caps for Treasury securities and for agency securities to their respective maximums of $30 billion and $20 billion. Of note,

15. See the December Summary of Economic Projections, which appeared as an addendum to the minutes of the December 18–19, 2018, meeting of the FOMC and is presented in Part 3 of this report.

16. For more information, see the Addendum to the Policy Normalization Principles and Plans, which is available on the Board's website at https://www.federalreserve.gov/monetarypolicy/files/FOMC_PolicyNormalization.20170613.pdf.

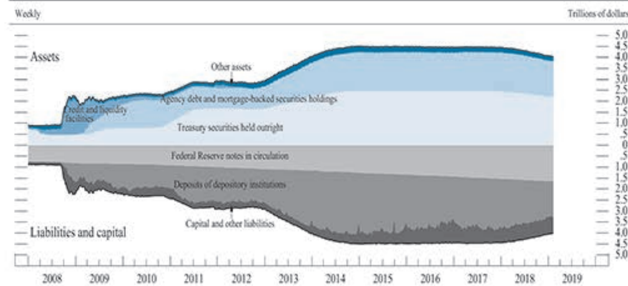
46. Principal payments on SOMA securities



NOTE: Reinvestment and redemption amounts of Treasury securities are projections starting in February 2019. Reinvestment and redemption amounts of agency debt and mortgage-backed securities are projections starting in February 2019. Cap amounts are projections beyond March 2019. The data extend through December 2019.

SOURCE: Federal Reserve Bank of New York; Federal Reserve Board staff calculations.

47. Federal Reserve assets and liabilities



NOTE: "Credit and liquidity facilities" consists of primary, secondary, and seasonal credit; term auction credit; central bank liquidity swaps; support for Maiden Lane, Bear Stearns, and AIG; and other credit facilities, including the Primary Dealer Credit Facility, the Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility, the Commercial Paper Funding Facility, and the Term Asset-Backed Securities Loan Facility. "Other assets" includes unamortized premiums and discounts on securities held outright. "Capital and other liabilities" includes reverse repurchase agreements, the U.S. Treasury General Account, and the U.S. Treasury Supplementary Financing Account. The data extend through February 13, 2019.

SOURCE: Federal Reserve Board, Statistical Release H.4.1, "Factors Affecting Reserve Balances."

reinvestments of agency debt and agency MBS ceased in October as principal payments fell below the maximum redemption caps.

The Federal Reserve's total assets have continued to decline from about \$4.3 trillion last July to about \$4.0 trillion at present, with holdings of Treasury securities at approximately \$2.2 trillion and holdings of agency debt and agency MBS at approximately \$1.6 trillion (figure 47).

As the Federal Reserve has continued to gradually reduce its securities holdings, the level of reserve balances in the banking system has declined. In particular, the level of reserve balances has decreased by about \$350 billion since the middle of last year, and

Monetary Policy Rules and Systematic Monetary Policy

Monetary policy rules are mathematical formulas that relate a policy interest rate, such as the federal funds rate, to a small number of other economic variables—typically including the deviation of inflation from its target value and a measure of resource slack in the economy. The prescriptions for the policy interest rate from these rules can provide helpful guidance for the Federal Open Market Committee (FOMC). This discussion provides information on how policy rules inform the FOMC's systematic conduct of monetary policy, as well as practical considerations that make it undesirable for the FOMC to mechanically follow the prescriptions of any specific rule. The FOMC's approach for conducting monetary policy provides sufficient flexibility to address the intrinsic complexities and uncertainties in the economy while keeping monetary policy predictable and transparent.

Policy Rules and Historical Prescriptions

The effectiveness of monetary policy is enhanced when it is well understood by the public.[1] In simple models of the economy, good economic performance can be achieved by following a specific monetary policy rule that fosters public understanding and that incorporates key principles of good monetary policy.[2] One such principle is that monetary policy should respond in a predictable way to changes in economic conditions and the economic outlook. A second principle is that monetary policy should be accommodative when inflation is below policymakers' longer-run inflation objective and employment is below its maximum sustainable level; conversely, monetary policy should be restrictive when the opposite holds. A third principle is that, to stabilize inflation, the policy rate should be adjusted by more than one-for-one in response to persistent increases or decreases in inflation.

Economists have analyzed many monetary policy rules, including the well-known Taylor (1993) rule. Other rules include the "balanced approach" rule, the "adjusted Taylor (1993)" rule, the "price level" rule, and the "first difference" rule (figure A).[3] These policy rules embody the three key principles of good monetary policy and take into account estimates of how far the economy is from the Federal Reserve's dual-mandate goals of maximum employment and price stability. Four of the five rules include the difference between the rate of unemployment that is sustainable in the longer run and the current unemployment rate (the unemployment rate gap); the first-difference rule includes the change in the unemployment gap rather than its level.[4] In addition, four of the five rules include the difference

(continued)

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1. For a discussion of how the public's understanding of monetary policy matters for the effectiveness of monetary policy, see Janet L. Yellen (2012), "Revolution and Evolution in Central Bank Communications," speech delivered at the Haas School of Business, University of California at Berkeley, Berkeley, Calif., November 13, https://www.federalreserve.gov/newsevents/speech/yellen20121113a.htm.

2. For a discussion regarding principles for the conduct of monetary policy, see Board of Governors of the Federal Reserve System (2018), "Monetary Policy Principles and Practice," Board of Governors, https://www.federalreserve.gov/monetarypolicy/monetary-policy-principles-and-practice.htm.

3. The Taylor (1993) rule was suggested in John B. Taylor (1993), "Discretion versus Policy Rules in Practice," *Carnegie-Rochester Conference Series on Public Policy*, vol. 39 (December), pp. 195–214. The balanced-approach rule was analyzed in John B. Taylor (1999), "A Historical Analysis of *Monetary Policy Rules*," in John B. Taylor, ed., Monetary Policy Rules (Chicago: University of Chicago Press), pp. 319–41. The adjusted Taylor (1993) rule was studied in David Reifschneider and John C. Williams (2000), "Three Lessons for Monetary Policy in a Low-Inflation Era," *Journal of Money, Credit and Banking*, vol. 32 (November), pp. 936–66. A price-level rule was discussed in Robert E. Hall (1984), "Monetary Strategy with an Elastic Price Standard," in *Price Stability and Public Policy*, proceedings of a symposium sponsored by the Federal Reserve Bank of Kansas City, held in Jackson Hole, Wyo., August 2–3 (Kansas City: Federal Reserve Bank of Kansas City), pp. 137–59, https://www.kansascityfed.org/publicat/sympos/1984/s84.pdf. Finally, the first-difference rule is based on a rule suggested by Athanasios Orphanides (2003), "Historical Monetary Policy Analysis and the Taylor Rule," *Journal of Monetary Economics*, vol. 50 (July), pp. 983–1022. A comprehensive review of policy rules is in John B. Taylor and John C. Williams (2011), "Simple and Robust Rules for Monetary Policy," in Benjamin M. Friedman and Michael Woodford, eds., *Handbook of Monetary Economics*, vol. 3B (Amsterdam: North-Holland), pp. 829–59. The same volume of the *Handbook of Monetary Economics* also discusses approaches other than policy rules for deriving policy rate prescriptions.

4. The Taylor (1993) rule represented slack in resource utilization using an output gap (the difference between the current level of real gross domestic product (GDP) and the level that GDP would be if the economy were operating at maximum employment). The rules in figure A represent slack in resource utilization using the unemployment gap instead, because that gap better captures the FOMC's statutory goal to promote maximum employment. However, movements in these alternative measures of resource utilization are highly correlated. For more information, see the note below figure A.

A. Monetary policy rules

Taylor (1993) rule	$R_t^{T93} = r_t^{LR} + \pi_t + 0.5(\pi_t - \pi^{LR}) + (u_t^{LR} - u_t)$
Balanced-approach rule	$R_t^{BA} = r_t^{LR} + \pi_t + 0.5(\pi_t - \pi^{LR}) + 2(u_t^{LR} - u_t)$
Taylor (1993) rule, adjusted	$R_t^{T93adj} = maximum \{R_t^{T93} - Z_t, 0\}$
Price-level rule	$R_t^{PL} = maximum \{r_t^{LR} + \pi_t + (u_t^{LR} - u_t) + 0.5(PLgap_t), 0\}$
First-difference rule	$R_t^{FD} = R_{t-1} + 0.5(\pi_t - \pi^{LR}) + (u_t^{LR} - u_t) - (u_{t-4}^{LR} - u_{t-4})$

NOTE: R_t^{T93}, R_t^{BA}, R_t^{T93adj}, R_t^{PL}, and R_t^{FD} represent the values of the nominal federal funds rate prescribed by the Taylor (1993), balanced-approach, adjusted Taylor (1993), price-level, and first-difference rules, respectively.

R_t denotes the actual nominal federal funds rate for quarter t, π_t is four-quarter price inflation for quarter t, u_t is the unemployment rate in quarter t, and r_t^{LR} is the level of the neutral real federal funds rate in the longer run that, on average, is expected to be consistent with sustaining maximum employment and inflation at the FOMC's 2 percent longer-run objective, π^{LR}. In addition, u_t^{LR} is the rate of unemployment in the longer run. Z_t is the cumulative sum of past deviations of the federal funds rate from the prescriptions of the Taylor (1993) rule when that rule prescribes setting the federal funds rate below zero. $PLgap_t$ is the percent deviation of the actual level of prices from a price level that rises 2 percent per year from its level in a specified starting period.

The Taylor (1993) rule and other policy rules are generally written in terms of the deviation of real output from its full capacity level. In these equations, the output gap has been replaced with the gap between the rate of unemployment in the longer run and its actual level (using a relationship known as Okun's law) in order to represent the rules in terms of the FOMC's statutory goals. Historically, movements in the output and unemployment gaps have been highly correlated. Box note 3 provides references for the policy rules.

between recent inflation and the FOMC's longer-run objective (2 percent as measured by the annual change in the price index for personal consumption expenditures, or PCE), while the price-level rule includes the gap between the level of prices today and the level of prices that would be observed if inflation had been constant at 2 percent from a specified starting year (***PLgap$_t$***).[5] The price-level rule thereby takes account of the deviation of inflation from the long-run objective in earlier periods as well as the current period.

The adjusted Taylor (1993) rule recognizes that the federal funds rate cannot be reduced materially below zero, and that following the prescriptions of the standard Taylor (1993) rule after a recession during which the federal funds rate has fallen to its lower bound may therefore not provide enough policy accommodation. To make up for the cumulative shortfall in accommodation (**Z_t**), the adjusted rule prescribes only a gradual return of the policy rate to the (positive) levels prescribed by the standard Taylor (1993) rule after the economy begins to recover. The version of the price-level rule specified in figure A also recognizes that the federal funds rate cannot be reduced materially below zero. If inflation runs below the 2 percent objective during periods when the price-level rule prescribes setting the federal funds rate well below zero, the rule will, over time, call for more accommodation to make up for the past inflation shortfall.

As shown in figure B, the different monetary policy rules often differ in their prescriptions for the federal funds rate.[6] Although almost all of the simple policy

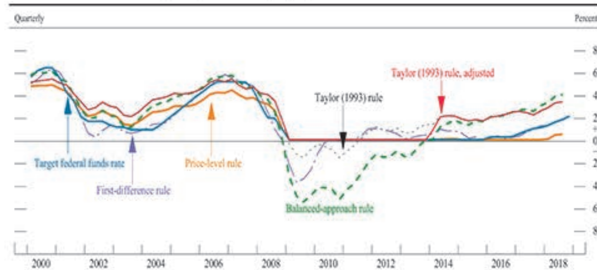
(continued on next page)

5. Calculating the prescriptions of the price-level rule requires selecting a starting year for the price level from which to cumulate the 2 percent annual rate of inflation. Figure B uses 1998 as the starting year. Around that time, the underlying trend of inflation and longer-term inflation expectations stabilized at a level consistent with PCE price inflation being close to 2 percent.

6. These prescriptions are calculated using (1) published data for inflation and the unemployment rate and (2) survey-based estimates of the longer-run value of the neutral real interest rate and the longer-run value of the unemployment rate.

Monetary Policy Rules *(continued)*

B. Historical federal funds rate prescriptions from simple policy rules



NOTE: The rules use historical values of inflation, the federal funds rate, and the unemployment rate. Inflation is measured as the 4-quarter percent change in the price index for personal consumption expenditures (PCE) excluding food and energy. Quarterly projections of long-run values for the federal funds rate and the unemployment rate are derived through interpolations of biannual projections from Blue Chip Economic Indicators. The long-run value for inflation is taken as 2 percent. The target value of the price level is the average level of the price index for PCE excluding food and energy in 1998 extrapolated at 2 percent per year. The data extend through 2018:Q3, with the exception of the target federal funds rate data, which go through 2018:Q4.

SOURCE: Federal Reserve Bank of Philadelphia; Wolters Kluwer, Blue Chip Economic Indicators; Federal Reserve Board staff estimates.

rules would have called for values for the federal funds rate that were increasing over time in recent years, the prescribed values vary widely across rules. In general, there is no unique criterion for favoring one rule over another.

Systematic Monetary Policy in Practice

Although monetary policy rules seem appealing for obtaining and communicating current and future policy rate prescriptions, the usefulness of these rules for policymakers is limited by a range of practical considerations. According to simple monetary policy rules, the policy interest rate must respond mechanically to a small number of variables. However, these variables may not reflect important information available to policymakers at the time they make decisions. For example, none of the inputs into the Taylor (1993) rule include financial and credit market conditions or indicators of consumer and business sentiment; these factors are often very informative for the future course of the economy. Similarly, monetary policy rules tend to include only the current values of the selected variables in the rule. But the relationship between the current values of these variables and the outlook for the economy changes over time for a number of reasons. For example, the structure of the economy is evolving over time and is not known with certainty at any given point in time.[7] To complicate matters further, monetary policy affects the Federal Reserve's goal variables of inflation and employment with long and variable lags. For these reasons, good monetary policy must take into account the information contained in the real-time forecast of the economy. Finally, simple policy rules do not take into account that the risks to the economic outlook may be asymmetric, such as during the period when the federal funds rate was still close to zero. At that time, the FOMC took into consideration that it would have limited scope to respond to an unexpected weakening in the economy by cutting the federal funds rate, but that it would have ample scope to increase the policy rate in response to an unexpected strengthening in the economy. This asymmetric risk provided a rationale for increasing the federal funds rate more gradually than prescribed by some policy rules shown in figure B.[8]

(continued)

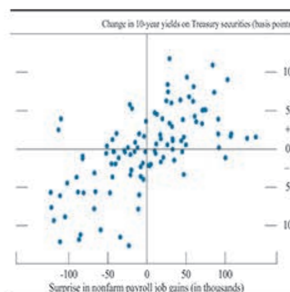
7. The box "Complexities of Monetary Policy Rules" in the July 2018 *Monetary Policy Report* discusses how shifts in the structure of the economy cause the longer-run value of the neutral real interest rate to vary over time and thus complicate its estimation. See Board of Governors of the Federal Reserve System (2018), *Monetary Policy Report* (Washington: Board of Governors, July), pp. 37–41, https://www.federalreserve.gov/monetarypolicy/files/20180713_mprfullreport.pdf.

8. For further discussion regarding the challenges of using monetary policy rules in practice, see Board of Governors of the Federal Reserve System (2018), "Challenges Associated with Using Rules to Make Monetary Policy," Board of Governors, https://www.federalreserve.gov/monetarypolicy/challenges-associated-with-using-rules-to-make-monetary-policy.htm.

The FOMC conducts systematic monetary policy in a framework that respects the key principles of good monetary policy while providing sufficient flexibility to address many of the practical concerns described earlier. At the core of this framework lies the FOMC's firm commitment to the Federal Reserve's statutory mandate of promoting maximum employment and price stability, a commitment that the Committee reaffirms on a regular basis.[9] To explain its monetary policy decisions to the public as clearly as possible, the FOMC communicates about the economic data that are relevant to its policy decisions. As part of this communication strategy, the Federal Reserve regularly describes the economic and financial data used to inform its policy decisions in the *Monetary Policy Report* and the FOMC meeting minutes. These data include, but are not limited to, measures of labor market conditions, inflation, household spending and business investment, asset prices, and the global economic environment. The FOMC postmeeting statements and the meeting minutes detail how the data inform the Committee's overall economic outlook, the risks to this outlook, and, in turn, the Committee's assessment about the appropriate stance of monetary policy. This appropriate stance depends on the FOMC's longer-run goals, the economic outlook and the risks to the outlook, and the channels through which monetary policy actions influence economic activity and prices. The FOMC combines all of these elements in determining the timing and size of adjustments of the policy interest rates. The quarterly Summary of Economic Projections provides additional information about each FOMC participant's forecasts for the economy and the longer-run assessments of the economy, under her or his individual views concerning appropriate policy.

These policy communications help the public understand the FOMC's approach to monetary policymaking and the principles that underlie it. Consequently, in response to incoming information, market participants tend to adjust their expectations regarding monetary policy in the direction consistent with achieving the maximum-employment and price-stability goals of the FOMC.[10] Evidence that market

C. Change in 10-year yield in response to Employment Situation report



NOTE: The data are monthly, and the sample period starts in February 2010. The change in 10-year yields on Treasury securities is measured within a 1-hour window after the data release. The surprise in nonfarm payroll job gains is measured as the difference in the actual nonfarm payroll job gains in thousands and the median expected nonfarm payroll job gains in the Bloomberg Survey of Economists before the data release.

SOURCE: Bureau of Labor Statistics; Bloomberg.

participants adjust their expectations for policy in this manner is shown in figure C. The figure plots the change in the 10-year yield on Treasury securities in a one-hour window around the release of employment reports on the vertical axis against the difference in the actual value of nonfarm payroll job gains and the expectations of private-sector analysts immediately before the release of the data on the horizontal axis—that is, a proxy for "surprises" in nonfarm payroll job gains. When actual nonfarm payroll job gains turn out to be higher than market participants expect, the yield on 10-year Treasury securities tends to increase. The rise in the 10-year yield reflects market participants' expectation that, as a result of stronger-than-expected labor market data, the path of short-term interest rates will be higher in the future. Conversely, the 10-year yield tends to decline after negative surprises in nonfarm payroll data, reflecting the path of short-term interest rates will be somewhat lower in the future. These adjustments in the 10-year yield help stabilize the economy even before the FOMC changes the level of the federal funds rate in the direction consistent with achieving its goals, as higher long-term interest rates tend to slow the labor market while lower rates tend to strengthen it.

9. See the Statement on Longer-Run Goals and Monetary Policy Strategy, which is available on the Board's website at https://www.federalreserve.gov/monetarypolicy/files/FOMC_LongerRunGoals.pdf.

10. New economic information can be composed of data surprises or of factors that may pose risks to future economic outcomes but are not yet reflected in the data.

by about $1.2 trillion since its peak in 2014.[17] At the January meeting, the Committee released an updated Statement Regarding Monetary Policy Implementation and Balance Sheet Normalization to provide additional information regarding its plans to implement monetary policy over the longer run.[18] In this statement, the Committee indicated that it intends to continue to implement monetary policy in a regime in which an ample supply of reserves ensures that control over the level of the federal funds rate and other short-term interest rates is exercised primarily through the setting of the Federal Reserve's administered rates, and in which active management of the supply of reserves is not required. This operating procedure is often called a "floor system." The FOMC judges that this approach provides good control of short-term money market rates in a variety of market conditions and effective transmission of those rates to broader financial conditions. In addition, the FOMC stated that it is prepared to adjust any of the details for completing balance sheet normalization in light of economic and financial developments.

Although reserve balances play a central role in the ongoing balance sheet normalization process, in the longer run, the size of the balance sheet will also be importantly determined by trend growth in nonreserve liabilities. The box "The Role of Liabilities in Determining the Size of the Federal Reserve's Balance Sheet" discusses various factors that influence the size of reserve and nonreserve liabilities.

Meanwhile, interest income on the Federal Reserve's securities holdings has continued to support substantial remittances to the U.S. Treasury. Preliminary financial statement results indicate that the Federal Reserve remitted about $65 billion in 2018.

17. Since the start of the normalization program, reserve balances have dropped by approximately $600 billion.

18. See the Statement Regarding Monetary Policy Implementation and Balance Sheet Normalization, which is available on the Board's website at https://www.federalreserve.gov/newsevents/pressreleases/monetary20190130c.htm.

The Federal Reserve's implementation of monetary policy has continued smoothly

As with the previous federal funds rate increases since late 2015, the Federal Reserve successfully raised the effective federal funds rate in September and December by increasing the interest rate paid on reserve balances and the interest rate offered on overnight reverse repurchase agreements (ON RRPs). Specifically, the Federal Reserve raised the interest rate paid on required and excess reserve balances to 2.20 percent in September and to 2.40 percent in December. In addition, the Federal Reserve increased the ON RRP offering rate to 2.00 percent in September and to 2.25 percent in December. The Federal Reserve also approved a ¼ percentage point increase in the discount rate (the primary credit rate) in both September and December. Yields on a broad set of money market instruments moved higher, roughly in line with the federal funds rate, in response to the FOMC's policy decisions in September and December. Usage of the ON RRP facility has remained low, excluding quarter-ends.

The effective federal funds rate moved to parity with the interest rate paid on reserve balances in the months before the December meeting. At its December meeting, the Committee made a second small technical adjustment by setting the interest on excess reserves rate 10 basis points below the top of the target range for the federal funds rate; this adjustment was intended to foster trading in the federal funds market at rates well within the FOMC's target range.

The Federal Reserve will conduct a review of its strategic framework for monetary policy in 2019

With labor market conditions close to maximum employment and inflation near the Committee's 2 percent objective, the FOMC

The Role of Liabilities in Determining the Size of the Federal Reserve's Balance Sheet

The size of the Federal Reserve's balance sheet increased from $900 billion at the end of 2006 to about $4.5 trillion at the end of 2014—or from 6 percent of gross domestic product (GDP) to about 25 percent of GDP—mainly as a result of the large-scale asset purchase (LSAP) programs conducted in response to persistent economic weakness following the financial crisis. The expansion of total assets that stemmed from the LSAPs was primarily matched by higher reserve balances of depository institutions, which peaked in the fall of 2014 at $2.8 trillion, or almost 16 percent of GDP, rising from about $10 billion at the end of 2006. Liabilities other than reserves have also grown significantly and played a role in the expansion of the balance sheet. The magnitude of these nonreserve liabilities as well as the flows affecting their variability are not closely related to monetary policy decisions. Since October 2017, the Federal Reserve has been gradually reducing its securities holdings resulting from crisis-era purchases. Once these holdings have unwound to the point at which reserve balances have declined to their longer-run level, the size of the balance sheet will be determined by factors affecting the demand for Federal Reserve liabilities. This discussion describes the Federal Reserve's most significant liabilities and reviews the factors that influenced their size since the financial crisis. Many of the Federal Reserve's liabilities arise from statutory responsibilities, such as supplying currency and serving as the Treasury Department's fiscal agent. Each liability provides social benefits to the economy and plays an important role as a safe and liquid asset for the public, the banking system, the U.S. government, or other institutions.

Figure A plots the evolution of the Federal Reserve's main liabilities relative to nominal GDP over the post–World War II period. Federal Reserve notes outstanding have traditionally been the largest Federal Reserve liability and, over the past three decades, have been slowly growing as a share of U.S. nominal GDP. U.S. currency is an important medium of exchange and store of value, both domestically and abroad. Despite the increasing use of electronic means of payment, currency remains widely used in retail transactions in the United States. Demand for currency tends to increase with the size of the economy because households and businesses need more currency to use in exchange for a growing volume of economic transactions. In addition, with heavy usage of U.S. currency overseas, changes in global growth as well as in financial and geopolitical stability can also

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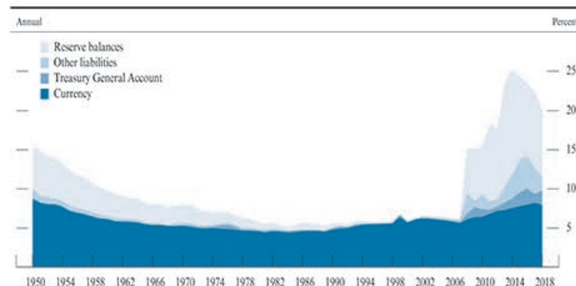
A. Liabilities as a share of nominal gross domestic product



NOTE: Data for 2018 pertain to Q3 and are from the *Federal Reserve Banks Combined Quarterly Financial Report* (Unaudited); data for 1950 through 2017 are from the *104th Annual Report, 2017*.

SOURCE: Board of Governors of the Federal Reserve System (2018), *104th Annual Report, 2017*, Table 6: Reserves of Depository Institutions, Federal Reserve Bank Credit, and Related Items (Table 6A: Year-End 1984-2017 and Month-End 2017; Table 6B: Year-End 1918-1983) (Washington: Board of Governors), pp. 302-09, https://www.federalreserve.gov/publications/files/2017-annual-report.pdf; Board of Governors of the Federal Reserve System (2018), *Federal Reserve Banks Combined Quarterly Financial Report* (Unaudited), Table: Combined Statements of Condition (Washington: Board of Governors, September 30), p. 3, https://www.federalreserve.gov/aboutthefed/files/quarterly-report-20180930.pdf.

The Role of Liabilities *(continued)*

materially affect the rate of currency growth. Since the start of the Global Financial Crisis, notes in circulation have more than doubled and, as of the end of 2018, stood at about $1.67 trillion, equivalent to about 8 percent of U.S. GDP, implying that accommodating demand for currency alone requires a larger balance sheet than before the crisis.

Reserve balances are currently the second-largest liability in the Federal Reserve's balance sheet, totaling $1.66 trillion at the end of 2018, or nearly 8 percent of nominal GDP. This liability item consists of deposits held at Federal Reserve Banks by depository institutions, including commercial banks, savings banks, credit unions, thrift institutions, and most U.S. branches and agencies of foreign banks. These balances include reserves held to fulfill reserve requirements as well as reserves held in excess of these requirements. Reserve balances allow banks to facilitate daily payment flows, both in ordinary times and in stress scenarios, without borrowing funds or selling assets. Reserve balances have been declining for several years, in part as a result of the ongoing balance sheet normalization program initiated in October 2017, and now stand about $1.2 trillion below their peak in 2014. At its January 2019 meeting, the Federal Open Market Committee decided that it would continue to implement monetary policy in a regime with an ample supply of reserves, which is often called a "floor system" or an "abundant reserves system."[1] Going forward, the banking system's overall demand for reserve balances and the Committee's judgment about the quantity that is appropriate for the efficient and effective implementation of monetary policy will determine the longer-run level of reserve balances. Although the level of reserve balances that banks will eventually demand is not yet known with certainty, it is likely to be appreciably higher than before the crisis. Banks' higher demand for reserves appears to reflect in part an increased focus on liquidity risk management in the context of regulatory changes.

Liabilities other than currency and reserves include the Treasury General Account (TGA), reverse repurchase agreements conducted with foreign official account holders, and deposits held by designated financial market utilities (DFMUs). By statute, the Federal Reserve serves a special role as fiscal agent or banker for the federal government. Consequently, the U.S. Treasury holds cash balances at the Federal Reserve in the TGA, using this account to receive taxes and proceeds of securities sales and to pay the government's bills, including interest and principal on maturing securities. Before 2008, the Treasury targeted a steady, low balance of $5 billion in the TGA on most days, and it used private accounts at commercial banks to manage the variability in its cash flows. Since 2008, the Treasury has used the TGA as the primary account for managing cash flows. In May 2015, the Treasury announced its intention to hold in the TGA a level of cash generally sufficient to cover one week of outflows, subject to a minimum balance objective of roughly $150 billion. Since this policy change, the TGA balance has generally been well above this minimum; at the end of 2018, it was about $370 billion, or nearly 2 percent of GDP. The current policy helps protect against the risk that extreme weather or other technical or operational events might cause an interruption in access to debt markets and leave the Treasury unable to fund U.S. government operations—a scenario that could have serious consequences for financial stability.

Reverse repurchase agreements with foreign official accounts, also known as the foreign repo pool, also rose during recent years. The Federal Reserve has long offered this service as part of a suite of banking and custody services to foreign central banks, foreign governments, and international official institutions.

(continued)

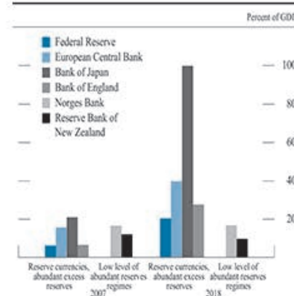
1. See footnote 18 in the main text.

Accounts at the Federal Reserve provide foreign official institutions with access to immediate dollar liquidity to support operational needs, to clear and settle securities in their accounts, and to address unexpected dollar shortages or exchange rate volatility. The foreign repo pool has grown from an average level of around $30 billion before the crisis to a current average of about $250 billion, equivalent to a little more than 1 percent of GDP. The rise in foreign repo pool balances has reflected in part central banks' preference to maintain robust dollar liquidity buffers.

Finally, "other deposits" with the Federal Reserve Banks have also risen steadily over recent years, from less than $1 billion before the crisis to about $80 billion at the end of 2018. Although "other deposits" include balances held by international and multilateral organizations, government-sponsored enterprises, and other miscellaneous items, the increase has largely been driven by the establishments of accounts for DFMUs. DFMUs provide the infrastructure for transferring, clearing, and settling payments, securities, and other transactions among financial institutions. The Dodd-Frank Wall Street Reform and Consumer Protection Act provides that DFMUs—those financial market utilities designated as systemically important by the Financial Stability Oversight Council—can maintain accounts at the Federal Reserve and earn interest on balances maintained in those accounts.

Putting together all of these elements—that is, projected trend growth for currency in circulation, the Committee's decision to continue operating with ample reserves, and the higher levels for the TGA, the foreign repo pool, and DFMU balances—explains why the longer-run size of the Federal Reserve's balance sheet will be considerably larger than before the crisis. At the end of 2018, the Federal Reserve's balance sheet totaled $4.1 trillion, or about 20 percent of GDP. Figure B considers the size of the balance sheet in an international context. In response to the Global Financial Crisis, central bank balance sheets increased in many jurisdictions. Relative to GDP, the Federal Reserve's balance sheet remains smaller than those of other reserve-currency central banks in major advanced foreign economies that currently operate with abundant reserves—such as the European Central Bank, the Bank of Japan, and the Bank of England—although this difference is partly due to the Federal Reserve being much further along in the policy normalization process after the crisis. In addition, the Federal Reserve's balance sheet relative to GDP is only modestly larger than those of central banks, such as the Norges Bank and the Reserve Bank of New Zealand, that aim to operate at a relatively low level of abundant reserves. Of course, differences in central bank balance sheets also reflect differences in financial systems across countries.

B. Central bank balance sheets relative to gross domestic product



NOTE: Data for 2018 pertain to Q3, except for the Bank of England, whose data pertain to 2017:Q3. Norges Bank data exclude assets of Norway's Government Pension Fund Global.

SOURCE: Haver Analytics.

judges it is an opportune time for the Federal Reserve to conduct a review of its strategic framework for monetary policy—including the policy strategy, tools, and communication practices. The goal of this assessment is to identify possible ways to improve the Committee's current policy framework in order to ensure that the Federal Reserve is best positioned going forward to achieve its statutory mandate of maximum employment and price stability.

Specific to the communications practices, the Federal Reserve judges that transparency is essential to accountability and the effectiveness of policy, and therefore the Federal Reserve seeks to explain its policymaking approach and decisions to the Congress and the public as clearly as possible. The box "Federal Reserve Transparency: Rationale and New Initiatives" discusses the steps and new initiatives the Federal Reserve has taken to improve transparency.

Federal Reserve Transparency: Rationale and New Initiatives

Over the past 25 years, the Federal Reserve and other major central banks have taken steps to improve transparency, which provides three important benefits. First, transparency helps ensure that central banks are held accountable to the public and its elected representatives. Accountability is essential to democratic legitimacy and is particularly important for central banks that have been granted extensive operational independence, as is the case for the Federal Reserve. Second, transparency enhances the effectiveness of monetary policy. If the public understands the central bank's views on the economy and monetary policy, then households and businesses will take those views into account in making their spending and investment plans. Third, transparency supports a central bank's efforts to promote the safety and soundness of financial institutions and the overall financial system, including by helping financial institutions know what is expected of them. Thus, for each of these reasons, the Federal Reserve seeks to explain its policymaking approach and decisions to the Congress and the public as clearly as possible.

To foster transparency and accountability, the Federal Reserve uses a wide variety of communications, including semiannual testimony by the Chairman in conjunction with this report, the *Monetary Policy Report*. In addition, the Federal Open Market Committee (FOMC) has released a statement after every regularly scheduled meeting for almost 20 years, and detailed minutes of FOMC meetings have been released since 1993.[1] In 2007, the Federal Reserve expanded the economic projections that have accompanied the *Monetary Policy Report* since 1979 into the Summary of Economic Projections, which FOMC participants submit every quarter. And in 2012, the FOMC first released its Statement on Longer-Run Goals and Monetary Policy Strategy, which it reaffirms annually.[2]

The Federal Reserve continues to make improvements to its communications. In January, the Chairman began holding a press conference after each FOMC meeting, doubling the frequency of the press conferences that were introduced in 2011. These press conferences are held 30 minutes after the release of the postmeeting statement and provide additional information about the economic outlook, the Committee's policy decision, and policy tools. Press conferences also allow the Chairman to answer questions on monetary policy and other issues in a timely fashion.

In November 2018, the Federal Reserve announced that it would conduct a broad review of its monetary policy framework—specifically, of the policy strategy, tools, and communication practices that the FOMC uses in the pursuit of its dual-mandate goals of maximum employment and price stability. The Federal Reserve's existing policy framework is the result of decades of learning and refinements and has allowed the FOMC to pursue effectively its dual-mandate goals. Central banks in a number of other advanced economies have also found it useful, at times, to conduct reviews of their monetary policy frameworks. Such a review seems particularly appropriate when the economy appears to have changed in ways that matter for the conduct of monetary policy. For example, the neutral level of the policy interest rate appears to have fallen in the United States and abroad, increasing the risk that a central bank's policy rate will be constrained by its effective lower bound in future economic downturns. The review will consider ways to ensure that the Federal Reserve's monetary policy strategy, tools, and communications going forward provide the best means to achieve and maintain the dual-mandate objectives.

The review will include outreach to and consultation with a broad range of stakeholders in the U.S. economy through a series of "Fed Listens" events. The Reserve Banks will hold forums around the country, in a town hall format, allowing the Federal Reserve to gather perspectives from the public, including representatives of business and industry, labor leaders, community and economic development officials, academics, nonprofit organizations, community bankers, local government officials, and representatives of congressional offices in Reserve Bank Districts.[3] In addition, the Federal Reserve

(continued on next page)

1. In December 2004, the FOMC decided to begin publishing the minutes three weeks after every meeting, expediting the publication schedule to provide the public with more timely information.

2. The statement is reprinted at the beginning of this report on p. ii. The FOMC also publishes transcripts of its meetings after a five-year lag. For a review of the main communication tools used by the Federal Reserve and other central banks, see the document "Monetary Policy Strategies of Major Central Banks," which is available on the webpage "Monetary Policy Principles and Practice" on the Board's website at https://www.federalreserve.gov/monetarypolicy/monetary-policy-principles-and-practice.htm.

3. "Fed Listens" events will be held at the Federal Reserve Bank of Dallas this February and at the Federal Reserve Bank of Minneapolis this April. Other "Fed Listens" events will be announced in coming weeks.

Federal Reserve Transparency *(continued)*

System will sponsor a research conference this June at the Federal Reserve Bank of Chicago, with academic speakers and non-academic panelists from outside the Federal Reserve System.

Beginning around the middle of 2019, as part of their review of how to best pursue the Fed's statutory mandate, Federal Reserve policymakers will discuss relevant economic research as well as the perspectives offered during the outreach events. At the end of the process, policymakers will assess the information and perspectives gathered and will report their findings and conclusions to the public.

This review complements other recent changes to the Federal Reserve's communication practices. In November 2018, the Board inaugurated two reports, the *Supervision and Regulation Report* and the *Financial Stability Report*.[4] These reports provide information about the Board's responsibility, shared with other government agencies, to foster the safety and soundness of the U.S. banking system and to promote financial stability. Transparency is key to these efforts, as it enhances public confidence, allows for the consideration of outside ideas, and makes it easier for regulated entities to know what is expected of them and how best to comply.

The *Supervision and Regulation Report* provides an overview of banking conditions and the current areas of focus of the Federal Reserve's regulatory policy framework, including pending rules, and key themes, trends, and priorities regarding supervisory programs. The report distinguishes between large financial institutions and regional and community banking organizations because supervisory approaches and priorities for these institutions frequently differ. The report provides information to the public in conjunction with semiannual testimony before the Congress by the Vice Chairman for Supervision.

The *Financial Stability Report* summarizes the Board's monitoring of vulnerabilities in the financial system. The Board monitors four broad categories of vulnerabilities, including elevated valuation pressures (as signaled by asset prices that are high relative to economic fundamentals or historical norms), excessive borrowing by businesses and households, excessive leverage within the financial sector, and funding risks (risks associated with a withdrawal of funds from a particular financial institution or sector, for example as part of a "financial panic"). Assessments of these vulnerabilities inform Federal Reserve actions to promote the resilience of the financial system, including through its supervision and regulation of financial institutions.

Through all of these efforts to improve its communications, the Federal Reserve seeks to enhance transparency and accountability regarding how it pursues its statutory responsibilities.

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4. The *Supervision and Regulation Report* and the *Financial Stability Report* are available on the Board's website at, respectively, https://www.federalreserve.gov/publications/2018-november-supervision-and-regulation-report-preface.htm and https://www.federalreserve.gov/publications/2018-november-financial-stability-report-purpose.htm.

Part 3
Summary of Economic Projections

The following material appeared as an addendum to the minutes of the December 18–19, 2018, meeting of the Federal Open Market Committee.

In conjunction with the Federal Open Market Committee (FOMC) meeting held on December 18–19, 2018, meeting participants submitted their projections of the most likely outcomes for real gross domestic product (GDP) growth, the unemployment rate, and inflation for each year from 2018 to 2021 and over the longer run.[19] Each participant's projections were based on information available at the time of the meeting, together with his or her assessment of appropriate monetary policy—including a path for the federal funds rate and its longer-run value—and assumptions about other factors likely to affect economic outcomes. The longer-run projections represent each participant's assessment of the value to which each variable would be expected to converge, over time, under appropriate monetary policy and in the absence of further shocks to the economy.[20] "Appropriate monetary policy" is defined as the future path of policy that each participant deems most likely to foster outcomes for economic activity and inflation that best satisfy his or her individual interpretation of the statutory mandate to promote maximum employment and price stability.

All participants who submitted longer-run projections expected that, under appropriate monetary policy, growth in real GDP in 2019 would run somewhat above their individual estimate of its longer-run rate. Most participants continued to expect real GDP growth to slow throughout the projection horizon, with a majority of participants projecting growth in 2021 to be a little below their estimate of its longer-run rate. Almost all participants who submitted longer-run projections continued to expect that the unemployment rate would run below their estimate of its longer-run level through 2021. Most participants projected that inflation, as measured by the four-quarter percentage change in the price index for personal consumption expenditures (PCE), would increase slightly over the next two years, and nearly all participants expected that it would be at or slightly above the Committee's 2 percent objective in 2020 and 2021. Compared with the Summary of Economic Projections (SEP) from September, many participants marked down slightly their projections for real GDP growth and inflation in 2019. Table 1 and figure 1 provide summary statistics for the projections.

As shown in figure 2, participants generally continued to expect that the evolution of the economy, relative to their objectives of maximum employment and 2 percent inflation, would likely warrant some further gradual increases in the federal funds rate. Compared with the September submissions, the median projections for the federal funds rate for the end of 2019 through 2021 and over the longer run were a little lower. Most participants expected that the federal funds rate at the end of 2020 and 2021 would be modestly higher than their estimate of its level over the longer run; however, many marked down the extent to which it would exceed their estimate of the longer-run level relative to their September projections.

19. Five members of the Board of Governors, one more than in September 2018, were in office at the time of the December 2018 meeting and submitted economic projections.

20. One participant did not submit longer-run projections for real GDP growth, the unemployment rate, or the federal funds rate.

Table 1. Economic projections of Federal Reserve Board members and Federal Reserve Bank presidents, under their individual assessments of projected appropriate monetary policy, December 2018

Percent

Variable	Median[1]					Central tendency[2]					Range[3]				
	2018	2019	2020	2021	Longer run	2018	2019	2020	2021	Longer run	2018	2019	2020	2021	Longer run
Change in real GDP	3.0	2.3	2.0	1.8	1.9	3.0–3.1	2.3–2.5	1.8–2.0	1.5–2.0	1.8–2.0	3.0–3.1	2.0–2.7	1.5–2.2	1.4–2.1	1.7–2.2
September projection	3.1	2.5	2.0	1.8	1.8	3.0–3.2	2.4–2.7	1.8–2.1	1.6–2.0	1.8–2.0	2.9–3.2	2.1–2.8	1.7–2.4	1.5–2.1	1.7–2.1
Unemployment rate	3.7	3.5	3.6	3.8	4.4	3.7	3.5–3.7	3.5–3.8	3.6–3.9	4.2–4.5	3.7	3.4–4.0	3.4–4.3	3.4–4.2	4.0–4.6
September projection	3.7	3.5	3.5	3.7	4.5	3.7	3.4–3.6	3.4–3.8	3.5–4.0	4.3–4.6	3.7–3.8	3.4–3.8	3.3–4.0	3.4–4.2	4.0–4.6
PCE inflation	1.9	1.9	2.1	2.1	2.0	1.8–1.9	1.8–2.1	2.0–2.1	2.0–2.1	2.0	1.8–1.9	1.8–2.2	2.0–2.2	2.0–2.3	2.0
September projection	2.1	2.0	2.1	2.1	2.0	2.0–2.1	2.0–2.1	2.1–2.2	2.0–2.2	2.0	1.9–2.2	2.0–2.3	2.0–2.2	2.0–2.3	2.0
Core PCE inflation[4]	1.9	2.0	2.0	2.0		1.8–1.9	2.0–2.1	2.0–2.1	2.0–2.1		1.8–1.9	1.9–2.2	2.0–2.2	2.0–2.3	
September projection	2.0	2.1	2.1	2.1		1.9–2.0	2.0–2.1	2.1–2.2	2.0–2.2		1.9–2.0	2.0–2.3	2.0–2.2	2.0–2.3	
Memo: Projected appropriate policy path															
Federal funds rate	2.4	2.9	3.1	3.1	2.8	2.4	2.6–3.1	2.9–3.4	2.6–3.1	2.5–3.0	2.1–2.4	2.4–3.1	2.4–3.6	2.4–3.6	2.5–3.5
September projection	2.4	3.1	3.4	3.4	3.0	2.1–2.4	2.9–3.4	3.1–3.6	2.9–3.6	2.8–3.0	2.1–2.4	2.1–3.6	2.1–3.9	2.1–4.1	2.5–3.5

NOTE: Projections of change in real gross domestic product (GDP) and projections for both measures of inflation are percent changes from the fourth quarter of the previous year to the fourth quarter of the year indicated. PCE inflation and core PCE inflation are the percentage rates of change in, respectively, the price index for personal consumption expenditures (PCE) and the price index for PCE excluding food and energy. Projections for the unemployment rate are for the average civilian unemployment rate in the fourth quarter of the year indicated. Each participant's projections are based on his or her assessment of appropriate monetary policy. Longer-run projections represent each participant's assessment of the rate to which each variable would be expected to converge under appropriate monetary policy and in the absence of further shocks to the economy. The projections for the federal funds rate are the value of the midpoint of the projected appropriate target range for the federal funds rate or the projected appropriate target level for the federal funds rate at the end of the specified calendar year or over the longer run. The September projections were made in conjunction with the meeting of the Federal Open Market Committee on September 25–26, 2018. One participant did not submit longer-run projections for the change in real GDP, the unemployment rate, or the federal funds rate in conjunction with the September 25–26, 2018, meeting, and one participant did not submit such projections in conjunction with the December 18–19, 2018, meeting.

1. For each period, the median is the middle projection when the projections are arranged from lowest to highest. When the number of projections is even, the median is the average of the two middle projections.
2. The central tendency excludes the three highest and three lowest projections for each variable in each year.
3. The range for a variable in a given year includes all participants' projections, from lowest to highest, for that variable in that year.
4. Longer-run projections for core PCE inflation are not collected.

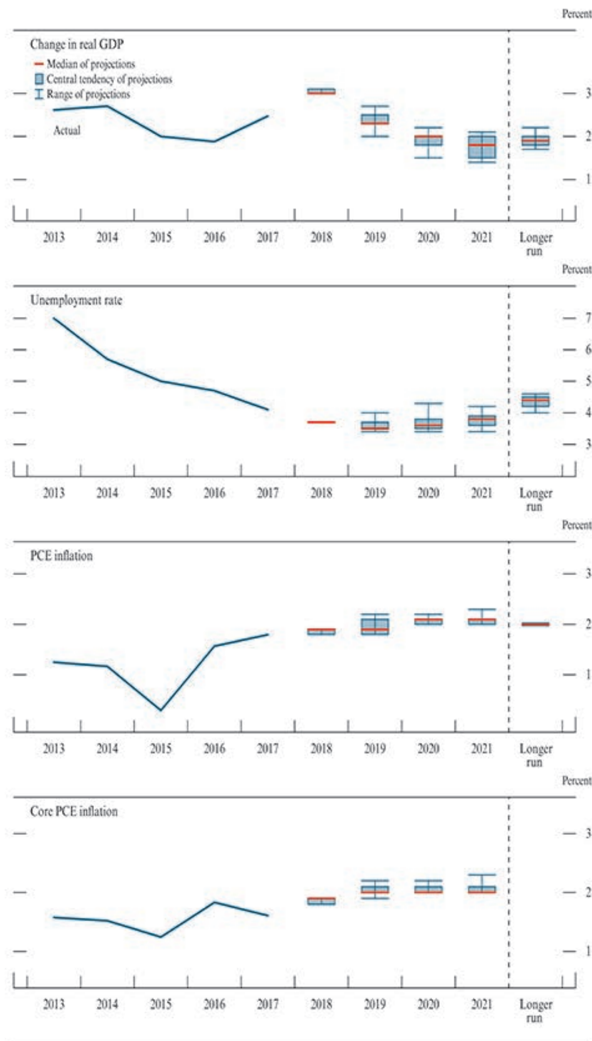
On balance, participants continued to view the uncertainty around their projections as broadly similar to the average of the past 20 years. While most participants viewed the risks to the outlook as balanced, a couple more participants than in September saw risks to real GDP growth as weighted to the downside, and one less participant viewed the risks to inflation as weighted to the upside.

The Outlook for Economic Activity

The median of participants' projections for the growth rate of real GDP for 2019, conditional on their individual assessment of appropriate monetary policy, was 2.3 percent, slower than the 3.0 percent pace expected for 2018. Most participants continued to expect GDP growth to slow throughout the projection horizon, with the median projection at 2.0 percent in 2020 and at 1.8 percent in 2021, a touch lower than the median estimate of its longer-run rate of 1.9 percent. Relative to the September SEP, the medians of the projections for real GDP growth for 2018 and 2019 were slightly lower, while the median for the longer-run rate of growth was a bit higher. Several participants mentioned tighter financial conditions or a softer global economic outlook as factors behind the downward revisions to their near-term growth estimates.

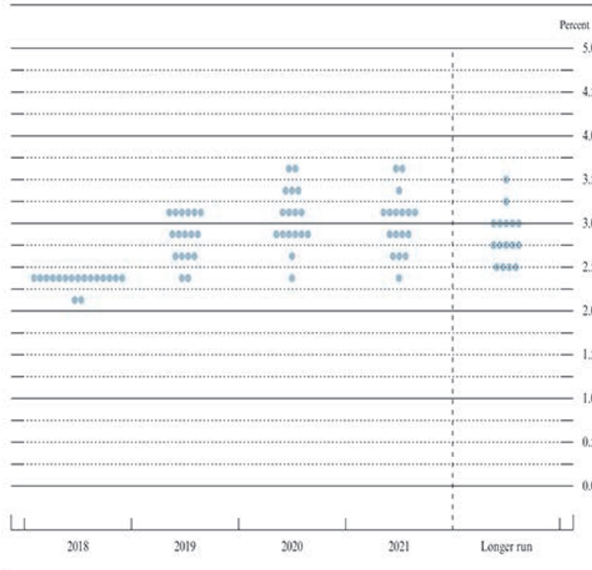
The median of projections for the unemployment rate in the fourth quarter of 2019 was 3.5 percent, unchanged from the September SEP and almost 1 percentage point below the median assessment of its longer-run normal level. With participants generally continuing to expect the unemployment rate to bottom out in 2019 or 2020, the median projections for 2020 and 2021 edged back up to 3.6 percent and 3.8 percent, respectively. Nevertheless, most participants continued to project that the unemployment rate in 2021 would still be well below their estimates of its longer-run level. The median estimate of the longer-run normal rate of unemployment was slightly lower than in September.

Figure 1. Medians, central tendencies, and ranges of economic projections, 2018–21 and over the longer run



NOTE: Definitions of variables and other explanations are in the notes to table 1. The data for the actual values of the variables are annual.

Figure 2. FOMC participants' assessments of appropriate monetary policy: Midpoint of target range or target level for the federal funds rate



NOTE: Each shaded circle indicates the value (rounded to the nearest 1/8 percentage point) of an individual participant's judgment of the midpoint of the appropriate target range for the federal funds rate or the appropriate target level for the federal funds rate at the end of the specified calendar year or over the longer run. One participant did not submit longer-run projections for the federal funds rate.

Figures 3.A and 3.B show the distributions of participants' projections for real GDP growth and the unemployment rate from 2018 to 2021 and in the longer run. The distributions of individual projections for real GDP growth for 2019 and 2020 shifted down relative to those in the September SEP, while the distributions for 2021 and for the longer-run rate of GDP growth were little changed. The distribution of individual projections for the unemployment rate in 2019 was a touch more dispersed relative to the distribution of the September projections; the distribution moved slightly higher for 2020, while the distribution for the longer-run normal rate shifted toward the lower end of its range.

The Outlook for Inflation

The median of projections for total PCE price inflation was 1.9 percent in 2019, a bit lower than in the September SEP, while the medians for 2020 and 2021 were 2.1 percent, the same as in the previous projections. The medians of projections for core PCE price inflation over the 2019–21 period were 2.0 percent, a touch lower than in September. Some participants pointed to softer incoming data or recent declines in oil prices as reasons for shaving their projections for inflation.

Figures 3.C and 3.D provide information on the distributions of participants' views about

the outlook for inflation. On the whole, the distributions of projections for total PCE price inflation and core PCE price inflation beyond this year either shifted slightly to the left or were unchanged relative to the September SEP. Most participants revised down slightly their projections of total PCE price inflation for 2019. All participants expected that total PCE price inflation would be in a range from 2.0 to 2.3 percent in 2020 and 2021. Most participants projected that core PCE inflation would run at 2.0 to 2.1 percent throughout the projection horizon.

Appropriate Monetary Policy

Figure 3.E shows distributions of participants' judgments regarding the appropriate target—or midpoint of the target range—for the federal funds rate at the end of each year from 2018 to 2021 and over the longer run. The distributions for 2019 through 2021 were less dispersed and shifted slightly toward lower values. Compared with the projections prepared for the September SEP, the median federal funds rate was 25 basis points lower over the 2019–21 period. For the end of 2019, the median of federal funds rate projections was 2.88 percent, consistent with two 25 basis point rate increases over the course of 2019. Thereafter, the medians of the projections were 3.13 percent at the end of 2020 and 2021. Most participants expected that the federal funds rate at the end of 2020 and 2021 would be modestly higher than their estimate of its level over the longer run; however, many marked down the extent to which it would exceed their estimate of the longer-run level relative to their September projections. The median of the longer-run projections of the federal funds rate was 2.75 percent, 25 basis points lower than in September.

In discussing their projections, many participants continued to express the view that any further increases in the federal funds rate over the next few years would likely be gradual. That anticipated pace reflected a few factors, such as a short-term neutral real interest rate that is currently low and an inflation rate that has been rising only gradually to the Committee's 2 percent objective. Some participants cited a weaker near-term trajectory for economic growth or a muted response of inflation to tight labor market conditions as factors contributing to the downward revisions in their assessments of the appropriate path for the policy rate.

Uncertainty and Risks

In assessing the appropriate path of the federal funds rate, FOMC participants take account of the range of possible economic outcomes, the likelihood of those outcomes, and the potential benefits and costs should they occur. As a reference, table 2 provides measures of forecast uncertainty—based on the forecast errors of various private and government forecasts over the past 20 years—for real GDP growth, the unemployment rate, and total PCE price inflation. Those measures are represented graphically in the "fan charts" shown in the top panels of figures 4.A, 4.B, and 4.C. The fan charts display the median SEP projections for the three variables surrounded by symmetric confidence intervals derived from the forecast errors reported in table 2. If the degree of uncertainty attending these projections is similar to the typical magnitude

Table 2. Average historical projection error ranges
Percentage points

Variable	2018	2019	2020	2021
Change in real GDP[1]	±0.8	±1.6	±2.1	±2.1
Unemployment rate[1]	±0.1	±0.8	±1.5	±1.9
Total consumer prices[2]	±0.2	±1.0	±1.0	±1.0
Short-term interest rates[3].	±0.1	±1.4	±2.0	±2.4

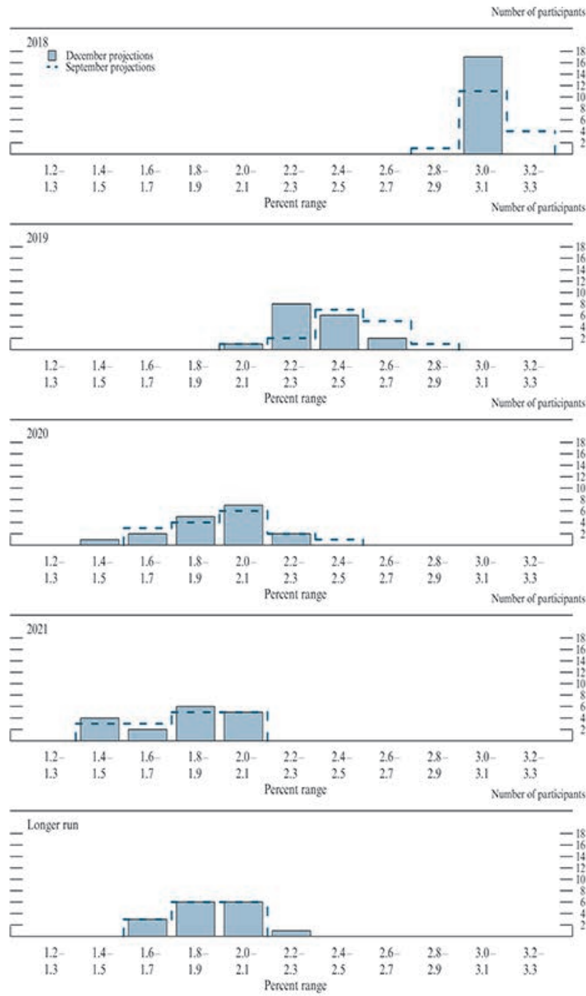
NOTE: Error ranges shown are measured as plus or minus the root mean squared error of projections for 1998 through 2017 that were released in the winter by various private and government forecasters. As described in the box "Forecast Uncertainty," under certain assumptions, there is about a 70 percent probability that actual outcomes for real GDP, unemployment, consumer prices, and the federal funds rate will be in ranges implied by the average size of projection errors made in the past. For more information, see David Reifschneider and Peter Tulip (2017), "Gauging the Uncertainty of the Economic Outlook Using Historical Forecasting Errors: The Federal Reserve's Approach," Finance and Economics Discussion Series 2017-020 (Washington: Board of Governors of the Federal Reserve System, February), https://dx.doi.org/10.17016/FEDS.2017.020.

1. Definitions of variables are in the general note to table 1.

2. Measure is the overall consumer price index, the price measure that has been most widely used in government and private economic forecasts. Projections are percent changes on a fourth quarter to fourth quarter basis.

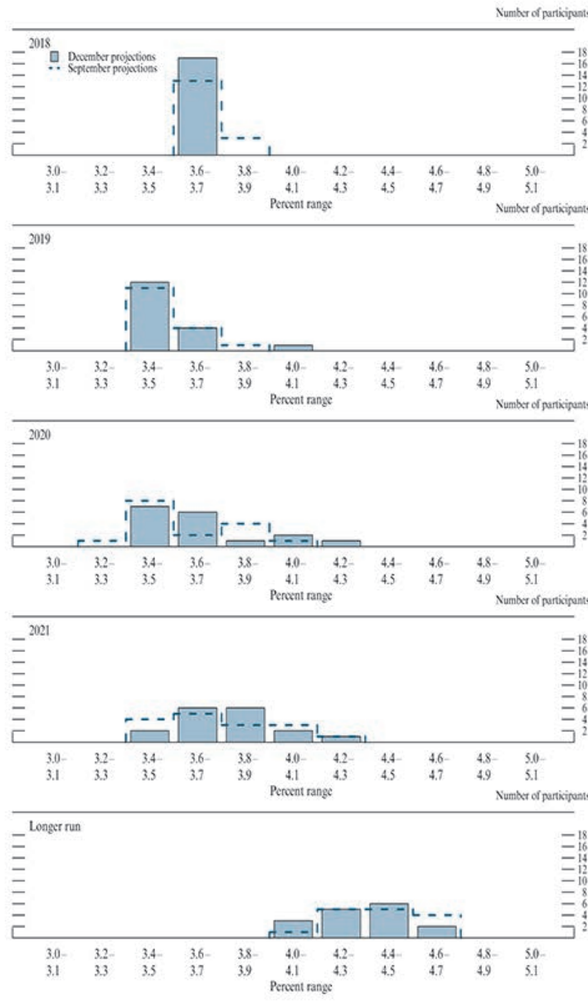
3. For Federal Reserve staff forecasts, measure is the federal funds rate. For other forecasts, measure is the rate on 3-month Treasury bills. Projection errors are calculated using average levels, in percent, in the fourth quarter.

Figure 3.A. Distribution of participants' projections for the change in real GDP, 2018–21 and over the longer run



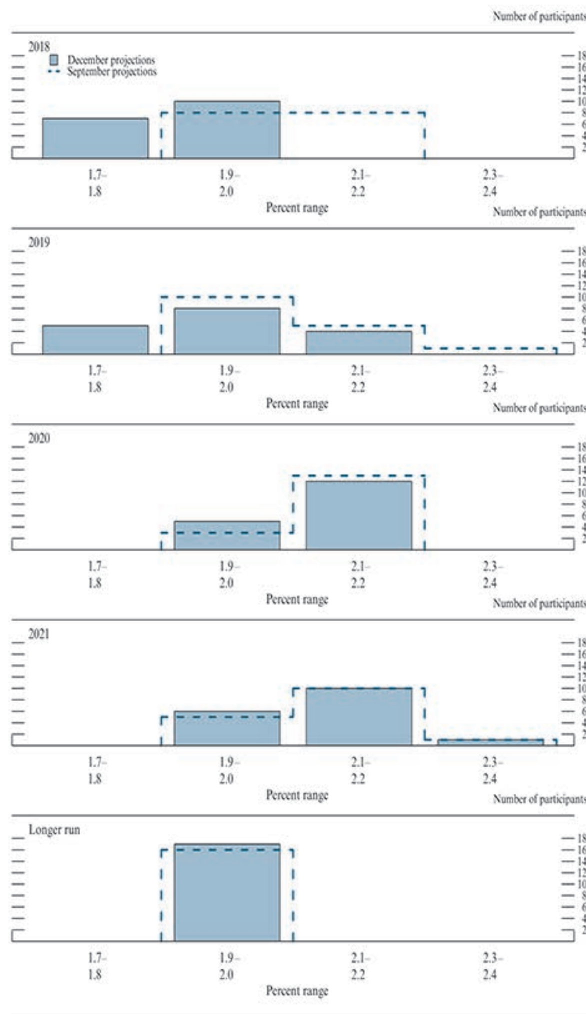
NOTE: Definitions of variables and other explanations are in the notes to table 1.

Figure 3.B. Distribution of participants' projections for the unemployment rate, 2018–21 and over the longer run



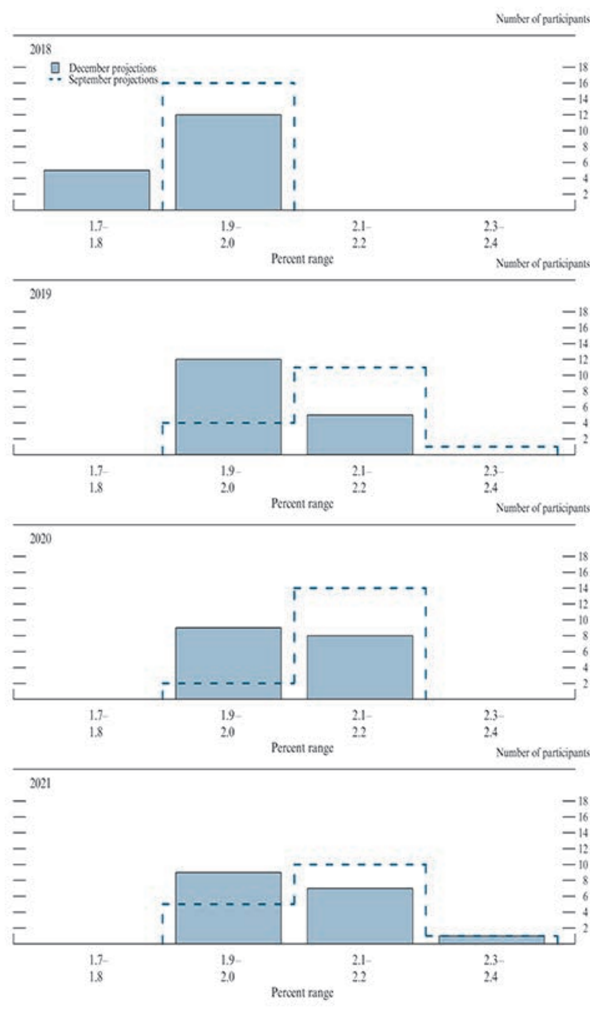
NOTE: Definitions of variables and other explanations are in the notes to table 1.

Figure 3.C. Distribution of participants' projections for PCE inflation, 2018–21 and over the longer run



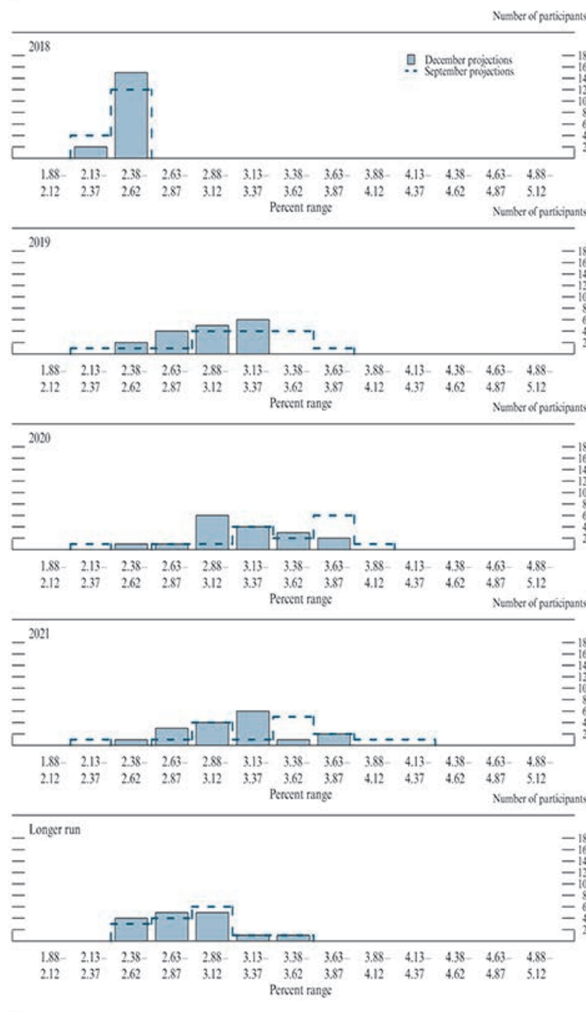
Note: Definitions of variables and other explanations are in the notes to table 1.

Figure 3.D. Distribution of participants' projections for core PCE inflation, 2018–21



NOTE: Definitions of variables and other explanations are in the notes to table 1.

Figure 3.E. Distribution of participants' judgments of the midpoint of the appropriate target range for the federal funds rate or the appropriate target level for the federal funds rate, 2018–21 and over the longer run



NOTE: Definitions of variables and other explanations are in the notes to table 1.

of past forecast errors and the risks around the projections are broadly balanced, then future outcomes of these variables would have about a 70 percent probability of being within these confidence intervals. For all three variables, this measure of uncertainty is substantial and generally increases as the forecast horizon lengthens.

Participants' assessments of the level of uncertainty surrounding their individual economic projections are shown in the bottom-left panels of figures 4.A, 4.B, and 4.C. Participants generally continued to view the degree of uncertainty attached to their economic projections for real GDP growth and inflation as broadly similar to the average of the past 20 years.[21] A couple more participants than in September viewed the uncertainty around the unemployment rate as higher than average.

Because the fan charts are constructed to be symmetric around the median projections, they do not reflect any asymmetries in the balance of risks that participants may see in their economic projections. Participants' assessments of the balance of risks to their economic projections are shown in the bottom-right panels of figures 4.A, 4.B, and 4.C. Most participants generally judged the risks to the outlook for real GDP growth, the unemployment rate, headline inflation, and core inflation as broadly balanced—in other words, as broadly consistent with a symmetric fan chart. Two more participants than in September saw the risks to real GDP growth as weighted to the downside, and one less judged the risks as weighted to the upside. The balance of risks to the projection for the unemployment rate was unchanged, with three participants judging the risks to the unemployment rate as weighted to the downside and two participants viewing the risks as weighted to the upside. In addition, the balance of risks to the inflation projections shifted down slightly relative to September, as one less participant judged the risks to both total and core inflation as weighted to the upside and one more participant viewed the risks as weighted to the downside.

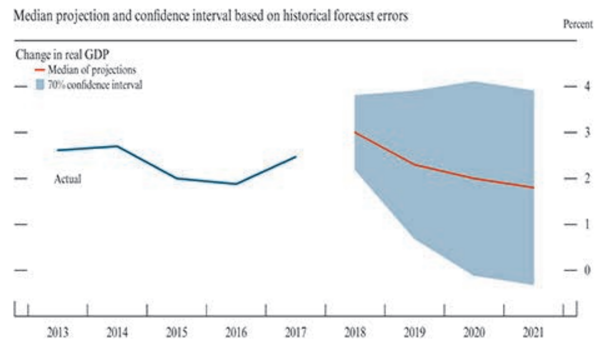
In discussing the uncertainty and risks surrounding their economic projections, participants mentioned trade tensions as well as financial and foreign economic developments as sources of uncertainty or downside risk to the growth outlook. For the inflation outlook, the effects of trade restrictions were cited as upside risks and lower energy prices and the stronger dollar as downside risks. Those who commented on U.S. fiscal policy viewed it as an additional source of uncertainty and noted that it might present two-sided risks to the outlook, as its effects could be waning faster than expected or turn out to be more stimulative than anticipated.

Participants' assessments of the appropriate future path of the federal funds rate were also subject to considerable uncertainty. Because the Committee adjusts the federal funds rate in response to actual and prospective developments over time in real GDP growth, the unemployment rate, and inflation, uncertainty surrounding the projected path for the federal funds rate importantly reflects the uncertainties about the paths for those key economic variables along with other factors. Figure 5 provides a graphical representation of this uncertainty, plotting the median SEP projection for the federal funds rate surrounded by confidence intervals derived from the results presented in table 2. As with the macroeconomic variables, the forecast uncertainty surrounding the appropriate path of the federal funds rate is substantial and increases for longer horizons.

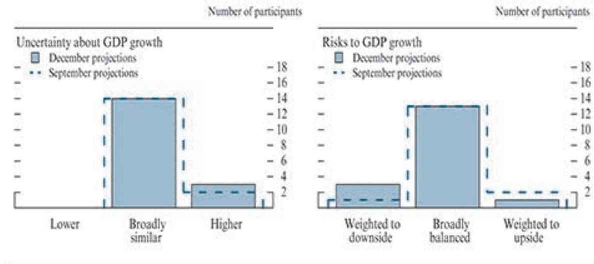
21. At the end of this summary, the box "Forecast Uncertainty" discusses the sources and interpretation of uncertainty surrounding the economic forecasts and explains the approach used to assess the uncertainty and risks attending the participants' projections.

Figure 4.A. Uncertainty and risks in projections of GDP growth

Median projection and confidence interval based on historical forecast errors



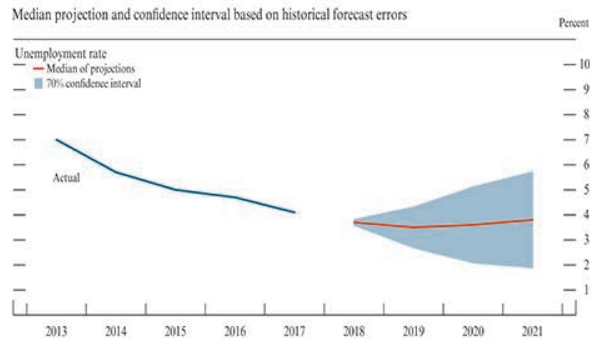
FOMC participants' assessments of uncertainty and risks around their economic projections



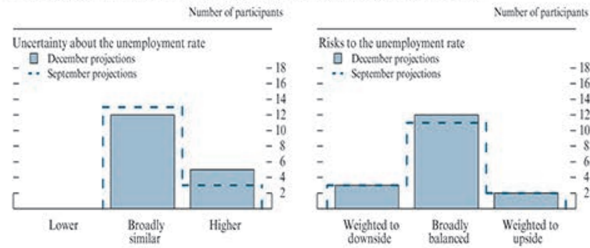
NOTE: The blue and red lines in the top panel show actual values and median projected values, respectively, of the percent change in real gross domestic product (GDP) from the fourth quarter of the previous year to the fourth quarter of the year indicated. The confidence interval around the median projected values is assumed to be symmetric and is based on root mean squared errors of various private and government forecasts made over the previous 20 years; more information about these data is available in table 2. Because current conditions may differ from those that prevailed, on average, over the previous 20 years, the width and shape of the confidence interval estimated on the basis of the historical forecast errors may not reflect FOMC participants' current assessments of the uncertainty and risks around their projections; these current assessments are summarized in the lower panels. Generally speaking, participants who judge the uncertainty about their projections as "broadly similar" to the average levels of the past 20 years would view the width of the confidence interval shown in the historical fan chart as largely consistent with their assessments of the uncertainty about their projections. Likewise, participants who judge the risks to their projections as "broadly balanced" would view the confidence interval around their projections as approximately symmetric. For definitions of uncertainty and risks in economic projections, see the box "Forecast Uncertainty."

Figure 4.B. Uncertainty and risks in projections of the unemployment rate

Median projection and confidence interval based on historical forecast errors

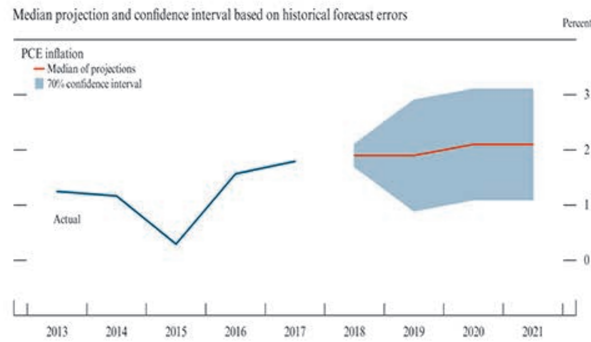


FOMC participants' assessments of uncertainty and risks around their economic projections

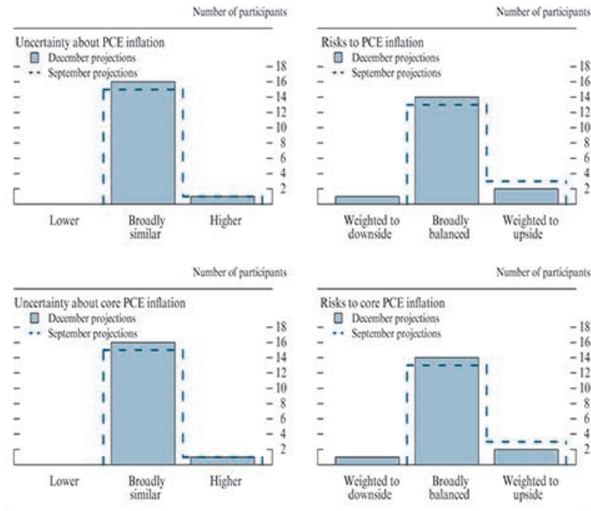


NOTE: The blue and red lines in the top panel show actual values and median projected values, respectively, of the average civilian unemployment rate in the fourth quarter of the year indicated. The confidence interval around the median projected values is assumed to be symmetric and is based on root mean squared errors of various private and government forecasts made over the previous 20 years; more information about these data is available in table 2. Because current conditions may differ from those that prevailed, on average, over the previous 20 years, the width and shape of the confidence interval estimated on the basis of the historical forecast errors may not reflect FOMC participants' current assessments of the uncertainty and risks around their projections; these current assessments are summarized in the lower panels. Generally speaking, participants who judge the uncertainty about their projections as "broadly similar" to the average levels of the past 20 years would view the width of the confidence interval shown in the historical fan chart as largely consistent with their assessments of the uncertainty about their projections. Likewise, participants who judge the risks to their projections as "broadly balanced" would view the confidence interval around their projections as approximately symmetric. For definitions of uncertainty and risks in economic projections, see the box "Forecast Uncertainty."

Figure 4.C. Uncertainty and risks in projections of PCE inflation



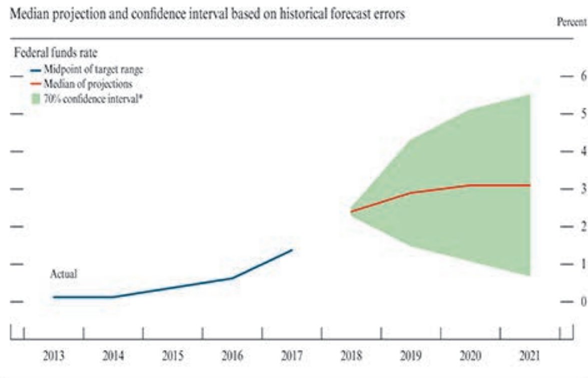
FOMC participants' assessments of uncertainty and risks around their economic projections



NOTE: The blue and red lines in the top panel show actual values and median projected values, respectively, of the percent change in the price index for personal consumption expenditures (PCE) from the fourth quarter of the previous year to the fourth quarter of the year indicated. The confidence interval around the median projected values is assumed to be symmetric and is based on root mean squared errors of various private and government forecasts made over the previous 20 years; more information about these data is available in table 2. Because current conditions may differ from those that prevailed, on average, over the previous 20 years, the width and shape of the confidence interval estimated on the basis of the historical forecast errors may not reflect FOMC participants' current assessments of the uncertainty and risks around their projections; these current assessments are summarized in the lower panels. Generally speaking, participants who judge the uncertainty about their projections as "broadly similar" to the average levels of the past 20 years would view the width of the confidence interval shown in the historical fan chart as largely consistent with their assessments of the uncertainty about their projections. Likewise, participants who judge the risks to their projections as "broadly balanced" would view the confidence interval around their projections as approximately symmetric. For definitions of uncertainty and risks in economic projections, see the box "Forecast Uncertainty."

Figure 5. Uncertainty in projections of the federal funds rate

Median projection and confidence interval based on historical forecast errors



NOTE: The blue and red lines are based on actual values and median projected values, respectively, of the Committee's target for the federal funds rate at the end of the year indicated. The actual values are the midpoint of the target range; the median projected values are based on either the midpoint of the target range or the target level. The confidence interval around the median projected values is based on root mean squared errors of various private and government forecasts made over the previous 20 years. The confidence interval is not strictly consistent with the projections for the federal funds rate, primarily because these projections are not forecasts of the likeliest outcomes for the federal funds rate, but rather projections of participants' individual assessments of appropriate monetary policy. Still, historical forecast errors provide a broad sense of the uncertainty around the future path of the federal funds rate generated by the uncertainty about the macroeconomic variables as well as additional adjustments to monetary policy that may be appropriate to offset the effects of shocks to the economy.

The confidence interval is assumed to be symmetric except when it is truncated at zero—the bottom of the lowest target range for the federal funds rate that has been adopted in the past by the Committee. This truncation would not be intended to indicate the likelihood of the use of negative interest rates to provide additional monetary policy accommodation if doing so was judged appropriate. In such situations, the Committee could also employ other tools, including forward guidance and large-scale asset purchases, to provide additional accommodation. Because current conditions may differ from those that prevailed, on average, over the previous 20 years, the width and shape of the confidence interval estimated on the basis of the historical forecast errors may not reflect FOMC participants' current assessments of the uncertainty and risks around their projections.

* The confidence interval is derived from forecasts of the average level of short-term interest rates in the fourth quarter of the year indicated; more information about these data is available in table 2. The shaded area encompasses less than a 70 percent confidence interval if the confidence interval has been truncated at zero.

Forecast Uncertainty

The economic projections provided by the members of the Board of Governors and the presidents of the Federal Reserve Banks inform discussions of monetary policy among policymakers and can aid public understanding of the basis for policy actions. Considerable uncertainty attends these projections, however. The economic and statistical models and relationships used to help produce economic forecasts are necessarily imperfect descriptions of the real world, and the future path of the economy can be affected by myriad unforeseen developments and events. Thus, in setting the stance of monetary policy, participants consider not only what appears to be the most likely economic outcome as embodied in their projections, but also the range of alternative possibilities, the likelihood of their occurring, and the potential costs to the economy should they occur.

Table 2 summarizes the average historical accuracy of a range of forecasts, including those reported in past *Monetary Policy Reports* and those prepared by the Federal Reserve Board's staff in advance of meetings of the Federal Open Market Committee (FOMC). The projection error ranges shown in the table illustrate the considerable uncertainty associated with economic forecasts. For example, suppose a participant projects that real gross domestic product (GDP) and total consumer prices will rise steadily at annual rates of, respectively, 3 percent and 2 percent. If the uncertainty attending those projections is similar to that experienced in the past and the risks around the projections are broadly balanced, the numbers reported in table 2 would imply a probability of about 70 percent that actual GDP would expand within a range of 2.2 to 3.8 percent in the current year, 1.4 to 4.6 percent in the second year, and 0.9 to 5.1 percent in the third and fourth years. The corresponding 70 percent confidence intervals for overall inflation would be 1.8 to 2.2 percent in the current year and 1.0 to 3.0 percent in the second, third, and fourth years. Figures 4.A through 4.C illustrate these confidence bounds in "fan charts" that are symmetric and centered on the medians of FOMC participants' projections for GDP growth, the unemployment rate, and inflation. However, in some instances, the risks around the projections may not be symmetric. In particular, the unemployment rate cannot be negative; furthermore, the risks around a particular projection might be tilted to either the upside or the downside, in which case the corresponding fan chart would be asymmetrically positioned around the median projection.

Because current conditions may differ from those that prevailed, on average, over history, participants provide judgments as to whether the uncertainty attached to their projections of each economic variable is greater than, smaller than, or broadly similar to typical levels of forecast uncertainty seen in the past 20 years, as presented in table 2 and reflected in the widths of the confidence intervals shown in the top panels of figures 4.A through 4.C. Participants' current assessments of the uncertainty surrounding their projections are summarized in the bottom-left

(continued)

panels of those figures. Participants also provide judgments as to whether the risks to their projections are weighted to the upside, are weighted to the downside, or are broadly balanced. That is, while the symmetric historical fan charts shown in the top panels of figures 4.A through 4.C imply that the risks to participants' projections are balanced, participants may judge that there is a greater risk that a given variable will be above rather than below their projections. These judgments are summarized in the lower-right panels of figures 4.A through 4.C.

As with real activity and inflation, the outlook for the future path of the federal funds rate is subject to considerable uncertainty. This uncertainty arises primarily because each participant's assessment of the appropriate stance of monetary policy depends importantly on the evolution of real activity and inflation over time. If economic conditions evolve in an unexpected manner, then assessments of the appropriate setting of the federal funds rate would change from that point forward. The final line in table 2 shows the error ranges for forecasts of short-term interest rates. They suggest that the historical confidence intervals associated with projections of the federal funds rate are quite wide. It should be noted, however, that these confidence intervals are not strictly consistent with the projections for the federal funds rate, as these projections are not forecasts of the most likely quarterly outcomes but rather are projections of participants' individual assessments of appropriate monetary policy and are on an end-of-year basis. However, the forecast errors should provide a sense of the uncertainty around the future path of the federal funds rate generated by the uncertainty about the macroeconomic variables as well as additional adjustments to monetary policy that would be appropriate to offset the effects of shocks to the economy.

If at some point in the future the confidence interval around the federal funds rate were to extend below zero, it would be truncated at zero for purposes of the fan chart shown in figure 5; zero is the bottom of the lowest target range for the federal funds rate that has been adopted by the Committee in the past. This approach to the construction of the federal funds rate fan chart would be merely a convention; it would not have any implications for possible future policy decisions regarding the use of negative interest rates to provide additional monetary policy accommodation if doing so were appropriate. In such situations, the Committee could also employ other tools, including forward guidance and asset purchases, to provide additional accommodation.

While figures 4.A through 4.C provide information on the uncertainty around the economic projections, figure 1 provides information on the range of views across FOMC participants. A comparison of figure 1 with figures 4.A through 4.C shows that the dispersion of the projections across participants is much smaller than the average forecast errors over the past 20 years.

Abbreviations

AFE	advanced foreign economy
BOE	Bank of England
C&I	commercial and industrial
CRE	commercial real estate
DFMU	designated financial market utility
EBITDA	earnings before interest, taxes, depreciation, and amortization
ECB	European Central Bank
EME	emerging market economy
EPOP	employment-to-population
EU	European Union
FOMC	Federal Open Market Committee; also, the Committee
GDP	gross domestic product
JOLTS	Job Openings and Labor Turnover Survey
LFPR	labor force participation rate
LSAP	large-scale asset purchase
MBS	mortgage-backed securities
Michigan survey	University of Michigan Surveys of Consumers
ON RRP	overnight reverse repurchase agreement
PCE	personal consumption expenditures
SEP	Summary of Economic Projections
SLOOS	Senior Loan Officer Opinion Survey on Bank Lending Practices
SSDI	Social Security Disability Insurance
TCJA	Tax Cuts and Jobs Act
TGA	Treasury General Account
TIPS	Treasury Inflation-Protected Securities
VIX	implied volatility for the S&P 500 index