Appendix 1: Materials used by Mses. Zarutskie and D'Amico

Class II FOMC - Restricted (FR)

Material for Briefing on

Review of Monetary Policy Framework

Rebecca Zarutskie and Stefania D'Amico

October 29, 2019

Supporting memos and contributors listed on final page of packet.

Non-standard uses of the policy rate tool at the ELB

- Two non-standard uses of the interest rate tool used at the ELB:
  - Forward guidance
  - Negative interest rate policy

- Tools have been generally effective in easing financial conditions and stimulating economic activity.
  - Effectiveness has varied across economic and institutional settings.

- Policy design and communication are important factors underlying these tools' effectiveness.

Variants of forward guidance (FG)

- FG has broadly taken three forms: Qualitative, date-based, and outcome-based.
- Date-based and outcome-based FG generally more effective than qualitative FG.
- No firm conclusion about the relative effectiveness of date-based versus outcome-based FG
  - Date-based FG in the United States associated with large decline in policy expectations and bond yields.
  - Subsequent outcome-based FG did not result in material shift
  - But outcome-based FG was intended to be consistent with earlier date-based FG.

FG communications considerations

- Key goal is to avoid conveying more negative economic outlook than intended.
  - Distinguish easing *given* the outlook from easing in response to *changes in* the outlook itself.

- Additional tools can be used to support FG
  - SEP can provide an indication of the Committee's thinking about the course of policy and the economic outlook.
  - Coordinated balance sheet policies may help reinforce FG.
  - Escape clauses can guard against unwanted circumstances.

Key considerations for future use of FG

- Date-based FG may be appropriate if Committee is reasonably certain that the guidance will not be frequently revised.

- Outcome-based FG may be appropriate if it conditions on easily measured and communicated outcomes.

- FG should in general
  - Avoid overly complex and vague language.
  - Clearly define and limit number of escape clauses.

Using FG away from the ELB

- There is little empirical evidence on the effectiveness of FG away from ELB.
  - A few studies have shown that such FG could be effective in altering expectations about future policy

- May be possible to use FG to firm the Committee's commitment to return to its inflation target.
  - If successful, could serve to raise inflation expectations.

Negative interest rate policy (NIRP)

- NIRP implemented by BOJ, ECB, and several other central banks in Europe
  - Evidence suggests that NIRPs have eased financial conditions and supported economic activity on balance.
  - Use of NIRP with other unconventional monetary policy tools makes study of NIRP in isolation difficult.

- Adverse effects from NIRP on banks and other financial institutions have been limited so far
  - Deposit tiering has helped alleviate pressure on banks' profitability.

- The effects of NIRP in the United States could differ from those in other countries given institutional differences across financial systems.

Balance Sheet Policy (BSP) options

We consider a variety of options for implementing BSP and for each of these options we summarize the most relevant benefits and costs:

1. BSPs already implemented by the Federal Reserve—quantitative easing (QE, including maturity-extension programs);
2. Flow-based versus fixed-size asset purchase programs;
3. BSPs that place ceilings on interest rates adjusting the balance sheet size as necessary—a form of yield curve control;
4. BSPs involving assets other than government bonds.

Benefits and costs of QE

Benefits:

- Significant pass-through to prices of higher-quality private assets;
- Increased bank lending and risk tolerance;
- Faster recovery of the labor market and modestly higher inflation rate than in the absence of QE.

Costs:

- Communication challenges arising from the novelty of the tool and the use of multiple tools;
- Some degree of non-productive risk-taking behavior by investors;
- Some political risks related to the volatility of remittances.

Does QE have diminishing returns?

Evidence available so far suggests that QE marginal benefits did not diminish.

- Empirical work that controls for investor expectations about BSP finds that QE impacts do not seem to have declined across consecutive programs;
- Model-based evidence on interaction of BSP with financial constraints shows tighter constraints can either magnify or dampen QE macroeconomic effects;
  - Even in normal times there are collateral constraints than can make QE effective.

Hard to extrapolate such evidence to very low levels of longer-term rates.

- Duration-risk channel might be weakened amid extended periods at ELB that lower interest rate volatility, making changes to average duration less effective;
- When long rates are already very low, there is less scope for QE to reduce them.

Benefits and costs of flow-based programs (FBP)

Benefits:

- State-contingent nature of FBP implies an automatic-stabilizing function—more stimulus when the economy deteriorates, and vice versa;
- Increased investor confidence in FOMC's ability to make timely policy adjustments could result in faster adjustments in investor expectations;
- Aligning state contingencies of FBP and FG attenuates risk of the two tools working at cross-purposes.

Costs:

- Higher investor uncertainty about magnitude and persistence of reduction in supply might delay or diminish its full effect—slower or partial portfolio rebalancing;
- Risk of ending up with a very large balance sheet;
  - Aligning state contingencies of FBP and FG could increase their complementarity and credibility, likely helping contain FBP's size.

Benefits and costs of yield curve targeting

Rate ceilings (vs. strict targets) do not require policy to tighten when yields decline in response to a worsening economy;

- On short rates might reinforce FG's credibility and associated balance sheet expansion would be easier to unwind;
- On longer rates would be more relevant for economic decisions of households and businesses but harder to maintain;

Benefits:

- Particularly effective in reducing interest rate volatility and tail risks in addition to helping maintain a particular level of rates;

Costs:

- High uncertainty about total amount of asset purchases may delay market responses;
- It may become costly to defend ceilings toward the end of the program.

BSPs involving assets other than government bonds

- Purchases of mortgage-backed securities by the Federal Reserve;
- Corporate bond purchases and “funding for lending” programs by foreign central banks.

Benefits:

- Directly target specific economic sectors, hence seem more effective than government bond purchases in improving credit spreads and debt issuance in targeted markets;

Costs:

- Political risk: Programs could be interpreted as engaging in credit allocation.
- Some programs would entail taking increased credit risk.

BSPs as a function of economic shocks

Valuable for the FOMC to have a variety of BSP options and employ the ones that best fit the economic situation that it faces.

For instance:

- Flow-based programs likely better response to a sequence of persistent demand shocks because of automatic-stabilizing function;
- Short-rate ceilings with FG likely better if those shocks are not expected to persist;
- Fixed-size program concentrated in longer-term securities likely better response to a one-time large demand shock, as it can activate faster and larger portfolio rebalance.

Supporting Memos and Contributors

Campbell, Jeffrey, Thomas King, Anna Orlik, and Rebecca Zarutskie (2019). "Issues Regarding the Use of the Policy Rate Tool," memorandum to the Federal Open Market Committee, Board of Governors of the Federal Reserve System, October 11.

Carlson, Mark, Stefania D'Amico, Cristina Fuentes-Albero, Bernd Schlusche, and Paul Wood (2019). "Issues in the Use of the Balance Sheet Tool," memorandum to the Federal Open Market Committee, Board of Governors of the Federal Reserve System, October 11.

Appendix 2: Materials used by Ms. Logan

Class II FOMC - Restricted (FR)

Material for Briefing on

Financial Developments and Open Market Operations

Lorie Logan
Exhibits by Ashley Rhodes and Nathan Dodge
October 29, 2019

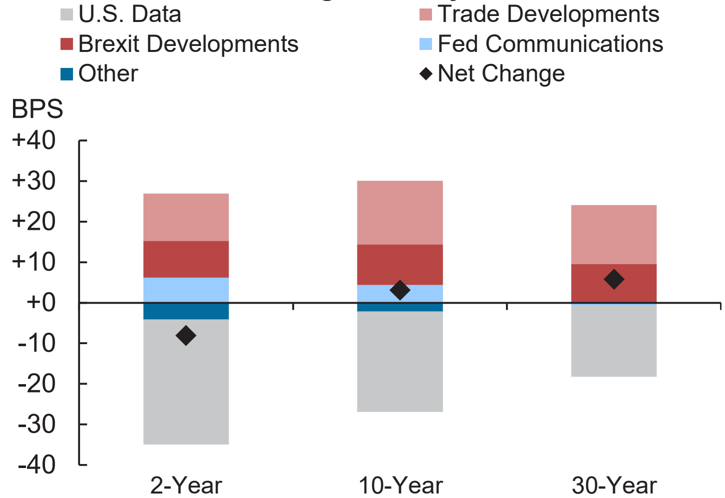
Class II FOMC – Restricted (FR) Exhibit 1

(1) Selected Asset Price Changes Over Intermeeting Period

	Since September FOMC	Sep. FOMC to Oct. 3rd	Since Oct. 3rd	Current Level
U.S. Rates				
2Y Treasury	-4 bps	-18 bps	+14 bps	1.62%
10Y Treasury	+5 bps	-14 bps	+20 bps	1.79%
30Y Treasury	+8 bps	-12 bps	+20 bps	2.29%
5Y TIPS-Implied Breakeven	+12 bps	-14 bps	+25 bps	1.56%
5Y5Y Fwd Inflation Swap	+2 bps	-10 bps	+12 bps	2.01%
Risk Assets & Currencies				
S&P 500 Index	+0.8%	-3.7%	+4.7%	3023
IG Credit Spreads	-6 bps	+5 bps	-11 bps	108 bps
HY Credit Spreads	+0 bps	+49 bps	-49 bps	360 bps
U.S. TW Broad Dollar	-0.8%	+0.8%	-1.6%	116

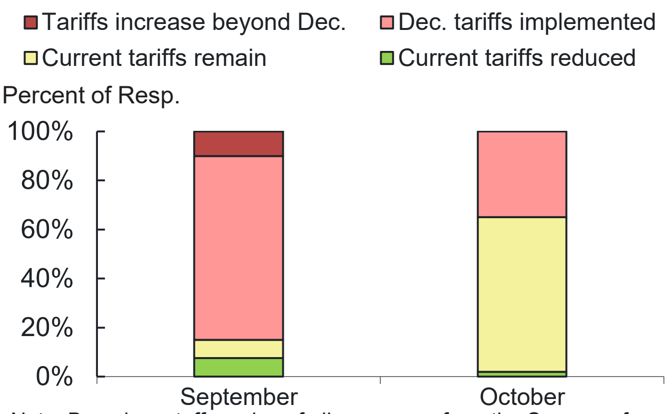
Note: Blue indicates loosening of financial conditions and red indicates tightening of financial conditions. Rows may not sum due to rounding.
Source: Barclays, Bloomberg

(2) Changes in U.S. Treasury Yields Over the Intermeeting Period by Driver



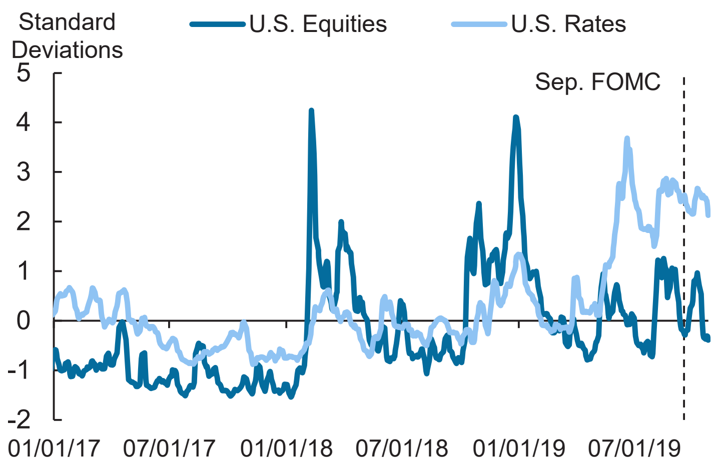
Source: Bloomberg, Staff Analysis

(3) Expectations for Tariffs on Imports from China



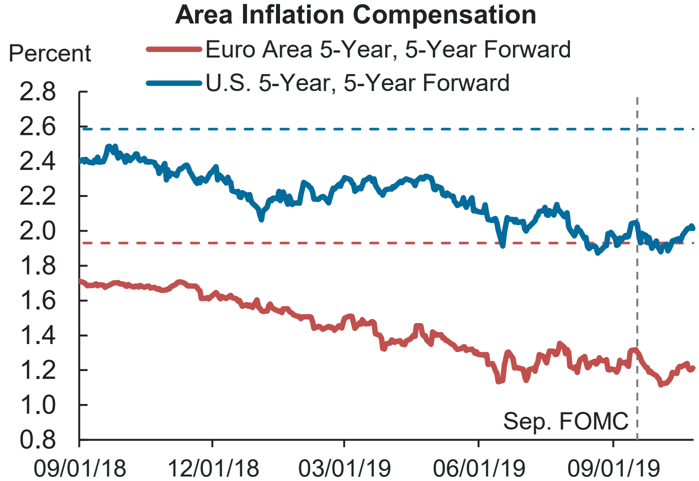
Note: Based on staff scoring of all responses from the Surveys of Primary Dealers and Market Participants. As of the October survey, current tariffs include tariffs on $360 billion of goods that have been implemented. Tariffs on a total of $550 billion of goods have been announced, the remainder of which is scheduled for December.
Source: FRBNY

(4) Standardized Implied Volatility Indices



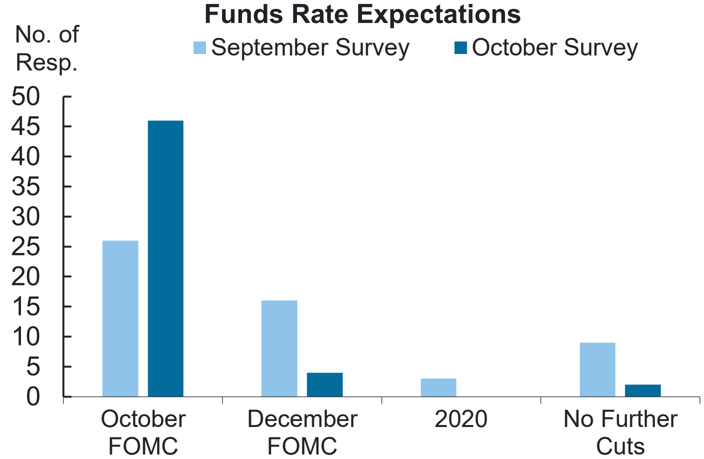
Note: Standardized implied volatilities since January 2012. Five-day moving average. U.S. equities: VIX Index. U.S. rates: 1m2y swaption volatility.
Source: Bloomberg

(5) Market-Based Measures of Forward U.S. and Euro Area Inflation Compensation



Note: Derived from inflation swap rates. Dashed horizontal lines represent 10-year averages.
Source: Bloomberg

(6) Implied Timing of Next Rate Cut Based on Modal Fed Funds Rate Expectations

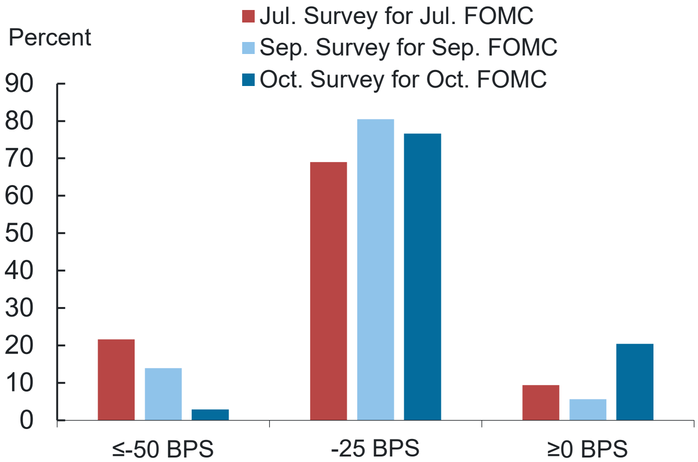


Note: Based on all responses to the Surveys of Primary Dealers and Market Participants. The September Survey data reflects the next rate cut from the October FOMC meeting onward.
Source: FRBNY

Class II FOMC – Restricted (FR)

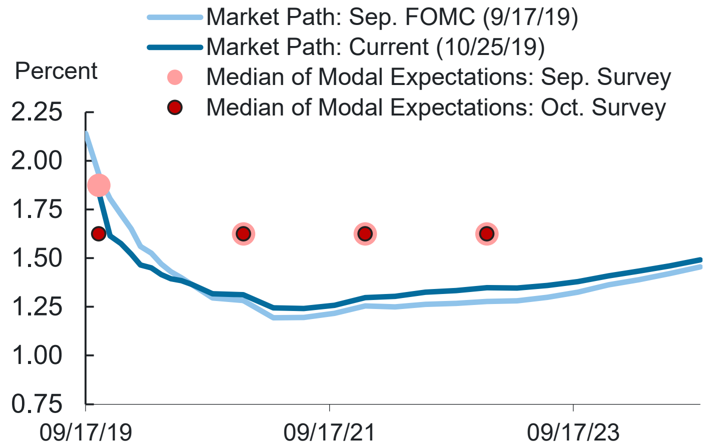
Exhibit 2

(7) Unconditional Probability Distribution for Changes in the Target Rate by Meeting



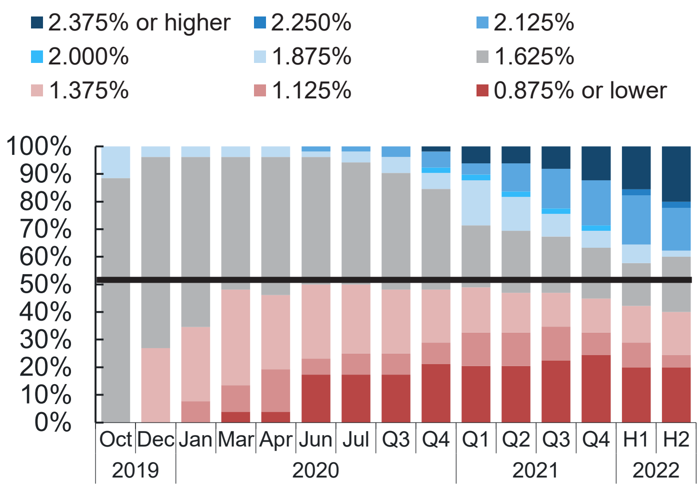
Note: Based on all responses to the Surveys of Primary Dealers and Market Participants.
Source: FRBNY

(8) Market- and Survey-Implied Paths of Policy



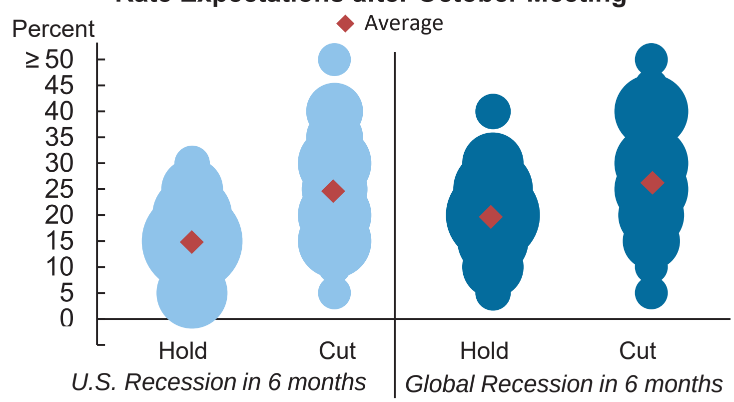
Note: Modal path is from all responses to the Surveys of Primary Dealers and Market Participants. Leftmost dots represent expected rate following the Oct. FOMC. Subsequent dots represent year-end expectations.
Source: Bloomberg, Staff Calculations

(9) Modal Target Rate Expectations



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

(10) Probability of U.S. and Global Recessions by Rate Expectations after October Meeting



Note: Based on all responses from the Surveys of Primary Dealers and Market Participants. 'Hold' group includes any respondent with modal path at 1.625% or above by end 2020, and 'Cut' is the complement. NBER defined recession for U.S., IMF staff work defined recession for Global. Dots scaled by percent of respondents.
Source: FRBNY

(11) Expectations for October FOMC Statement and Press Conference

Statement:

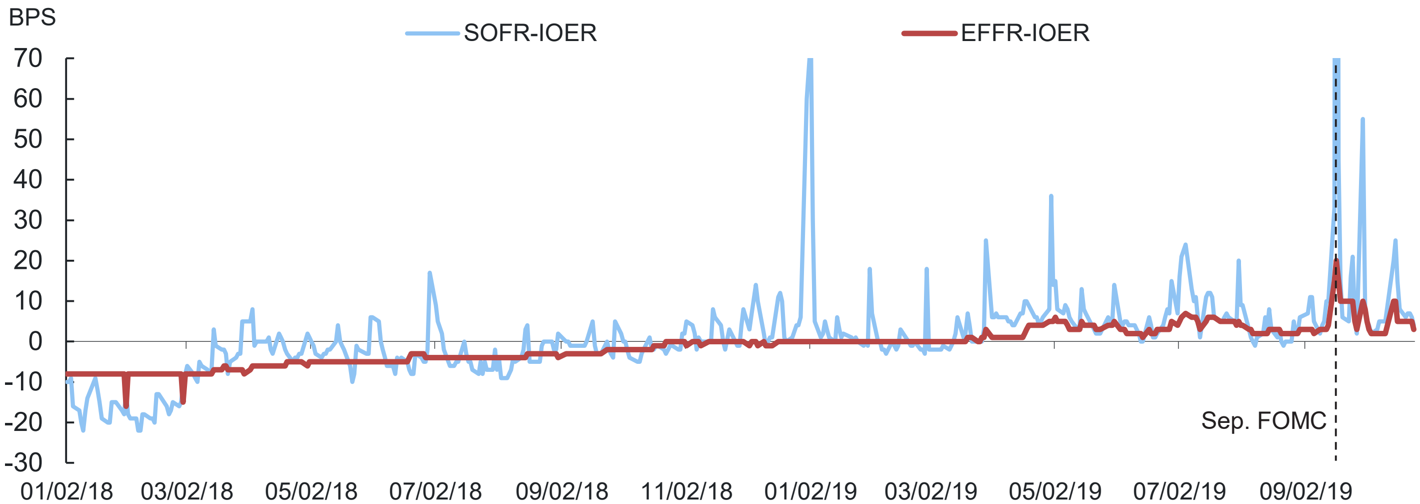
- Roughly half note chance of some downgrade to current economic conditions
- Most did not indicate expectations for material changes to economic outlook or forward guidance sections
- Several suggest statement could signal further rate adjustments are less likely than in the past

Press conference:

- Some indicate they expect the Chair to emphasize a data-dependent approach

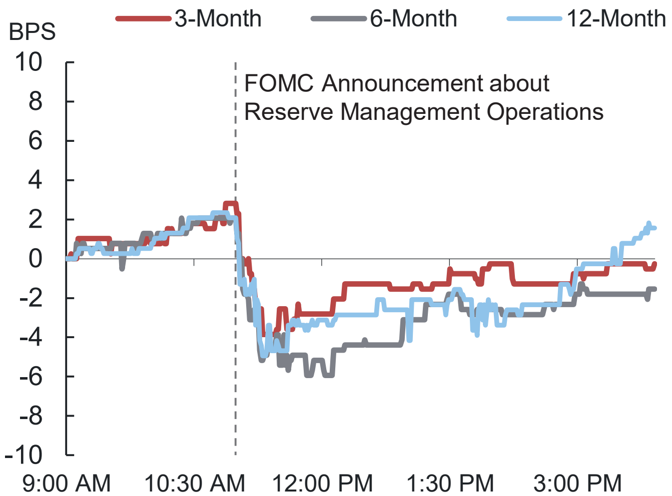
Class II FOMC – Restricted (FR) Exhibit 3

(12) Effective Fed Funds Rate and Secured Overnight Financing Rate Spreads to IOER



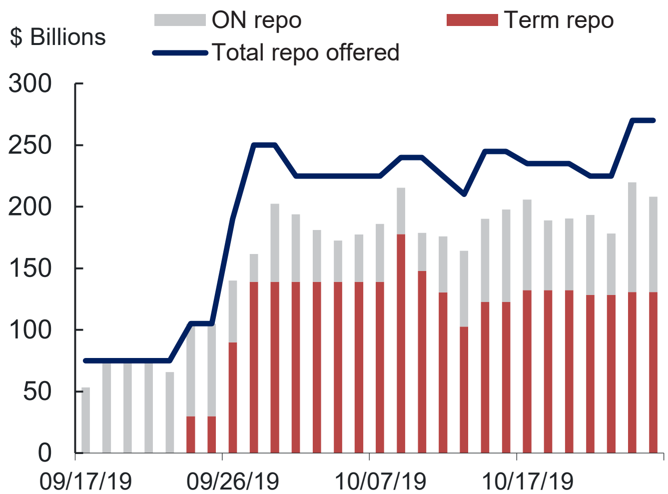
Note: On 09/17, SOFR was 315 basis points above IOER, not shown in graph.
Source: FRBNY

(13) Intraday Bill Yields on Intermeeting FOMC Announcement, 10/11/2019



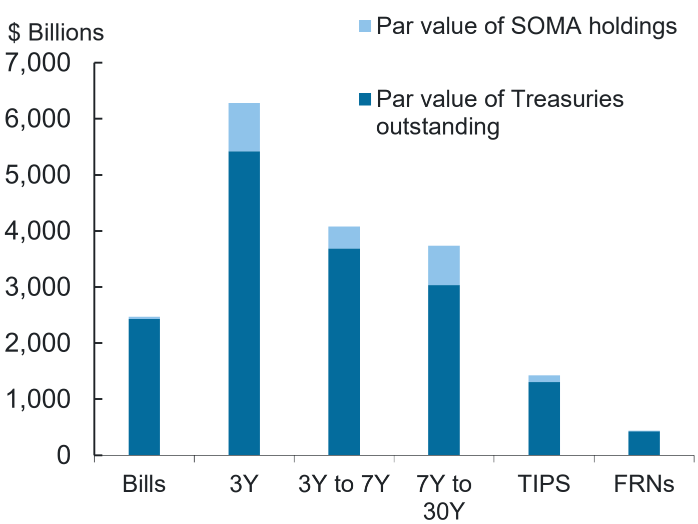
Source: Bloomberg

(14) Temporary Open Market Operations



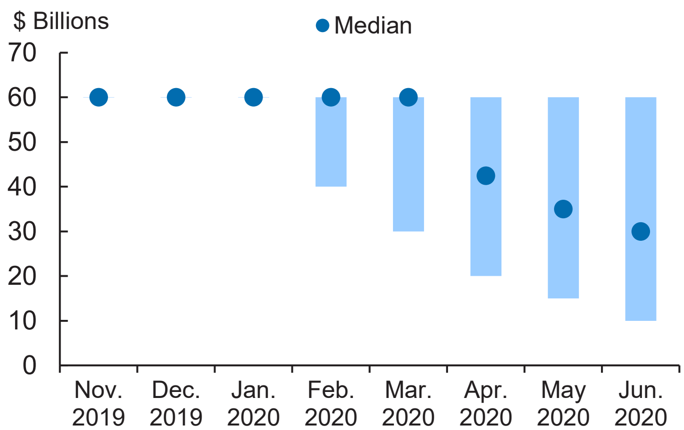
Note: Dark blue line represents total repo operations offered.
Source: FRBNY

(15) SOMA Allocation Relative to Treasury Universe



Source: FRBNY

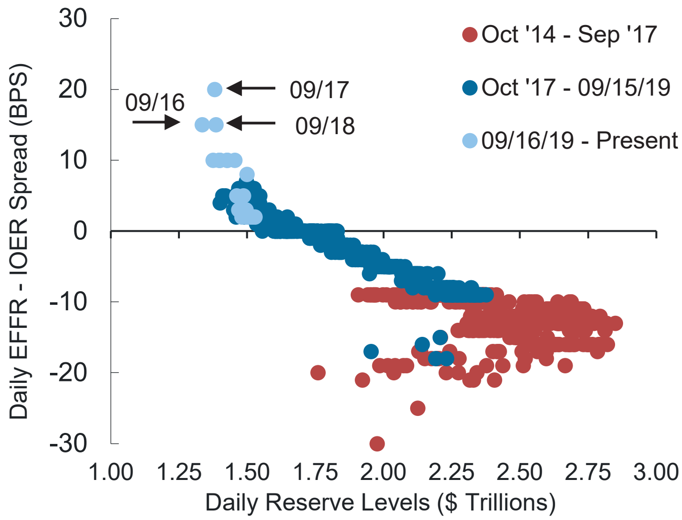
(16) Expectations for Reserve Management Purchases of Treasury Bills



Note: Based on all responses to the Surveys of Primary Dealers and Market Participants. The shaded bars represent the interquartile range of responses.
Source: FRBNY

Class II FOMC – Restricted (FR) Exhibit 4

(17) Daily Reserve Levels vs Daily EFFR-IOER Spread

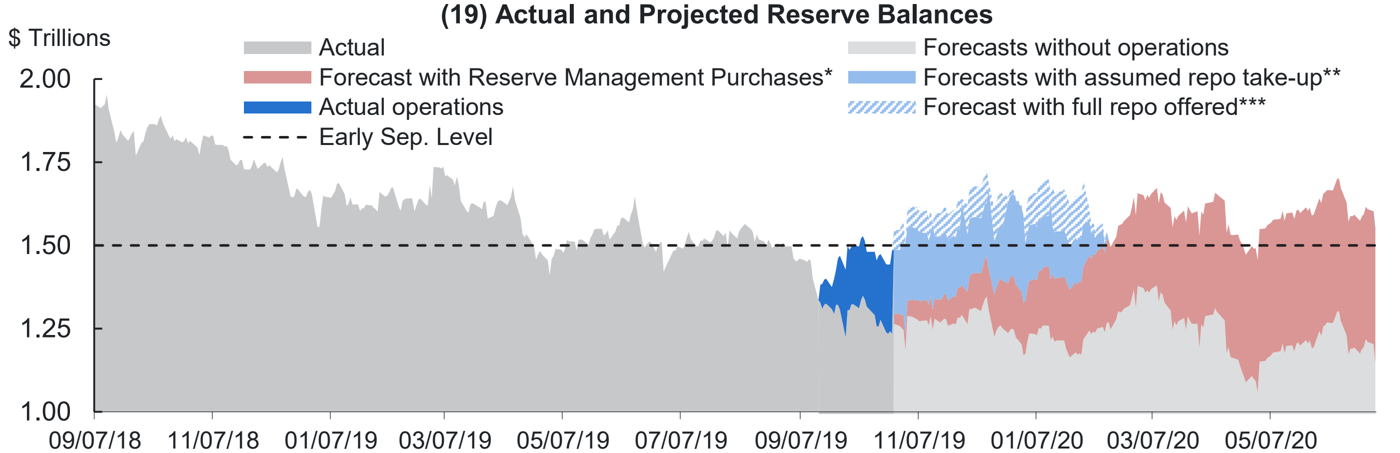


Source: FRBNY

(18) Observations from mid-September

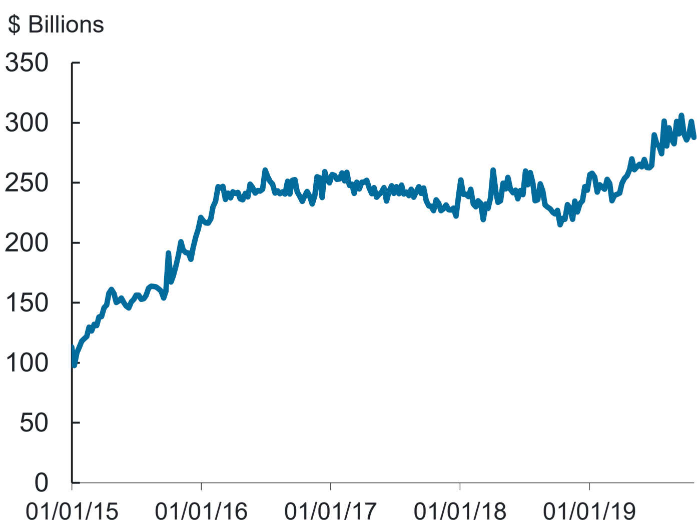
- Pressure in repo markets passed through to fed funds
- Frictions to distribution of reserves resulted in higher unsecured rates
- Some banks also express a preference to hold reserves above LCLoR to cushion against deposit outflows

(19) Actual and Projected Reserve Balances



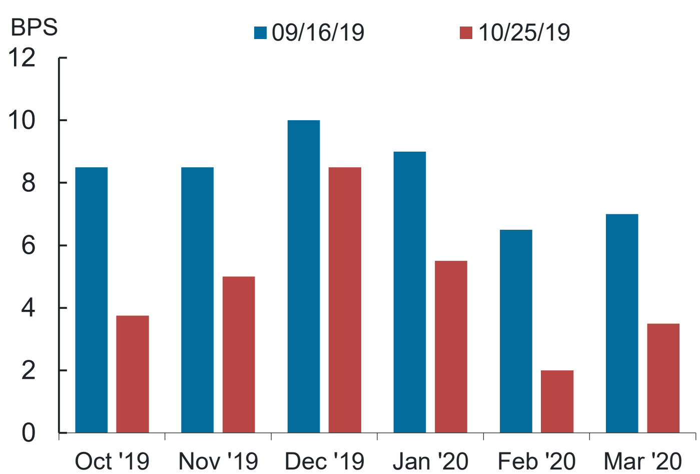
*Assumes $60 billion per month and nearly $160 billion by year-end.
**Assumes both ON and term repo operations. Assumes gradual decline in ON repo through January 2020 from current average level of take-up, with an increase in take-up to $120 billion mid-month, month-end and toward year-end. Assumes gradual decline in term repo outstanding through January 2020, with an increase to $140 billion over year-end 2019.
***Assumes $120 billion ON repo and $35 billion at each term repo operation ($45 billion over October month-end) through January 2020.
Source: FRBNY

(20) Foreign Repo Pool



Source: FRBNY

(21) SOFR - Fed Funds Futures Spreads



Note: Based on futures contracts that settle to the average level of the underlying index over a calendar month.
Source: Bloomberg

Appendix 1

(1) Summary of Operational Testing

Summary of Operational Tests in prior period:

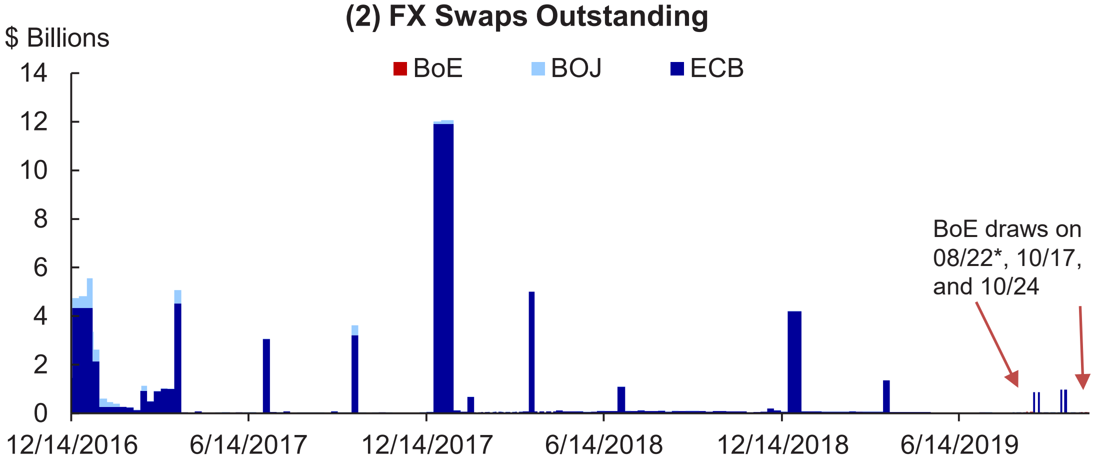
- Foreign Authorization
    - September 26: Yen-denominated sovereign debt sale to private counterparties for ¥100 million
    - October 10: Swiss franc liquidity swap for CHF 51,000
    - October 10: U.S. dollar liquidity swap of $51,000 per counterparty (BoC, BoE, ECB, SNB)

Upcoming Operational Tests:

- Six tests scheduled under the Domestic Authorization
    - November 5: Term repo for up to $75 million*
    - November 7: Securities lending (using the backup tool) for up to $120 million
    - November 19: Term reverse repo with MBS collateral for up to $175 million
    - November 19 and 21: Coupon swap with unsettled MBS holdings for up to $20 million, total
    - December 3 and 5: MBS specified pool sale for up to $180 million, total
    - December 5: Outright FRN sale for up to $50 million
- Four tests scheduled under the Foreign Authorization
    - November 5: Pound sterling liquidity swap for GBP 51,000
    - November 8: Early partial liquidation of a euro-denominated callable term deposit with an official institution for €1 million
    - November 18: Yen liquidity swap for JPY 51,000
    - November 19: Yen-denominated sovereign debt purchase for ¥100 million

*This repo operation will have T+1 settlement.

(2) FX Swaps Outstanding



*First draw on the USD swap lines by the Bank of England since 2009, due to precautionary demand for testing purposes by BOE counterparties.
Source: FRBNY

(3) FX Intervention

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

Appendix 2

(1) MBS Purchase Summary Since Cap Implementation through 10/11/19 ($ Millions)

Purchase Period	Actual Paydowns	Cap	Reinvestment Purchases	Net Deviation	Cumulative Deviation Since 10/2017
Jul. '19	22,260	20,000	2,258	-2	60
Aug. '19	25,270	20,000	5,273	3	63
Sep. '19	26,414	20,000	6,410	-4	58

*From Oct. '17 to Jun. '19 the cumulative net deviation w as $62 million.

(2) Treasury Purchase Summary through 10/11/19 ($ Millions)

Purchase Period	Target Reserve Management Amount	Target Reinvestment Amount	Purchases	Net Deviation	Cumulative Deviation Since 08/2019
Aug. '19		20,000	20,009	9	9
Sep. '19		20,000	20,011	11	20
Oct. '19	60,000	20,000			

Appendix 3: Materials used by Mses. Zobel and Lipscomb

Material for

Review of options for repo operations to support control of the federal funds rate

Patricia Zobel and Laura Lipscomb
Exhibits by Ashley Rhodes
October 29, 2019

Supporting memo and contributors listed on final page of packet.

Options for Repo Operations to Support Control of the Federal Funds Rate

Repo Operations in an Ample Framework: Repo operations are currently fulfilling an important role in ensuring that the supply of reserves remains ample and in mitigating the risk that money market pressures could adversely affect policy implementation. Treasury bill purchases will build reserve levels more permanently, and repo operations are set to expire after January 2020. Even with ample reserves, some form of continued repo operations could provide insurance against unexpected shocks.

Lessons from Recent Experience

- *Repo operations are effective at restoring interest rate control.* In September, repo operations were effective at maintaining the federal funds rate within the target range.
    - Operations increased funding to repo markets and reduced pass through to federal funds.
    - Additional reserves eased pressure on banks that had fallen close to their lowest comfortable level of reserves.

- *Determining when to deploy operations, and how to calibrate them, is complex,* as money market pressures are not always predictable.
    - Conducting operations only after pressure is evident appears reactive and results in larger operations being required.
    - Determining the operation size and rate that will adequately address pressure is difficult. (Figures 1 and 2)

- *Dealer balance sheet constraints create some limits to effectiveness.* This dynamic may result in money market pressures even with large repo operations outstanding. This may be particularly evident at year end.

Options for Ongoing Repo Operations

- Modestly-sized operations could provide a high degree of readiness, but require discretion for when to intervene meaningfully.
- A standing repo facility at a backstop rate could serve as an automatic stabilizer.

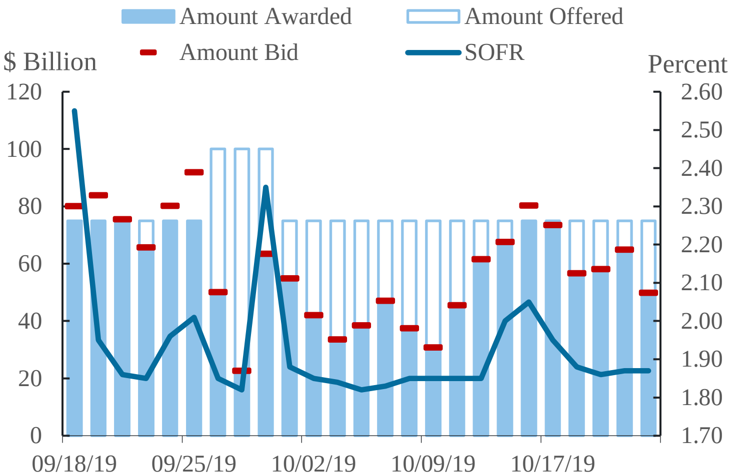
Tradeoffs and Policy Considerations

- **Assurance of rate control**: Standing facility would provide greater assurance. Discretionary operations rely on judgment to respond to shocks.

- **Stigma**: A facility with a rate set such that usage is infrequent is more likely to incur stigma, which could limit effectiveness over time. Repo operations conducted on a discretionary basis may have less stigma. (Figures 3 and 4)

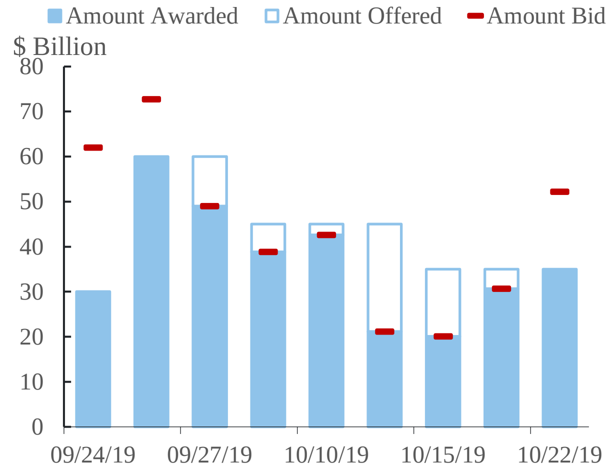
- **Commitment to funding**: A standing facility would represent a commitment to expand the Federal Reserve's balance sheet and provide liquidity to primary dealers at their discretion (a discount-window like option, currently only available to banks).
    - Dealers may be incented to take on greater liquidity risk in eligible collateral.
    - Operation parameters (collateral, size limits) could constrain the commitment.

Figure 1: Overnight Repo Operations



Source: Board of Governors, FRBNY

Figure 2: Term Repo Operations



Source: FRBNY

Figure 3: Average Distribution of Overnight Secured and Unsecured Money Market Volumes on Non-Month-Ends

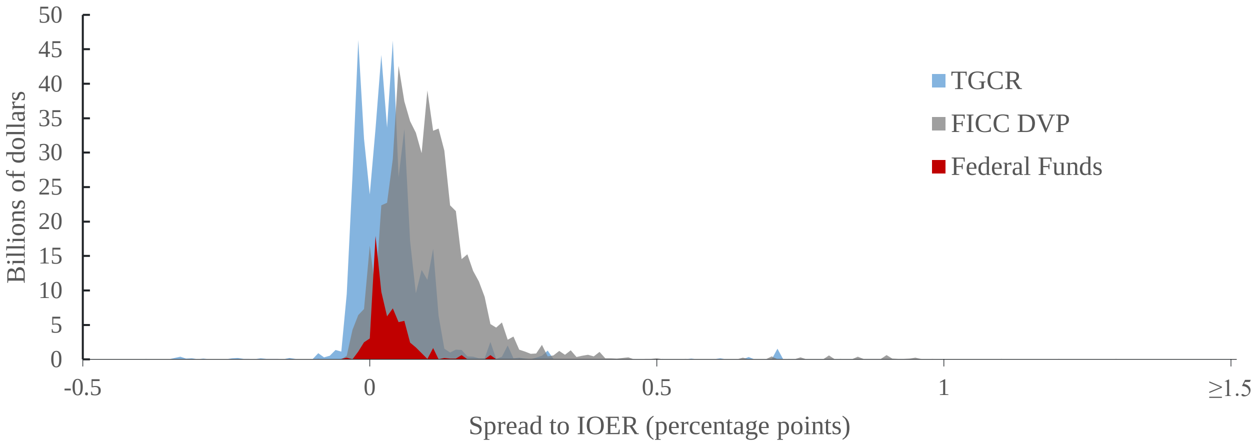
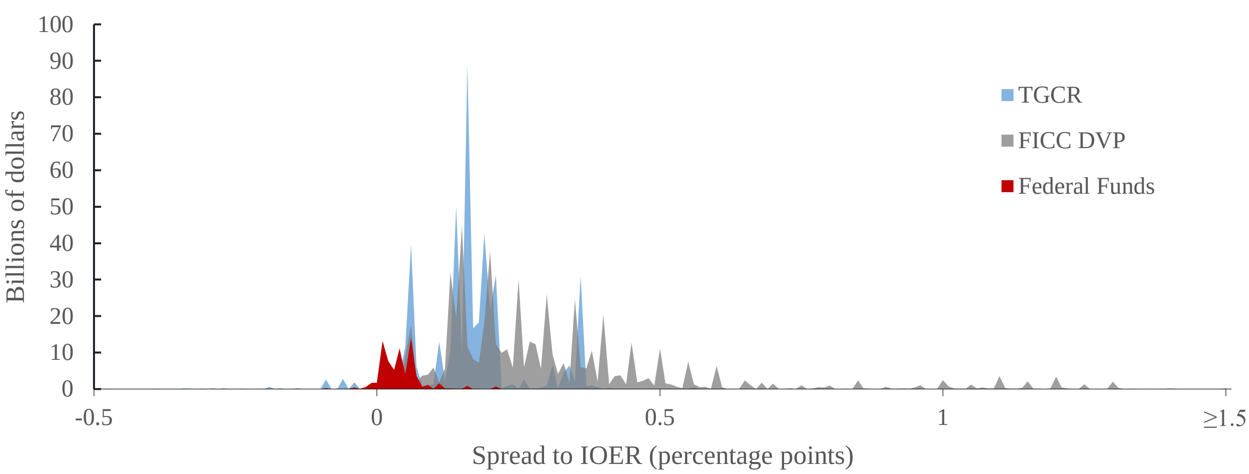


Figure 4: Average Distribution of Overnight Secured and Unsecured Money Market Volumes on Month-Ends



Source: Federal Reserve FR2420 collections. Includes data from Jan. 2, to Sept. 13, 2019.

Supporting Memo and Contributors

Lipscomb, Laura, Sam Schulhofer-Wohl, Nathaniel Wuerffel, and Patricia Zobel (2019). "Options for Repo Operations to Support Control of the Federal Funds Rate," memorandum to the Federal Open Market Committee, Board of Governors of the Federal Reserve System, October 18.

Appendix 4: Materials used by Ms. Tevlin and Mr. Nekarda

Class II FOMC - Restricted (FR)

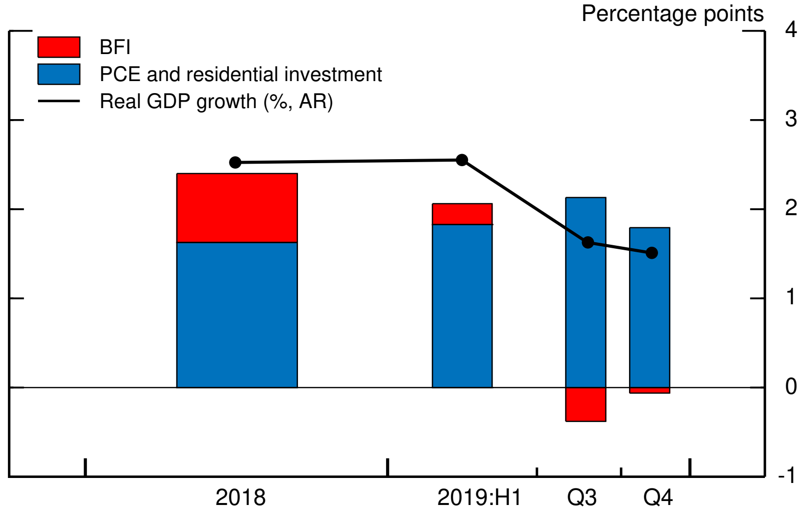
Material for Briefing on

The U.S. Outlook

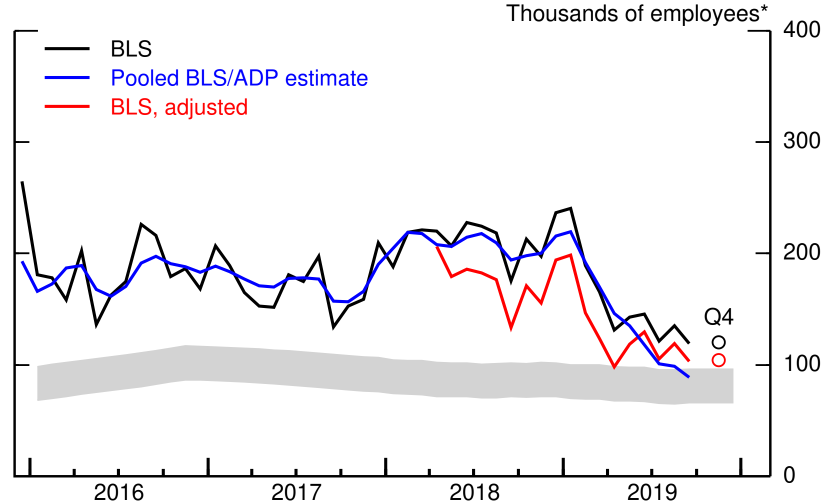
Stacey Tevlin and Christopher J. Nekarda
Exhibits by Rosemary Rhodes and Ashley Sexton
October 29, 2019

Economy slowing but projected to land softly

1. GDP growth is slowing

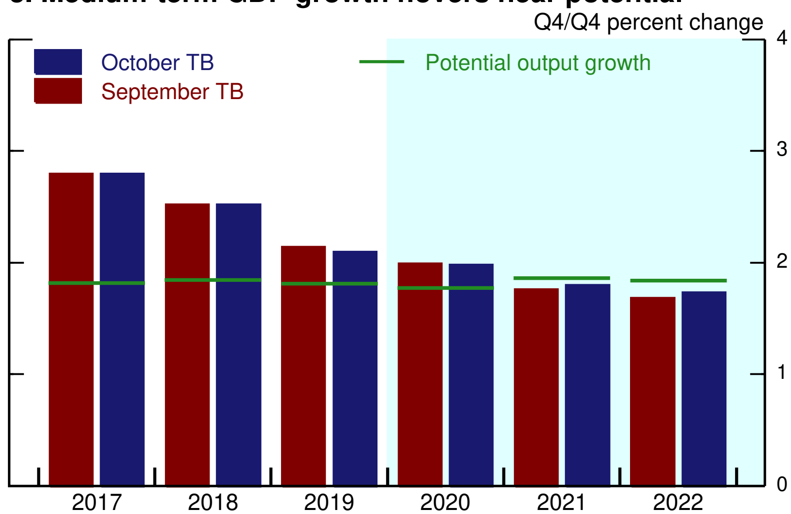


2. Private payroll gains have also softened

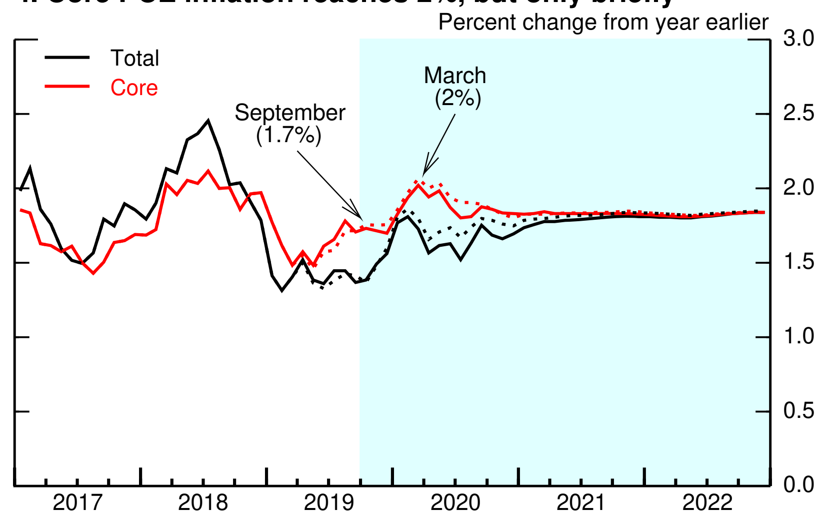


Note: Shaded region gives the estimated range of monthly payroll gains consistent with unchanged labor market slack.
* 3-month moving average.

3. Medium-term GDP growth hovers near potential



4. Core PCE inflation reaches 2%, but only briefly



Note: Solid lines are current projections; dotted lines are September Tealbook projections.

Two broad categories of unemployment rate benchmarks

5. Longer-run unemployment rate (LRU)

Rate of unemployment that is expected to prevail after the economy has fully adjusted to business cycle shocks

- Largely determined by nonmonetary factors
- Evolves with changing structure of the economy
  - Demographics
  - Educational attainment
  - Industrial and occupational composition
  - Permanent changes in firms' recruiting practices

6. Stable-price unemployment rate (SPU)

Rate of unemployment such that there are no upward or downward pressures on price inflation apart from those stemming from underlying inflation or arising from supply shocks

- *(u - LRU)* not necessarily relevant benchmark for assessing cyclical pressures on price inflation
- Estimate depends on Phillips curve specification, e.g.

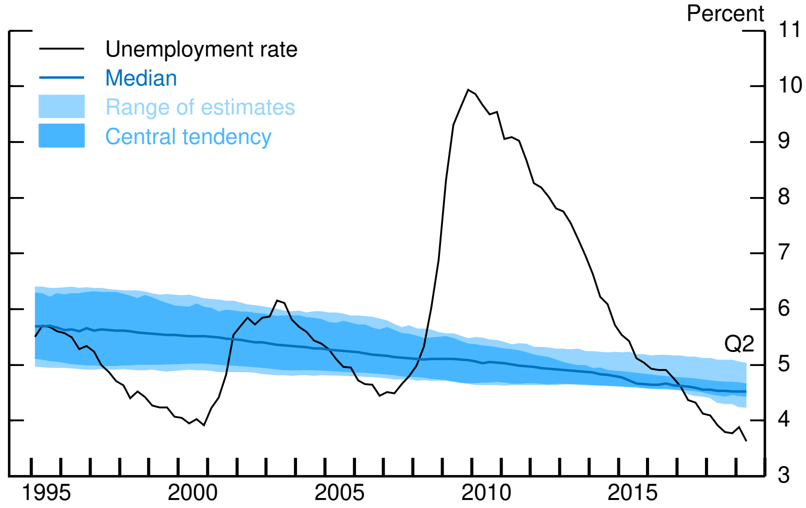
$$\pi_t = \underbrace{\pi_t^*}_{\text{underlying inflation}} + \beta\,(u_t - SPU_t) + \underbrace{\alpha X_t}_{\text{other influences}} + \varepsilon_t$$

7. Relationship between LRU and SPU

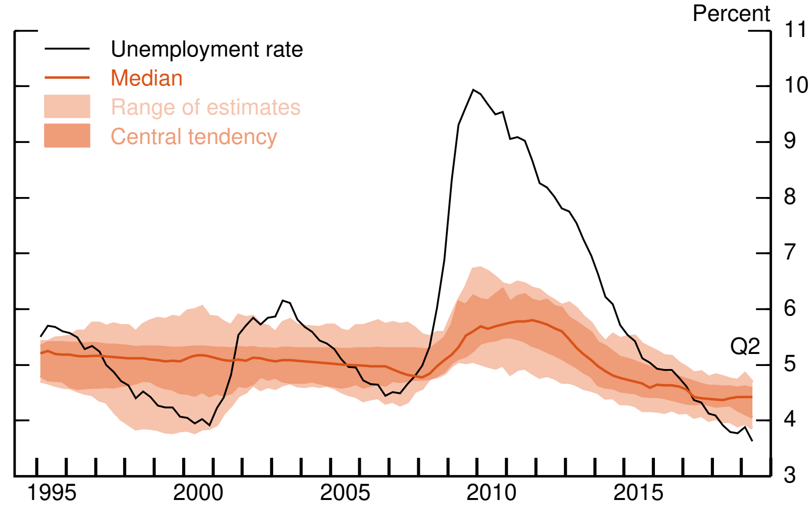
- Persistent forces related to the structure of the economy affect both LRU and SPU
- Transitory factors relevant for price pressures affect only the SPU
  - Temporary government policies affecting labor supply (e.g., emergency and extended unemployment insurance)
  - Change in skills of job seekers relative to firms' demand (i.e., mismatch)
  - Cyclical variation in firms' desired markups
- The wedge between the SPU and LRU may be sizeable and persist long enough to be relevant for monetary policy

The unemployment rate is currently below most estimates of its benchmarks

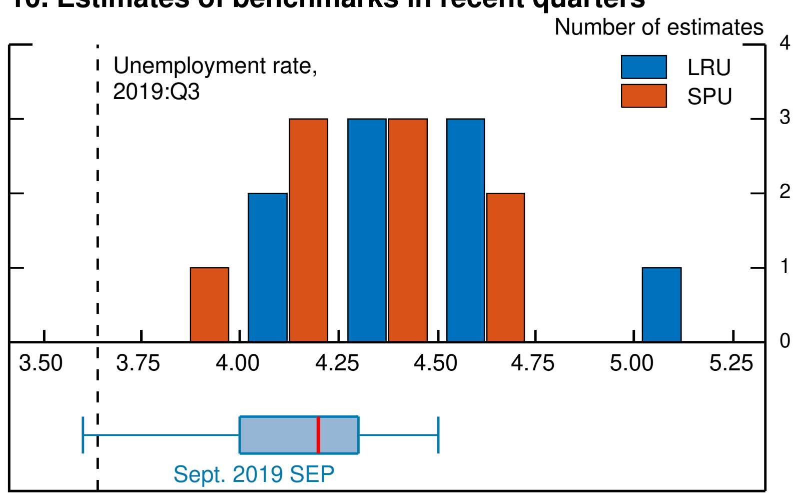
8. Estimates of LRUs



9. Estimates of SPUs



10. Estimates of benchmarks in recent quarters



11. Costs and benefits associated with low unemployment

- Potential costs of low unemployment
  - Risks to financial stability
  - Distorts incentives
- Potential benefits of low unemployment
  - Raises labor force attachment
  - Creates incentives for firms to train workers
  - Improves job matches
- Important to consider which conflict with attaining policy objectives and which do not

Sources: LRU: Tasci (2012); Berge and Nekarda (2018); Tüzemen (2019); Hornstein and Küdlyak (2019); Crump and others (2019); Morris, Rich and Tracy (2019); Congressional Budget Office (long-run). SPU: Aaronson and others (2015), Berge and Nekarda (2018), Crump and others (2019), Petrosky-Nadeau and Valletta (2019), SS-PF state-space model, Tealbook, Congressional Budget Office (short-run). Histogram only: Survey of Professional Forecasters (SPU); Blue Chip Economic Indicators (LRU and SPU); Survey of Primary Dealers (LRU).

Appendix 5: Materials used by Ms. Wilson

International Financial Developments

Beth Anne Wilson

Exhibits by Theresa Dinh, William Barcelona, Jay Faris, and Charlotte Singer

Dashboard | My Colleges | Common App | College Search | Financial Aid Resources

Common Application

- Profile
- Family
- Education
- Testing
- Activities
- Writing
- Courses & Grades

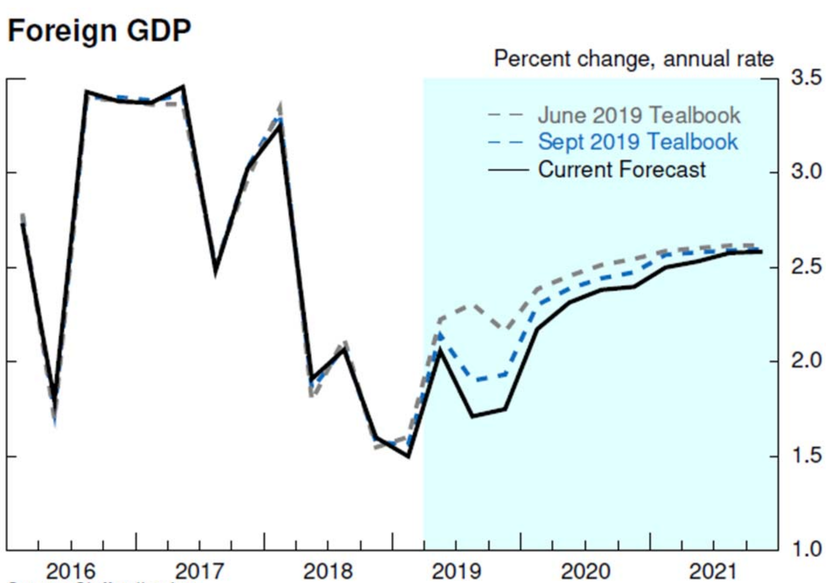
Write an essay of no more than 854 words, using one of the following prompts to inspire and structure your response.

- *"Baby Shark." Discuss.*
- ***Where do you, the foreign economy, see yourself now and the path going forward? How much conviction do you have about that path? What do you see as key challenges to your future?***
- *If you could teleport anywhere now, where would it be, and why?*

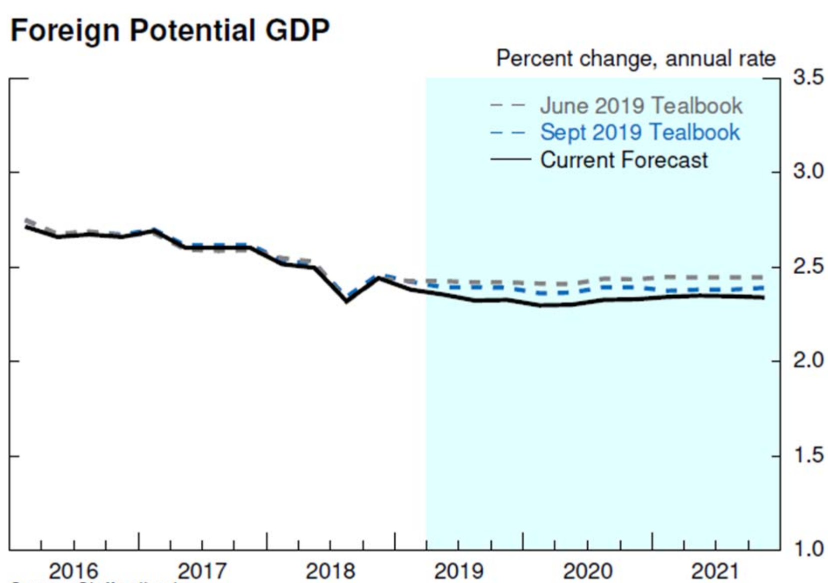
Where do you, the foreign economy, see your path going forward?

Conviction | Challenges | Conclusion

- Foreign growth continues to disappoint. Weighing on GDP are …
  - Brexit uncertainty and auto emission tests,
  - deleveraging in China and the downside of a tech cycle,
  - a deep slump in Latin America.
  - Trade policy uncertainty has also shaken confidence, trade, and investment.
- Expect to improve and grow above potential by 2021, but potential is revised down.



Source: Staff estimates.

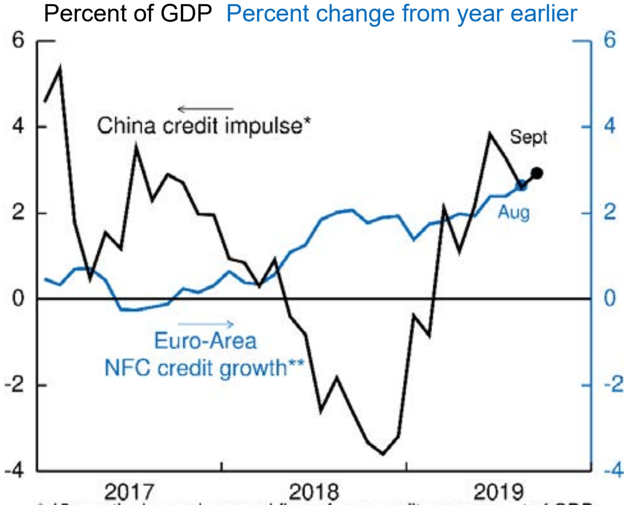


Source: Staff estimates.

Path | **How much conviction do you have about that path?** | Challenges | Conclusion

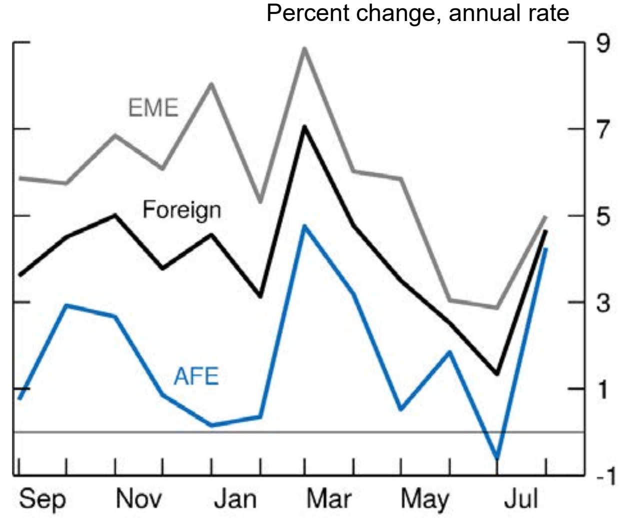
- Positive factors bolstering the outlook include
  - Accommodative monetary policy, supporting lending and sentiment.
  - Buoyant labor markets and a turnaround in retail sales.
  - Hints that the tech cycle may be bottoming out.

Credit



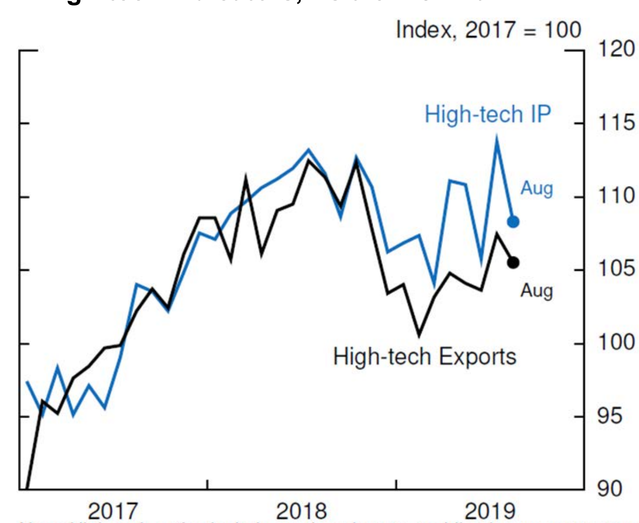
* 12-month change in annual flow of new credit as a percent of GDP. Credit is defined as total social financing less equity financing, plus local government bonds corrected for double counting of local government special bonds.
** Credit is defined as loans to nonfinancial corporations.
Source: Haver Analytics, ECB, PBOC, staff calculations.

Retail Sales



Note: Series are 3-month rolling averages. AFEs include Australia, Canada, France, Germany, Italy, Spain, Japan, and the U.K. EMEs include Brazil, China, Indonesia, Mexico, Russia, and South Korea.

High-tech Indicators, Asia ex. China

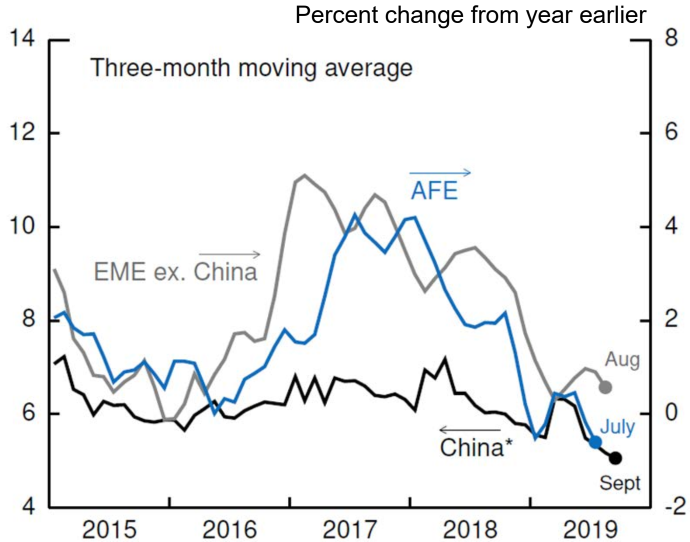


Note: High-tech series include semiconductors, mobile phones, computers, and components thereof. IP aggregate weighted by shares in U.S. merchandise exports. Aggregates include India, Korea, Malaysia, Philippines, Singapore, Taiwan, Thailand, and Vietnam.
Source: Haver Analytics.

Path | **How much conviction do you have about that path?** | Challenges | Conclusion

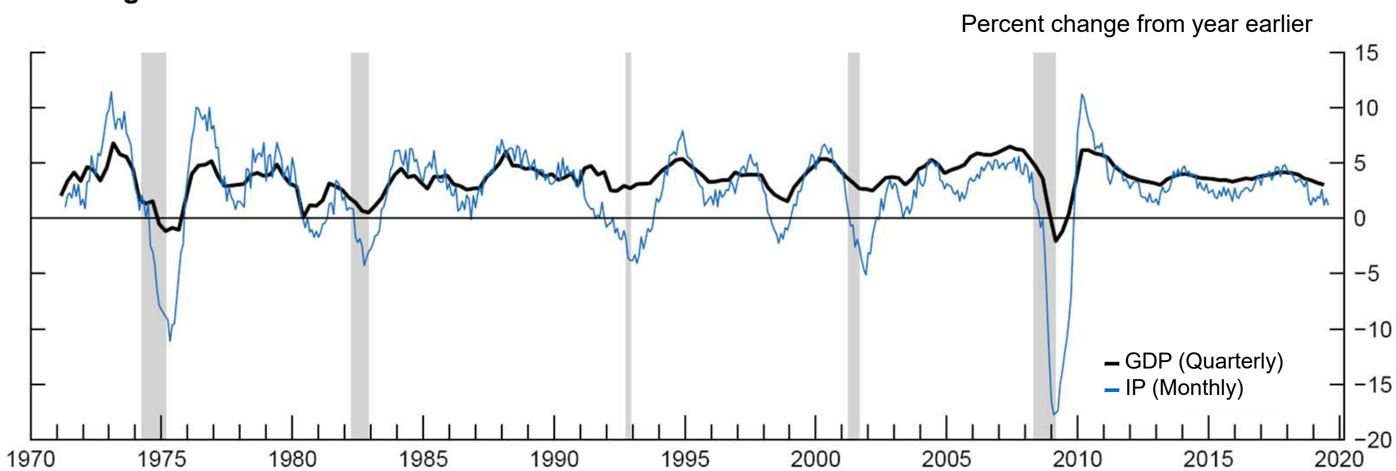
- Wary of depending on Latin America to pick up and policy uncertainty to be resolved.
- Weakness in global manufacturing could spillover and presage recession.
  - Aggregate foreign GDP and IP highly correlated.
  - Sharp declines in IP associated with recessions.

Manufacturing Industrial Production



* China IP is total industry.
Note: Aggregates are weighted by shares in U.S. merchandise exports.
Source: Haver Analytics.

Foreign GDP and Industrial Production*



* Industrial production excluding construction. Shading indicates that countries representing 55% of foreign GDP are classified as in recession. AFEs included are Australia, Canada, the euro area, Japan, Spain, and the U.K. EMEs included are Brazil, China, India, Indonesia, Korea, Mexico, and Russia. These countries account for approximately 65 percent of world GDP on a PPP basis.
Source: Haver Analytics and staff calculations.

Path | **How much conviction do you have about that path?** | Challenges | Conclusion

- Foreign recessions preceded by declines in foreign IP growth.
- Foreign IP growth has fallen more than 2 percent below trend over the past year.
- But, 14 times outside of recessions IP growth fell 2 percent or more and, on average, GDP growth, remained at trend.

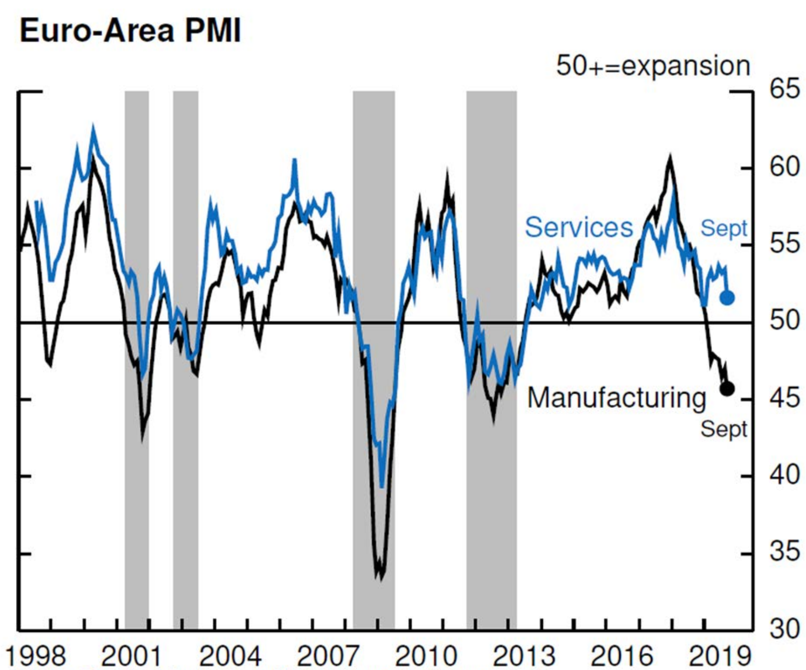
Table 1. Foreign IP and GDP during recession and non-recession episodes

	Episode	IP growth pre-recession year (p.p. deviation from trend)*	GDP growth recesssion year (p.p. deviation from trend)**
1.	1974 recession	-2.2	-4.8
2.	1982 recession	-1.6	-2.5
3.	1992 recession	-4.1	-0.5
4.	2001 recession	-0.3	-1.1
5.	2008 recession	-1.0	-5.7
6.	Average during 5 recessions	-1.8	-2.2
7.	2019Q3-2020Q3	-2.2	TBD
8.	Average during 14 non-recessions	-4.6	0.1

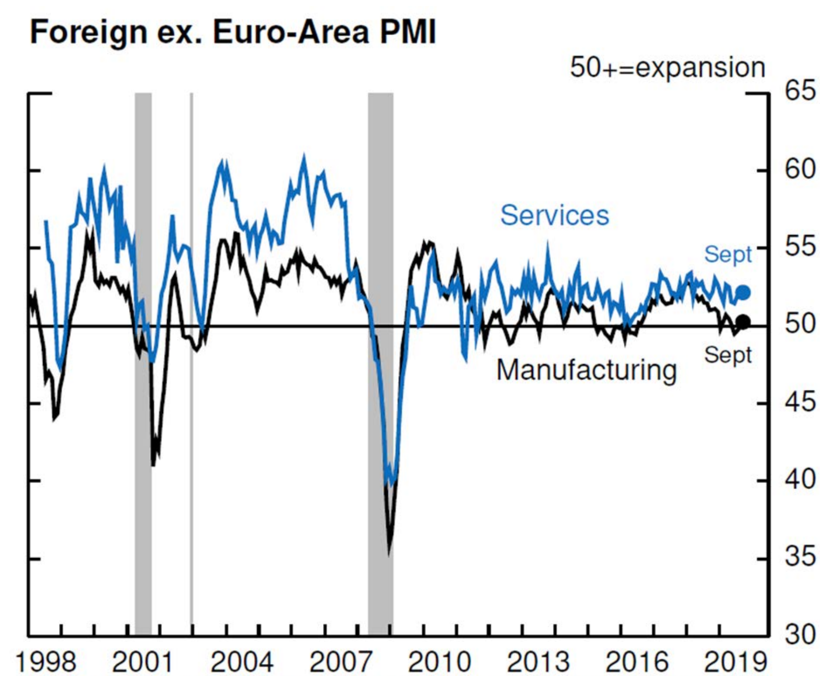
(*) During recession episodes, we compute average IP growth in the 12 months prior to the beginning of the recession. For non-recessions, we select all years in which IP growth fell more than 2 p.p. below trend. (**) For GDP, we compute average GDP growth in the four quarters starting in the first quarter of the recession. Shading indicates that countries representing 55% of foreign GDP are classified as in recession.

Path | **How much conviction do you have about that path?** | Challenges | Conclusion

- Divergence between manufacturing and services PMIs also sends unclear signal about recession likelihood.
- Manufacturing PMIs tend to lead services, posing downside risk.
- But, directionality is not always consistent.



Note: Shading indicates CEPR-classified recessions.
Source: IHS Markit, Haver Analytics.

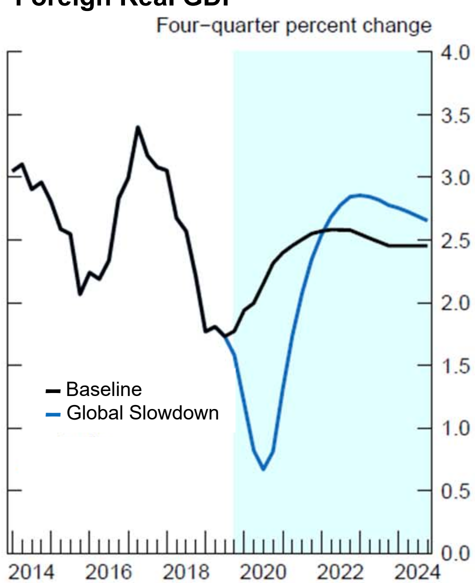


Note: Shading indicates that countries representing 55% of foreign GDP classified as in recession.
Source: IHS Markit, Haver Analytics.

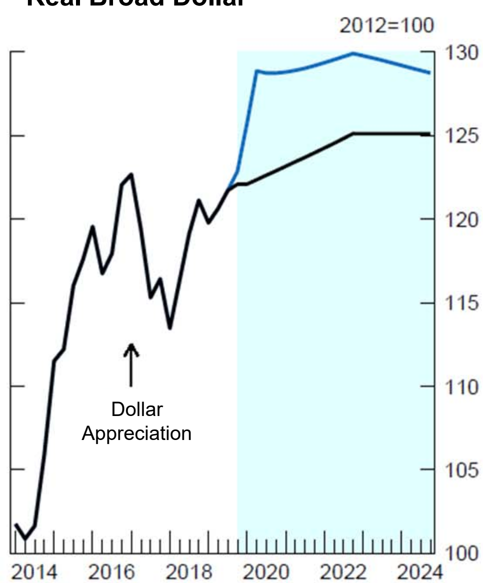
Path | Conviction | **What do you see as key challenges to your future?** | Conclusion

- Thus, the current weakness in manufacturing raises a key challenge to the baseline.
- Should the drag from trade policy uncertainty and other factors be greater and more sustained.
  - Lower productivity and confidence could significantly reduce foreign GDP.
  - Flight to safety flows could boost the dollar.
  - And, U.S. GDP could weaken notably.

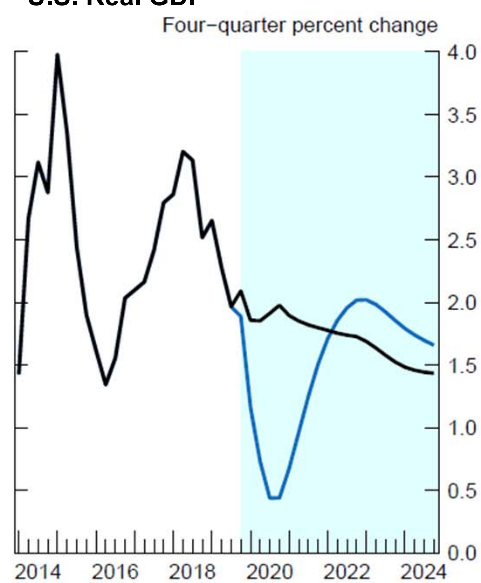
Foreign Real GDP



Real Broad Dollar



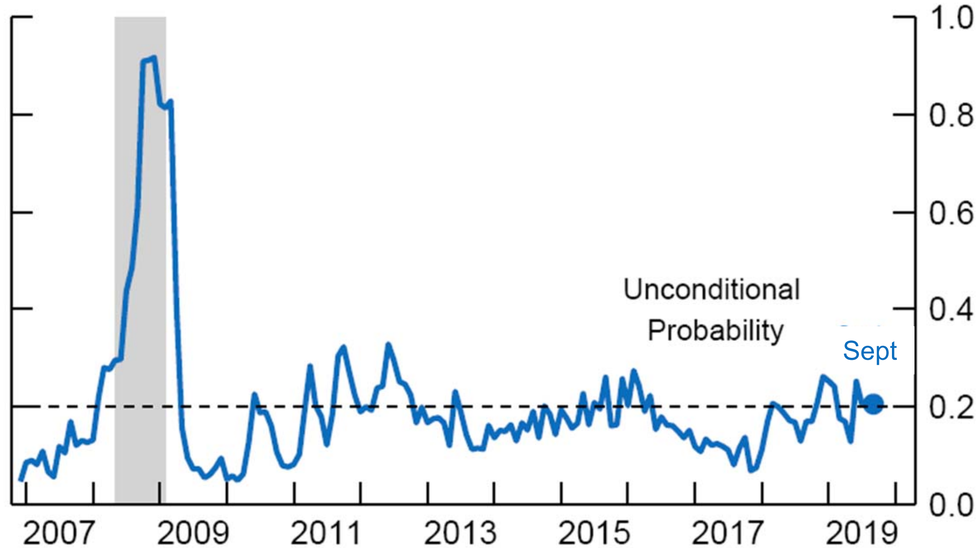
U.S. Real GDP



Path | Conviction | Challenges | **Conclusion**

- Expect foreign GDP growth to rise next year.
    - Richer set of indicators point to limited near-term risk of global recession.
    - Acute near-term risks have lessened…for now.
- But foreign economy isn't strong.

Estimated Probability of Recession in the Foreign Economy within 12 Months*



*Recession probability model includes foreign industrial production, retail sales, new export orders, and indicators of financial market conditions. Shading indicates that countries representing 55% of foreign GDP are classified as in recession. Source: Haver analytics and Staff calculations.

Appendix 6: Materials used by Mr. Lehnert

Class II FOMC - Restricted (FR)

Material for Briefing on

Financial Stability Developments

Andreas Lehnert
Exhibits by Morgan Elliott
October 29, 2019

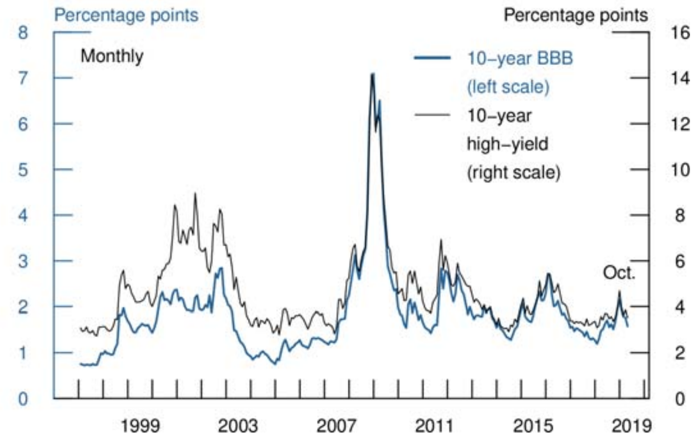
Assessment of Financial Stability

- Survey of imbalances
  - In many asset classes, measures of risk appetite have returned to the rough middles of their historical ranges
  - Household debt continues to lag GDP
  - Business debt is at or near record highs relative to GDP or assets
- Resilience of the financial system
  - Financial institutions currently have robust capital cushions
  - Low interest rates and payout plans may point to decreased resilience
  - Liquidity mismatches seem to be falling

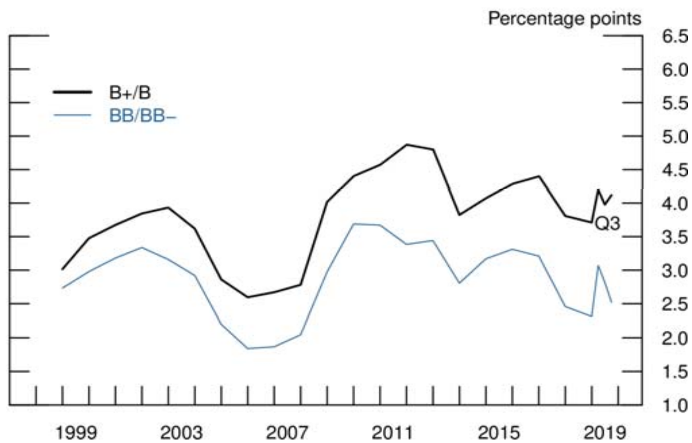
Risk Appetite for Business Assets

Equity Risk Premium

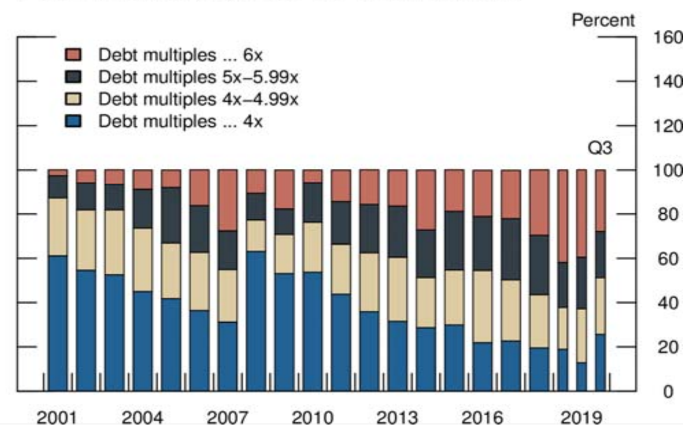
Corporate Bond Spreads to Similar–Maturity Treasury Securities



Spreads on Newly Issued Institutional Leveraged Loans

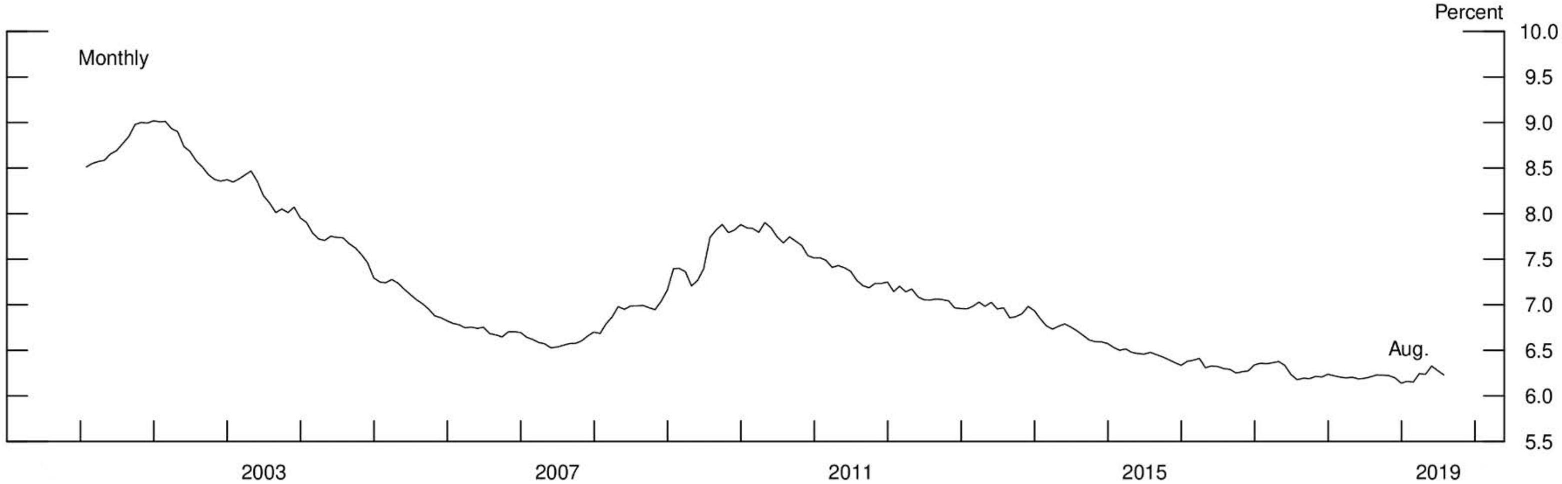


Distribution of Large Institutional Leveraged Loan Volumes, by Debt–to–EBITDA Ratio

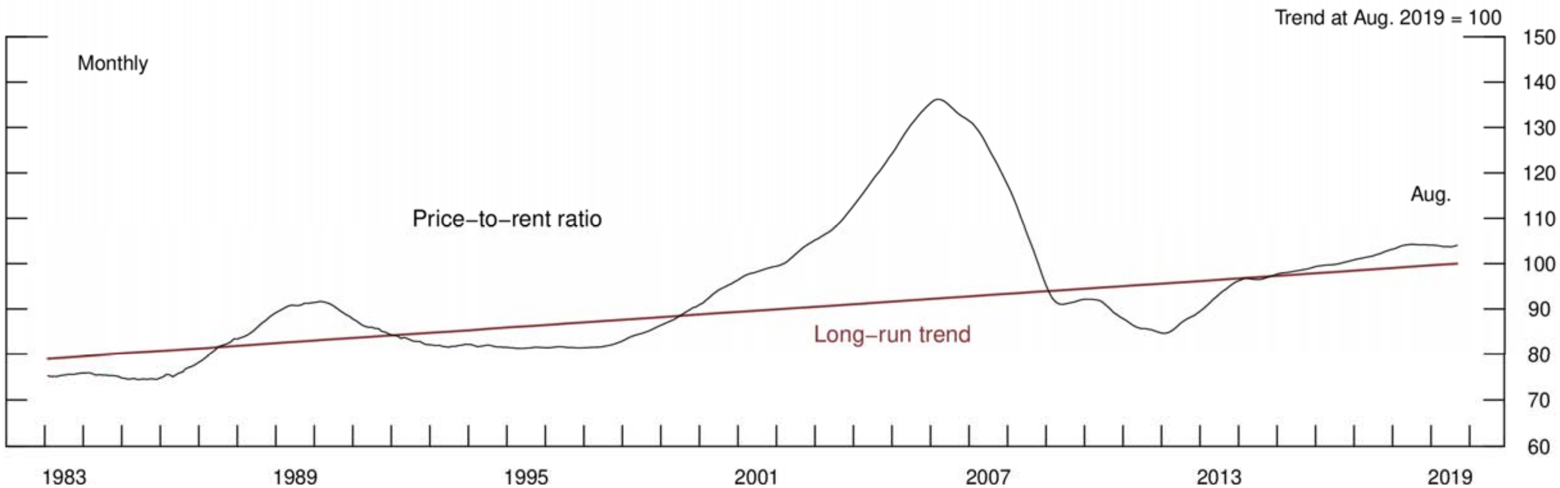


Risk Appetite in Property Markets

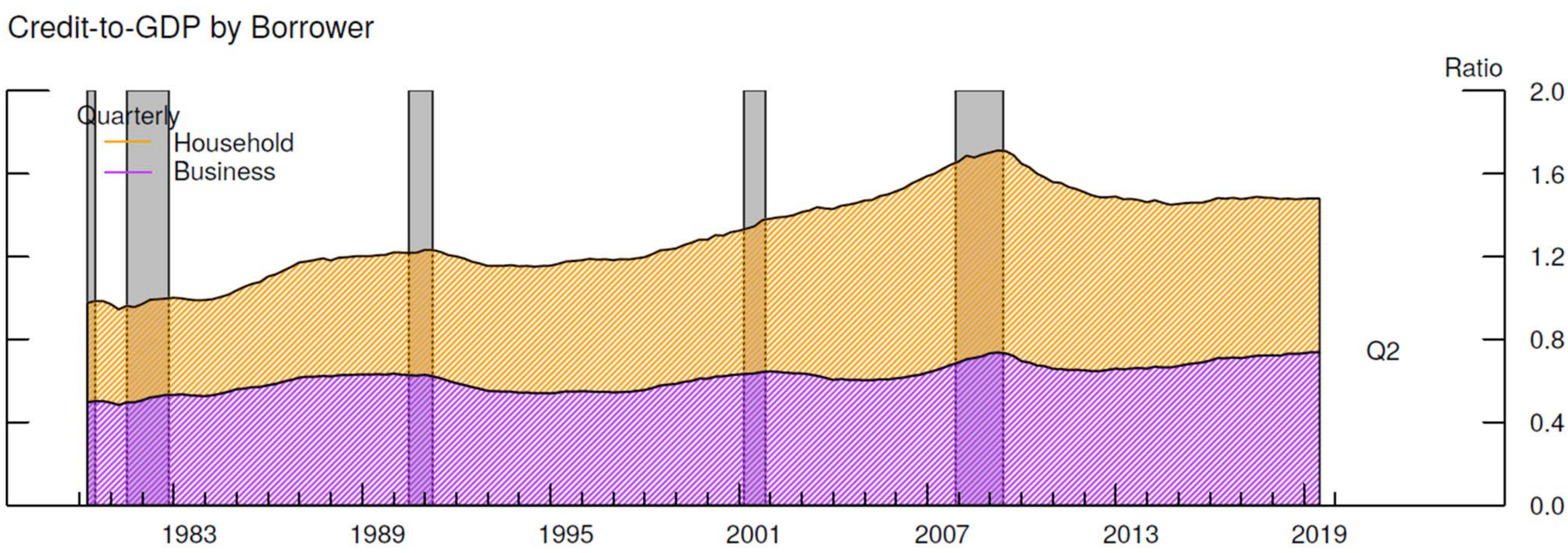
Capitalization Rate at Purchase for Commercial Properties



Housing Price–to–Rent Ratio

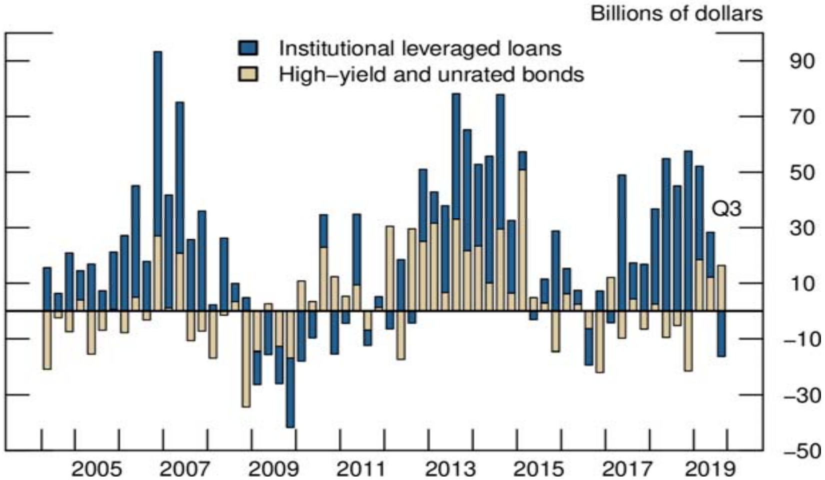


Debt Owed by Households and Businesses

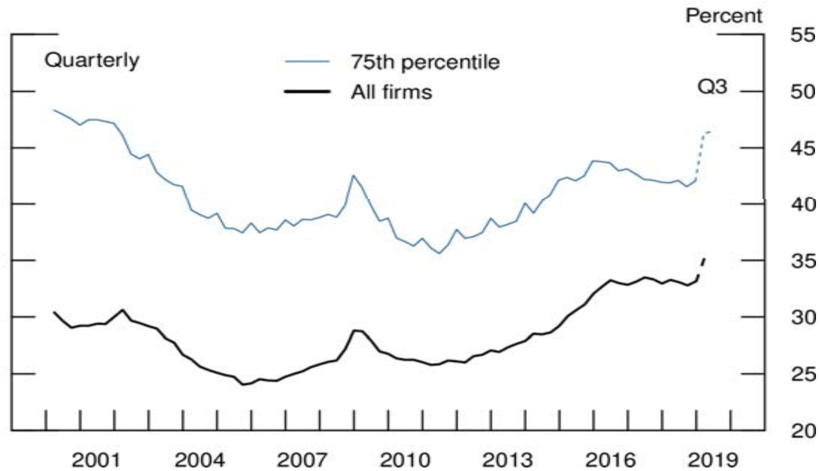


Business Vulnerability

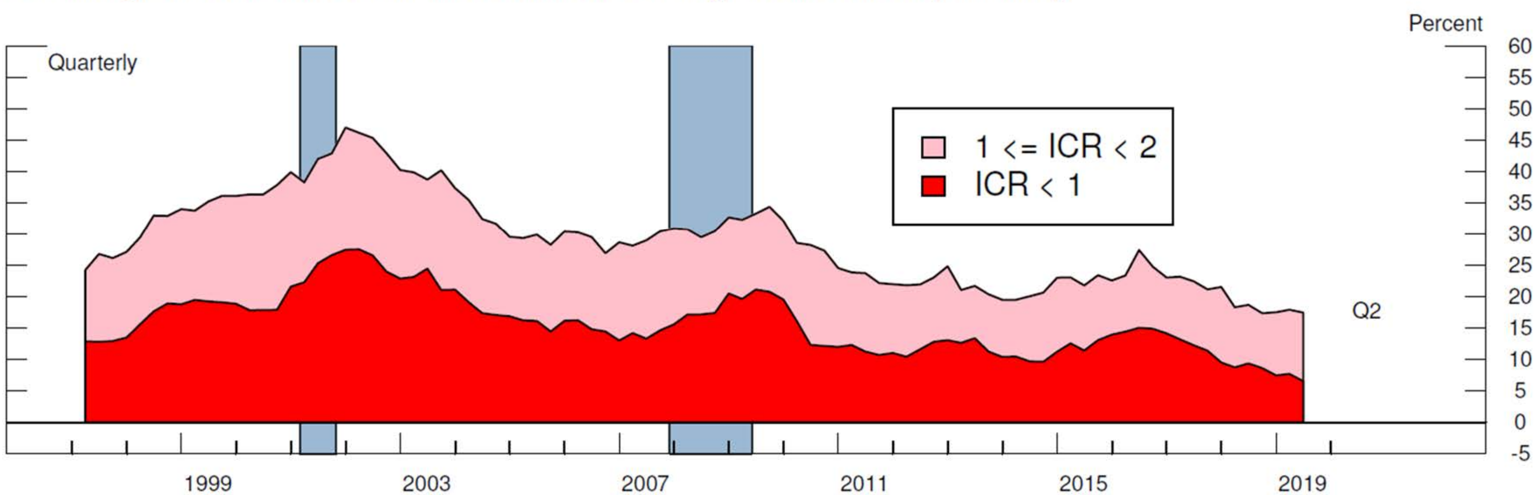
Net Issuance of Risky Business Debt



Gross Balance Sheet Leverage of Public Nonfinancial Corporations

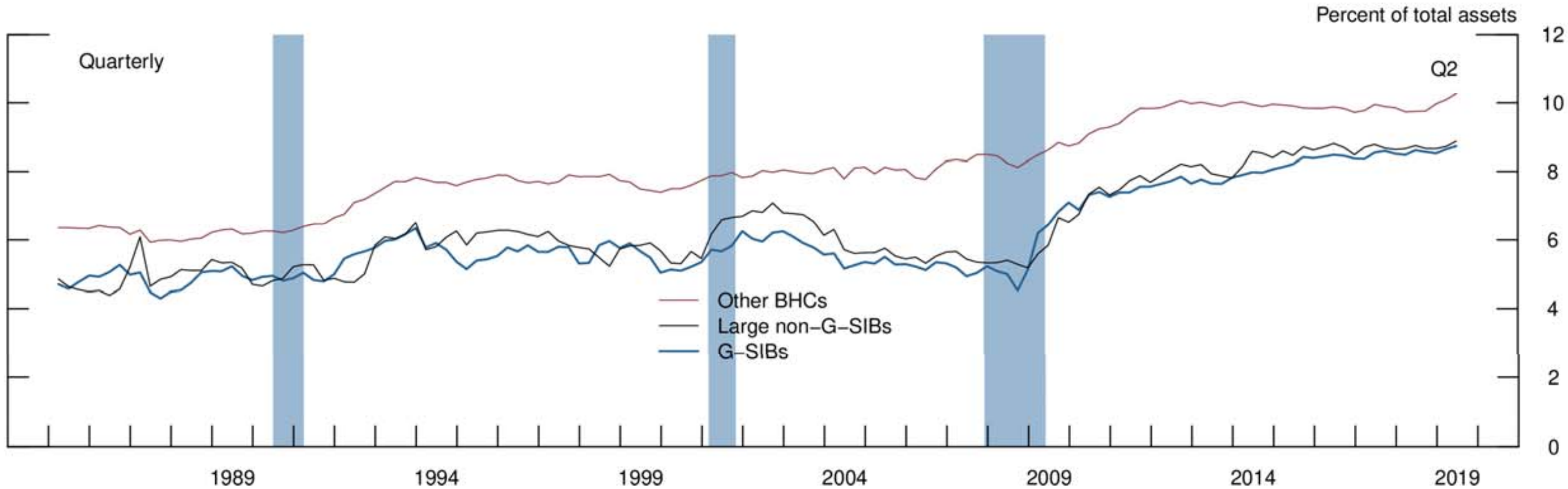


Percentage of Debt below Threshold Interest Coverage Ratio Values (All Firms)

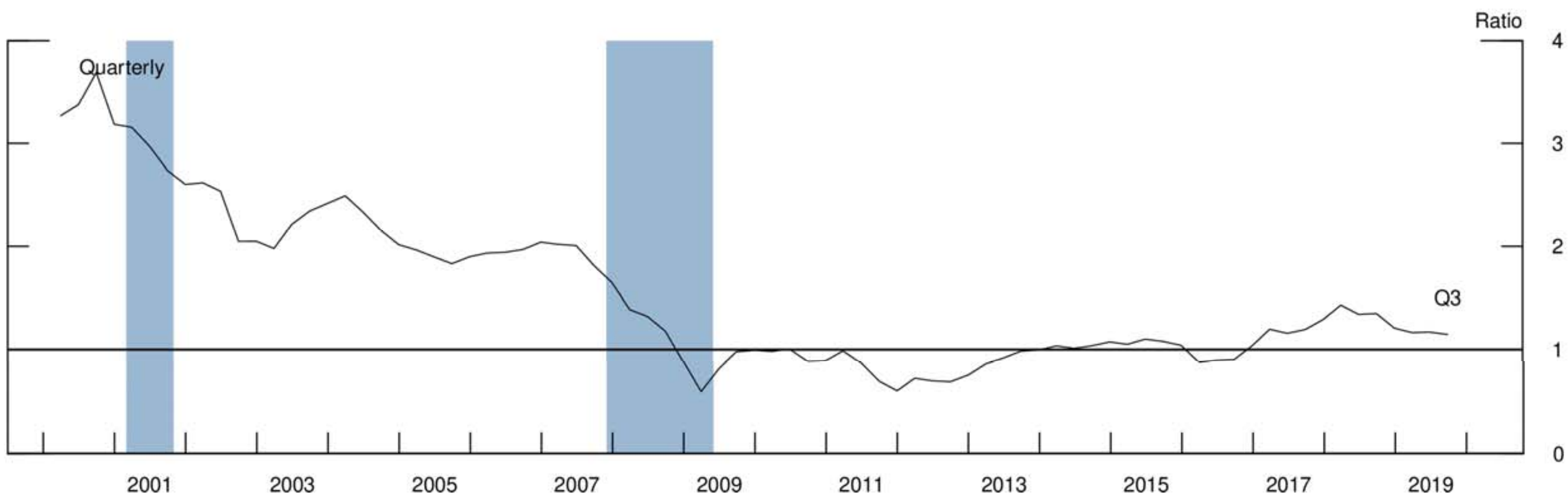


Bank capital

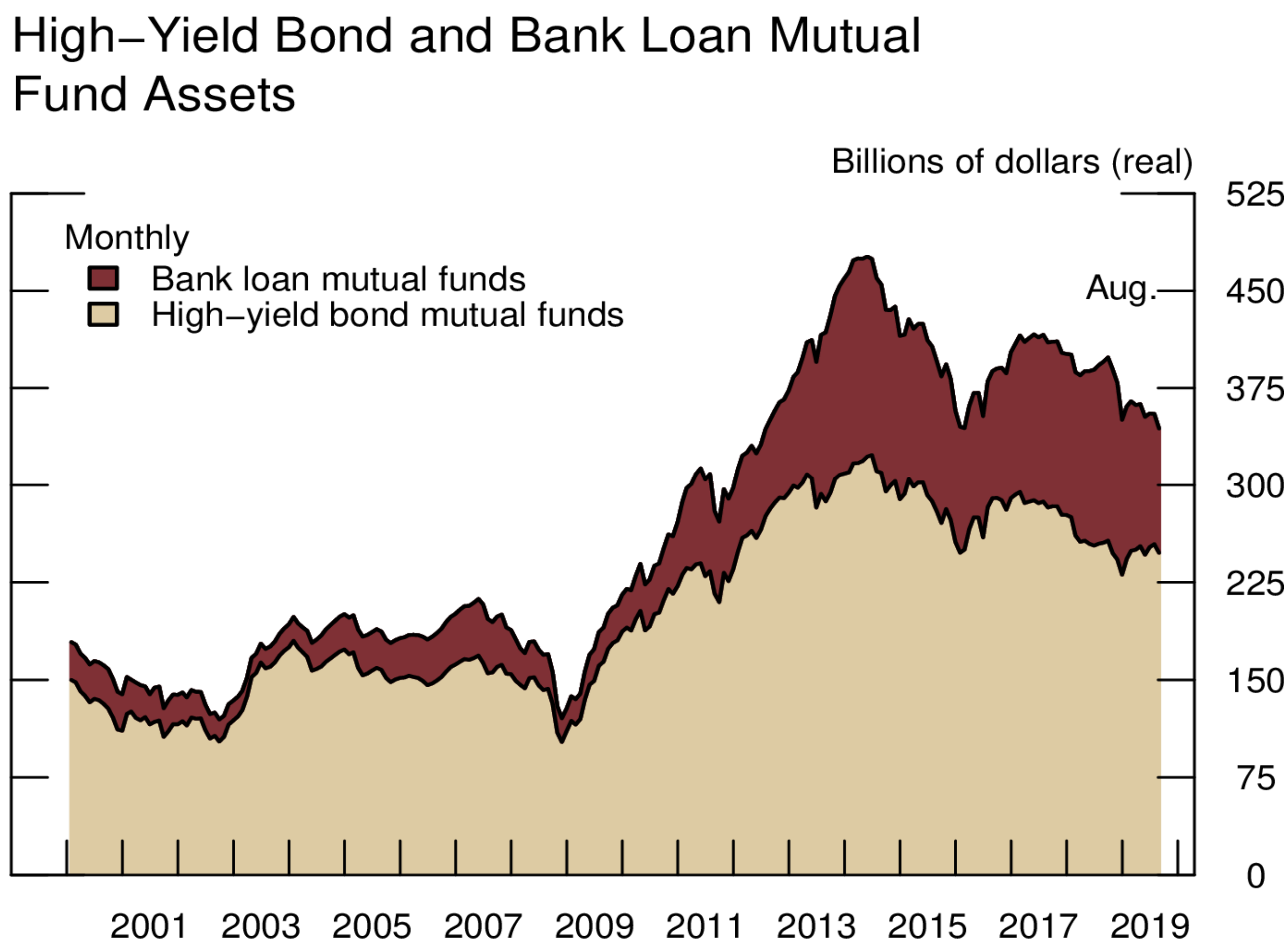
Ratio of Tangible Bank Equity to Assets



Ratio of Market Value to Book Value of Equity at U.S. G–SIBs



Mutual Funds That Hold Less Liquid Assets



Appendix

Panels from Slide 2

- *Equity Risk Premium: Based on a dividend discount model and staff projections. + Denotes the latest daily observation using daily interest rates and stock prices* (Source: Staff projections).

- *Corporate Bond Spreads to Similar-Maturity Treasury Securities: 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).

- *Spreads on Newly Issued Institutional Leveraged Loans: Breaks in the series represent periods with no issuance. Spreads are calculated against three-month LIBOR (London interbank offered rate). The spreads do not include up-front fees. Series shown as annual averages through 2018; 2019 values are quarterly averages.* (Source: S&P Global, Leveraged Commentary & Data).

- *Distribution of Large Institutional Leveraged Loan Volumes, by Debt-to-EBITDA Ratio: The data for 2019 are quarterly. Volumes are for large corporations with earnings before interest, taxes, depreciation, and amortization (EBITDA) greater than $50 million and exclude existing tranches of add-ons and amendments as well as restatements with no new money. Key identifies bars in order from top to bottom* (Source: S&P Global, Leveraged Commentary & Data).

Panels from Slide 3

- *Capitalization Rate at Purchase for Commercial Property: The data are three-month moving averages of weighted capitalization rates in the industrial, retail, office, and multifamily sectors, based on national square footage in 2009 (Source: Real Capital Analytics; Andrew C. Florance, Norm G. Miller, Ruijue Peng, and Jay Spivey (2010), "Slicing, Dicing, and Scoping the Size of the U.S. Commercial Real Estate Market," Journal of Real Estate Portfolio Management, vol. 16 (May-August), pp.101–18).*

- *Housing Price-to-Rent Ratio: Chart shows the log of the price-to-rent ratio. Long-run trend is estimated using data from 1978 to 2001 and includes the effect of carrying costs on the expected price-to-rent ratio. The last value of the trend is normalized to equal 100* (Source: For house prices, CoreLogic; for rent data, Bureau of Labor Statistics).

Appendix

Panel from Slide 4

- *Credit-to-Debt GDP by Borrower: Gray shading represents NBER recession dates* (Source: Financial Accounts of the United States and NIPA).

Panels from Slide 5

- *Net Issuance of Risky Business Debt: Institutional leveraged loans generally exclude loan commitments held by banks* (Source: Mergent, Fixed Income Securities Database (FISD); S&P Global, Leveraged Commentary & Data).

- *Gross Balance Sheet Leverage of Public Nonfinancial Corporations: Gross leverage is the ratio of the book value of total debt to the book value of total assets.The 75th percentile is calculated from a sample of the 2,500 largest firms by assets. The dashed line shows the data after the structural break in the series due to the 2019 compliance deadline for Financial Accounting Standards Board rule ASU 2016-02* (Source: Federal Reserve Board staff calculations based on S&P Global, Compustat).

  Percentage of Debt below Threshold Interest Coverage Ratio Values (All Firms): The percentage is computed as the sum of debt of firms with ICR below the threshold over debt. Q2 data is based off of 96% of firms reporting compared to the previous quarter (Source: Compustat).

Panels from Slide 6

- *Ratio of Tangible Bank Equity to Assets: Bank equity is total equity capital net of preferred equity and intangible assets, and assets are total assets. The data are seasonally adjusted by Board staff. G-SIBs are global systemically important U.S. banks. Large non-G-SIBs are bank holding companies (BHCs) and intermediate holding companies (IHCs) with greater than $100 billion in total assets that are not G-SIBs. The shaded bars indicate periods of business recession as defined by the National Bureau of Economic Research: July 1990- March 1991, March 2001-November 2001 and December 2007-June 2009* (Source: Federal Financial Institutions Examination Council, Call Report Form FFIEC 031, Consolidated Reports of Condition and Income for a Bank with Domestic and Foreign Offices).

Appendix

- *Ratio of Market Value to Book Value of Equity at U.S. G-SIBs: Shaded areas indicate recession periods as defined by the National Bureau of Economic Research. G-SIBs are globally systemic important banks* (Source: S&P Global Market Intelligence; Yahoo Finance).

Panel from Slide 7

- *High-Yield Bond and Bank Loan Mutual Fund Assets: The data are converted to constant 2019 dollars using the consumer price index. Key identifies series in order from top to bottom* (Source: Morningstar, Inc., Morningstar Direct; Bureau of Labor Statistics, consumer price index via Haver Analytics).

Appendix 7: Materials used by Mr. Laubach

Class I FOMC – Restricted Controlled (FR)

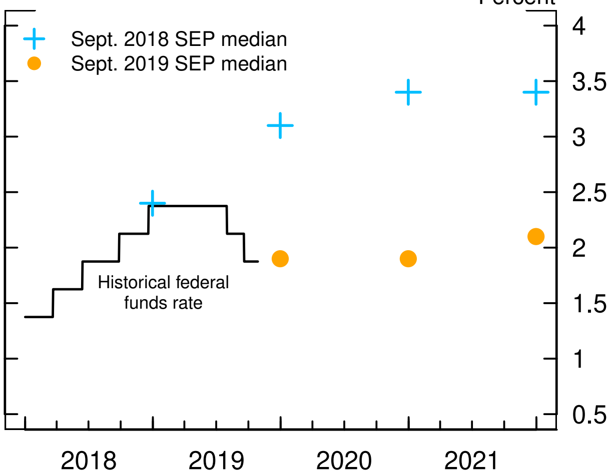
Material for the Briefing on

Monetary Policy Alternatives

Thomas Laubach
Exhibits by Gurubala Kotta
October 29-30, 2019

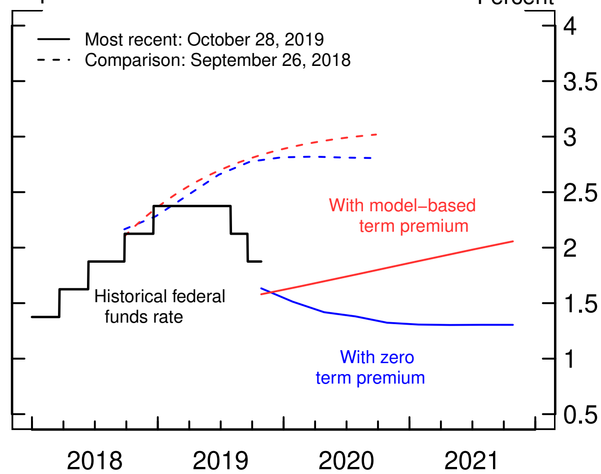
Monetary Policy Considerations

Federal Funds Rate Paths



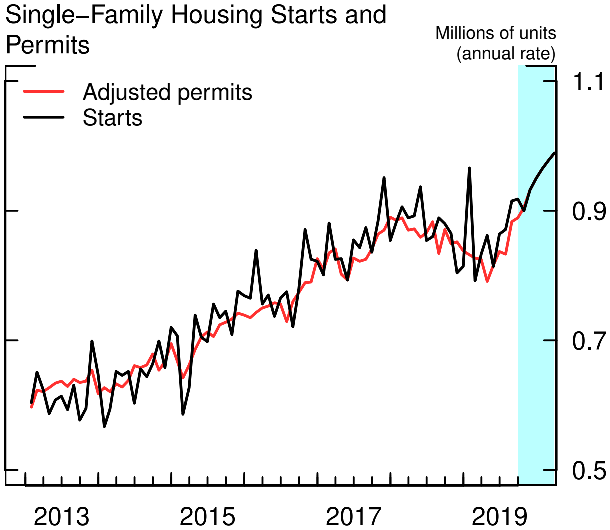
Source: Federal Reserve Board, Summary of Economic Projections.

Implied Federal Funds Rate



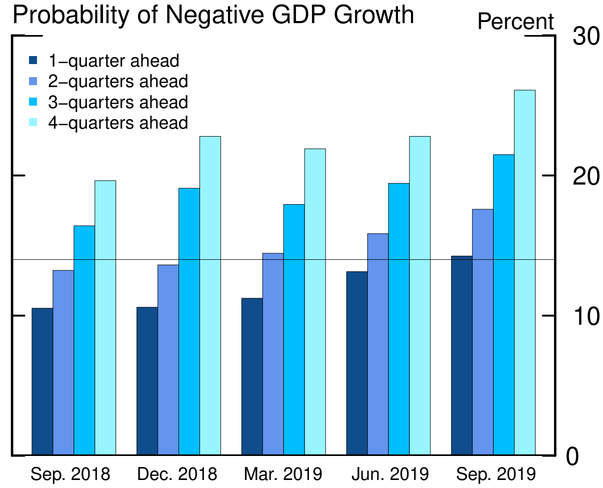
Note: Zero term premium path is estimated using OIS quotes with a spline approach, and a term premium of zero basis points.
Source: Bloomberg, Board staff calculations.

Single–Family Housing Starts and Permits



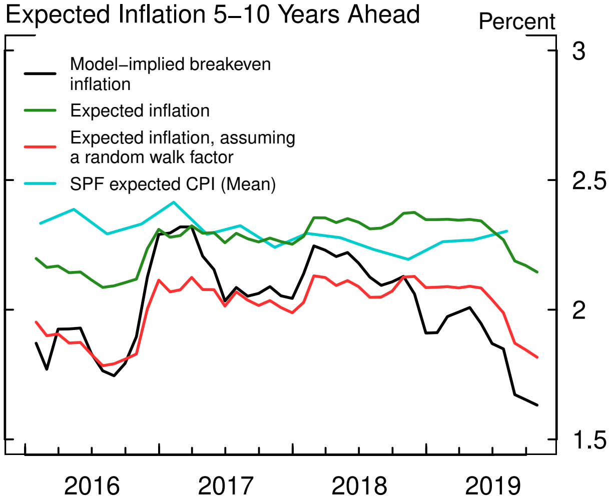
Note: Shaded blue region corresponds to forecast period. Adjusted permits equal permit issuance plus starts outside of permit–issuing areas.
Source: U.S. Census Bureau.

Probability of Negative GDP Growth



Note: The horizontal line denotes the frequency of negative quarterly real GDP growth in U.S. data from 1947 – 2019.
Source: Survey of Professional Forecasters.

Expected Inflation 5–10 Years Ahead



Note: The black, green, and red series are monthly averages.
Source: Board staff estimates, Survey of Professional Forecasters.

Policy Alternatives

- Alternative B
  - Conveys diminished likelihood of additional funds rate reductions.
  - Continues to note remaining uncertainties, monitoring of incoming information.
- Alternative C does not reduce the target range, conveys reduced concern about downside risks.
- Alternative A emphasizes inflation persistently below 2 percent, maintains "act as appropriate".

SEPTEMBER 2019 FOMC STATEMENT

1. Information received since the Federal Open Market Committee met in July indicates that the labor market remains strong and that economic activity has been rising at a moderate rate. Job gains have been solid, on average, in recent months, and the unemployment rate has remained low. Although household spending has been rising at a strong pace, business fixed investment and exports have weakened. On a 12-month basis, overall inflation and inflation for items other than food and energy are running below 2 percent. Market-based measures of inflation compensation remain low; survey-based measures of longer-term inflation expectations are little changed.

2. Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. In light of the implications of global developments for the economic outlook as well as muted inflation pressures, the Committee decided to lower the target range for the federal funds rate to 1-3/4 to 2 percent. This action supports the Committee's view that sustained expansion of economic activity, strong labor market conditions, and inflation near the Committee's symmetric 2 percent objective are the most likely outcomes, but uncertainties about this outlook remain. As the Committee contemplates the future path of the target range for the federal funds rate, it will continue to monitor the implications of incoming information for the economic outlook and will act as appropriate to sustain the expansion, with a strong labor market and inflation near its symmetric 2 percent objective.

3. 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 maximum employment objective and its symmetric 2 percent inflation objective. 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.

Alternative A for October 2019

1. Information received since the Federal Open Market Committee met in ~~July~~ **September** indicates that the labor market remains strong and that economic activity has been rising at a moderate rate. Job gains have been solid, on average, in recent months, and the unemployment rate has remained low. Although household spending has been rising at a strong pace, business fixed investment and exports ~~have weakened~~ **remain weak**. On a 12-month basis, overall inflation and inflation for items other than food and energy ~~are running~~ **continue to run** below 2 percent. Market-based measures of inflation compensation remain low; survey-based measures of longer-term inflation expectations are little changed.

2. Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. In light of the implications of global developments for the economic outlook as well as ~~muted~~ inflation ~~pressures~~ **running persistently below 2 percent**, the Committee decided to lower the target range for the federal funds rate to **1-1/2 to** 1-3/4 ~~to 2~~ percent. This action supports the Committee's view that sustained expansion of economic activity, strong labor market conditions, and inflation near the Committee's symmetric 2 percent objective are the most likely outcomes, but uncertainties about this outlook remain. As the Committee contemplates the future path of the target range for the federal funds rate, it will continue to monitor the implications of incoming information for the economic outlook and will act as appropriate to sustain the expansion, with a strong labor market and inflation near its symmetric 2 percent objective.

3. 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 maximum employment objective and its symmetric 2 percent inflation objective. 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.

ALTERNATIVE B FOR OCTOBER 2019

1. Information received since the Federal Open Market Committee met in ~~July~~ **September** indicates that the labor market remains strong and that economic activity has been rising at a moderate rate. Job gains have been solid, on average, in recent months, and the unemployment rate has remained low. Although household spending has been rising at a strong pace, business fixed investment and exports ~~have weakened~~ **remain weak**. On a 12-month basis, overall inflation and inflation for items other than food and energy are running below 2 percent. Market-based measures of inflation compensation remain low; survey-based measures of longer-term inflation expectations are little changed.

2. Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. In light of the implications of global developments for the economic outlook as well as muted inflation pressures, the Committee decided to lower the target range for the federal funds rate to **1-1/2 to** 1-3/4 ~~to 2~~ percent. This action supports the Committee's view that sustained expansion of economic activity, strong labor market conditions, and inflation near the Committee's symmetric 2 percent objective are the most likely outcomes, but uncertainties about this outlook remain. ~~As~~ The Committee ~~contemplates the future path of the target range for the federal funds rate, it~~ will continue to monitor the implications of incoming information for the economic outlook ~~and will act as appropriate to sustain the expansion, with a strong labor market and inflation near its symmetric 2 percent objective~~ **as it assesses the appropriate path of the target range for the federal funds rate**.

3. 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 maximum employment objective and its symmetric 2 percent inflation objective. 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.

ALTERNATIVE C FOR OCTOBER 2019

1. Information received since the Federal Open Market Committee met in ~~July~~ **September** indicates that the labor market remains strong and that economic activity has been rising at a moderate rate. Job gains have been solid, on average, in recent months, and the unemployment rate has ~~remained low~~ **declined**. Although household spending has been rising at a strong pace, business fixed investment and exports ~~have weakened~~ **remain weak**. On a 12-month basis, overall inflation and inflation for items other than food and energy are running below 2 percent. Market-based measures of inflation compensation remain low; survey-based measures of longer-term inflation expectations are little changed.

2. Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. In ~~light of the implications of global developments for the economic outlook as well as muted inflation pressures~~ **support of these goals**, the Committee decided to ~~lower~~ **maintain** the target range for the federal funds rate ~~to~~ **at** 1-3/4 to 2 percent. ~~This action supports~~ The Committee~~'s~~ **continues to** view ~~that~~ sustained expansion of economic activity, strong labor market conditions, and inflation near the Committee's symmetric 2 percent objective ~~are~~ **as** the most likely outcomes, but uncertainties about this outlook remain. ~~As~~ The Committee ~~contemplates the future path of the target range for the federal funds rate, it~~ will continue to monitor the implications of incoming information for the economic outlook ~~and will act as appropriate to sustain the expansion, with a strong labor market and inflation near its symmetric 2 percent objective~~ **as it assesses the appropriate path of the target range for the federal funds rate**.

3. 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 maximum employment objective and its symmetric 2 percent inflation objective. 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.

Implementation Note for October 2019, Alternatives A and B

Release Date: October 30, 2019

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 ~~September 18, 2019~~ **October 30, 2019**:

- The Board of Governors of the Federal Reserve System voted **[** unanimously **]** to lower the interest rate paid on required and excess reserve balances to ~~1.80~~ **1.55** percent, effective ~~September 19, 2019~~ **October 31, 2019**. ~~Setting the interest rate paid on required and excess reserve balances 20 basis points below the top of the target range for the federal funds rate is intended to foster trading in the federal funds market at rates well within the FOMC's target range.~~

- 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 ~~October 15, 2019~~ **October 31, 2019**, 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 **1-1/2 to** 1-3/4 ~~to 2~~ percent. In light of recent and expected increases in the Federal Reserve's non-reserve liabilities, the Committee directs the Desk to purchase Treasury bills at least into the second quarter of next year to maintain over time ample reserve balances at or above the level that prevailed in early September 2019. The Committee also directs the Desk to conduct term and overnight repurchase agreement operations at least through January of next year to ensure that the supply of reserves remains ample even during periods of sharp increases in non-reserve liabilities, and to mitigate the risk of money market pressures that could adversely affect policy implementation. In addition, the Committee directs the Desk to conduct 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 ~~1.70~~ **1.45** 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 at auction all principal payments from the Federal Reserve's holdings of Treasury securities and to continue reinvesting all principal payments from the Federal Reserve's holdings of agency debt and agency mortgage-backed securities received during each calendar month. Principal payments from agency debt and agency mortgage-backed securities up to $20 billion per month will continue to be reinvested in Treasury securities to roughly match the maturity composition of Treasury securities outstanding; principal payments in excess of $20 billion per month will continue to be reinvested in agency mortgage-backed securities. 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 a 1/4 percentage point decrease in the primary credit rate to ~~2.50~~ **2.25** percent, effective ~~September 19, 2019~~ **October 31, 2019**. In taking this action, the Board approved requests to establish that rate submitted by the Boards of Directors of the Federal Reserve Banks of [….]

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 reinvestments may be found on the Federal Reserve Bank of New York's website.

Implementation Note for October 2019, Alternative C

Release Date: October 30, 2019

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 ~~September 18, 2019~~ **October 30, 2019**:

- The Board of Governors of the Federal Reserve System voted **[** unanimously **]** to ~~lower~~ **maintain** the interest rate paid on required and excess reserve balances ~~to~~ **at** 1.80 percent, effective ~~September 19, 2019~~ **October 31, 2019**. ~~Setting the interest rate paid on required and excess reserve balances 20 basis points below the top of the target range for the federal funds rate is intended to foster trading in the federal funds market at rates well within the FOMC's target range.~~
- 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 ~~October 15, 2019~~ **October 31, 2019**, 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 1-3/4 to 2 percent. In light of recent and expected increases in the Federal Reserve's non-reserve liabilities, the Committee directs the Desk to purchase Treasury bills at least into the second quarter of next year to maintain over time ample reserve balances at or above the level that prevailed in early September 2019. The Committee also directs the Desk to conduct term and overnight repurchase agreement operations at least through January of next year to ensure that the supply of reserves remains ample even during periods of sharp increases in non-reserve liabilities, and to mitigate the risk of money market pressures that could adversely affect policy implementation. In addition, the Committee directs the Desk to conduct 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 1.70 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 at auction all principal payments from the Federal Reserve's holdings of Treasury securities and to continue reinvesting all principal payments from the Federal Reserve's holdings of agency debt and agency mortgage-backed securities received during each calendar month. Principal payments from agency debt and agency mortgage-backed securities up to $20 billion per month will continue to be reinvested in Treasury securities to roughly match the maturity composition of Treasury securities outstanding; principal payments in excess of $20 billion per month will continue to be reinvested in agency mortgage-backed securities. 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 ~~a 1/4 percentage point decrease in~~ **the establishment of the** primary credit rate ~~to~~ **at the existing level of** 2.50 percent. ~~effective September 19, 2019. In taking this action, the Board approved requests to establish that rate submitted by the Boards of Directors of the Federal Reserve Banks of Chicago, Minneapolis, Dallas, and San Francisco~~.

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 reinvestments may be found on the Federal Reserve Bank of New York's website.

Potential actions of the Board of Governors of the Federal Reserve System

Potential Board actions associated with FOMC Alternative A

Interest on required and excess reserve balances

Reduce the interest rate paid on required and excess reserve balances to 1.55 percent, effective October 31, 2019.

Establishment of the primary, secondary, and seasonal credit rates

Approve establishment of the primary credit rate by the Federal Reserve Banks of Minneapolis and San Francisco at 2.25 percent, effective October 31, 2019. This action will encompass approval of the establishment of a 2.25 percent primary credit rate by each of the remaining Federal Reserve Banks, effective on the later of October 31, 2019, or the date such Reserve Bank informs the Secretary of the Board of such a request; the Secretary of the Board would be authorized to inform each such Reserve Bank of the approval of the Board of Governors upon such notification by the Reserve Bank. Lastly, this vote will also encompass the establishment of the rates for secondary and seasonal credit under the existing formulas specified in staff's October 25, 2019, memorandum to the Board.

Potential Board actions associated with FOMC Alternative B

Interest on required and excess reserve balances

Reduce the interest rate paid on required and excess reserve balances to 1.55 percent, effective October 31, 2019.

Establishment of the primary, secondary, and seasonal credit rates

Approve establishment of the primary credit rate by the Federal Reserve Banks of Minneapolis and San Francisco at 2.25 percent, effective October 31, 2019. This action will encompass approval of the establishment of a 2.25 percent primary credit rate by each of the remaining Federal Reserve Banks, effective on the later of October 31, 2019, or the date such Reserve Bank informs the Secretary of the Board of such a request; the Secretary of the Board would be authorized to inform each such Reserve Bank of the approval of the Board of Governors upon such notification by the Reserve Bank. Lastly, this vote will also encompass the establishment of the rates for secondary and seasonal credit under the existing formulas specified in staff's October 25, 2019, memorandum to the Board.

Potential Board actions associated with FOMC Alternative C

Interest on required and excess reserve balances

> Leave the interest rates paid on required and excess reserve balances unchanged at 1.80 percent.

Establishment of the primary, secondary, and seasonal credit rates

> Approve establishment of the primary credit rate at the existing rate of 2.50 percent and establishment of the rates for secondary and seasonal credit under the existing formulas specified in the staff's October 25, 2019, memo to the Board.

Appendix 8: Materials used by Ms. Tevlin

Class II FOMC – Restricted (FR)

Material for

Gross Domestic Product Update

Stacey Tevlin

October 30, 2019

Class II FOMC—Restricted (FR)

Real GDP and Related Items
(Percent change at annual rate)

	2019 Q2	2019 Q3
Real GDP	**2.0**	**1.9**
October Tealbook		*1.7*
Personal consumption	4.6	2.9
October Tealbook		*2.8*
Business fixed investment	–1.0	–3.0
October Tealbook		*–2.1*
Residential investment	–3.0	5.1
October Tealbook		*4.8*
Government	4.8	2.0
October Tealbook		*1.3*
Memo:		
Total PCE price index	2.4	1.5
October Tealbook		*1.6*
Core PCE price index	1.9	2.2
October Tealbook		*2.2*

Note: Advance 2019:Q3 NIPA data released at 8:30 a.m. on October 30, 2019.