Appendix 1: Materials used by Mr. Potter and Ms. Logan

Class II FOMC – Restricted (FR)

Material for the Briefing on

Financial Developments and Open Market Operations

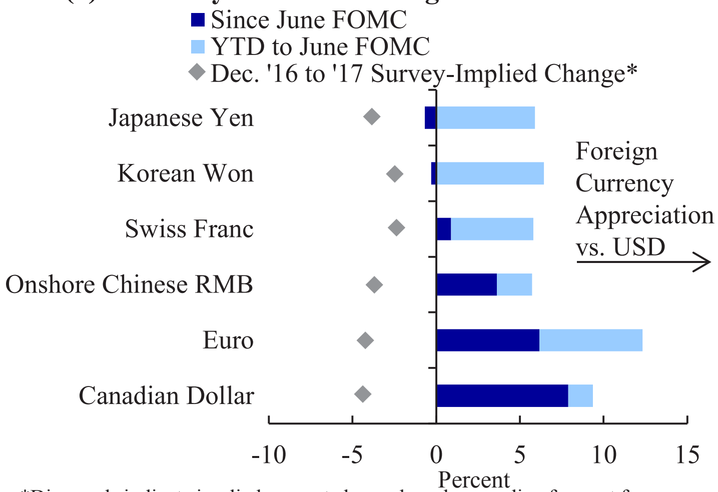
Simon Potter and Lorie Logan

September 19, 2017

Class II FOMC – Restricted (FR)

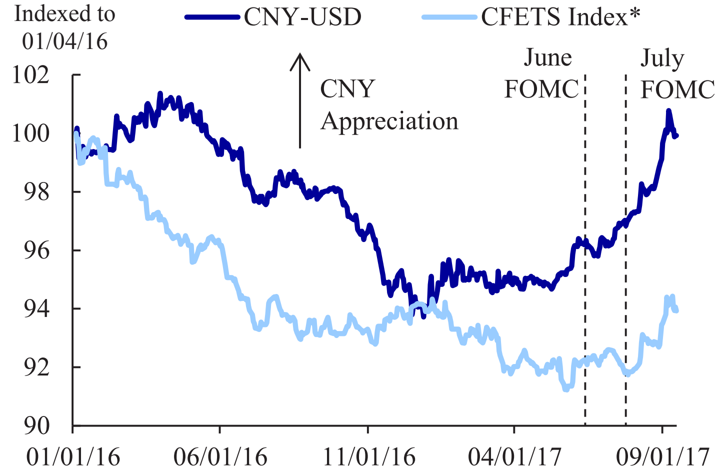
Exhibit 1

(1) Currency Performance Against U.S. Dollar



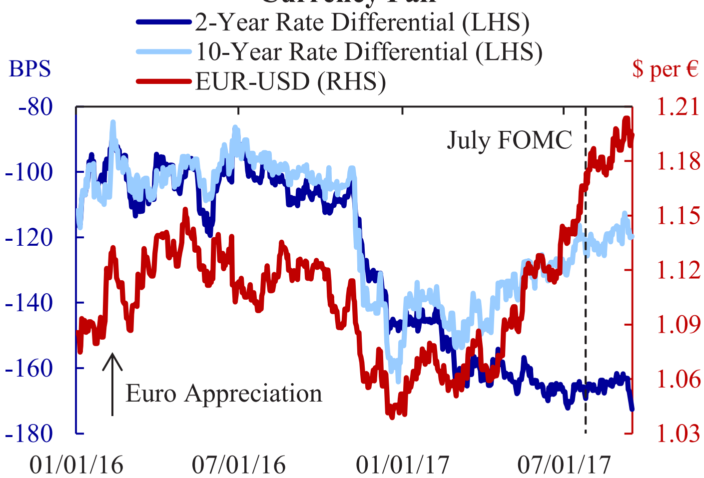
*Diamonds indicate implied percent change based on median forecast for year-end '17 from the Dec. '16 FX Counterparty Survey.
Source: Bloomberg, FRBNY

(2) Chinese Exchange Rate



*An estimation from Standard Chartered of the CFETS EER basket.
Source: Bloomberg

(3) Interest Rate Differentials and Euro-Dollar Currency Pair*



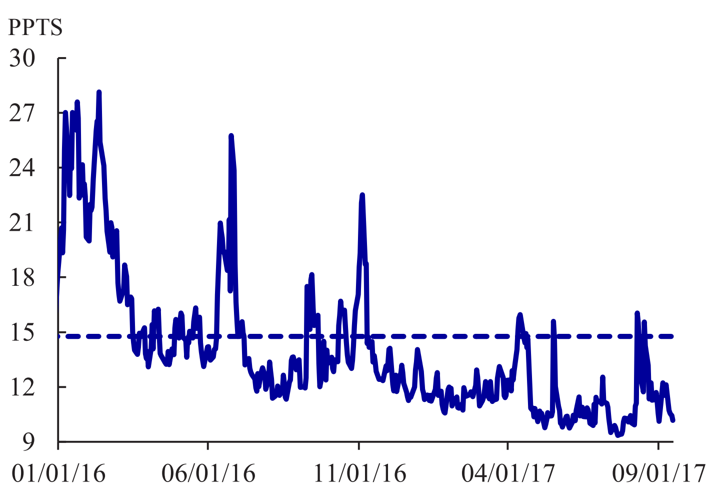
*Rate differentials based on OIS; euro swap rate less U.S. dollar swap rate.
Source: Bloomberg, Desk Calculations

(4) Asset Price Changes Since July FOMC

	Since July FOMC	Current Level
Nominal 10-Year TSY Yield	-13 bps	2.20%
Nominal 10-Year German Yield	-13 bps	0.43%
U.S. Broad T.W. Dollar	-1.8%	117.6
S&P 500 Index	+0.9%	2500
VIX Index	+0.7 ppts	10.17

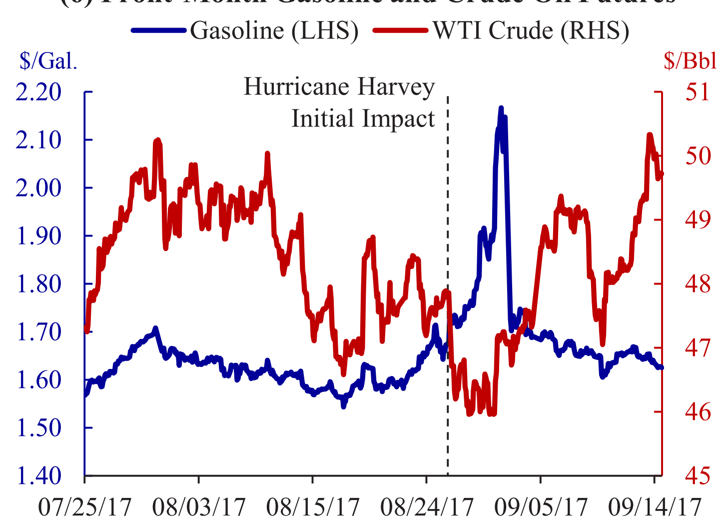
Source: Bloomberg, Federal Reserve Board

(5) VIX Index*



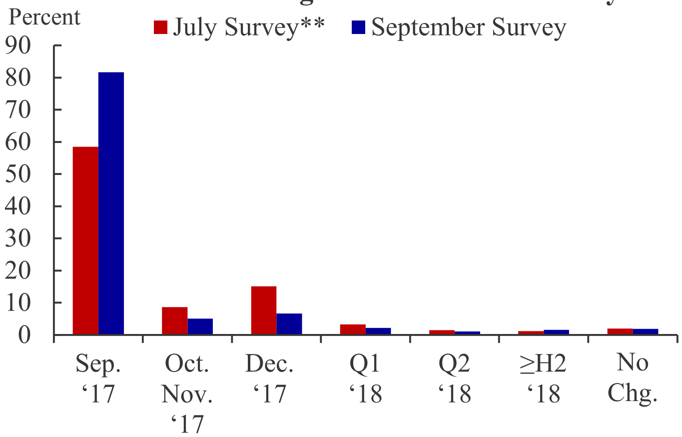
*Dashed line is 5-year average.
Source: Bloomberg

(6) Front-Month Gasoline and Crude Oil Futures



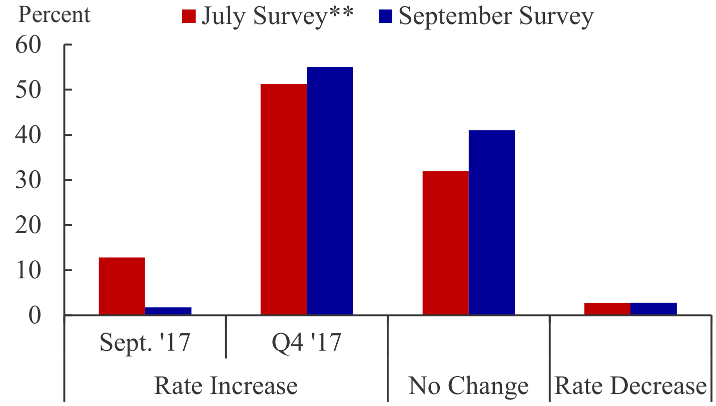
Source: Bloomberg

(7) Average PDF of Expected Time of First Announced Change in Reinvestment Policy*



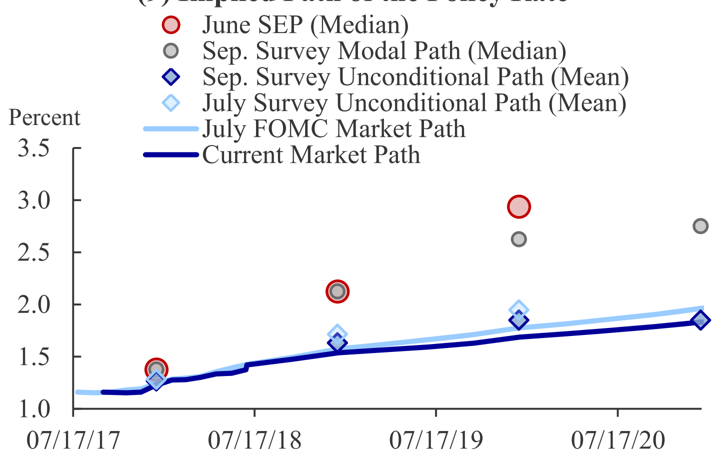
*Based on all responses from the Surveys of Primary Dealers and Market Participants.
**Probability for Jul. '17 FOMC of 9.9% not shown.
Source: FRBNY

(8) Average PDF of Expectation for Next Policy Rate Action in 2017*



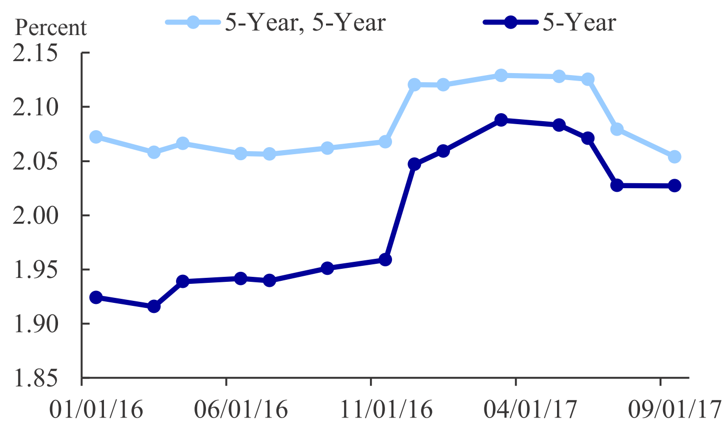
*Based on all responses from the Surveys of Primary Dealers and Market Participants. Q4 '17 reflects combined probability assigned to a rate increase at the Oct./Nov. and Dec. FOMC meetings.
**Probability for Jul. '17 FOMC of 1.2% not shown.
Source: FRBNY

(9) Implied Path of the Policy Rate*



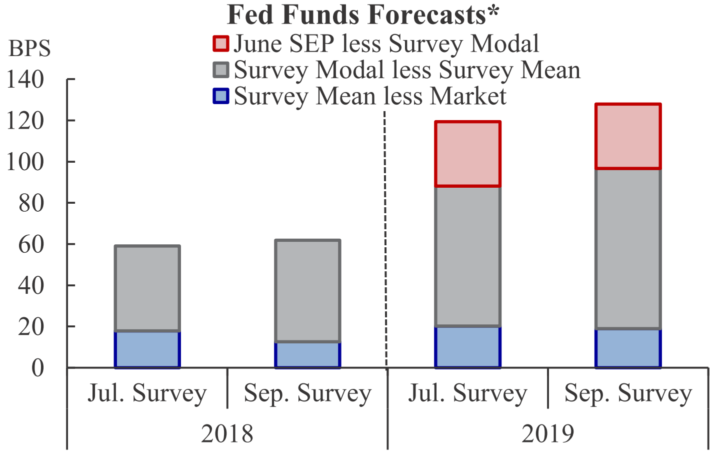
*Market-implied paths derived from federal funds and Eurodollar futures. Unconditional survey path is the average PDF-implied means from the Surveys of Primary Dealers and Market Participants.
Source: Bloomberg, Desk Calculations, Federal Reserve Board, FRBNY

(10) Average PDF-Implied Mean of Annual Average CPI Inflation Rate*



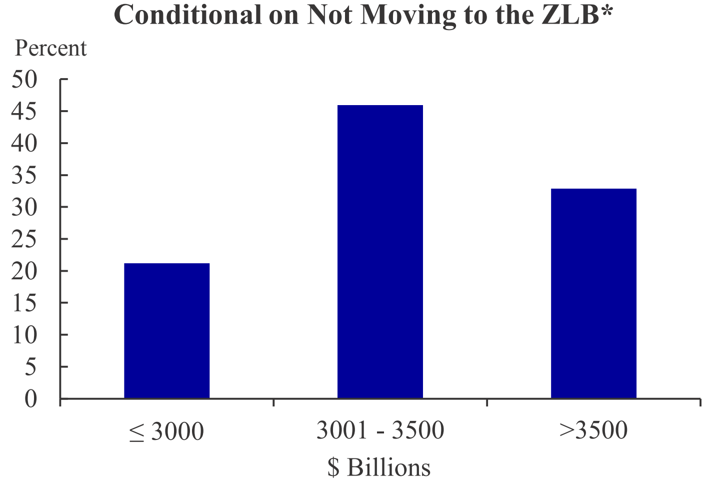
*Based on all responses from the Surveys of Primary Dealers and Market Participants.
Source: FRBNY

(11) Differences in Year-End 2018 and 2019 Fed Funds Forecasts*



*Based on all responses from the Surveys of Primary Dealers and Market Participants. Survey modal forecast is the median while survey mean is the average PDF-implied mean.
Source: FRBNY

(12) Average PDF of Year-End 2020 SOMA Level, Conditional on Not Moving to the ZLB*

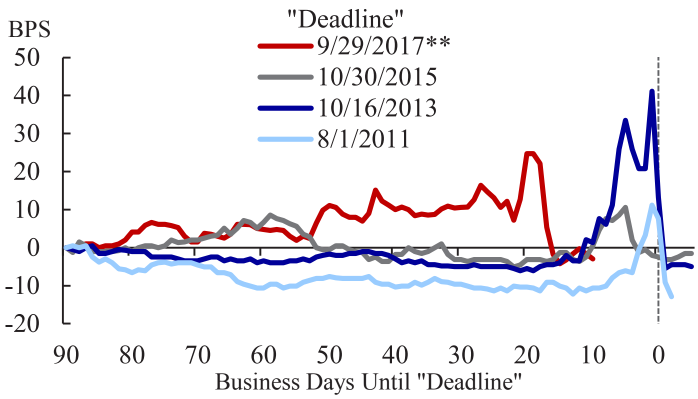


*Based on all responses from the Surveys of Primary Dealers and Market Participants.
Source: FRBNY

Class II FOMC – Restricted (FR)

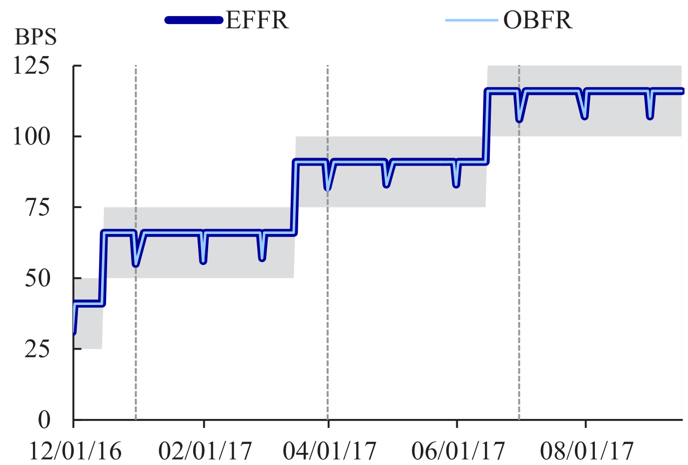
Exhibit 3

(13) Cumulative Change in Yield on Treasury Bills "at Risk" of Default in Recent Debt Ceiling Episodes*



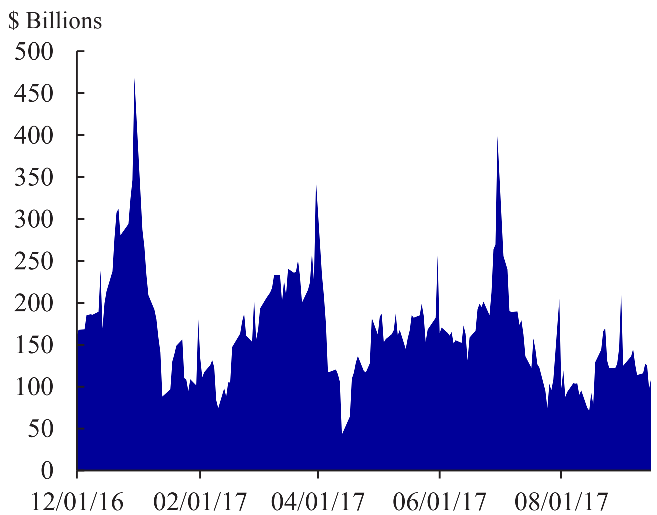
*Cumulative change from 90 business days before anticipated deadline.
** 9/29/17 reflected Treasury Secretary Mnuchin's latest communication prior to passing of debt ceiling suspension bill.
Source: Bloomberg

(14) Overnight Unsecured Rates*



*Grey dashed line indicates quarter-end. Shaded area reflects target range for the federal funds rate.
Source: FRBNY

(15) ON RRP Take-Up

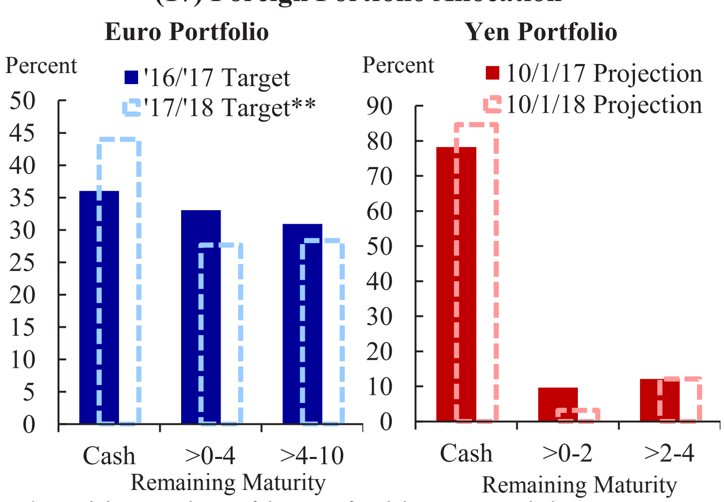


Source: FRBNY

(16) Treasury and Agency Securities Principal Payments Over the Next Intermeeting Period

- **Treasuries:** $19.6 billion maturing
  - $10.9 billion on Sep. 30
  - $8.7 billion on Oct. 31
- **Agency MBS:**
  - September Monthly Purchase Period
    - Purchases from Sep. 14 to Oct. 13
    - $26.7 billion estimated paydowns
  - October Monthly Purchase Period
    - Purchases from Oct. 16 to Nov. 13
    - Model projects $24 billion paydowns
- **Agency Debt:** none maturing

(17) Foreign Portfolio Allocation*



*Remaining maturity as of the start of each investment period.
**Allocation is tentative, will be finalized just prior to implementation.
Source: FRBNY

(18) Update on Reference Rates

- **May 2017:** Desk released statement regarding three proposed rates
- **June 2017:** ARRC selected the SOFR as its recommended alternative to U.S. dollar LIBOR
  - SOFR is the broadest rate; based on tri-party, GCF (interdealer), and bilateral transactions
- **August 2017:** Federal Register Notice (FRN) requested public comment
- **October 2017:** FRN comment period ends
- **Fourth Quarter of 2017:** Comments will be addressed publicly and a final FRN will be published
- **First half of 2018:** Initial publication of rates expected

Appendix

(1) Summary of Operational Testing

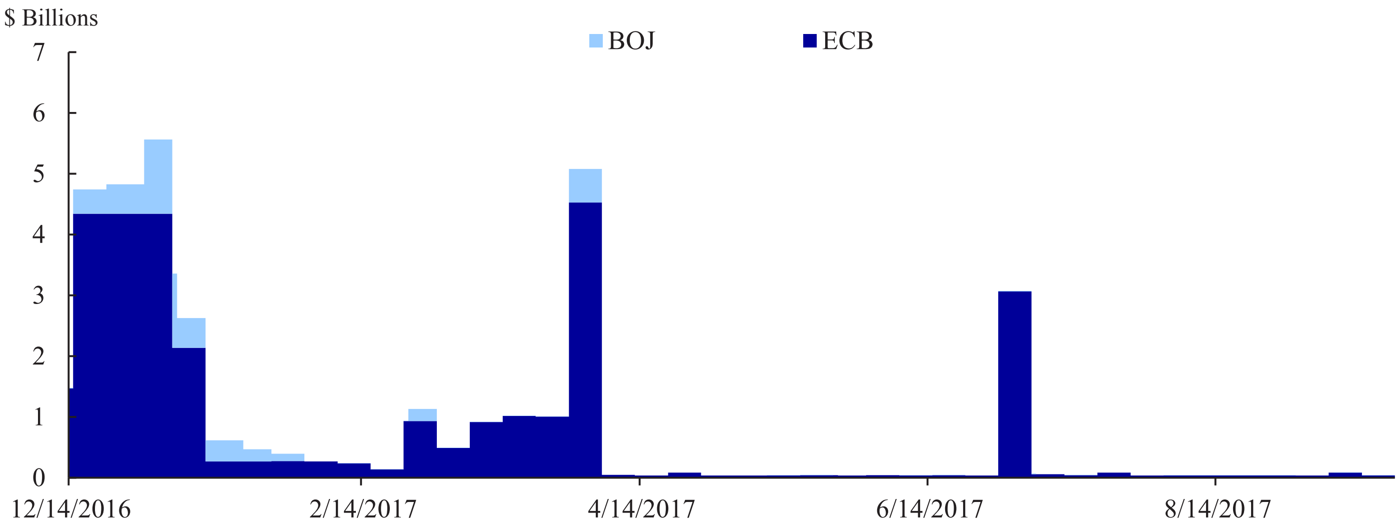
Summary of Operational Tests in prior period:

- Domestic Authorization
    - August 10: Contingency securities lending operation for no more than $115 million (unsuccessful)
    - September 6: Treasury outright purchase for $200 million
- TDF Test Operation
    - August 10: Conducted 7-day test with total take-up of $14.7 billion

Upcoming Operational Tests:

- Domestic Authorization
    - October 24 and 25: Coupon swaps with unsettled agency MBS holdings for approximately $20 million total
- Foreign Authorization
    - October 10: Euro-denominated overnight repo for €1 million

(2) FX Swaps Outstanding



Source: FRBNY

(3) FX Intervention

- There were no intervention operations in foreign currencies for the System's account during the intermeeting period

Appendix 2: Materials used by Mr. Potter

Class I FOMC – Restricted-Controlled (FR)

Material for the Briefing on

Reinvestment Operations

Simon Potter

September 19, 2017

(1) Reinvestment Cap Approach

- Treasury Securities:
  - Initial $6 billion monthly cap, increased in $6 billion increments every three months
  - Maximum monthly cap of $30 billion reached in October 2018
- Agency Debt and MBS:
  - Initial $4 billion monthly cap, increased in $4 billion increments every three months
  - Maximum monthly cap of $20 billion reached in October 2018

(2) Treasury Rollover Operations

- Amount to be reinvested, if any, will be allocated across maturity dates within a month in proportion to SOMA amounts maturing on those dates
- For each maturity date, amount is then allocated to each auction in proportion to publically announced offering amounts
- Precision of rollovers limited by $100 U.S. Treasury auction bid increments
- Month defined by stated maturity date, not date funds are received; including when month-end maturity is on weekend or holiday

(3) Agency Securities Reinvestment Operations

- Paydown reporting variance
  - Actual principal paydowns vary versus estimated amount by an average of about $20 million per month
- Actual purchase variance
  - Operational constraints result in a variance expected to be less than $50 million per month versus target amount
- Prior to the implementation of caps, both of these variances were carried over to the next monthly period
- Going forward, cumulative variances will be tracked on a monthly basis and reported at the following FOMC meeting, but will not be carried over to the next monthly period

(4) Starting Dates Assuming October Implementation

- The initial Treasury rollover will be of securities with October 31 maturity
- The initial agency MBS purchase period will be October 16 through November 13, announced October 13

(5) Reverse Repo Operations

- Current process: following each change in the fed funds target range, issue a Desk statement estimating the amount of Treasuries available for ON RRPs
- Proposed process: release a one-time statement and update ON RRP FAQs to note that "around $2 trillion" is currently available, and that this amount will decrease as the Treasury portfolio declines
  - Allows for changes to be made to this amount without drawing attention to a technical adjustment

(6) Planned Desk Communications

- 2 pm
  - Desk Statement Regarding Reinvestment in Treasury Securities and Agency Mortgage-Backed Securities (draft in exhibit 3)
  - Treasury Rollovers FAQs
  - Agency MBS Reinvestment Purchases FAQs
- 4 pm
  - Desk Statement Regarding Overnight Reverse Repurchase Agreements (draft in exhibit 4)
  - Reverse Repurchase Agreement Operations FAQs

Statement Regarding Reinvestment in Treasury Securities and Agency Mortgage-Backed Securities

September 20, 2017

During its meeting on September 19-20, 2017, the Federal Open Market Committee (FOMC) directed the Open Market Trading Desk (the Desk) at the Federal Reserve Bank of New York to initiate, in October 2017, the program to gradually reduce the reinvestment of principal payments from the Federal Reserve's securities holdings that is described in the Committee's June 2017 addendum to its Policy Normalization Principles and Plans. Specifically, the Committee directed the Desk to reinvest each month's principal payments from Treasury securities, agency debt, and agency mortgage-backed securities (MBS) only to the extent that such payments exceed gradually rising caps.

The schedule of monthly caps consistent with the Committee's September 20 decision and the June 2017 addendum is as follows:

	Monthly Caps on SOMA Securities Reductions	
	Treasury Securities	Agency Securities*
Oct – Dec 2017	$6 billion	$4 billion
Jan – Mar 2018	$12 billion	$8 billion
Apr – Jun 2018	$18 billion	$12 billion
Jul – Sep 2018	$24 billion	$16 billion
From Oct 2018**	$30 billion	$20 billion

**Applies to combined principal payments of agency debt and agency MBS.*

*** Once caps reach their maximum amounts, they will remain in effect until the Committee judges that the Federal Reserve is holding no more securities than necessary to implement monetary policy efficiently and effectively.*

For Treasury securities, the Desk will roll over at auction the principal payments from the Federal Reserve's holdings of Treasury securities maturing during each calendar month that exceed the cap amount for that month. The Desk will allocate that rollover amount across the month's maturity dates in proportion to total maturities of SOMA Treasury holdings on each date. Consistent with current practice, rollovers will continue to be accomplished by placing non-competitive bids at Treasury auctions; the bids will be allocated across the securities being issued in proportion to their announced offering amounts. The initial cap will first be applied to the October scheduled maturities, which occur on October 31.

For agency securities, the Desk will reinvest in agency MBS the principal payments from the Federal Reserve's holdings of agency debt and agency MBS received during each calendar month that exceed the cap amount for that month. Consistent with current practice, the Desk's reinvestment purchases will continue to be concentrated in newly-issued agency MBS in the To-Be-Announced (TBA) market. The planned amount of reinvestments in agency MBS that is anticipated to take place over each monthly period will be announced on or around the ninth business day of the month and will generally be conducted over the subsequent one-month period until the next announcement. The initial cap will first be applied to the October planned purchases, which will be announced on October 13, the ninth business day of the month.

Additional information on Treasury rollovers and agency MBS reinvestments can be found in Frequently Asked Questions in the following locations:

FAQs: Treasury Rollovers »
FAQs: Agency MBS Reinvestment Purchases »

DESK STATEMENT FOR SEPTEMBER 2017

Release Date: September 20, 2017

Statement Regarding Overnight Reverse Repurchase Agreements

During its meeting on September 19-20, 2017, the Federal Open Market Committee (FOMC) directed the Open Market Trading Desk (the Desk) at the Federal Reserve Bank of New York (New York Fed), effective September 21, 2017, to undertake open market operations as necessary to maintain the federal funds rate in a target range of 1 to 1¼ percent, including overnight reverse repurchase operations (ON RRPs) at an offering rate of 1.00 percent, in amounts limited only by the value of Treasury securities held outright in the System Open Market Account (SOMA) that are available for such operations and by a per-counterparty limit of $30 billion per day. The FOMC also directed the Desk to initiate the program to gradually reduce the reinvestment of principal payments from the Federal Reserve's holdings of Treasury securities, agency debt, and agency mortgage-backed securities (MBS), effective beginning in October 2017.

To determine the value of Treasury securities available for ON RRP operations, the Desk takes several factors into account, as not all Treasury securities held outright in the SOMA are available for use in such operations. First, some of the Treasury securities held outright in the SOMA are needed to conduct reverse repurchase agreements with foreign official and international accounts.[1] Second, some Treasury securities are needed to support the securities lending operations conducted by the Desk. Additionally, the Treasury securities serving as collateral for any outstanding term RRP operations would not be available to serve as collateral for ON RRP operations.

Taking these factors into account, as of the beginning of the implementation of the FOMC's balance sheet normalization program, the Desk has determined that around $2 trillion of Treasury securities are available for ON RRP operations to fulfill the FOMC's domestic policy directive. As the amount of Treasury securities held in the SOMA gradually declines over time pursuant to the FOMC's Policy Normalization Principles and Plans, this amount is expected to decrease. While the Desk does not plan to provide regular updates on the precise amount of ON RRP to be offered each day, this amount can be approximated by taking the above-mentioned factors into account.

Even as the amount of Treasury securities available for RRP operations decreases, it remains highly unlikely that the value of propositions received in an ON RRP operation will exceed the amount of available securities on a given day. In the highly unlikely event that the value of bids received in an ON RRP operation exceeds the amount of available securities, the Desk will allocate awards using a single-price auction based on the stop-out rate at which the overall size limit is reached, with all bids below

[1] The outstanding amounts of RRPs with foreign official and international accounts are reported on the Federal Reserve's H.4.1 statistical release as a factor absorbing reserves under the heading "Reverse repurchase agreements, Foreign official and international accounts" in Table 1 and as a component of the liability item "Reverse repurchase agreements" in Tables 5 and 6.

this rate awarded in full at the stop-out rate and all bids at this rate awarded on a pro rata basis at the stop-out rate.

These ON RRP operations will be open to all eligible RRP counterparties, will settle same-day, and will have an overnight tenor unless a longer term is warranted to accommodate weekend, holiday, and other similar trading conventions. Each eligible counterparty is permitted to submit one proposition for each ON RRP operation, in a size not to exceed $30 billion and at a rate not to exceed the specified offering rate. The operations will take place from 12:45 p.m. to 1:15 p.m. (Eastern Time). Any changes to these terms will be announced with at least one business day's prior notice on the New York Fed's website.

The results of these operations will be posted on the New York Fed's website. The outstanding amounts of ON RRPs are reported on the Federal Reserve's H.4.1 statistical release as a factor absorbing reserves under the heading "Reverse repurchase agreements, Others" in Table 1 and as a component of the liability item "Reverse repurchase agreements" in Tables 5 and 6.

Appendix 3: Materials used by Mr. Wilcox

Class II FOMC – Restricted (FR)

Material for the Briefing on

The U.S. Outlook

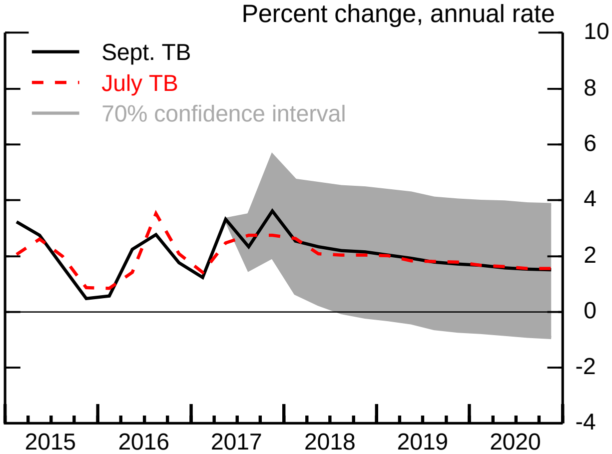
David W. Wilcox

September 19, 2017

Forecast Summary

Confidence Intervals for Panels 1, 6, 10, and 11 Based on FRB/US Stochastic Simulations

1. Real GDP

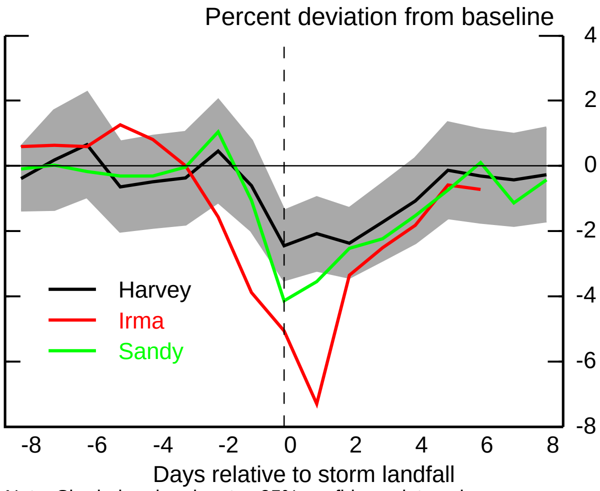


2. Hurricane-Related Effects on Output

(Percentage point contributions at annual rates)

	2017 Q3	2017 Q4	2018 Q1	2017 Q4/Q4
1. Real GDP	-1.0	1.2	.3	.0
2. Sept. TB	*-.5*	*.7*	*.1*	*.0*
3. Industrial prod.	-3.7	3.2	.5	-.1

3. Hurricane-Related Effects on National Retail Sales Group Spending



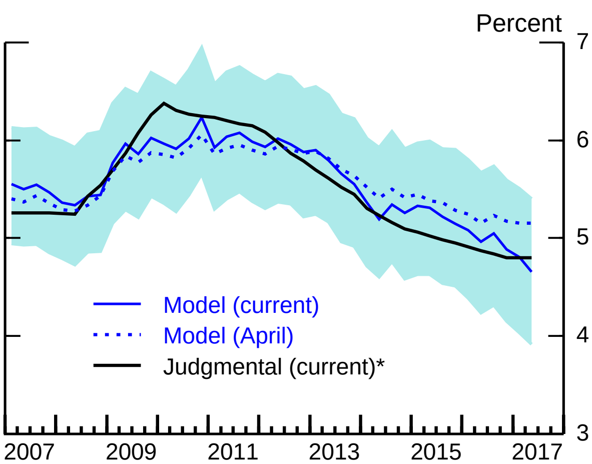
Note: Shaded region denotes 95% confidence interval.
Source: First Data retail volume aggregates.

4. Tealbook Update

	2017 H1	2017 H2	2018	2019	2020
	AR change, %		Q4-over-Q4 change, %		
Real GDP	2.2	2.8	2.3	1.9	1.6
Sept. TB	*2.3*	*3.0*	*2.3*	*1.9*	*1.6*
Unempl. rate*	4.4	4.2	3.8	3.7	3.8
Sept. TB	*4.4*	*4.2*	*3.8*	*3.7*	*3.7*
Total PCE prices	1.3	1.9	1.8	2.0	2.0
Sept. TB	*1.2*	*1.9*	*1.9*	*2.0*	*2.0*

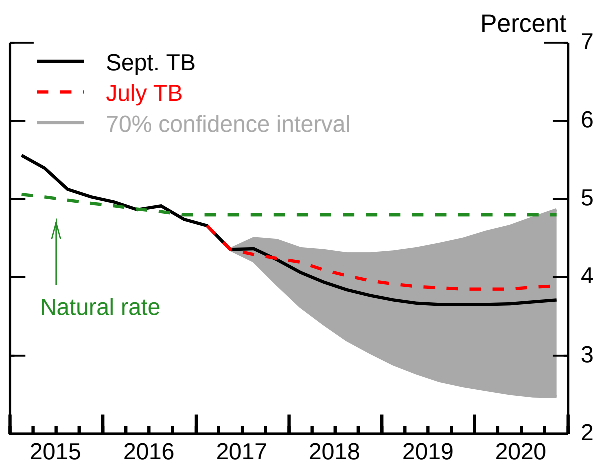
* Percent, final quarter of period indicated.

5. Natural Rate Estimates

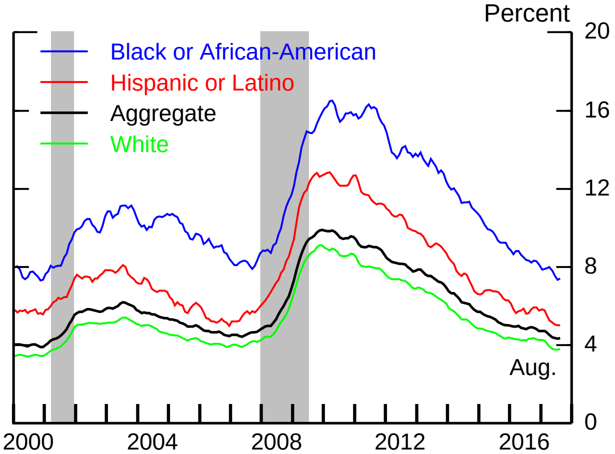


Note: Shaded region gives 70% confidence interval for model-based estimate. *Includes EEB effects.

6. Unemployment Rate

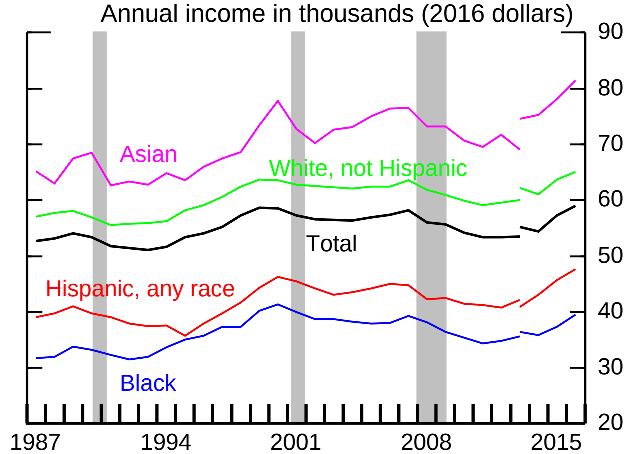


7. Unemployment Rates by Race or Ethnicity



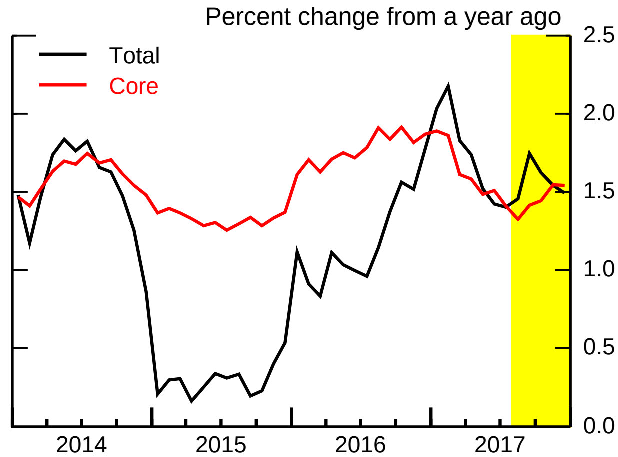
Note: Three-month moving averages. Shaded bars indicate a period of business recession as defined by the NBER.

8. Real Median Household Income by Race or Ethnicity*



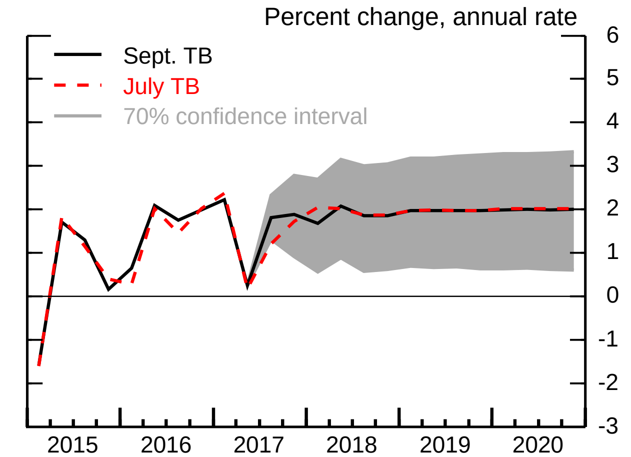
Note: Shaded bars indicate a period of business recession as defined by the NBER. *2013-2017 data reflect survey redesign.

9. Monthly PCE Price Inflation

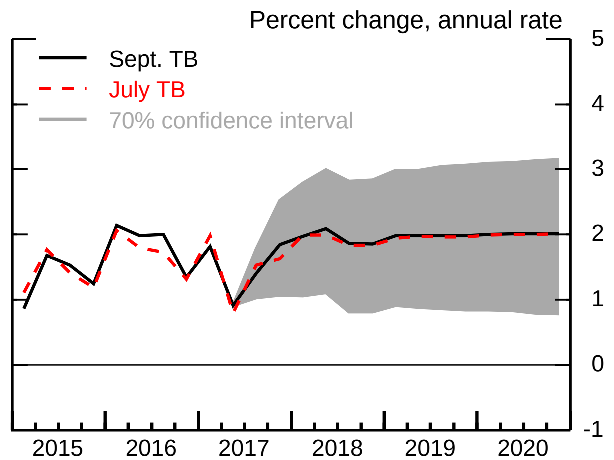


Note: Shaded yellow region indicates forecast period.

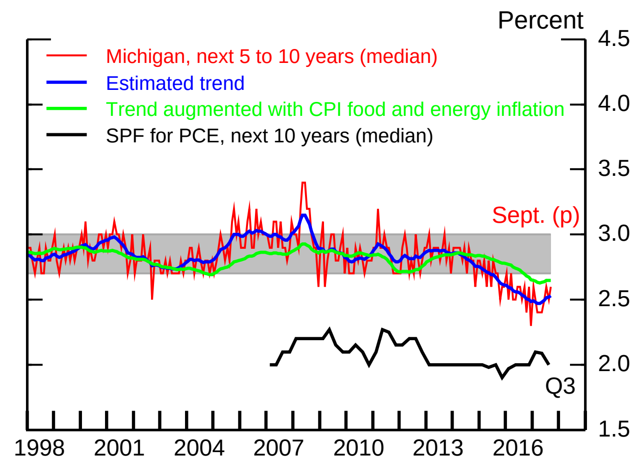
10. Total PCE Prices



11. PCE Prices Excluding Food and Energy

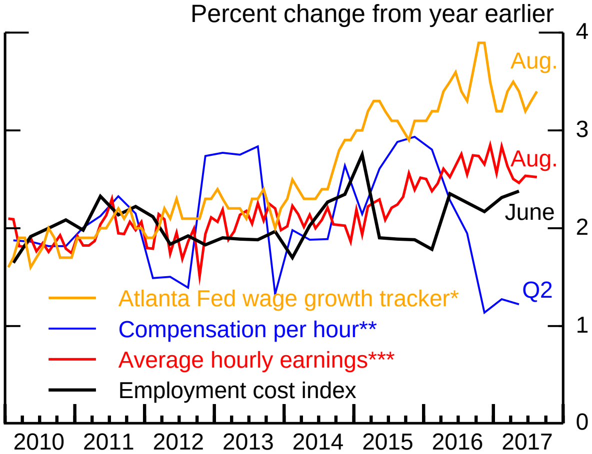


12. Longer-Term Inflation Expectations



Note: (p) Preliminary value. Augmented trend uses staff forecasts for September CPIs. Shaded area denotes 70 percent of the observed historical range of the Michigan measure since 1998.

13. Measures of Labor Compensation



*Three-month moving average. **Percent change of the four-quarter moving average from a year earlier. ***All employees.

Appendix 4: Materials used by Mr. Kamin

Class II FOMC – Restricted (FR)

Material for the Briefing on

The International Outlook

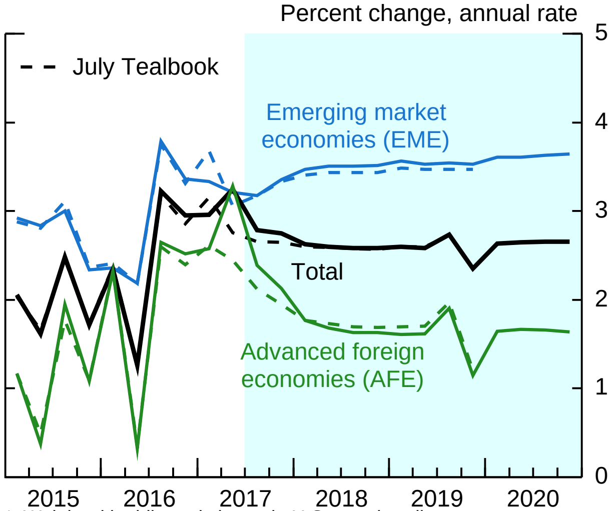
Steven B. Kamin
Exhibits by Meghan Letendre
September 19, 2017

Class II FOMC - Restricted (FR)

Exhibit 1

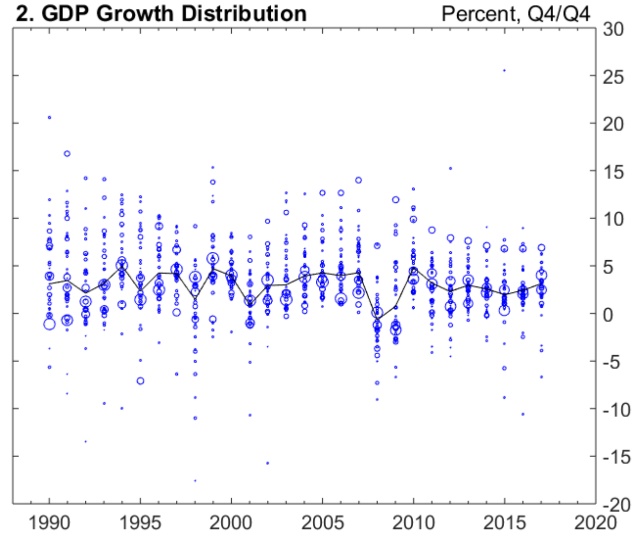
The International Outlook

1. Foreign GDP*



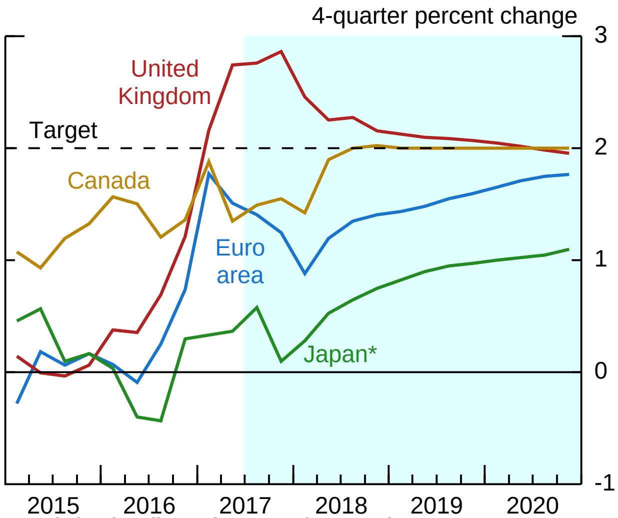
* Weighted by bilateral shares in U.S. merchandise exports.

2. GDP Growth Distribution



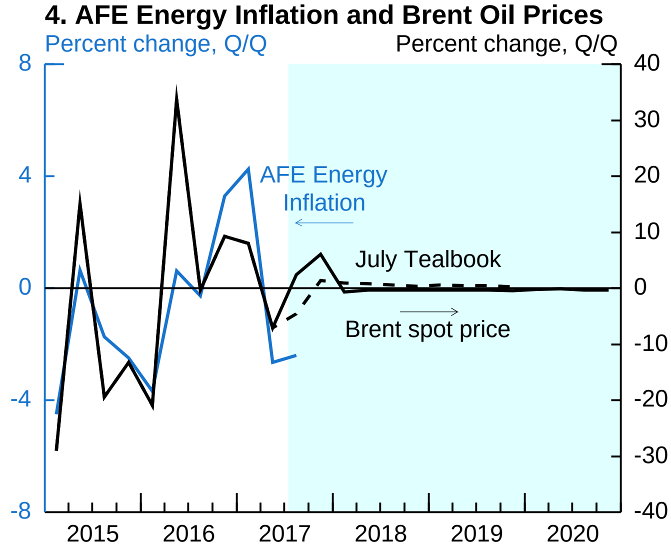
The sizes of the dots are proportional to the U.S. merchandise export weights of the countries. 2017 is Q2/Q4.

3. Headline Inflation

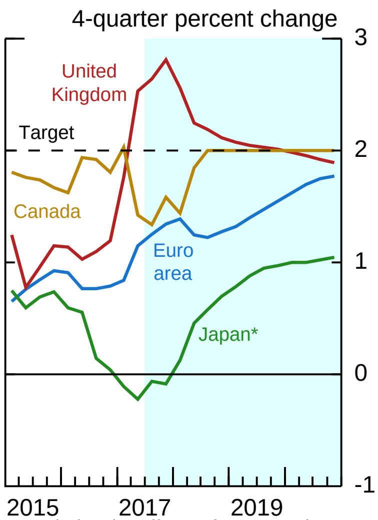


* Excludes the effects of consumption taxes in Japan.

4. AFE Energy Inflation and Brent Oil Prices

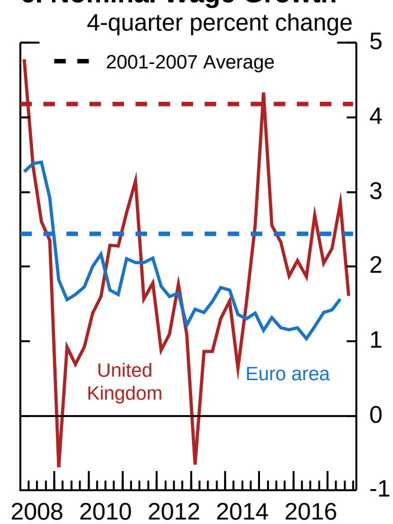


5. Core Inflation



* Excludes the effects of consumption taxes in Japan.

6. Nominal Wage Growth



7. Monetary Outlook Revisions

- Slower tapering of ECB asset purchases.
- BOJ yield target to remain around zero through 2018.
- In contrast, BOC has steeper path of tightening.
- BOE liftoff 2018:Q1, a quarter earlier than July TB.

Class II FOMC - Restricted (FR)

Exhibit 2

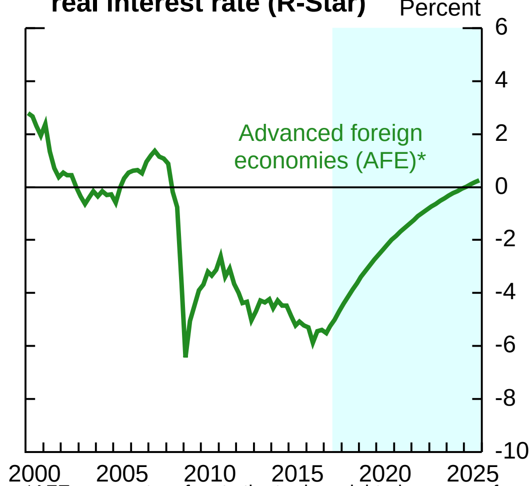
The International Outlook (2)

8. Taylor Rule Description

Taylor 1999: $r_t = r^{LR} + \pi_t + 0.5(\pi_t - \pi^{LR}) + ygap_t$

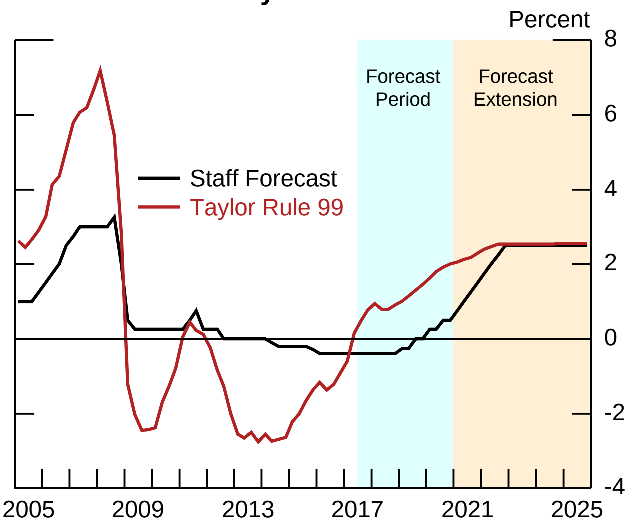
- π_t = 4-quarter percent change in core CPI
- r^{LR} = real neutral policy rate
  - o In euro area = 0.5
  - o In U.K. = 1
  - o In Canada = 1
  - o In Japan = 0

9. Estimates of the cyclical equilibrium real interest rate (R-Star)

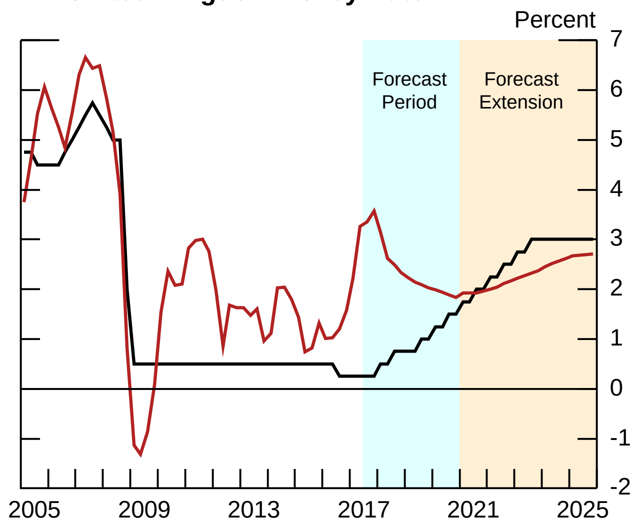


*AFE aggregate refers to the trade-weighted average of estimates, based on Curdia et al. (2015), for the euro area, Canada, and the United Kingdom.

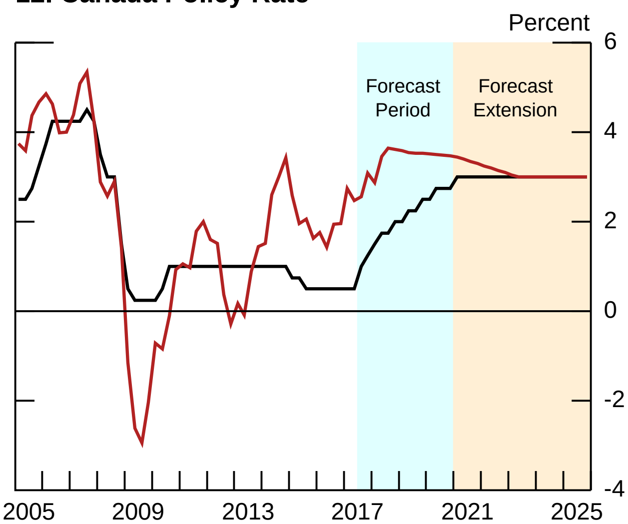
10. Euro Area Policy Rate



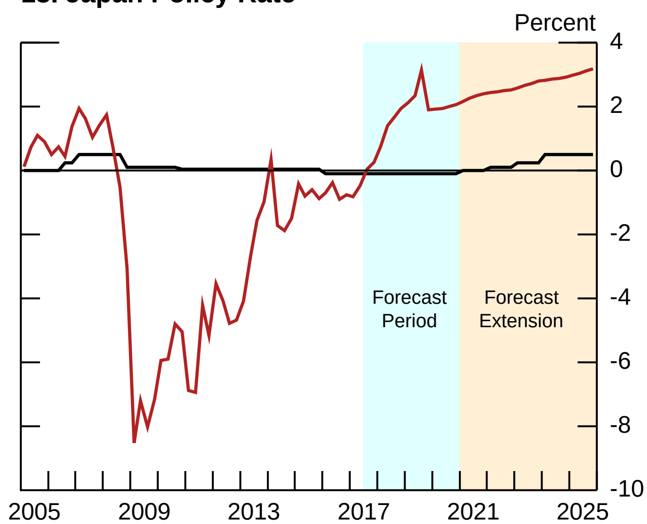
11. United Kingdom Policy Rate



12. Canada Policy Rate



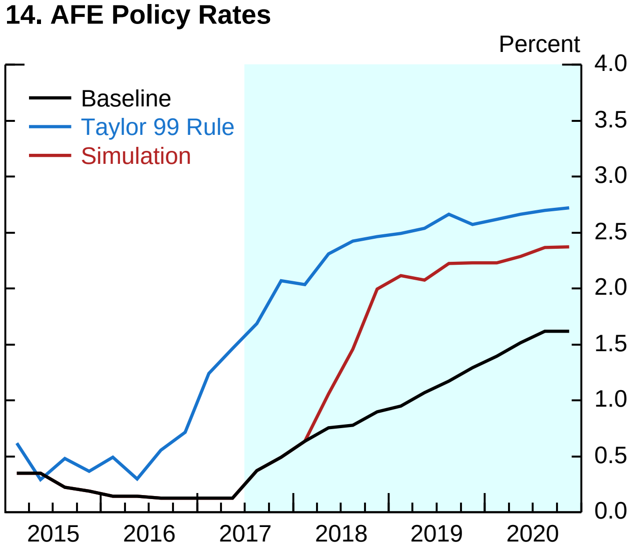
13. Japan Policy Rate

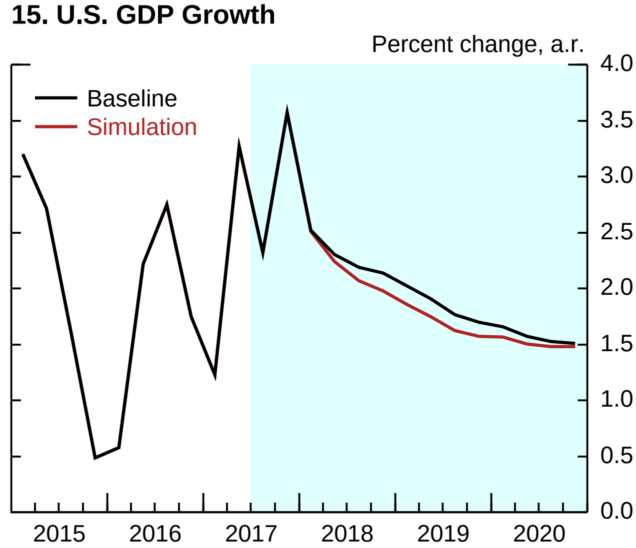


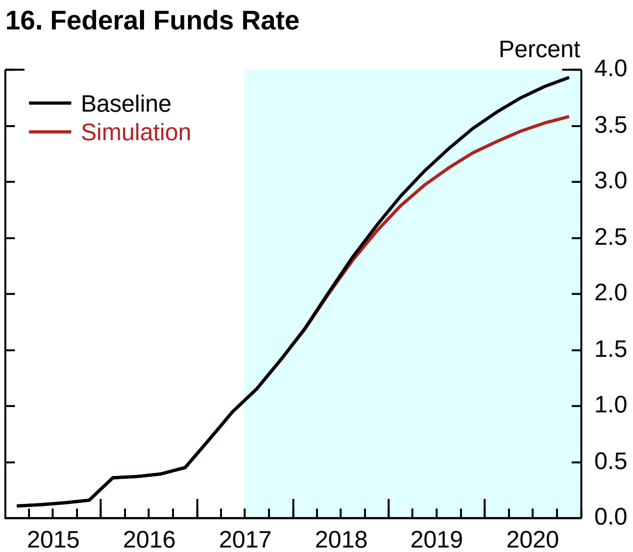
Class II FOMC - Restricted (FR)

Exhibit 3 (last)

The International Outlook (3)







Appendix 5: Materials used by Mr. De Pooter

Class I FOMC – Restricted Controlled (FR)

Material for Briefing on the

Summary of Economic Projections

Michiel De Pooter

September 19, 2017

Exhibit 1. Medians, central tendencies, and ranges of economic projections, 2017–20 and over the longer run

NOTE: The data for the actual values of the variables are annual. The percent changes in real GDP and inflation are measured Q4/Q4. Projections for the unemployment rate are for the average civilian unemployment rate in the fourth quarter of the year indicated. One participant did not submit longer-run projections for the change in real GDP or the unemployment rate.

Exhibit 2. Economic projections for 2017–20 and over the longer run (percent)

Change in real GDP

	2017	2018	2019	2020	Longer run
Median	2.4	2.1	2.0	1.8	1.8
June projection	2.2	2.1	1.9	n.a.	1.8
Range	2.2 – 2.7	1.7 – 2.6	1.4 – 2.3	1.4 – 2.0	1.5 – 2.2
June projection	2.0 – 2.5	1.7 – 2.3	1.4 – 2.3	n.a.	1.5 – 2.2
Memo: Tealbook	2.5	2.3	1.9	1.6	1.7
June projection	2.4	2.2	1.8	1.4	1.7

Unemployment rate

	2017	2018	2019	2020	Longer run
Median	4.3	4.1	4.1	4.2	4.6
June projection	4.3	4.2	4.2	n.a.	4.6
Range	4.2 – 4.5	3.9 – 4.5	3.8 – 4.5	3.8 – 4.8	4.4 – 5.0
June projection	4.1 – 4.5	3.9 – 4.5	3.8 – 4.5	n.a.	4.5 – 5.0
Memo: Tealbook	4.2	3.8	3.7	3.8	4.8
June projection	4.2	3.9	3.8	4.0	4.9

PCE inflation

	2017	2018	2019	2020	Longer run
Median	1.6	1.9	2.0	2.0	2.0
June projection	1.6	2.0	2.0	n.a.	2.0
Range	1.5 – 1.7	1.7 – 2.0	1.8 – 2.2	1.9 – 2.2	2.0
June projection	1.5 – 1.8	1.7 – 2.1	1.8 – 2.2	n.a.	2.0
Memo: Tealbook	1.6	1.8	2.0	2.0	2.0
June projection	1.6	1.9	2.0	2.1	2.0

Core PCE inflation

	2017	2018	2019	2020
Median	1.5	1.9	2.0	2.0
June projection	1.7	2.0	2.0	n.a.
Range	1.4 – 1.7	1.7 – 2.0	1.8 – 2.2	1.9 – 2.2
June projection	1.6 – 1.8	1.7 – 2.1	1.8 – 2.2	n.a.
Memo: Tealbook	1.5	1.9	2.0	2.0
June projection	1.6	1.9	2.0	2.1

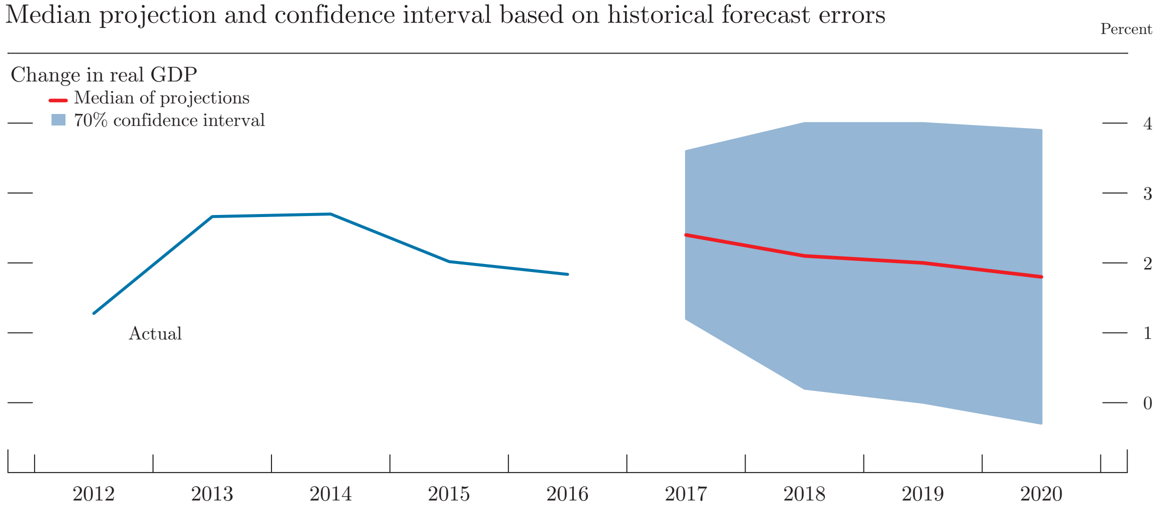
NOTE: Updated September Tealbook values are reported. The percent changes in real GDP and inflation are measured Q4/Q4. Projections for the unemployment rate are for the average civilian unemployment rate in the fourth quarter of the year indicated. One participant did not submit longer-run projections for the change in real GDP, the unemployment rate, or the federal funds rate in conjunction with the June 13–14, 2017, meeting, and one participant did not submit such projections in conjunction with the September 19–20, 2017, meeting.

Exhibit 3. Overview of FOMC participants' assessments of appropriate monetary policy

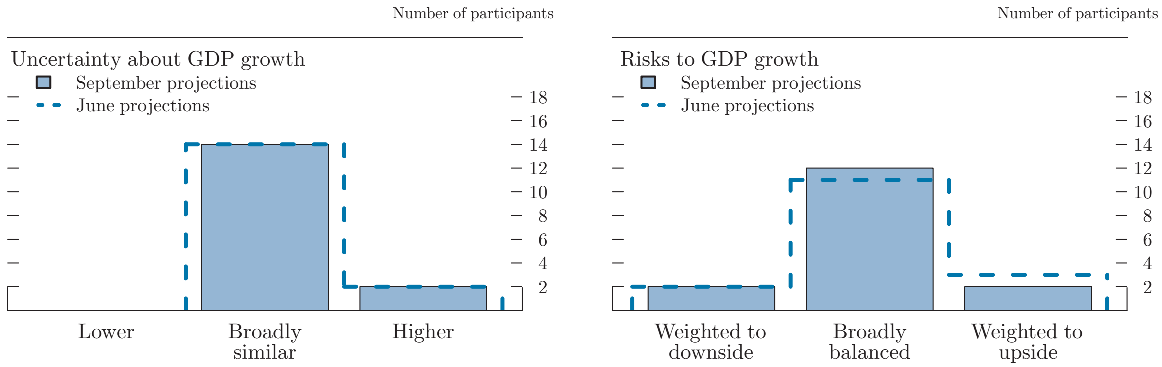
NOTE: In the two panels above, each circle indicates the value (rounded to the nearest 1/8 percentage point) of an individual participant's judgment of the midpoint of the appropriate target range for the federal funds rate or the appropriate target level for the federal funds rate at the end of the specified calendar year or over the longer run. The red diamonds for each year represent the median of the federal funds rate prescriptions that were derived by taking each participant's projections for the unemployment gap, core PCE inflation, and longer-run nominal federal funds rate for that year and inserting them into the non-inertial Taylor (1999) rule. The whiskers represent the central tendency of the prescriptions of the non-inertial Taylor (1999) rule using participants' projections. One participant did not submit a longer-run projection for the federal funds rate in conjunction with the June 13–14, 2017, meeting, and one participant did not submit such a projection in conjunction with the September 19–20, 2017, meeting.

Exhibit 4.A. Uncertainty and risks in projections of GDP growth

Median projection and confidence interval based on historical forecast errors



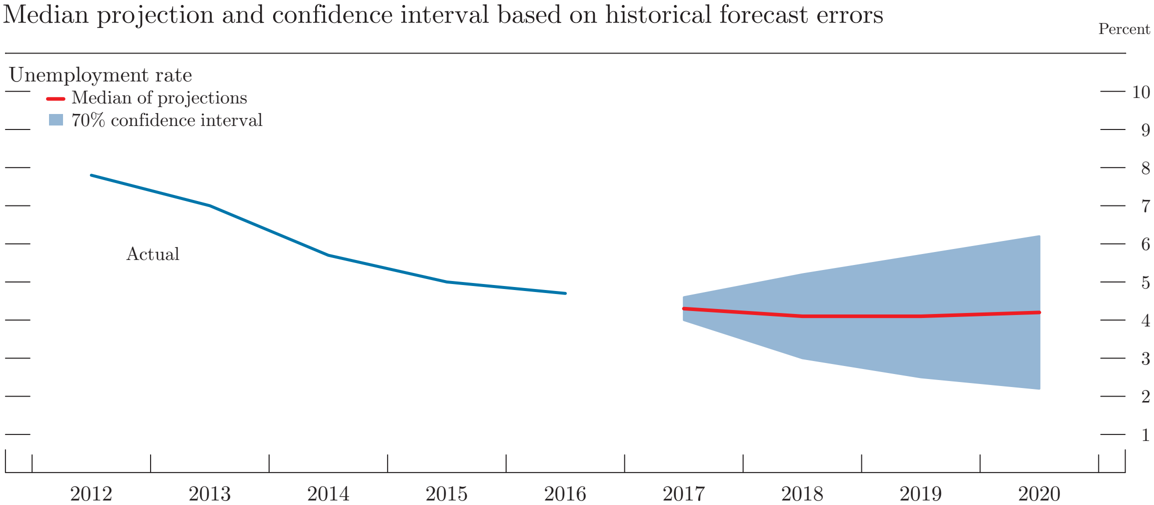
FOMC participants’ assessments of uncertainty and risks around their economic projections



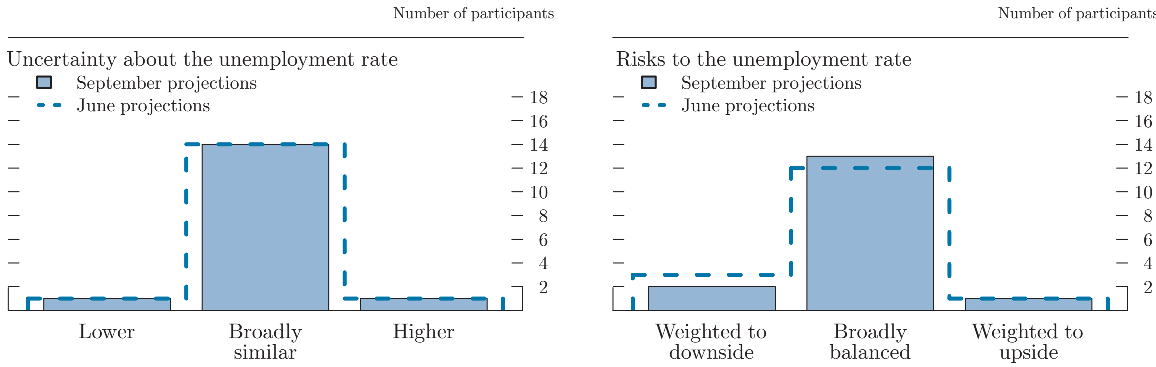
NOTE: The blue and red lines in the top panel show actual values and median projected values, respectively, of the percent change in real gross domestic product (GDP) from the fourth quarter of the previous year to the fourth quarter of the year indicated. The confidence interval around the median projected 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 of the Summary of Economic Projections (SEP). 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” in the SEP.

Exhibit 4.B. Uncertainty and risks in projections of the unemployment rate

Median projection and confidence interval based on historical forecast errors



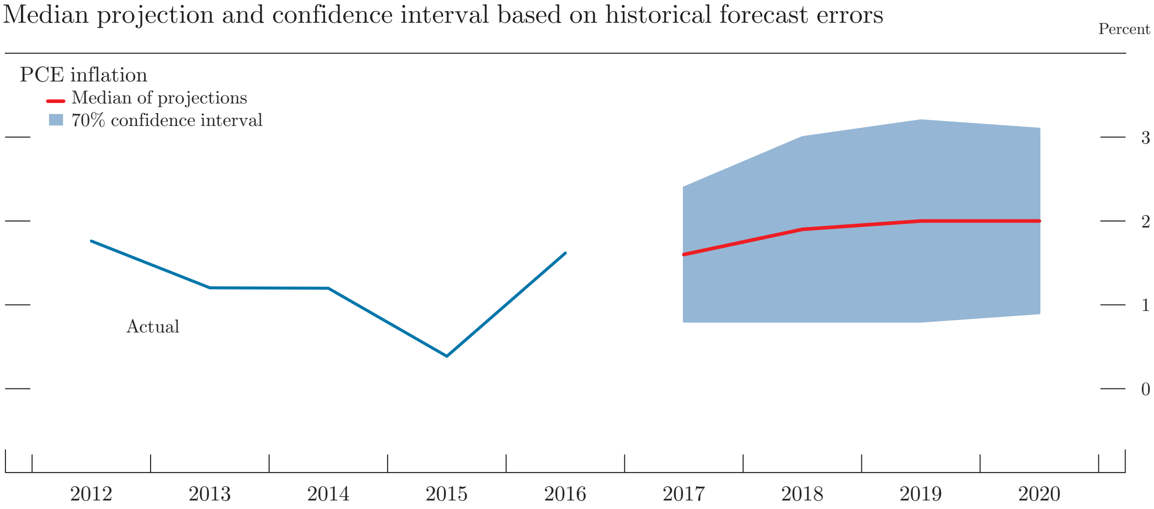
FOMC participants' assessments of uncertainty and risks around their economic projections



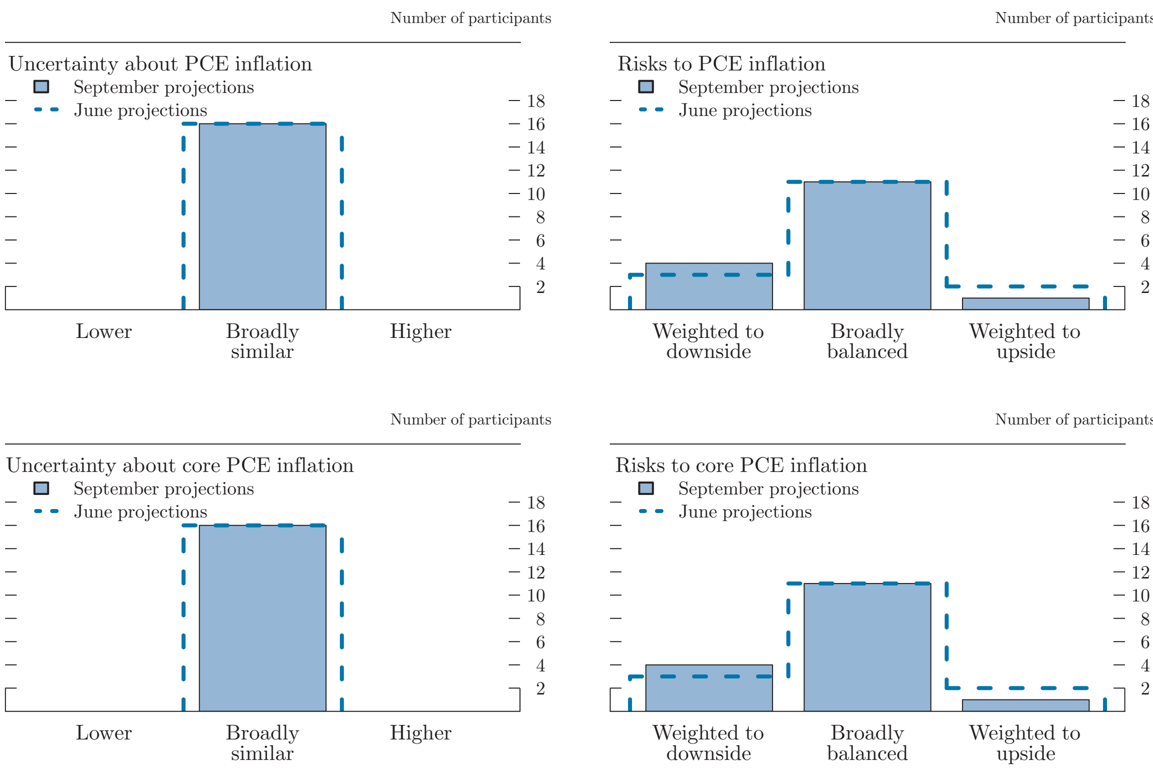
NOTE: The blue and red lines in the top panel show actual values and median projected values, respectively, of the average civilian unemployment rate in the fourth quarter of the year indicated. The confidence interval around the median projected values is assumed to be symmetric and is based on root 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 of the Summary of Economic Projections (SEP). 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" in the SEP.

Exhibit 4.C. Uncertainty and risks in projections of PCE inflation

Median projection and confidence interval based on historical forecast errors

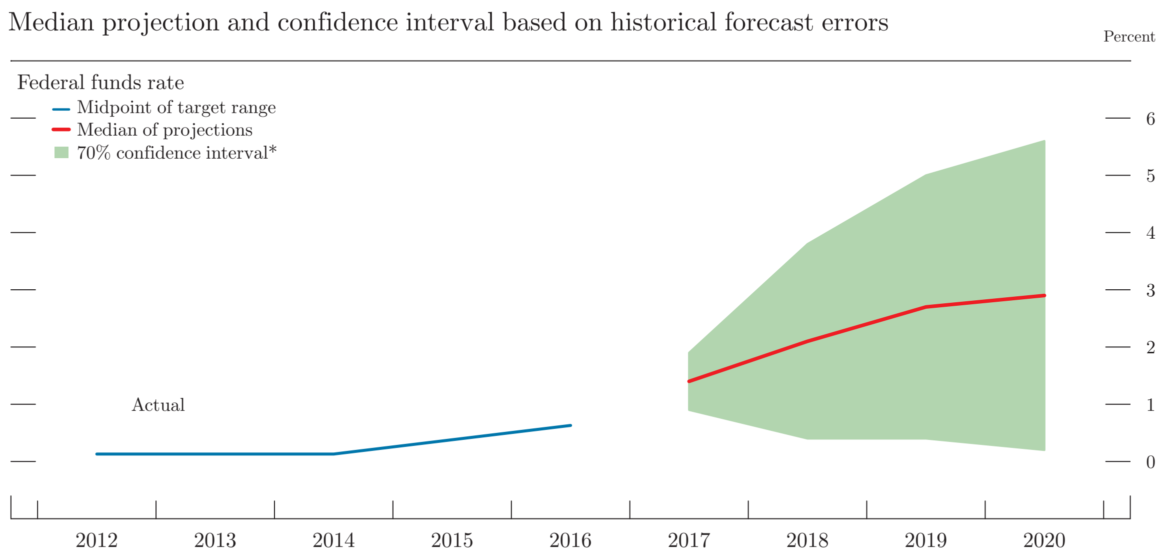


FOMC participants' assessments of uncertainty and risks around their economic projections



NOTE: The blue and red lines in the top panel show actual values and median projected values, respectively, of the percent change in 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 of the Summary of Economic Projections (SEP). 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" in the SEP.

Exhibit 5. Uncertainty in projections of the federal funds rate



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 of the Summary of Economic Projections. The shaded area encompasses less than a 70 percent confidence interval if the confidence interval has been truncated at zero.

Appendix 6: Materials used by Mr. Laubach

Class I FOMC – Restricted Controlled (FR)

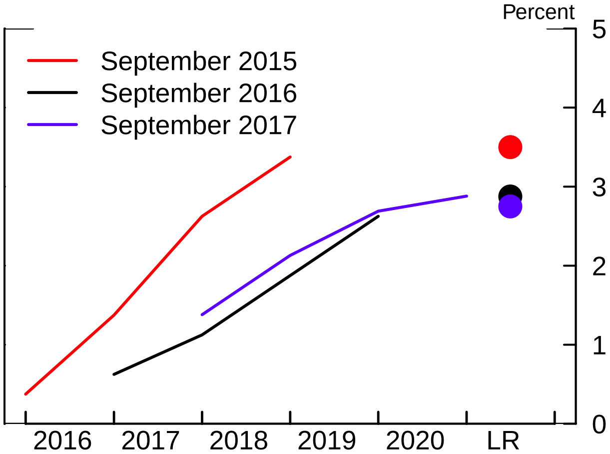
Material for the Briefing on

Monetary Policy Alternatives

Thomas Laubach
Exhibits by Laurie Khalfan
September 19-20, 2017

SEP−Implied Neutral Real Rates

SEP Median Projections for the Fed Funds Rate



Note: Circles represent LR estimates.
Source: September 2017, September 2016, and September 2015 SEPs.

Estimates of Time−varying r* Implied by Participants' Projections

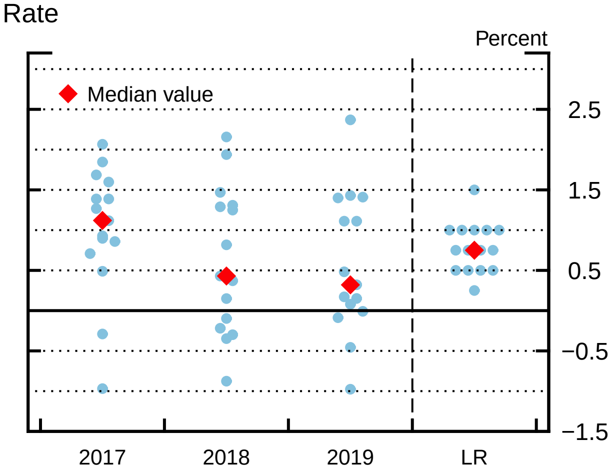
- IS equation relates the unemployment gap to the real interest rate gap as follows:

$$(u_t - u_t^*) = \alpha \times (u_{t-1} - u_{t-1}^*) + \beta \times (r_{t-1} - r_{t-1}^*)$$

- Estimate coefficients α and β using data from the 4th quarter of each year, staff's estimate of u*, and Laubach−Williams estimates of r*.
- Insert participants' estimates of the longer−run unemployment rate and projections for the unemployment rate and real federal funds rate to solve for their implied time−varying r*.

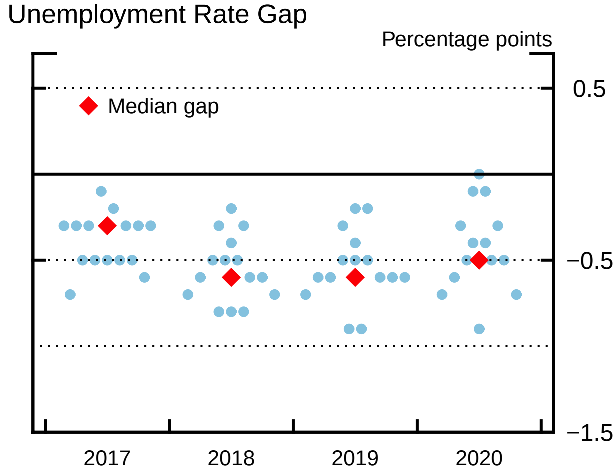
Note: α = 0.84; β = 0.15.

SEP−Implied r* and Longer−Run Real Interest Rate



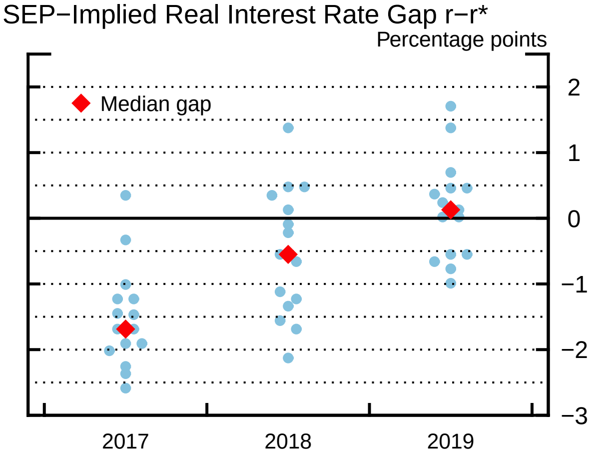
Source: September 2017 SEP.

Unemployment Rate Gap



Source: September 2017 SEP.

SEP−Implied Real Interest Rate Gap r−r*



Source: September 2017 SEP.

Policy Implications

- Alternative C: Further increases needed soon to moderate growth and avoid risks associated with undershooting u*.
- Alternative A: Much less conviction that r* is positive; no change in stance of policy likely soon.
- Alternative B: Confidence in medium−term outlook for inflation to stabilize around 2 percent and employment to undershoot modestly while the policy rate is increased gradually.

July 2017 FOMC Statement

1. Information received since the Federal Open Market Committee met in June indicates that the labor market has continued to strengthen and that economic activity has been rising moderately so far this year. Job gains have been solid, on average, since the beginning of the year, and the unemployment rate has declined. Household spending and business fixed investment have continued to expand. On a 12-month basis, overall inflation and the measure excluding food and energy prices have declined and are running below 2 percent. Market-based measures of inflation compensation remain low; survey-based measures of longer-term inflation expectations are little changed, on balance.

2. Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. The Committee continues to expect that, with gradual adjustments in the stance of monetary policy, economic activity will expand at a moderate pace, and labor market conditions will strengthen somewhat further. Inflation on a 12-month basis is expected to remain somewhat below 2 percent in the near term but to stabilize around the Committee's 2 percent objective over the medium term. Near-term risks to the economic outlook appear roughly balanced, but the Committee is monitoring inflation developments closely.

3. In view of realized and expected labor market conditions and inflation, the Committee decided to maintain the target range for the federal funds rate at 1 to 1-1/4 percent. The stance of monetary policy remains accommodative, thereby supporting some further strengthening in labor market conditions and a sustained return to 2 percent inflation.

4. In determining the timing and size of future adjustments to the target range for 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. The Committee will carefully monitor actual and expected inflation developments relative to its symmetric inflation goal. The Committee expects that economic conditions will evolve in a manner that will warrant gradual increases in the federal funds rate; the federal funds rate is likely to remain, for some time, below levels that are expected to prevail in the longer run. However, the actual path of the federal funds rate will depend on the economic outlook as informed by incoming data.

5. For the time being, the Committee is maintaining its existing policy of reinvesting principal payments from its holdings of agency debt and agency mortgage-backed securities in agency mortgage-backed securities and of rolling over maturing Treasury securities at auction. The Committee expects to begin implementing its balance sheet normalization program relatively soon, provided that the economy evolves broadly as anticipated; this program is described in the June 2017 Addendum to the Committee's Policy Normalization Principles and Plans.

SEPTEMBER 2017 ALTERNATIVE A

1. Information received since the Federal Open Market Committee met in ~~June~~ **July** indicates that the labor market has continued to strengthen and that economic activity has been rising moderately so far this year. **While** job gains have ~~been~~ **remained** solid, on average, ~~since the beginning of the year, and~~ the unemployment rate has ~~declined~~ **changed little in recent months and wage gains have continued to be subdued**. Household spending and business fixed investment have ~~continued to~~ **been** expand**ing at moderate rates**. On a 12-month basis, overall inflation and the measure excluding food and energy prices have declined **this year** and are running below 2 percent. Market-based measures of inflation compensation remain low; survey-based measures of longer-term inflation expectations are little changed, on balance.

2. Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. **Hurricanes Harvey and Irma have devastated many communities, inflicting severe hardship. Storm-related disruptions and rebuilding will affect economic activity in the near term, but past experience suggests that the storms are unlikely to materially alter the course of the national economy over the medium term.** The Committee ~~continues to~~ expect**s** that, with ~~gradual adjustments in the stance of~~ **appropriate** monetary policy **accommodation**, economic activity will expand at a moderate pace, and labor market conditions will strengthen somewhat further. **Higher prices for gasoline and some other items in the aftermath of the hurricanes will likely boost inflation temporarily; apart from that effect,** inflation on a 12-month basis is expected to remain ~~somewhat~~ below 2 percent in the near term but to stabilize around the Committee's 2 percent objective over the medium term. Near-term risks to the economic outlook appear roughly balanced, but the Committee is monitoring inflation developments closely.

3. In view of realized and expected labor market conditions and inflation, the Committee decided to maintain the target range for the federal funds rate at 1 to 1-1/4 percent **while assessing the likelihood that recent low readings on inflation will persist**. The stance of monetary policy remains accommodative, thereby supporting some further strengthening in labor market conditions and a sustained return to 2 percent inflation.

4. In determining the timing and size of future adjustments to the target range for 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. The Committee will carefully monitor actual and expected inflation developments relative to its symmetric inflation goal. ~~The Committee expects that economic conditions will evolve in a manner that will warrant gradual increases in the federal funds rate; the federal funds rate is likely to remain, for some time, below levels that are expected to~~

~~prevail in the longer run. However, the actual path of the federal funds rate will depend on the economic outlook as informed by incoming data.~~

5. ~~For the time being, the Committee is maintaining its existing policy of reinvesting principal payments from its holdings of agency debt and agency mortgage-backed securities in agency mortgage-backed securities and of rolling over maturing Treasury securities at auction.~~ **In October,** the Committee ~~expects to begin implementing its~~ **will initiate the** balance sheet normalization program ~~relatively soon, provided that the economy evolves broadly as anticipated; this program is~~ described in the June 2017 Addendum to the Committee's Policy Normalization Principles and Plans.

In future FOMC statements, paragraph 5 could become: "Balance sheet normalization is proceeding in accordance with the program that the Committee initiated in October 2017; that program is described in the June 2017 Addendum to the Committee's Policy Normalization Principles and Plans."

SEPTEMBER 2017 ALTERNATIVE B

1. Information received since the Federal Open Market Committee met in ~~June~~ **July** indicates that the labor market has continued to strengthen and that economic activity has been rising moderately so far this year. Job gains have ~~been~~ **remained** solid~~, on average, since the beginning of the year~~ **in recent months**, and the unemployment rate has ~~declined~~ **stayed low**. Household spending **has been expanding at a moderate rate,** and **growth in** business fixed investment ~~have continued to expand~~ **has picked up in recent quarters**. On a 12-month basis, overall inflation and the measure excluding food and energy prices have declined **this year** and are running below 2 percent. Market-based measures of inflation compensation remain low; survey-based measures of longer-term inflation expectations are little changed, on balance.

2. Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. **Hurricanes Harvey and Irma have devastated many communities, inflicting severe hardship. Storm-related disruptions and rebuilding will affect economic activity in the near term, but past experience suggests that the storms are unlikely to materially alter the course of the national economy over the medium term. Consequently,** the Committee continues to expect that, with gradual adjustments in the stance of monetary policy, economic activity will expand at a moderate pace, and labor market conditions will strengthen somewhat further. **Higher prices for gasoline and some other items in the aftermath of the hurricanes will likely boost inflation temporarily; apart from that effect,** inflation on a 12-month basis is expected to remain somewhat below 2 percent in the near term but to stabilize around the Committee's 2 percent objective over the medium term. Near-term risks to the economic outlook appear roughly balanced, but the Committee is monitoring inflation developments closely.

3. In view of realized and expected labor market conditions and inflation, the Committee decided to maintain the target range for the federal funds rate at 1 to 1-1/4 percent. The stance of monetary policy remains accommodative, thereby supporting some further strengthening in labor market conditions and a sustained return to 2 percent inflation.

4. In determining the timing and size of future adjustments to the target range for 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. The Committee will carefully monitor actual and expected inflation developments relative to its symmetric inflation goal. The Committee expects that economic conditions will evolve in a manner that will warrant gradual increases in the federal funds rate; the federal funds rate is likely to remain, for some time, below levels that are expected to prevail in the longer run. However, the actual path of the federal funds rate will depend on the economic outlook as informed by incoming data.

5. ~~For the time being, the Committee is maintaining its existing policy of reinvesting principal payments from its holdings of agency debt and agency mortgage-backed securities in agency mortgage-backed securities and of rolling over maturing Treasury securities at auction.~~ **In October,** the Committee ~~expects to begin implementing its~~ **will initiate the** balance sheet normalization program ~~relatively soon, provided that the economy evolves broadly as anticipated; this program is~~ described in the June 2017 Addendum to the Committee's Policy Normalization Principles and Plans.

In future FOMC statements, paragraph 5 could become: "Balance sheet normalization is proceeding in accordance with the program that the Committee initiated in October 2017; that program is described in the June 2017 Addendum to the Committee's Policy Normalization Principles and Plans."

SEPTEMBER 2017 ALTERNATIVE C

1. Information received since the Federal Open Market Committee met in ~~June~~ **July** indicates that the labor market has continued to ~~strengthen~~ **tighten** and that **growth of** economic activity has ~~been rising moderately so far this year~~ **picked up**. Job gains have ~~been solid~~ **remained strong**, ~~on average, since the beginning of the year,~~ and the unemployment rate ~~has declined~~ **remains at a low level**. Household spending **has been expanding at a moderate rate,** and **growth in** business fixed investment ~~have continued to expand~~ **has picked up in recent quarters**. On a 12-month basis, overall inflation and the measure excluding food and energy prices have declined **this year** and are running below 2 percent. Market-based measures of inflation compensation ~~remain low;~~ **and** survey-based measures of longer-term inflation expectations are little changed, on balance.

2. Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. **Hurricanes Harvey and Irma have devastated many communities, inflicting severe hardship. Storm-related disruptions and rebuilding will affect economic activity in the near term, but past experience suggests that the storms are unlikely to materially alter the course of the national economy over the medium term.** The Committee ~~continues to~~ expect**s** that, with **further** gradual adjustments in the stance of monetary policy, **growth in** economic activity **and employment** will ~~expand at a~~ moderate ~~pace~~ **to sustainable rates in the medium term**~~, and labor market conditions will strengthen somewhat further~~. **Higher prices for gasoline and some other items in the aftermath of the hurricanes will likely boost inflation temporarily; apart from that effect,** inflation on a 12-month basis is expected to remain somewhat below 2 percent in the near term but to stabilize around the Committee's 2 percent objective over the medium term. Near-term risks to the economic outlook appear roughly balanced, but the Committee is monitoring inflation developments closely.

3. In view of realized and expected labor market conditions and inflation, the Committee decided to maintain the target range for the federal funds rate at 1 to 1-1/4 percent **for the time being**. The stance of monetary policy remains accommodative, thereby supporting some further strengthening in labor market conditions and a sustained return to 2 percent inflation.

4. In determining the timing and size of future adjustments to the target range for 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. The Committee will carefully monitor actual and expected inflation developments relative to its symmetric inflation goal. The Committee expects that economic conditions will evolve in a manner that will warrant **further** gradual increases in the federal funds rate~~; the federal funds rate is likely to remain, for some time, below levels that are~~

~~expected to prevail in the longer run~~. However, the actual path of the federal funds rate will depend on the economic outlook as informed by incoming data.

5. ~~For the time being, the Committee is maintaining its existing policy of reinvesting principal payments from its holdings of agency debt and agency mortgage-backed securities in agency mortgage-backed securities and of rolling over maturing Treasury securities at auction.~~ **In October,** the Committee ~~expects to begin implementing its~~ **will initiate the** balance sheet normalization program ~~relatively soon, provided that the economy evolves broadly as anticipated; this program is~~ described in the June 2017 Addendum to the Committee's Policy Normalization Principles and Plans.

In future FOMC statements, paragraph 5 could become: "Balance sheet normalization is proceeding in accordance with the program that the Committee initiated in October 2017; that program is described in the June 2017 Addendum to the Committee's Policy Normalization Principles and Plans."

Implementation Note for September 2017 Alternatives A, B, and C

Release Date: September 20, 2017

Decisions Regarding Monetary Policy Implementation

The Federal Reserve has made the following decisions to implement the monetary policy stance announced by the Federal Open Market Committee in its statement on ~~July 26~~ **September 20**, 2017:

- The Board of Governors of the Federal Reserve System voted **[** unanimously **]** to maintain the interest rate paid on required and excess reserve balances at 1.25 percent.

- As part of its policy decision, the Federal Open Market Committee voted to authorize and direct the Open Market Desk at the Federal Reserve Bank of New York, until instructed otherwise, to execute transactions in the System Open Market Account in accordance with the following domestic policy directive:

> "Effective ~~July 27~~ **September 21**, 2017, the Federal Open Market Committee directs the Desk to undertake open market operations as necessary to maintain the federal funds rate in a target range of 1 to 1-1/4 percent, including overnight reverse repurchase operations (and reverse repurchase operations with maturities of more than one day when necessary to accommodate weekend, holiday, or similar trading conventions) at an offering rate of 1.00 percent, in amounts limited only by the value of Treasury securities held outright in the System Open Market Account that are available for such operations and by a per-counterparty limit of $30 billion per day.
>
> The Committee directs the Desk to continue rolling over ~~maturing Treasury securities~~ at auction **Treasury securities maturing during September,** and to continue reinvesting ~~principal payments on all agency debt and agency mortgage-backed securities~~ in agency mortgage-backed securities **the principal payments received through September from the Federal Reserve's holdings of agency debt and agency mortgage-backed securities**.
>
> **Effective in October 2017, the Committee directs the Desk to roll over at auction the amount of principal payments from the Federal Reserve's holdings of Treasury securities maturing during each calendar month that exceeds $6 billion, and to reinvest in agency mortgage-backed securities the amount of principal payments from the Federal Reserve's holdings of agency debt and agency mortgage-backed securities received during each calendar month that exceeds $4 billion. Small deviations from these amounts for operational reasons are acceptable.**

> The Committee also directs the Desk to engage in dollar roll and coupon swap transactions as necessary to facilitate settlement of the Federal Reserve's agency mortgage-backed securities transactions."

- In a related action, the Board of Governors of the Federal Reserve System voted unanimously to approve the establishment of the primary credit rate at the existing level of 1.75 percent.

This information will be updated as appropriate to reflect decisions of the Federal Open Market Committee or the Board of Governors regarding details of the Federal Reserve's operational tools and approach used to implement monetary policy.

More information regarding open market operations **and the details of operational plans for reducing reinvestments** may be found on the Federal Reserve Bank of New York's website.