

Appendix 1: Materials used by Ms. Logan

Class II FOMC - Restricted (FR)

Material for Briefing on

Financial Developments and Open Market Operations

Lorie Logan

Exhibits by Kathleena Inchoco, Manisha Ratakonda, and Tim Wessel

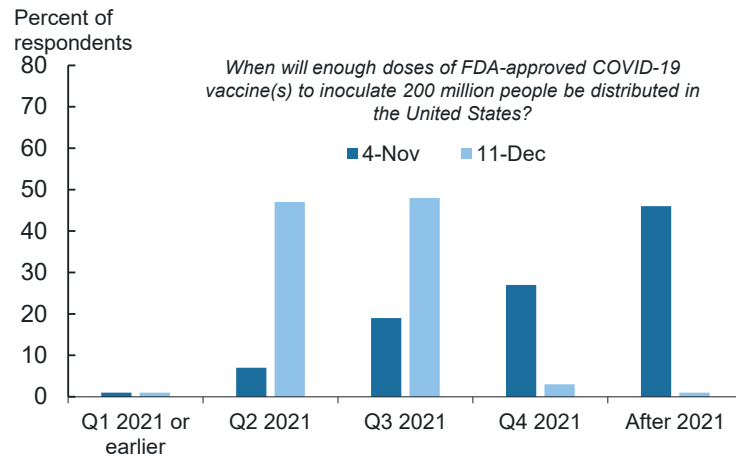
December 15, 2020

Overview

- How did markets balance the worsening near-term outlook with brighter medium-term prospects from vaccine developments?
- How were these developments reflected in yields and what are expectations for monetary policy?
- How did markets respond to the announced expiry of some 13(3) facilities and what are expectations for money market conditions going forward?

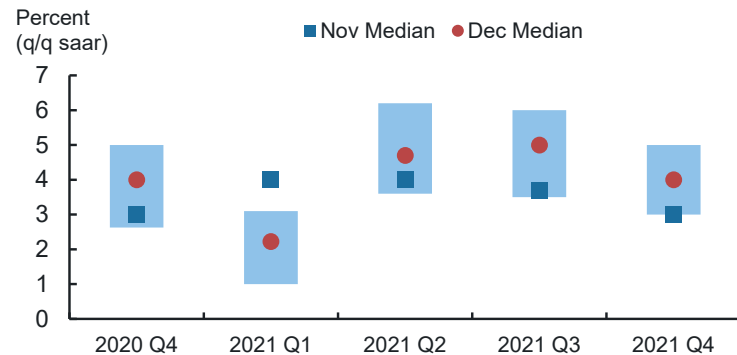
Expectations for widespread vaccinations were pulled forward, and financial conditions eased

(1) Expected Timing of Widespread Vaccination



Source: GoodJudgement Superforecasters

(2) Modal Projections for Quarterly U.S. Real GDP



Note: Surveys of Primary Dealers and Market Participants. The light blue bars represent the middle 50 percent of responses in the current survey.

Source: FRBNY

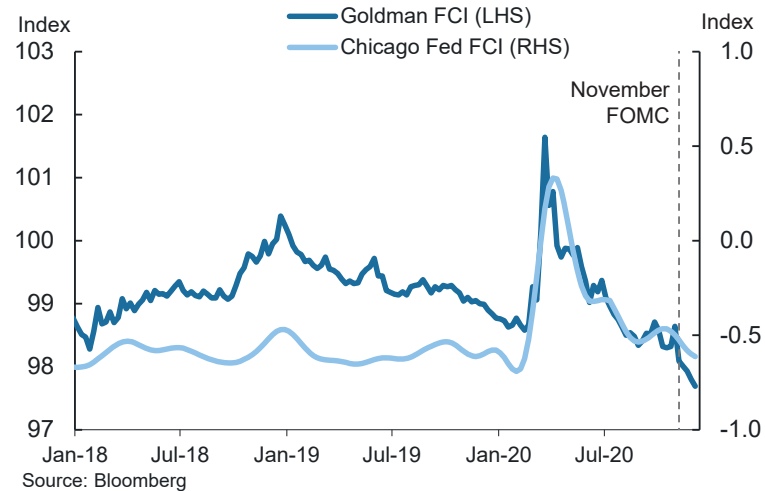
(3) Asset Price Table

| | Since Nov FOMC | YTD | Current Level |
|---------------------------|----------------|----------|---------------|
| S&P 500 Index | 4.4% | 13.4% | 3,663 |
| VIX Index | -4 ppts | +10 ppts | 23 ppts |
| IG Credit Spreads | -14 bps | +12 bps | 105 bps |
| HY Credit Spreads | -52 bps | +48 bps | 384 bps |
| U.S. Broad TW Dollar | -2.0% | -1.9% | 112 |
| 10Y Treasury Yield | +13 bps | -102 bps | 0.90% |
| 30Y Primary Mortgage Rate | -14 bps | -94 bps | 2.92% |

Note: Current level pricing as of 12/11/2020

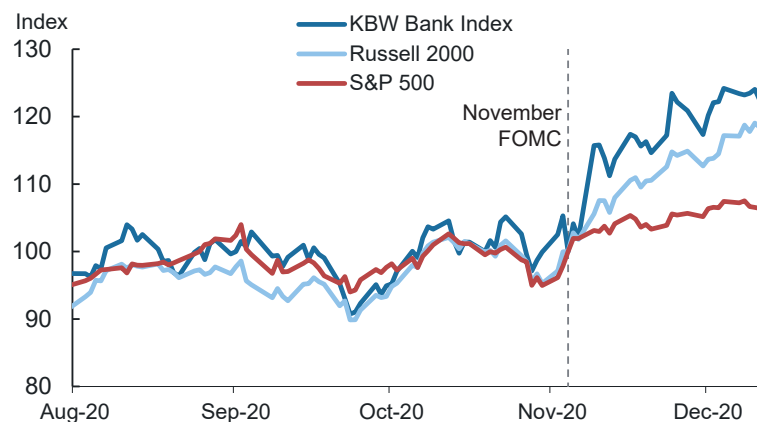
Source: Bloomberg

(4) Financial Conditions Indices

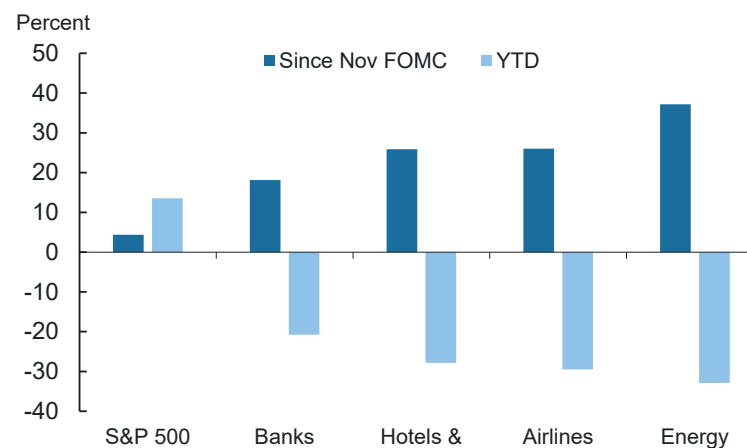


COVID-exposed sectors outperformed despite the current pandemic surge

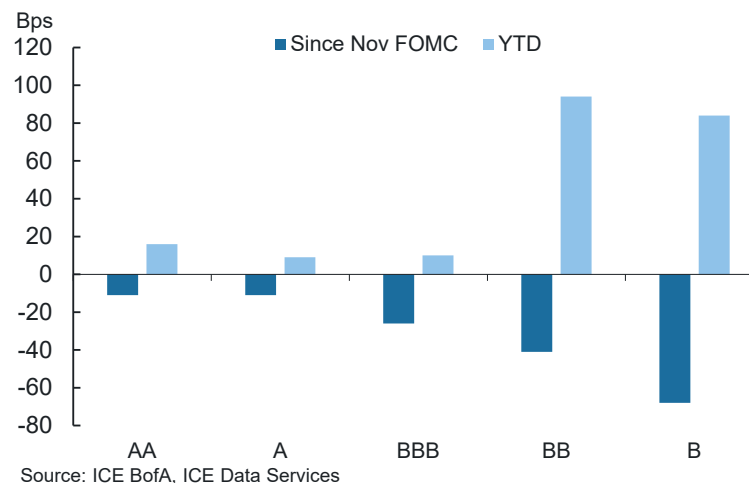
(5) U.S. Equity Indices



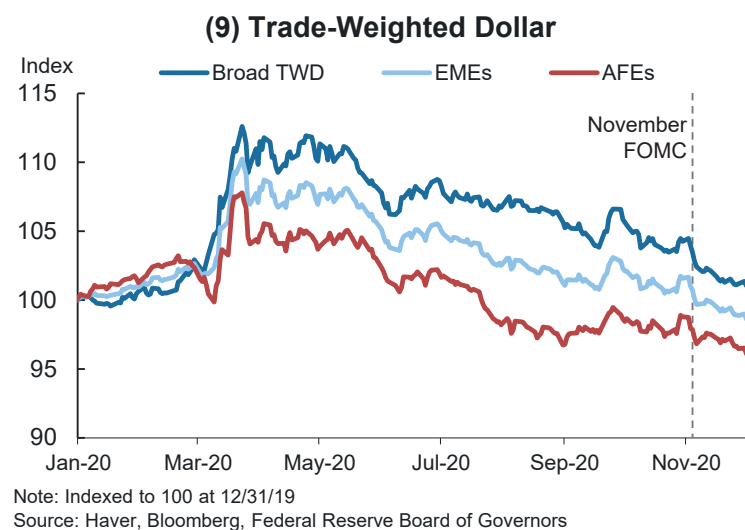
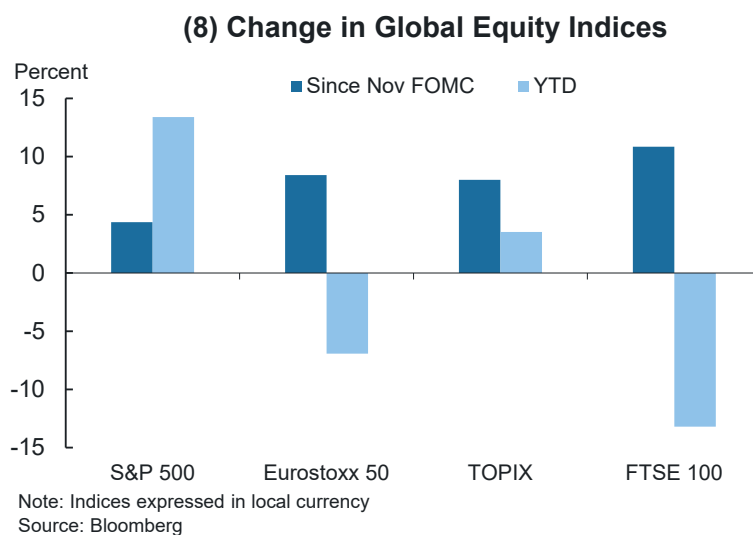
(6) S&P 500: Change in COVID-Impacted Sectors



(7) Change in Corporate Credit Spread by Rating



Foreign equities also outperformed and the dollar weakened...



...while foreign sovereign yields were little changed amid ongoing policy accommodation

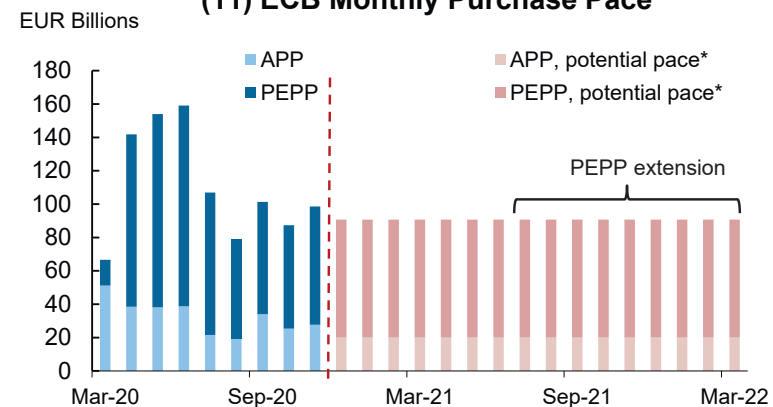
(10) Select AFE Sovereign Yields

| | Since Nov FOMC | YTD | Current Level |
|-------------------|----------------|----------|---------------|
| U.S. Treasury 10y | +13 bps | -102 bps | 0.90% |
| German Bund 10y | +0 bps | -45 bps | -0.64% |
| UK Gilt 10y | -6 bps | -65 bps | 0.17% |
| JGB 10y | -1 bps | +3 bps | 0.01% |
| Sweden 10y | -2 bps | -21 bps | -0.07% |

Note: Current level pricing as of 12/11/2020

Source: Bloomberg

(11) ECB Monthly Purchase Pace



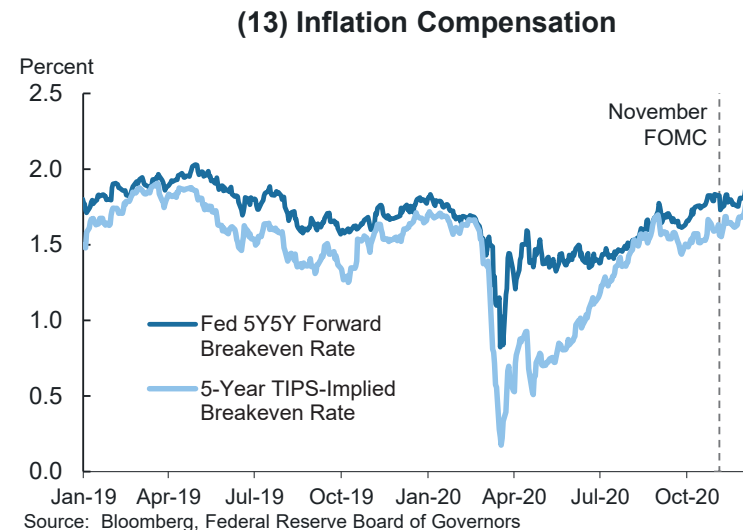
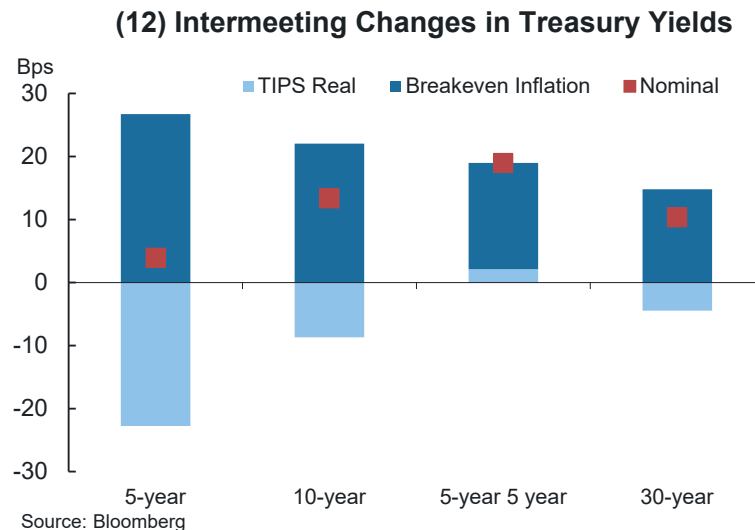
*Potential pace of current program assuming (1) full PEPP envelope of €1.85 tr is spent by March 2022, (2) PEPP purchases are conducted at a constant monthly pace, and (3) APP purchases continue at €20 bn per month.

Source: ECB

Market participants highlight that prominent risks remain and some sectors are still challenged

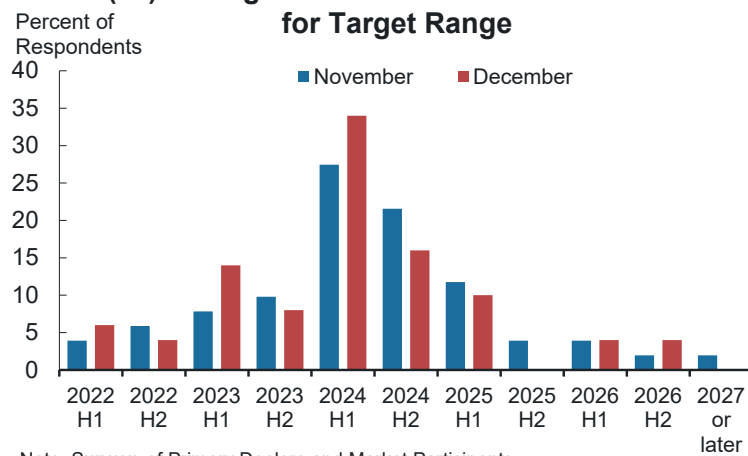
- Challenges with vaccine rollout
- Potentially elevated risk asset valuations
- Hard exit for the United Kingdom
- Small businesses and CRE still struggling

Longer-term Treasury yields rose on brighter outlook, driven by increases in inflation compensation

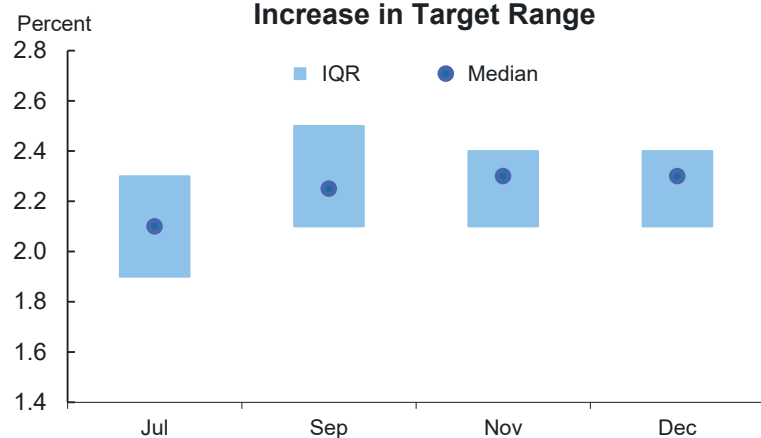


Forward guidance anchored expectations for the policy rate path...

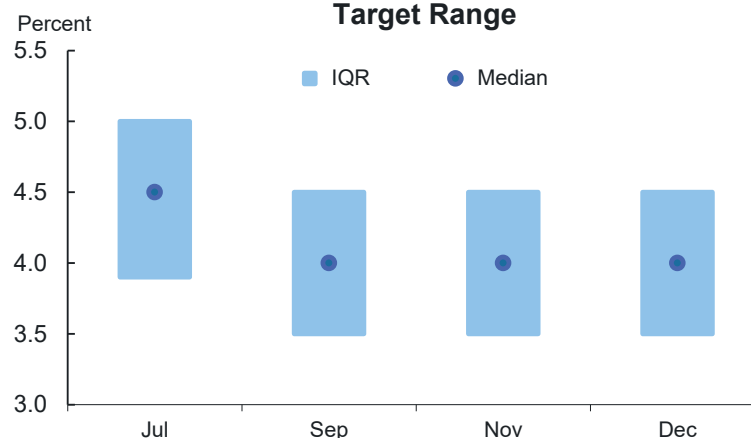
(14) Timing of First Increase in Modal Path for Target Range



(15) Headline 12-Month PCE Inflation at Time of First Increase in Target Range

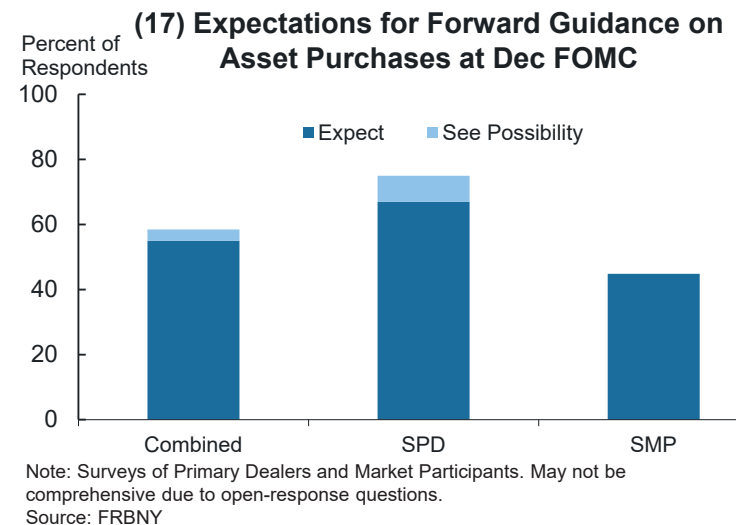


(16) Unemployment Rate at Time of First Increase in Target Range

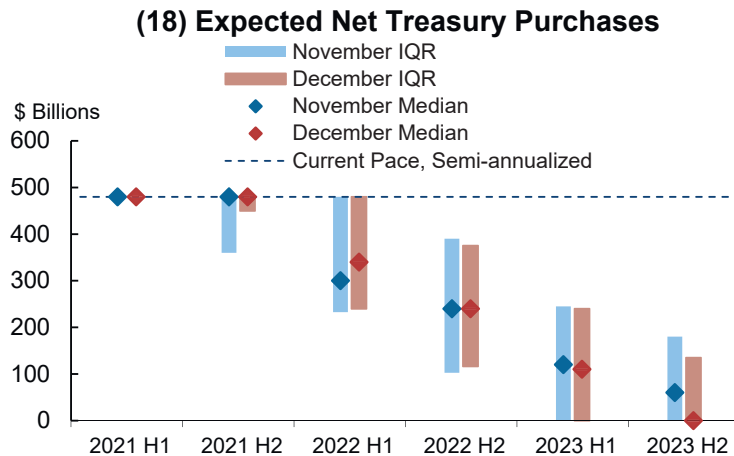


...and market participants focused on guidance for asset purchases

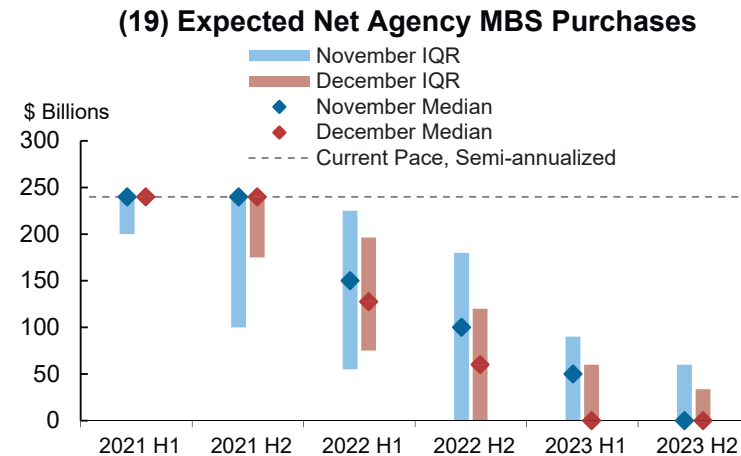
- November minutes interpreted as suggesting broad Committee support for revised guidance
- Most Desk survey respondents expect outcome-based guidance
 - Many suggested it would be tied to inflation and/or unemployment
 - Some suggested it would feature a phrase such as “progress”, “substantial progress” or “on track”



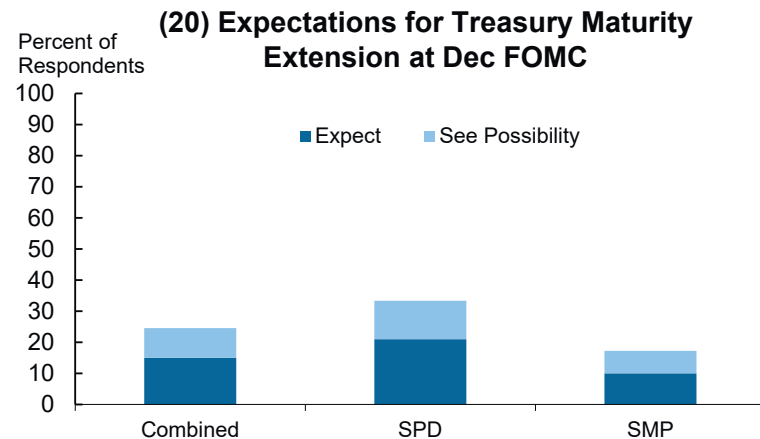
Expectations for the size of purchases little changed, but some expect a maturity extension



Note: Surveys of Primary Dealers and Market Participants
Source: FRBNY

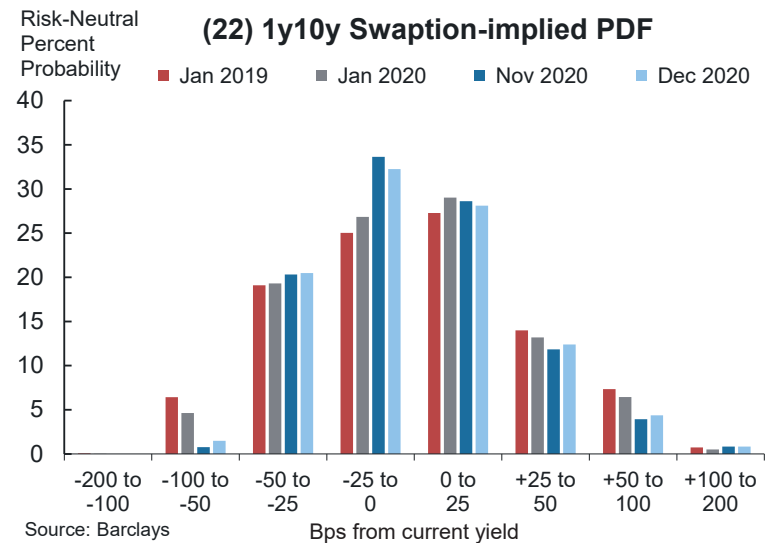
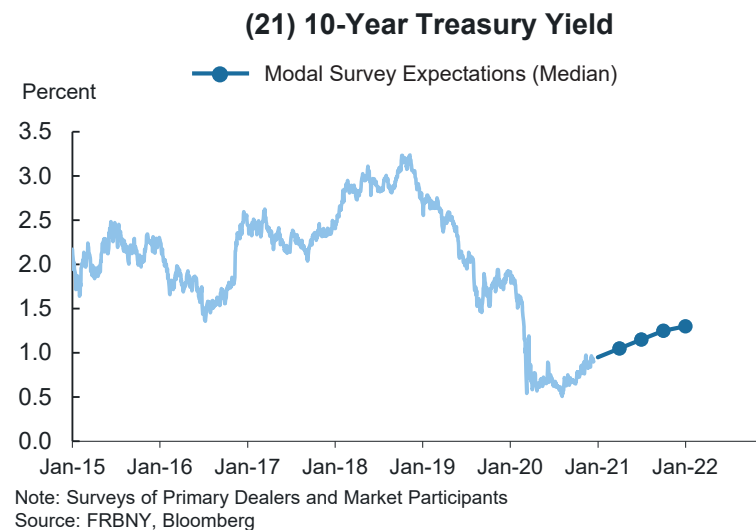


Note: Surveys of Primary Dealers and Market Participants
Source: FRBNY

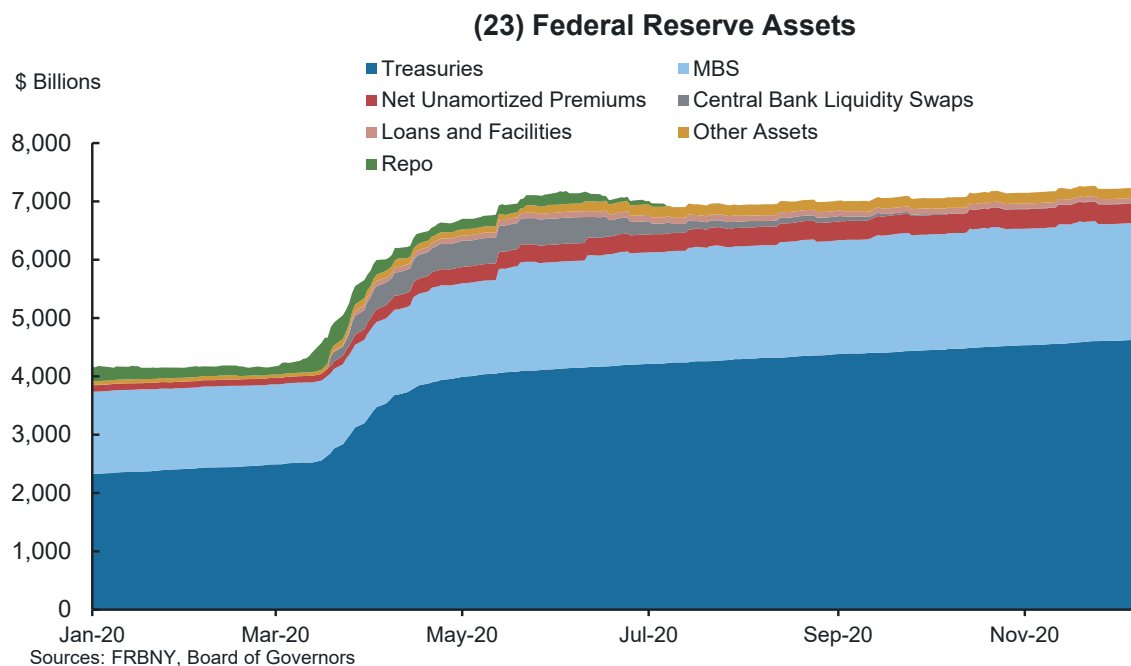


Note: Surveys of Primary Dealers and Market Participants. May not be comprehensive due to open-response questions.
Source: FRBNY

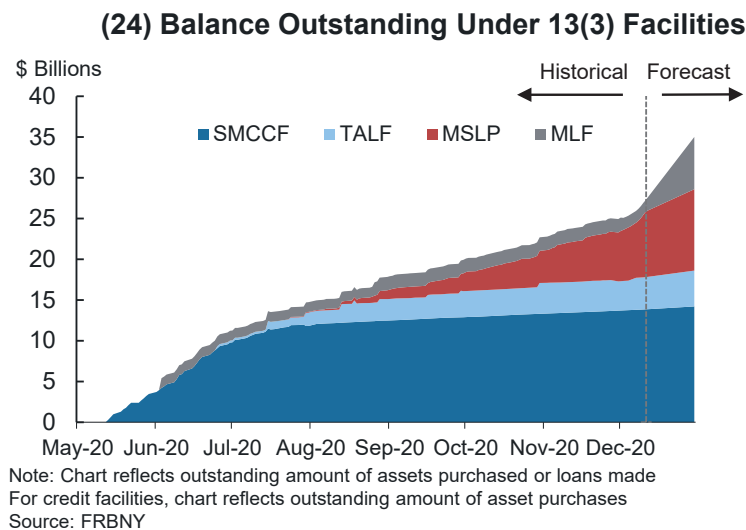
Contacts suggest conditions favor higher longer-term yields; survey and market measures more muted



Federal Reserve balance sheet increased modestly



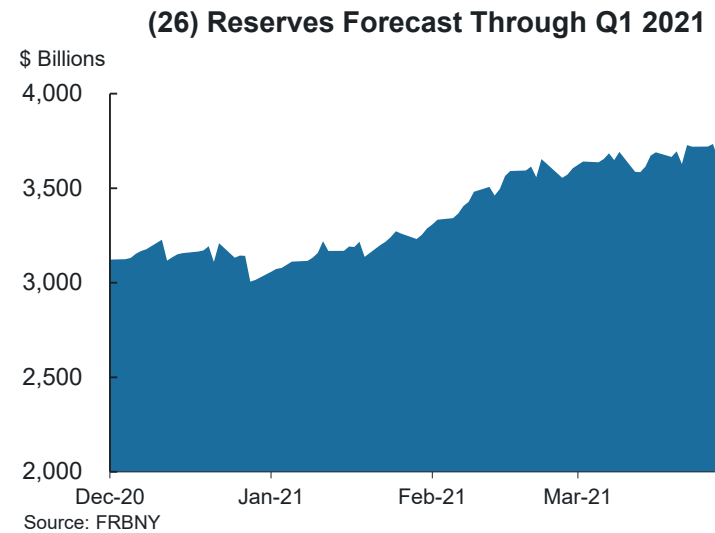
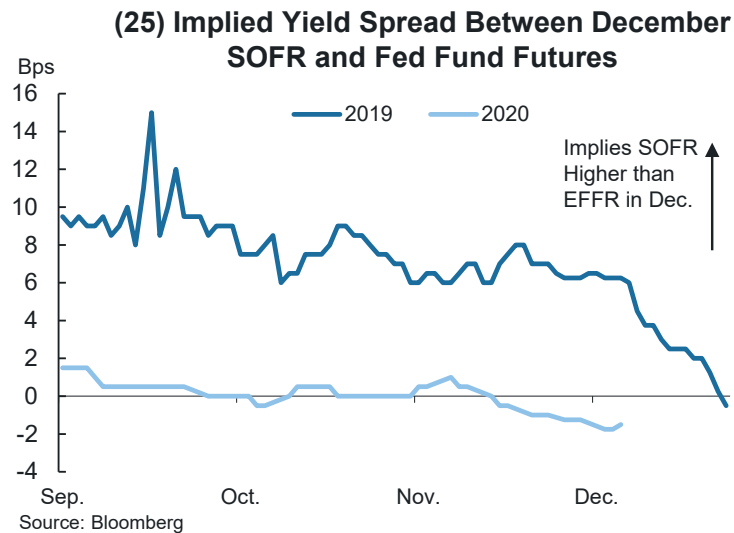
Reaction to 13(3) announcement subdued, as most anticipate Fed responsiveness and backstops in place



Remaining Backstop Facilities and Operations

- 13(3) facilities
 - CPFF
 - MMLF
 - PDCF
 - PPPLF
- Other Operations
 - Overnight and term repos
 - FX swap lines
 - FIMA repo facility

Most anticipate calm year-end and expect money market rates to gradually fall in 2021

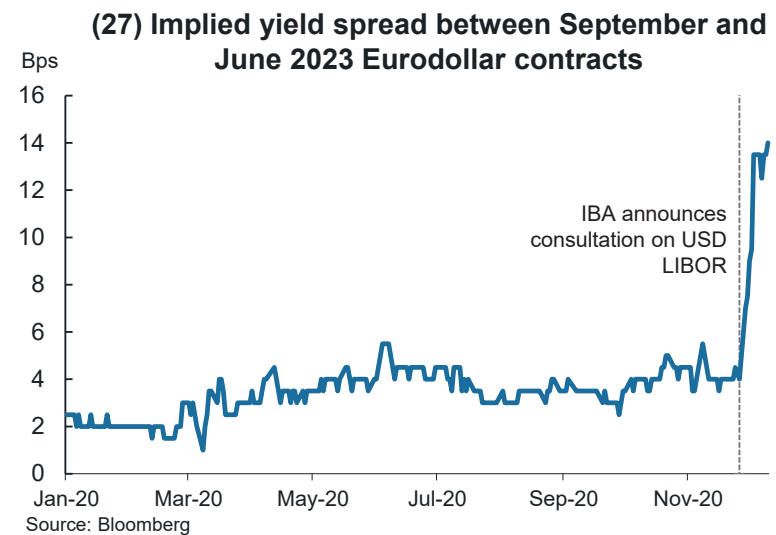


Actions banks plan to take to reduce reserve holdings

- Increase other HQLA holdings
- Let wholesale funding mature without replacement
- Decrease FHLB advances
- Decrease deposits by lowering rates
- Increased lending in secured markets

LIBOR transition approaches key milestones

- Consultation announced regarding:
 - December 2021 cessation of 1-week and 2-month USD LIBOR tenors
 - June 2023 cessation of remaining USD LIBOR tenors
- Consultation will close towards the end of January
- Supervisory Guidance to stop entering into new USD LIBOR products as soon as practicable and in any event by December 31, 2021



Appendix

Appendix I

FEDERAL RESERVE press release



For release at 2 p.m. EST

December 16, 2020

The Federal Reserve on Wednesday announced the extension of its temporary U.S. dollar liquidity swap lines and the temporary repurchase agreement facility for foreign and international monetary authorities (FIMA repo facility) through September 30, 2021. These facilities were temporarily established in March 2020 to ease strains in global dollar funding markets resulting from the COVID-19 shock and mitigate the effect of such strains on the supply of credit to households and businesses, both domestically and abroad. Extensions to both facilities through March 2021 were announced on [July 29, 2020](#). A further extension of these facilities will help sustain recent improvements in global U.S. dollar funding markets by serving as an important liquidity backstop. In addition, the FIMA repo facility will help continue to support the smooth functioning of the U.S. Treasury market by providing an alternative temporary source of U.S. dollars other than sales of securities in the open market.

The extension of the temporary swap lines applies to all nine central banks previously announced on [March 19](#) and extended in July. These swap lines allow the provision of U.S. dollar liquidity in amounts up to \$60 billion each for the Reserve Bank of Australia, the Banco Central do Brasil, the Bank of Korea, the Banco de Mexico, the Monetary Authority of Singapore, and the Sveriges Riksbank (Sweden) and \$30 billion each for the Danmarks Nationalbank (Denmark), the Norges Bank (Norway), and the Reserve Bank of New Zealand.

The FIMA repo facility will continue as originally announced on [March 31](#) and similarly extended in July. Its further extension will allow approved FIMA account holders to continue to temporarily exchange their U.S. Treasury securities held with the Federal Reserve for U.S. dollars, which can then be made available to institutions in their jurisdictions.

For media inquiries, call 202-452-2955.

Appendix II

FIMA Desk Resolution

[Approved December 15, 2020]

The Federal Open Market Committee (Committee) directs the Federal Reserve Bank of New York (the Selected Bank), for the System Open Market Account (SOMA), to purchase U.S. Treasury securities subject to an agreement to resell (“repo transactions”) with foreign central bank and international accounts maintained at a Federal Reserve Bank (the “Foreign Accounts”). The repo transactions hereby directed shall (i) include only U.S. Treasury securities; (ii) be conducted with Foreign Accounts approved in advance by the Foreign Currency Subcommittee (Subcommittee); (iii) be conducted at an offering rate of IOER + 25 bps.; (iv) be offered on an overnight basis (except that the Selected Bank may extend the term for longer than an overnight term to accommodate weekend, holiday, and similar trading conventions); and (v) be subject to per-counterparty limits per day set by the Subcommittee. The Subcommittee may approve changes in the offering rate, the maturity of the transactions, and counterparty limits. These transactions shall be undertaken by the Selected Bank through September 30, 2021, unless otherwise determined by the Committee.

Appendix III

(1) Summary of Operational Tests in prior period:

- Domestic Authorization
 - November 18: Treasury outright sale for \$25 million
 - November 18: Overnight reverse repo (using back-up tool) for \$103 million
 - December 1 and 3: Coupon swap with unsettled MBS holdings for \$20 million, total
 - December 10: MBS specified pool sale for \$84 million
- Foreign Authorization
 - November 6: Japanese yen liquidity swap for JPY 51,000 with the BoJ
 - November 19: British pound liquidity swap for GBP 51,000 with the BoE
 - December 2: Euro-denominated repo with private counterparties for €3 million
 - December 3: Yen-denominated sovereign debt purchase with private counterparties for ¥300 million*
 - December 3: Yen-denominated sovereign debt sales with private counterparties for ¥300 million*

(2) Upcoming Operational Tests:

- There are no tests scheduled under the Domestic or Foreign Authorizations

(3) FX Intervention:

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

* Due to scheduling issues, the two small value yen operations were rescheduled from November 17 to December 3. The operations were both executed successfully without issues.

Appendix IV

(4) Treasury Purchase Summary since June 12, 2020 (\$ Millions)

| Purchase Period | New Purchase Target | Actual Purchases | Net Deviation | Cumulative Deviation Since 6/20 |
|-----------------|---------------------|------------------|---------------|---------------------------------|
| Jun-20 | 80,000 | 80,013 | 13 | 13 |
| Jul-20 | 80,000 | 80,006 | 6 | 19 |
| Aug-20 | 80,000 | 80,004 | 4 | 23 |
| Sep-20 | 80,000 | 80,004 | 4 | 27 |
| Oct-20 | 80,000 | 80,014 | 14 | 41 |
| Nov-20 | 80,000 | 80,010 | 10 | 51 |

Note: The Desk purchased \$1,590.28 billion between 3/16/20 and 6/11/20.

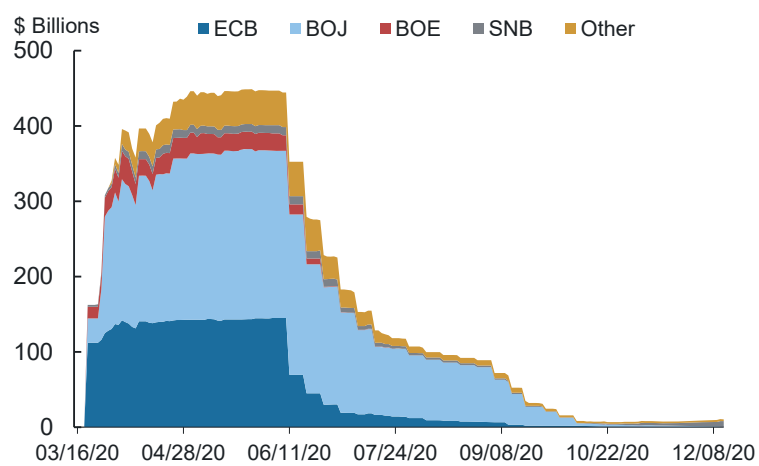
(5) MBS Purchase Summary since June 12, 2020 (\$ Millions)

| Purchase Period | New Purchase Target | Paydowns | Actual Purchases | Net Deviation | Cumulative Deviation Since 6/20 |
|-----------------|---------------------|----------|------------------|---------------|---------------------------------|
| Jun-20 | 40,000 | 55,976 | 95,895 | -81 | -81 |
| Jul-20 | 40,000 | 69,382 | 109,407 | 25 | -56 |
| Aug-20 | 40,000 | 70,319 | 110,343 | 24 | -32 |
| Sep-20 | 40,000 | 71,119 | 111,139 | 20 | -12 |
| Oct-20 | 40,000 | 76,890 | 116,916 | 26 | 14 |
| Nov-20 | 40,000 | 84,162 | 124,167 | 5 | 19 |

Note: The Desk purchased \$728 billion between 3/16/20 and 6/11/20 of which \$108 billion were reinvestments.

Appendix V

(6) FX Swaps Outstanding by Counterparty



(7) Total Amount Outstanding by Central Bank (\$ Billions)

| | Current Amount Outstanding | Coronavirus Peak Outstanding | GFC Peak Outstanding |
|---------------------------------|----------------------------------|------------------------------------|-------------------------|
| Bank of Japan | 0.00 | 225.84 | 127.57 |
| European Central Bank | 0.91 | 144.98 | 313.81 |
| Bank of England | 0.00 | 37.70 | 95.00 |
| Swiss National Bank | 7.18 | 11.40 | 31.06 |
| Reserve Bank of Australia | 0.00 | 1.17 | 26.67 |
| Denmark Nationalbank | 0.20 | 5.29 | 15.00 |
| Norges Bank | 0.00 | 5.40 | 8.95 |
| Monetary Authority of Singapore | 0.62 | 10.03 | 0.00 |
| Bank of Korea | 0.00 | 18.79 | 16.35 |
| Banco de Mexico | 1.44 | 6.59 | 3.22 |
| Riksbank | 0.00 | 0.00 | 25.00 |
| Total | 10.36 | 448.95 | 586.12 |

Source: FRBNY

Appendix 2: Materials used by Ms. Tevlin

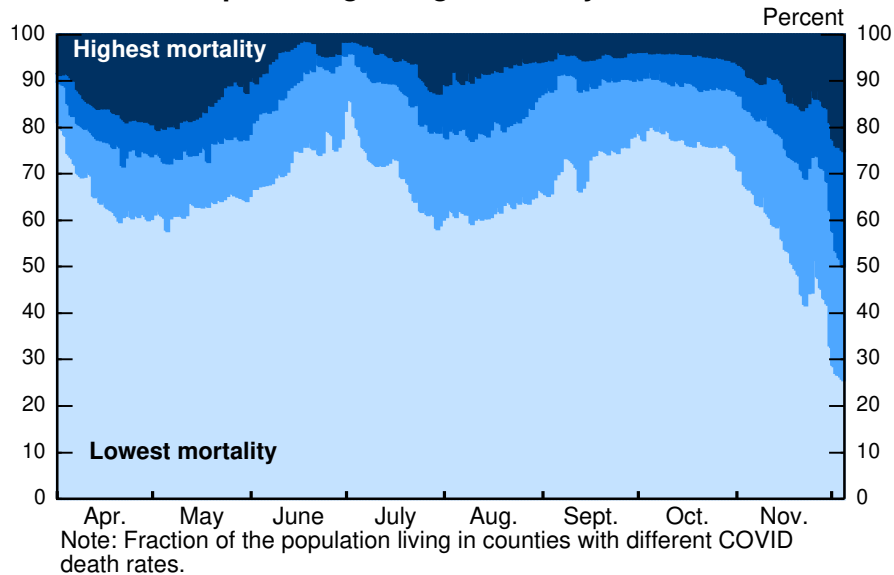
Class II FOMC - Restricted (FR)

Material for Briefing on
The U.S. Outlook

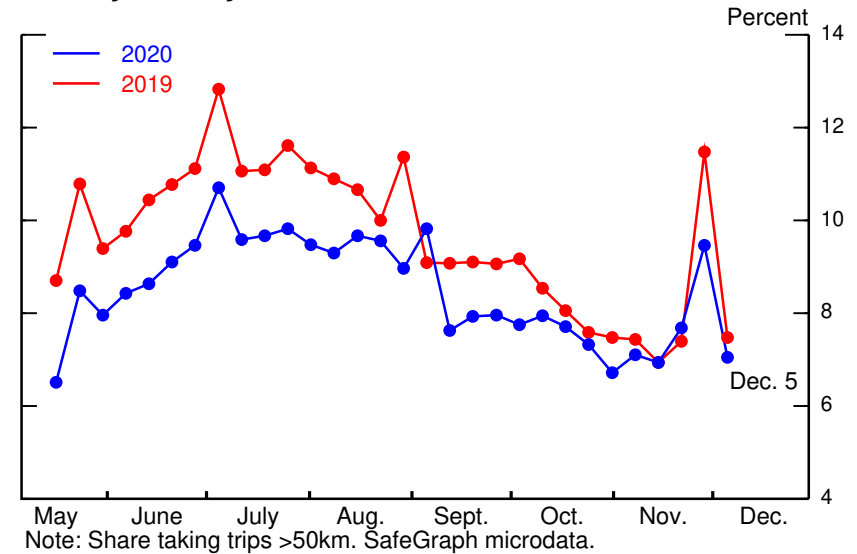
Stacey Tevlin
Exhibits by Rosemary Rhodes and Ashley Sexton
December 15, 2020

The Pandemic is Worsening, and Activity is Slowing

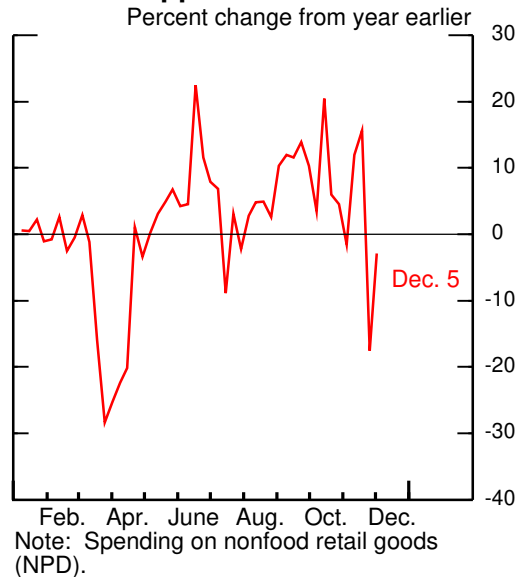
1. More People Living in High Mortality Areas



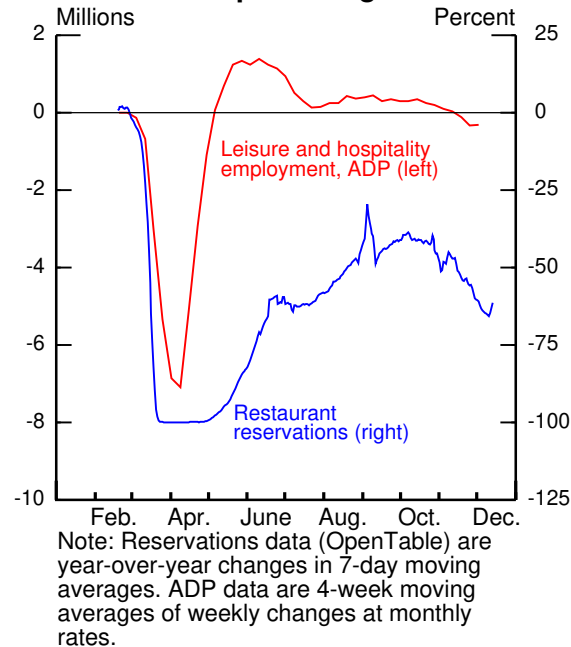
2. Busy Holiday Travel Season Means Trouble Ahead



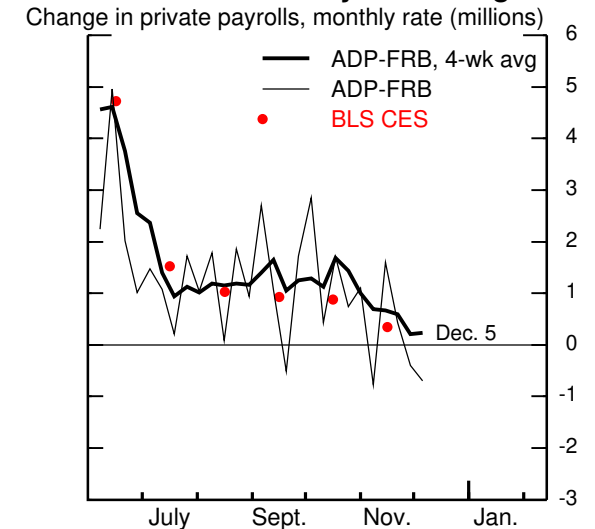
3. Goods Spending May Have Slipped



4. Fewer People Eating Out

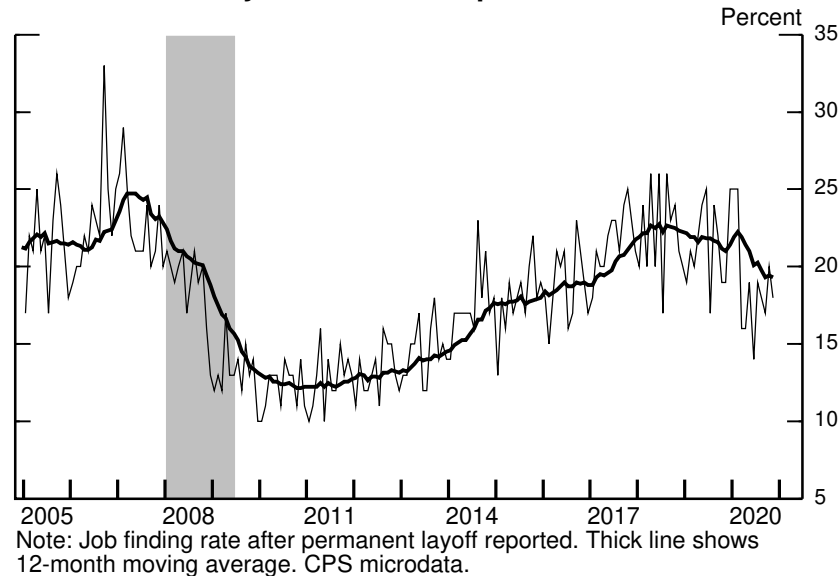


5. And the Broader Labor Market Recovery is Slowing

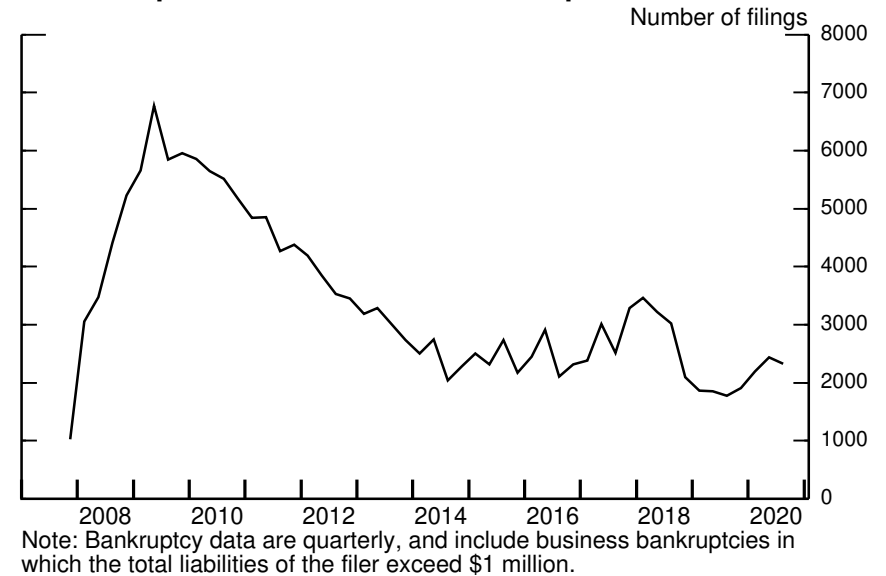


The Economy Has Been Resilient--with Less Scarring

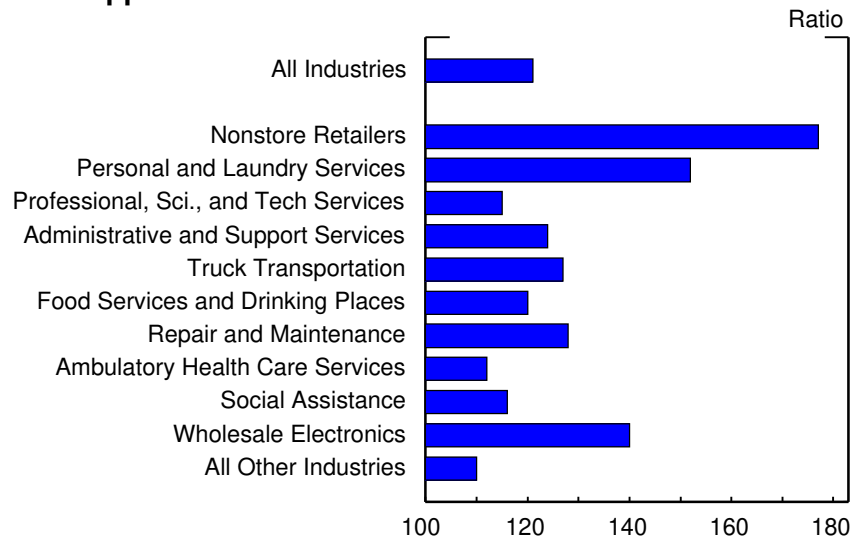
6. The Job Finding Rate for Those Experiencing Permanent Layoffs Has Held Up So Far



7. Bankruptcies Rose Less Than Anticipated



8. Entrepreneurs Are Exploiting New Business Opportunities



Note: Chart shows the ratio of the total number of new business applications over the first 40 weeks of 2020 (the latest data available) and the first 40 weeks of 2019, times 100.

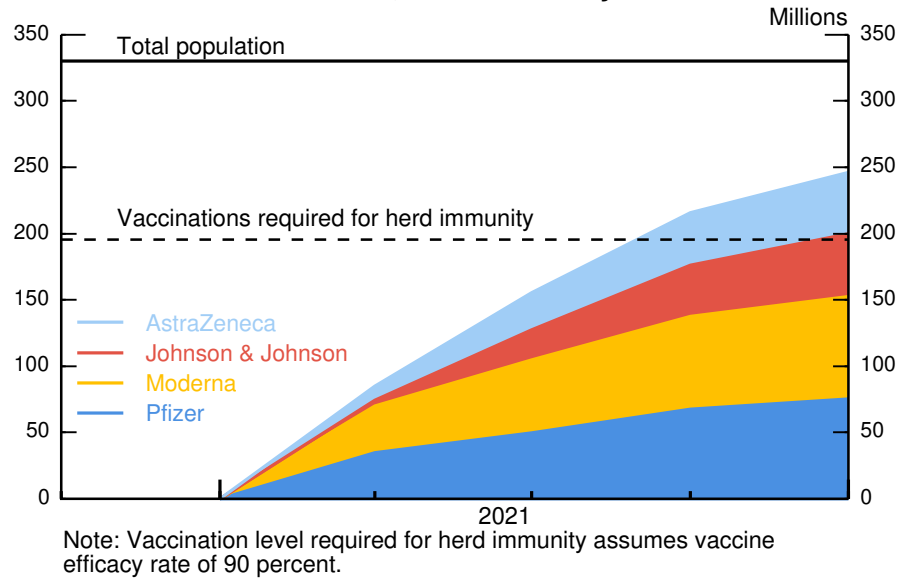
Source: Business Formation Statistics (Census).

9. Prospects Look Good for More Business Spending

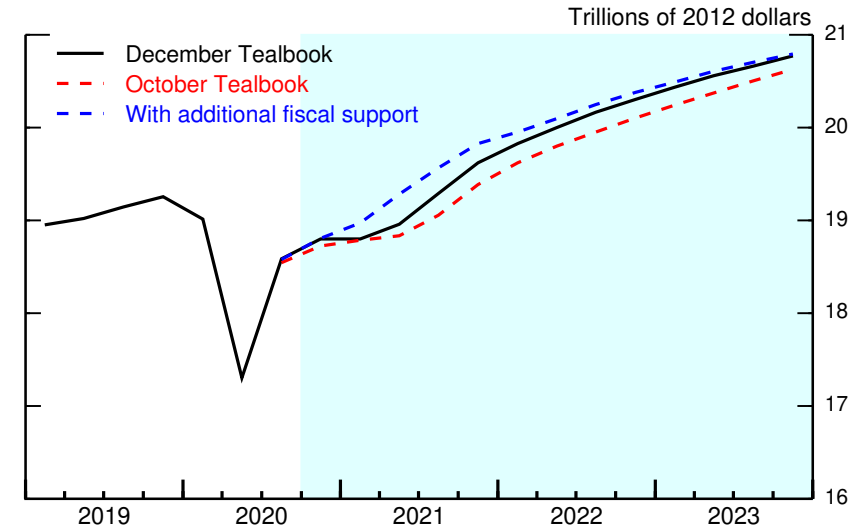


A Vaccine and Accommodative Policy Foster Recovery

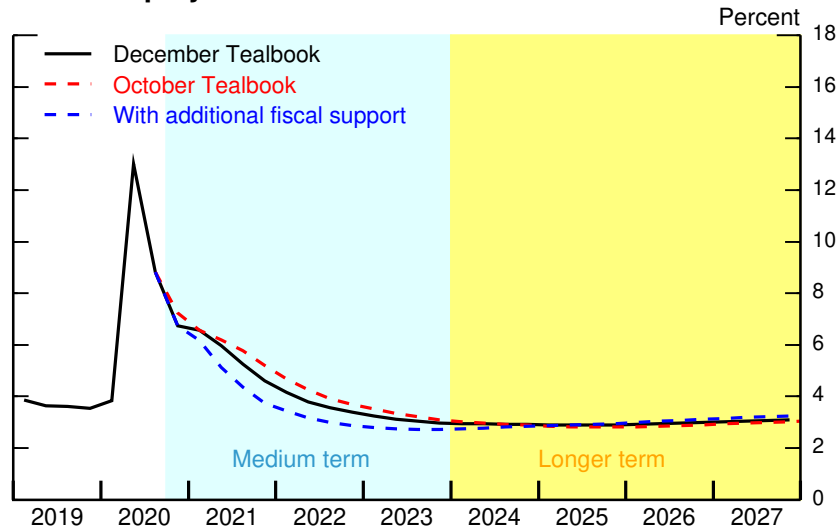
10. Vaccine News Good; Herd Immunity in Q3



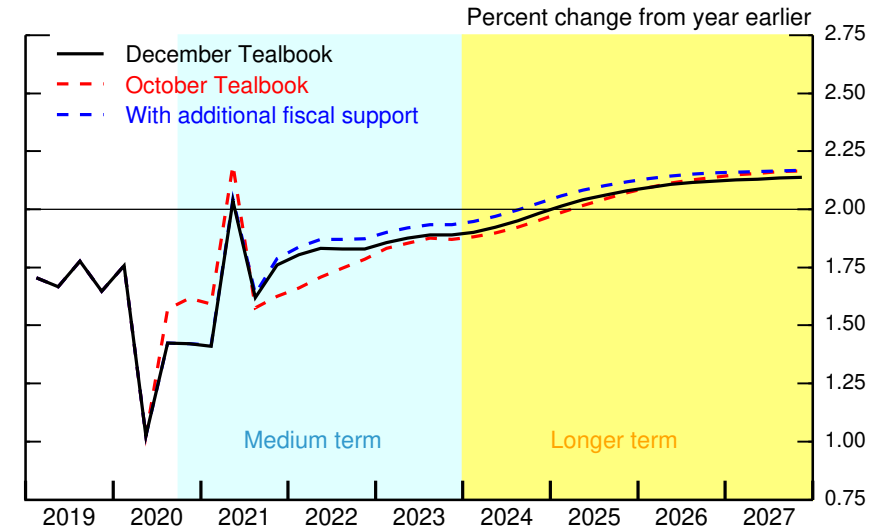
11. GDP



12. Unemployment Rate



13. Core PCE Prices



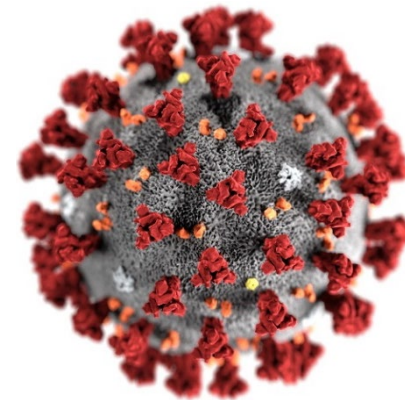
Appendix 3: Materials used by Mr. Ahmed

Class II FOMC – Restricted FR

Material for Briefing on
The International Outlook

Shaghil Ahmed

Exhibits by Theresa Dinh, Dylan Kirkeeng, and Matthew Deininger
December 15, 2020

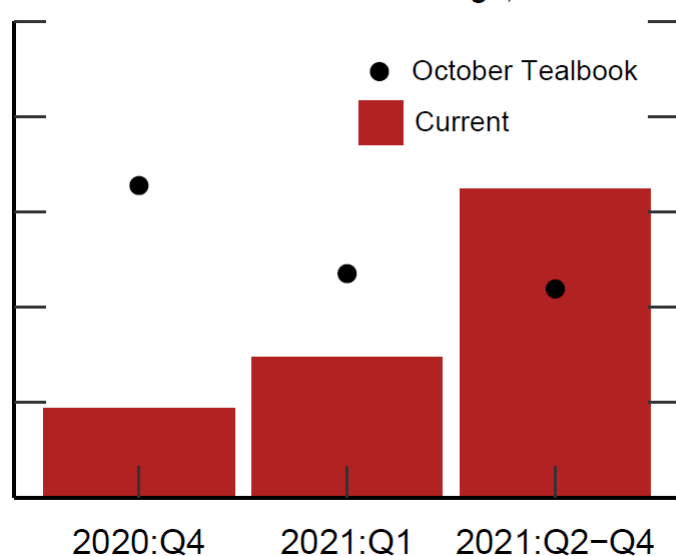


Foreign growth marked down in near term, up in medium term

- Outlook balances resurgence of virus with positive vaccine developments.
- Q4: Growth moderates sharply.
- Foreign GDP not back to pre-pandemic level until H2 of next year.

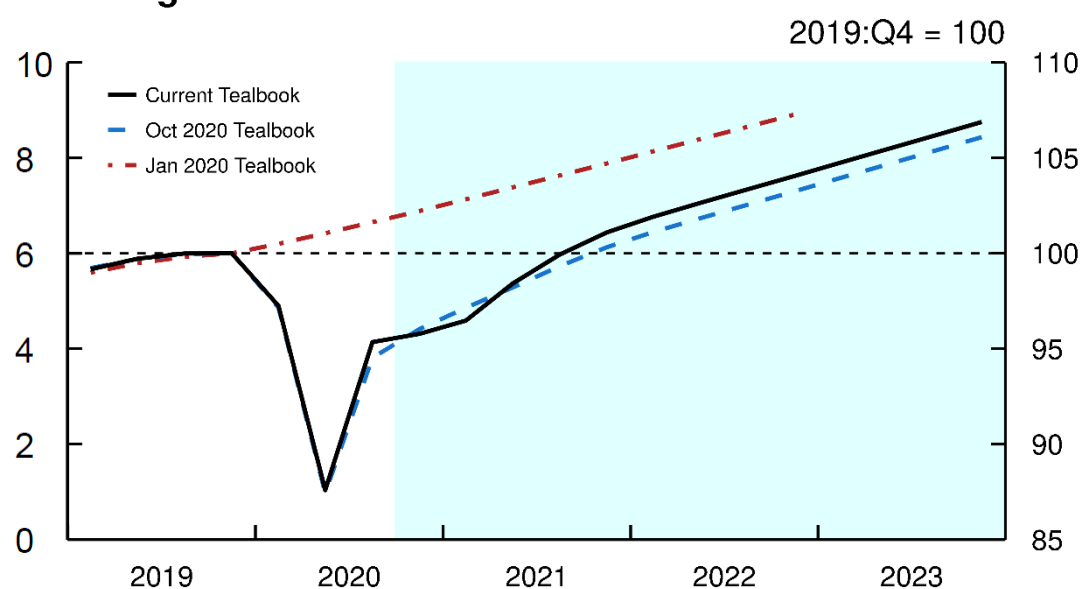
Foreign GDP

Percent change, annual rate



Source: Staff forecasts.

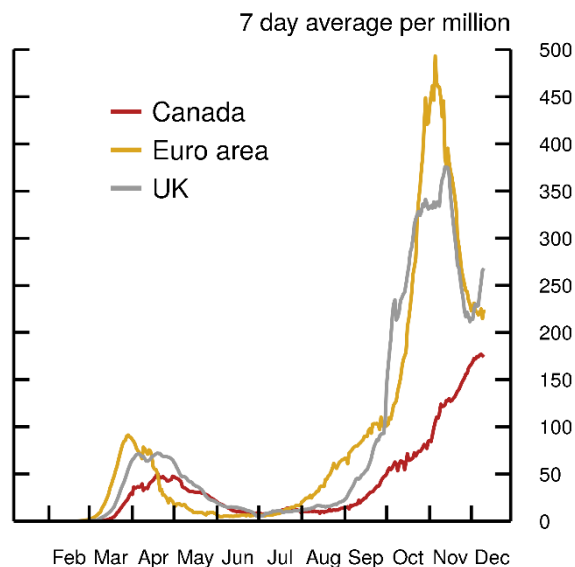
Foreign GDP



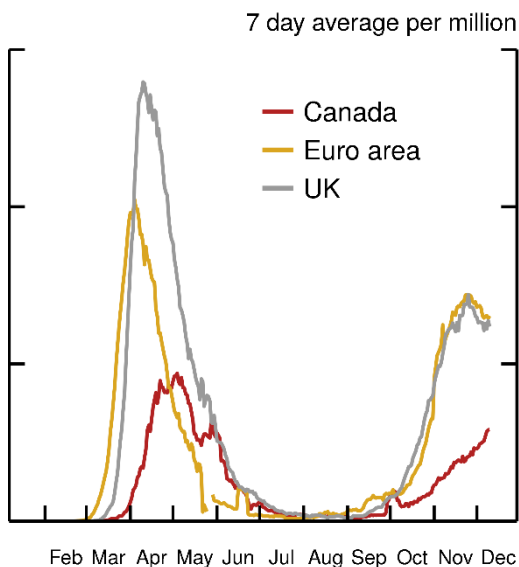
Current virus situation grim

- New COVID-19 cases in Europe turned down, but remain elevated.
- Deaths only just starting to turn down.
- New cases in Canada, Brazil, and Mexico shooting up.

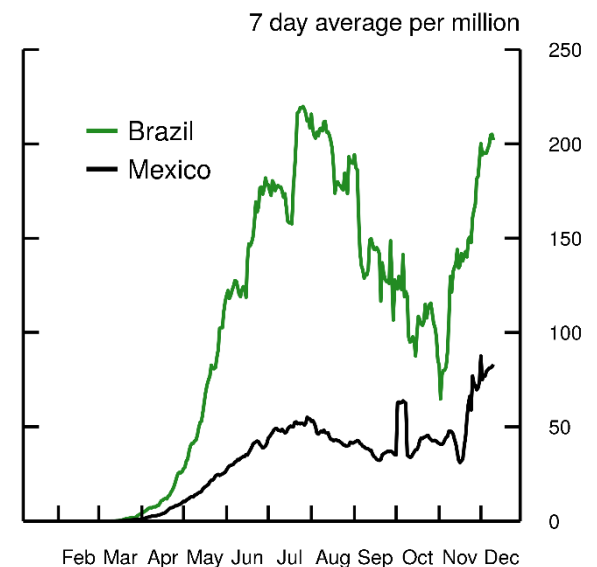
New Coronavirus Cases



New Coronavirus Deaths



New Coronavirus Cases

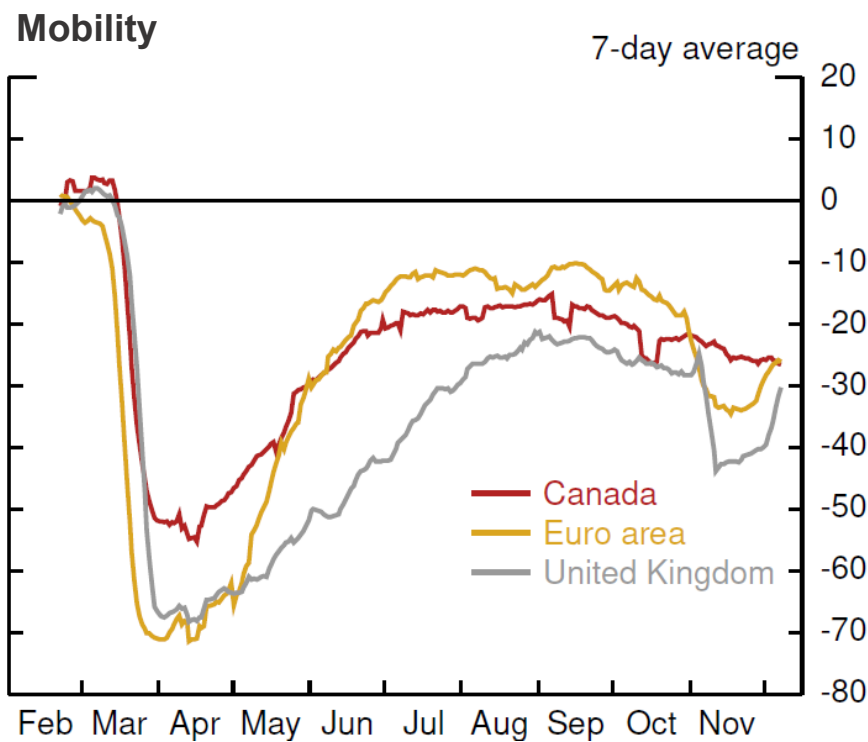


Note: Euro area comprises France, Germany, Italy, and Spain.

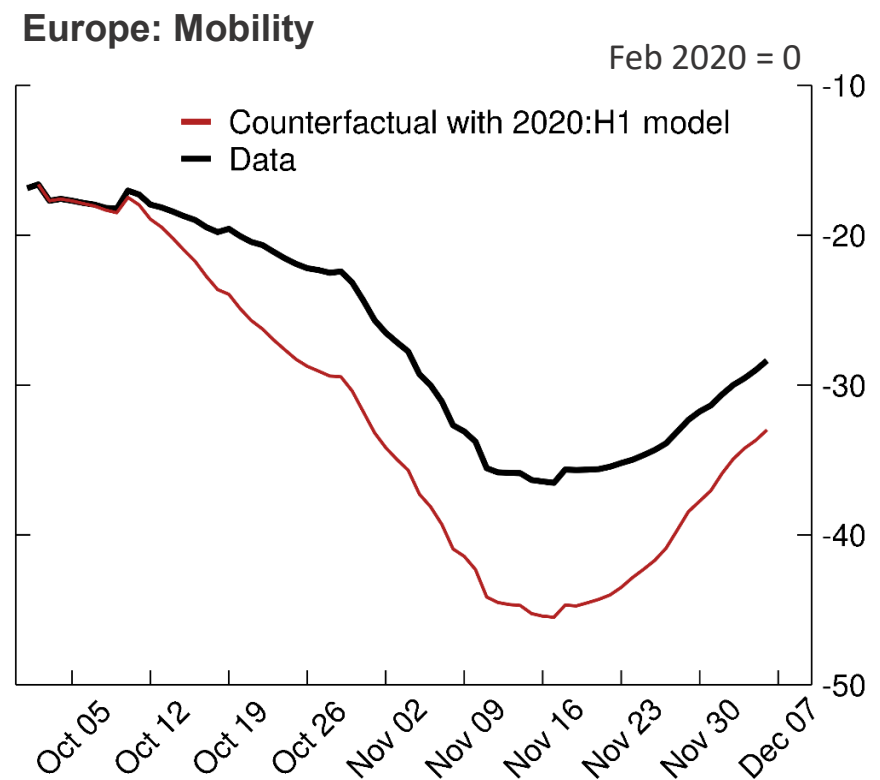
Source: Johns Hopkins Center for Systems Science and Engineering.

Less damage expected from the new wave of the virus

- Authorities taking more targeted measures.
- Households and businesses following better virus management practices.



Note: Euro area comprises France, Germany, Italy, and Spain.
Source: Google Community Mobility Reports.

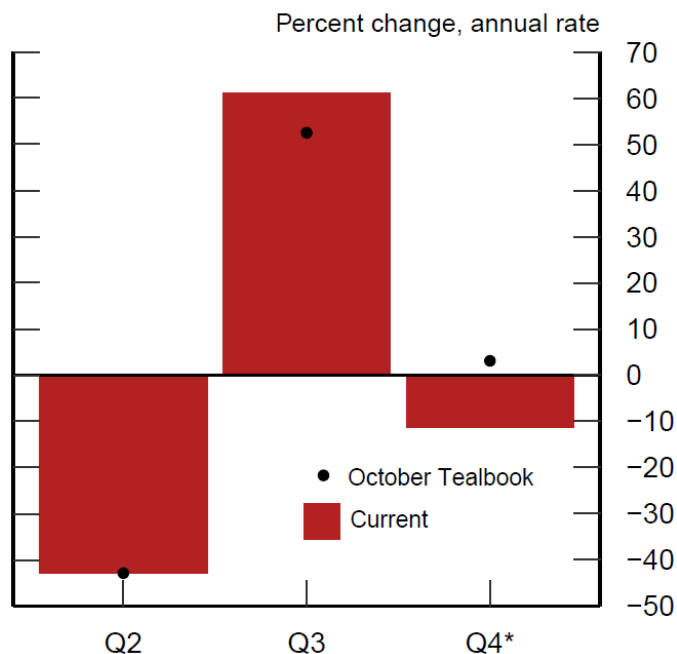


Source: Staff calculations.

AFEs: Beyond the near term, outlook is brighter

- Q4: Double-digit contraction in euro area and U.K.
- More fiscal and monetary support.
- AFE GDP revised up in medium term on vaccine news.

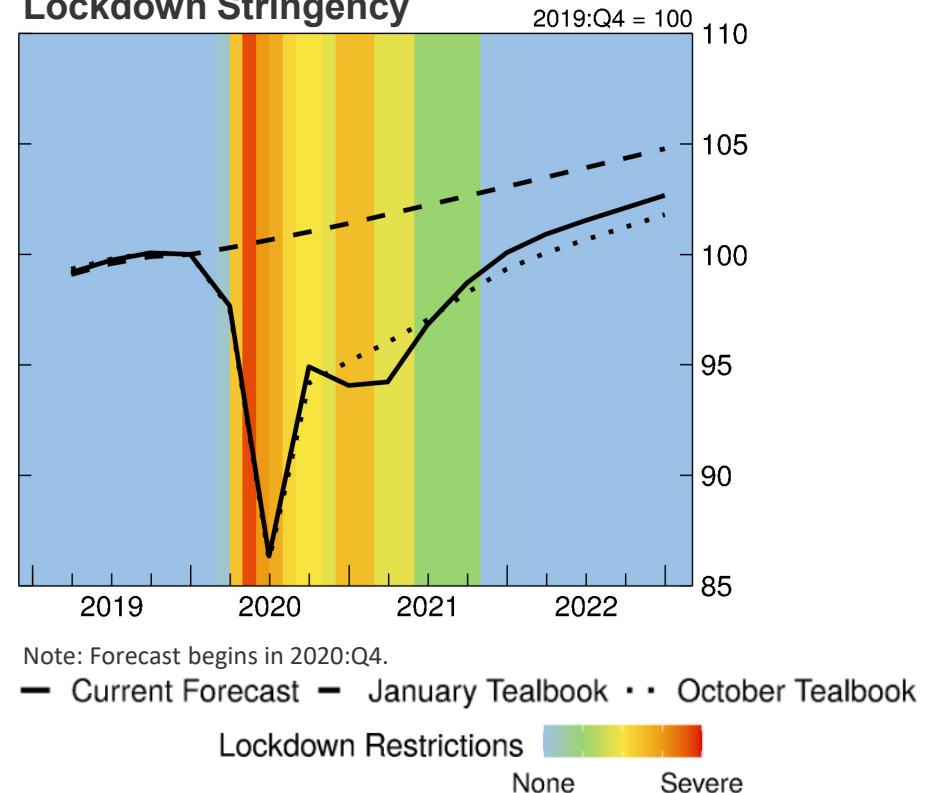
Europe: 2020 GDP*



*Forecast starts in 2020:Q4

Source: Staff forecasts and calculations.

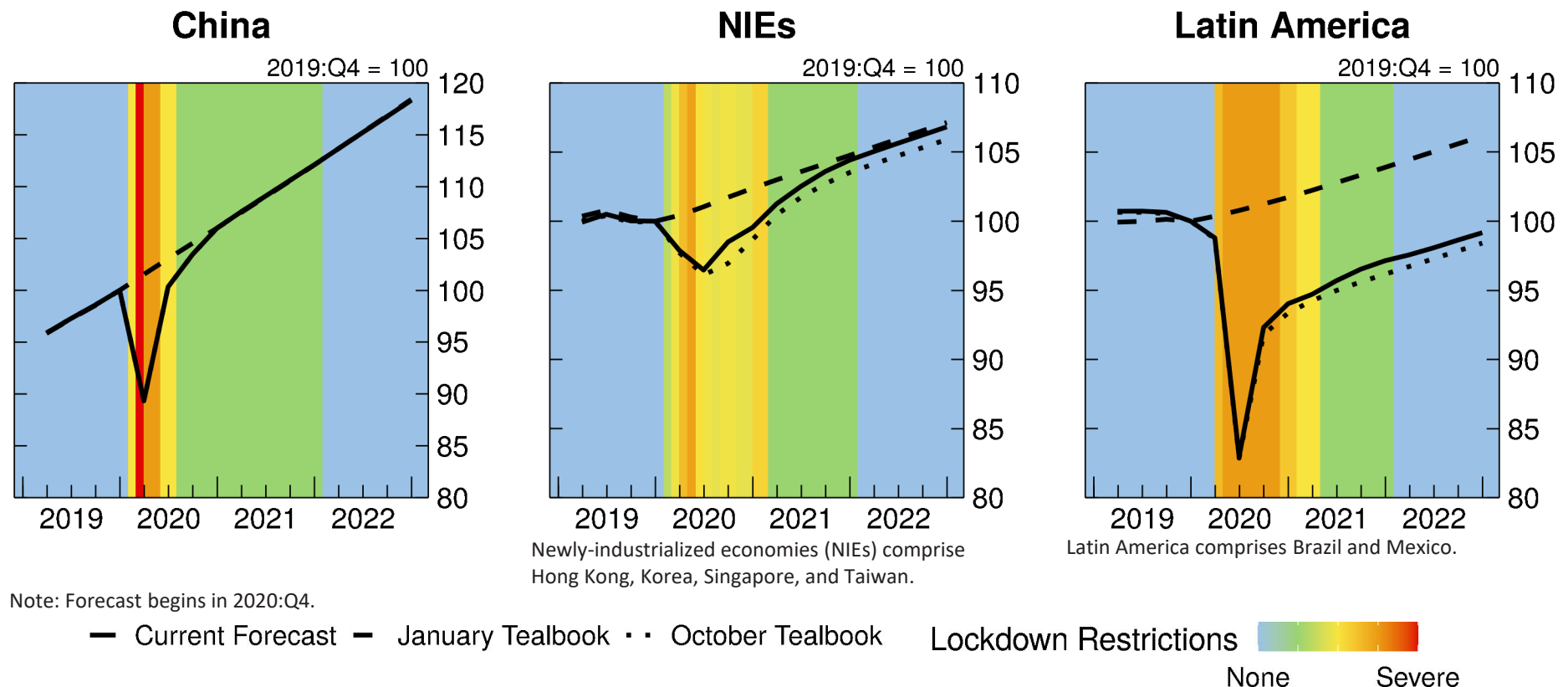
AFEs: GDP Forecast and Lockdown Stringency



EMES: Vaccine news has more limited implications

- In China and richer Asian EMEs, effective strategies for virus control.
- Latin America: Logistical hurdles imply a gradual rollout of vaccine.

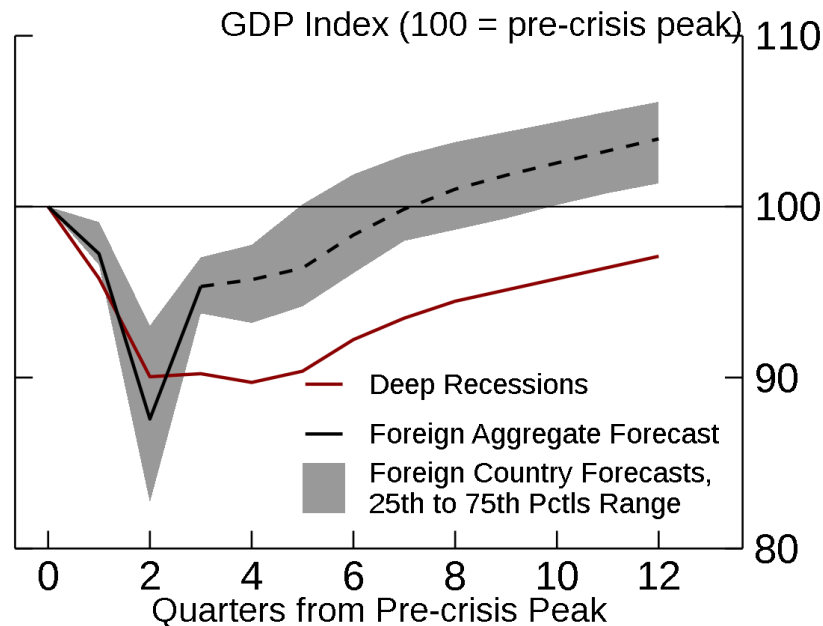
GDP Forecast and Lockdown Stringency



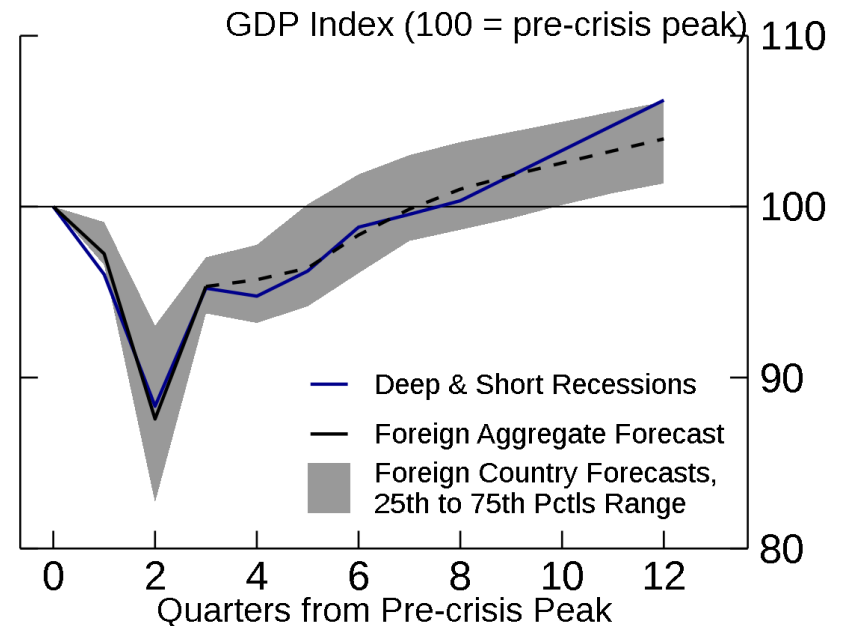
Decreased extreme downside risks, but uncertainty still high

- Foreign recovery path similar to average of past deep and short recessions.
- Risks still tilted to downside.
- Non-COVID risks: Brexit—significant risk of no trade deal.

Foreign GDP Path and Deep Recessions



Deep and Short Recessions

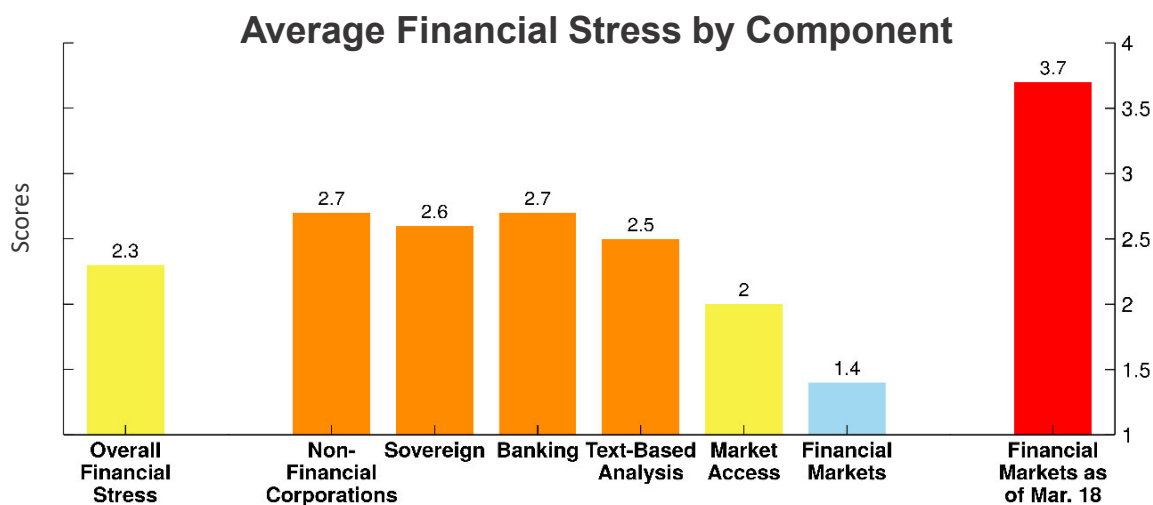
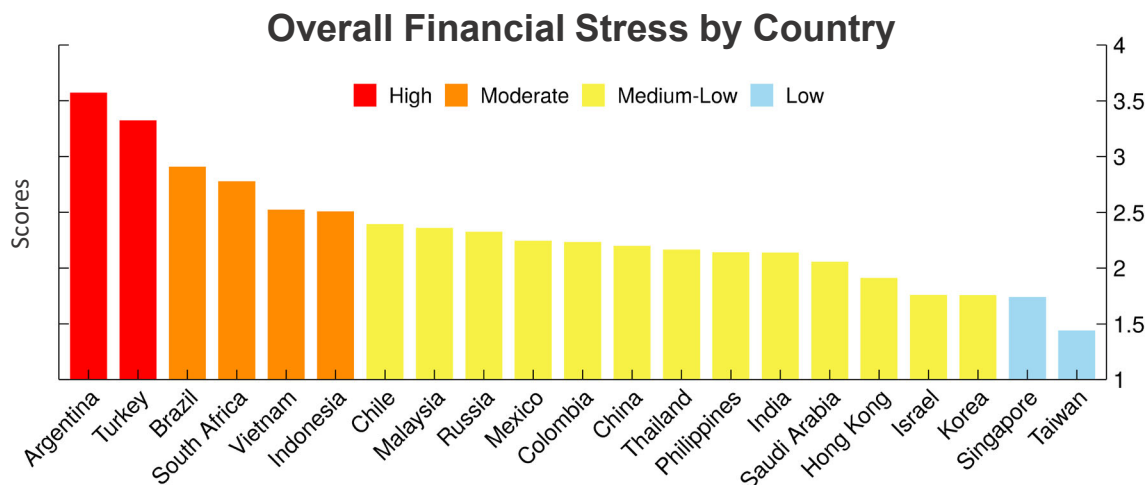


Note: Quarterly GDP/Pop data for a panel of 54 countries from 1960 to 2019. Deep recessions have greater than 7% declines in GDP over two quarters and include 25 episodes (AFE 9, EME 16). Deep and short recessions only last for two quarters and include 10 episodes (AFE 5, EME 5). Source: Staff calculations.

EMEs: Divergence across components of financial stress

Financial Stress Monitor

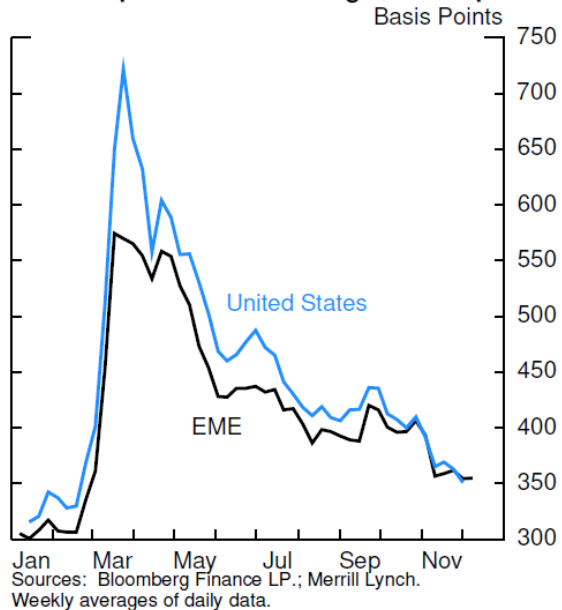
- Just under a 1/3 of EMEs showing moderate to high stress, overall.
- Financial markets and market access components: little stress.
- Other components: moderate stress.
- Financial markets stress fallen substantially since March.



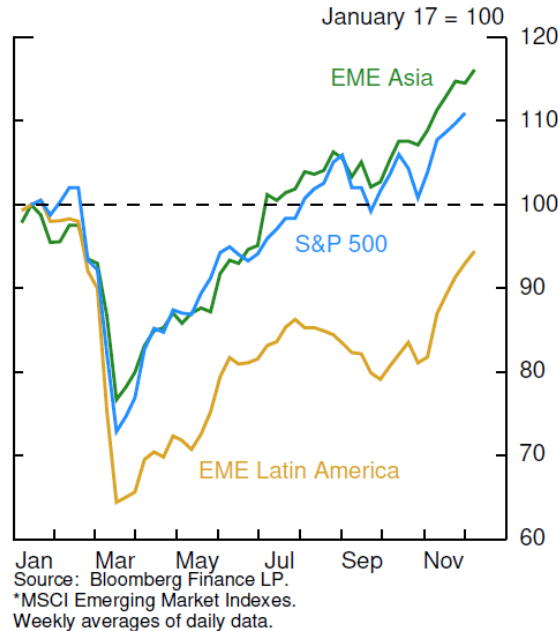
Why has EME financial market stress fallen?

- Improvement in EME financial markets owes much to easing of global financial conditions.
- Buffers of international reserves also helped calm financial markets.

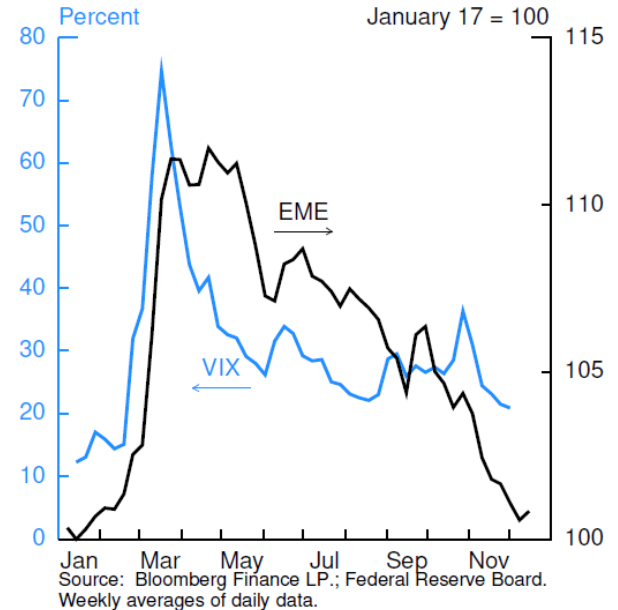
EMBI+ Spreads vs. U.S. High-Yield Spreads



MSCI EME Index vs. S&P 500



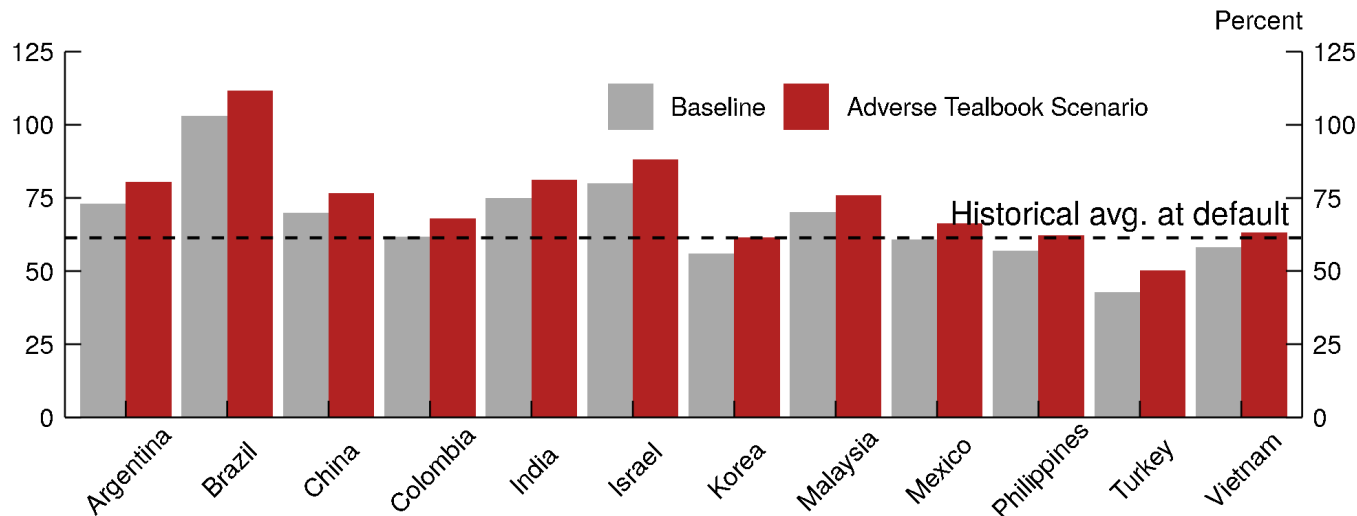
EME Dollar Index vs. VIX



How may things play out in EMEs?

- Benign global financial conditions and market confidence in their buffers could tide over EMEs to better times, but with some damage.
 - Consistent with our baseline.
- But several EMEs very vulnerable to further large negative shocks.
 - In that event, financial market conditions could worsen.
 - Health of NFCs, sovereigns, and banks would deteriorate more rapidly.
 - If financial crisis in EMEs, significant adverse spillovers to U.S. real economy.

2021 Government Debt/GDP in Different Scenarios



Sources: IMF, Staff calculations.

Appendix 4: Materials used by Mr. Petrasek

Class I FOMC - Restricted Controlled (FR)

Material for Briefing on

Summary of Economic Projections

Lubomir Petrasek

Exhibits and support by Isaiah Ahn and Stephen Zoulalian

December 15, 2020

Exhibit 1. Economic projections for 2020–23 and over the longer run (percent)

| Change in real GDP | | | | | |
|-----------------------|-----------|---------|---------|---------|------------|
| | 2020 | 2021 | 2022 | 2023 | Longer run |
| Median | -2.4 | 4.2 | 3.2 | 2.4 | 1.8 |
| September projection | -3.7 | 4.0 | 3.0 | 2.5 | 1.9 |
| Range | -3.3–-1.0 | 0.5–5.5 | 2.5–4.0 | 2.0–3.5 | 1.6–2.2 |
| September projection | -5.5–-1.0 | 0.0–5.5 | 2.0–4.5 | 2.0–4.0 | 1.6–2.2 |
| Memo: Tealbook | -2.4 | 4.4 | 3.5 | 2.3 | 1.7 |
| September projection | -3.2 | 4.2 | 3.2 | 2.8 | 1.7 |

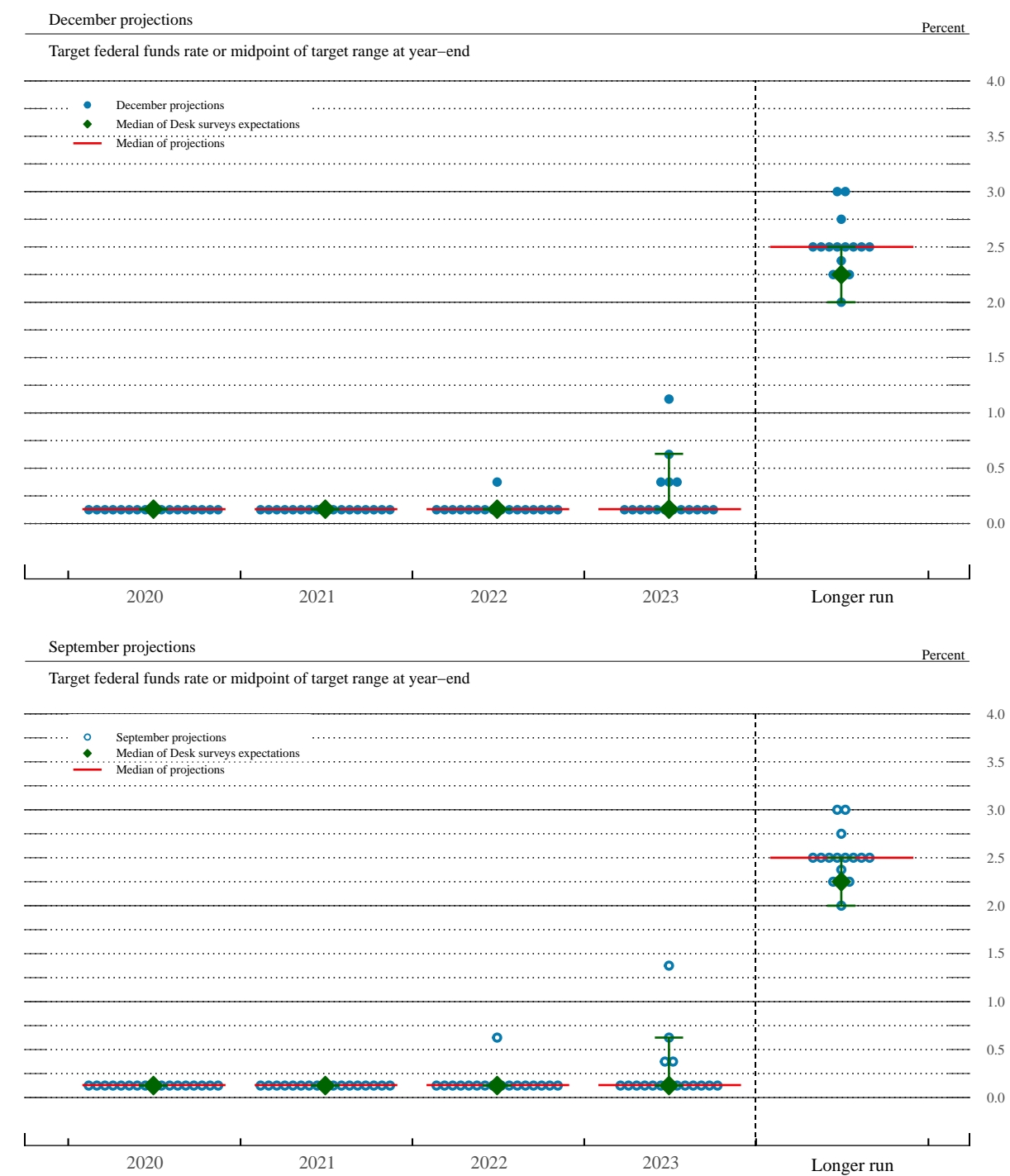
| Unemployment rate | | | | | |
|-----------------------|---------|---------|---------|---------|------------|
| | 2020 | 2021 | 2022 | 2023 | Longer run |
| Median | 6.7 | 5.0 | 4.2 | 3.7 | 4.1 |
| September projection | 7.6 | 5.5 | 4.6 | 4.0 | 4.1 |
| Range | 6.6–6.9 | 4.0–6.8 | 3.5–5.8 | 3.3–5.0 | 3.5–4.5 |
| September projection | 6.5–8.0 | 4.0–8.0 | 3.5–7.5 | 3.5–6.0 | 3.5–4.7 |
| Memo: Tealbook | 6.7 | 4.6 | 3.4 | 3.0 | 4.3 |
| September projection | 7.4 | 4.9 | 3.8 | 3.2 | 4.3 |

| PCE inflation | | | | | |
|-----------------------|---------|---------|---------|---------|------------|
| | 2020 | 2021 | 2022 | 2023 | Longer run |
| Median | 1.2 | 1.8 | 1.9 | 2.0 | 2.0 |
| September projection | 1.2 | 1.7 | 1.8 | 2.0 | 2.0 |
| Range | 1.1–1.4 | 1.2–2.3 | 1.5–2.2 | 1.7–2.2 | 2.0 |
| September projection | 1.0–1.5 | 1.3–2.4 | 1.5–2.2 | 1.7–2.1 | 2.0 |
| Memo: Tealbook | 1.1 | 1.8 | 1.8 | 1.9 | 2.0 |
| September projection | 1.1 | 1.7 | 1.8 | 1.9 | 2.0 |

| Core PCE inflation | | | | |
|-----------------------|---------|---------|---------|---------|
| | 2020 | 2021 | 2022 | 2023 |
| Median | 1.4 | 1.8 | 1.9 | 2.0 |
| September projection | 1.5 | 1.7 | 1.8 | 2.0 |
| Range | 1.3–1.5 | 1.5–2.3 | 1.6–2.2 | 1.7–2.2 |
| September projection | 1.2–1.6 | 1.5–2.4 | 1.6–2.2 | 1.7–2.1 |
| Memo: Tealbook | 1.3 | 1.8 | 1.8 | 1.9 |
| September projection | 1.3 | 1.7 | 1.8 | 1.9 |

Note: Updated December 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 September 15–16, 2020, meeting, and one participant did not submit such projections in conjunction with the December 15–16, 2020, meeting.

Exhibit 2. Overview of FOMC participants' assessments of appropriate monetary policy



Note: In these two panels, each blue dot indicates the value (rounded to $\frac{1}{8}$ 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 that rate, at the end of the specified year or over the longer run. One participant did not submit longer-run projections for the federal funds rate. Each green diamond represents the most likely outcomes reported by the median respondent to the Desk's surveys of Primary Dealers and Market Participants for the last surveyed time period of the indicated year. The green whiskers show, for each time period, the interquartile range of the distribution of most likely outcomes reported in the Desk surveys.

Exhibit 3. Uncertainty and risks in economic projections

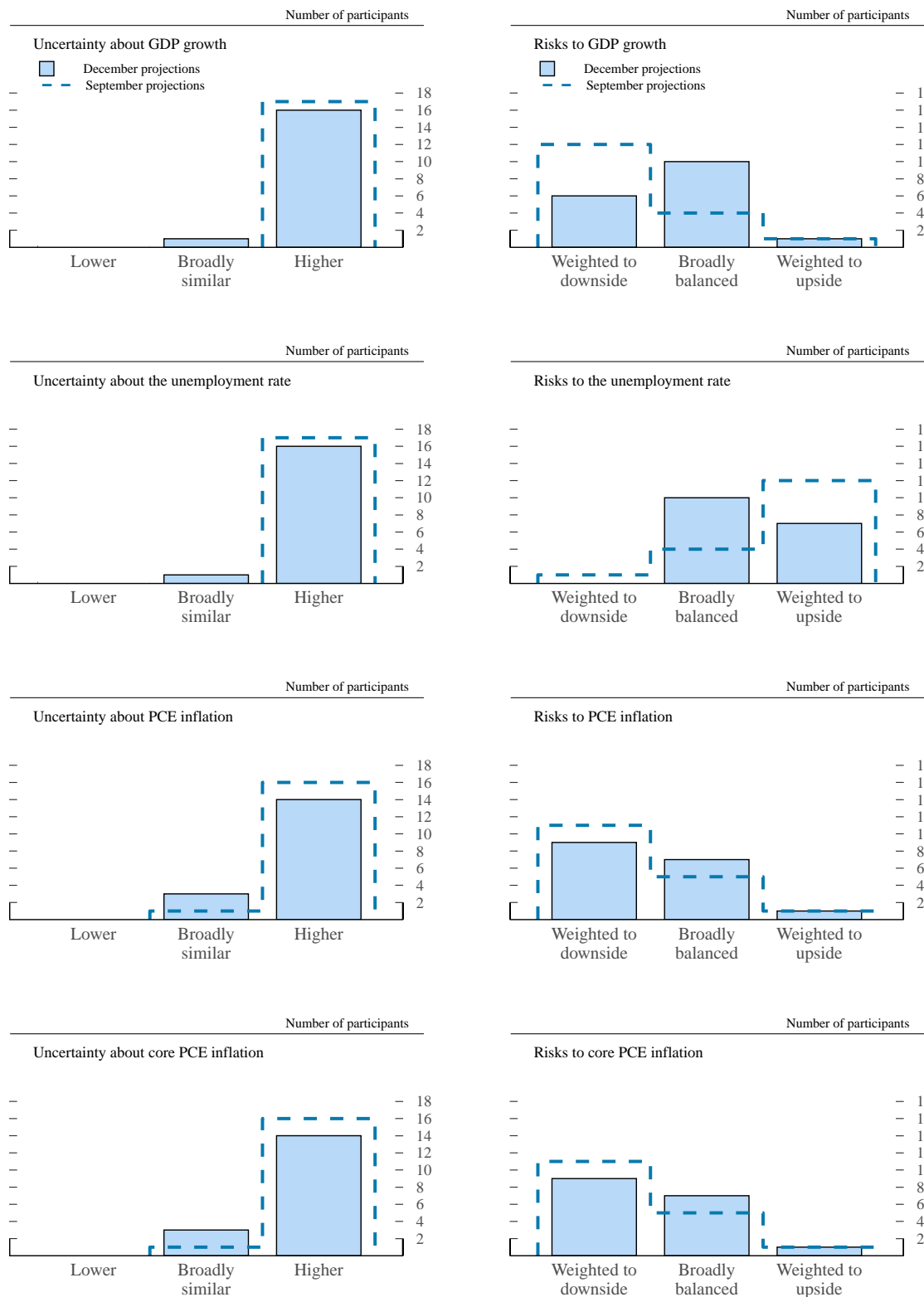
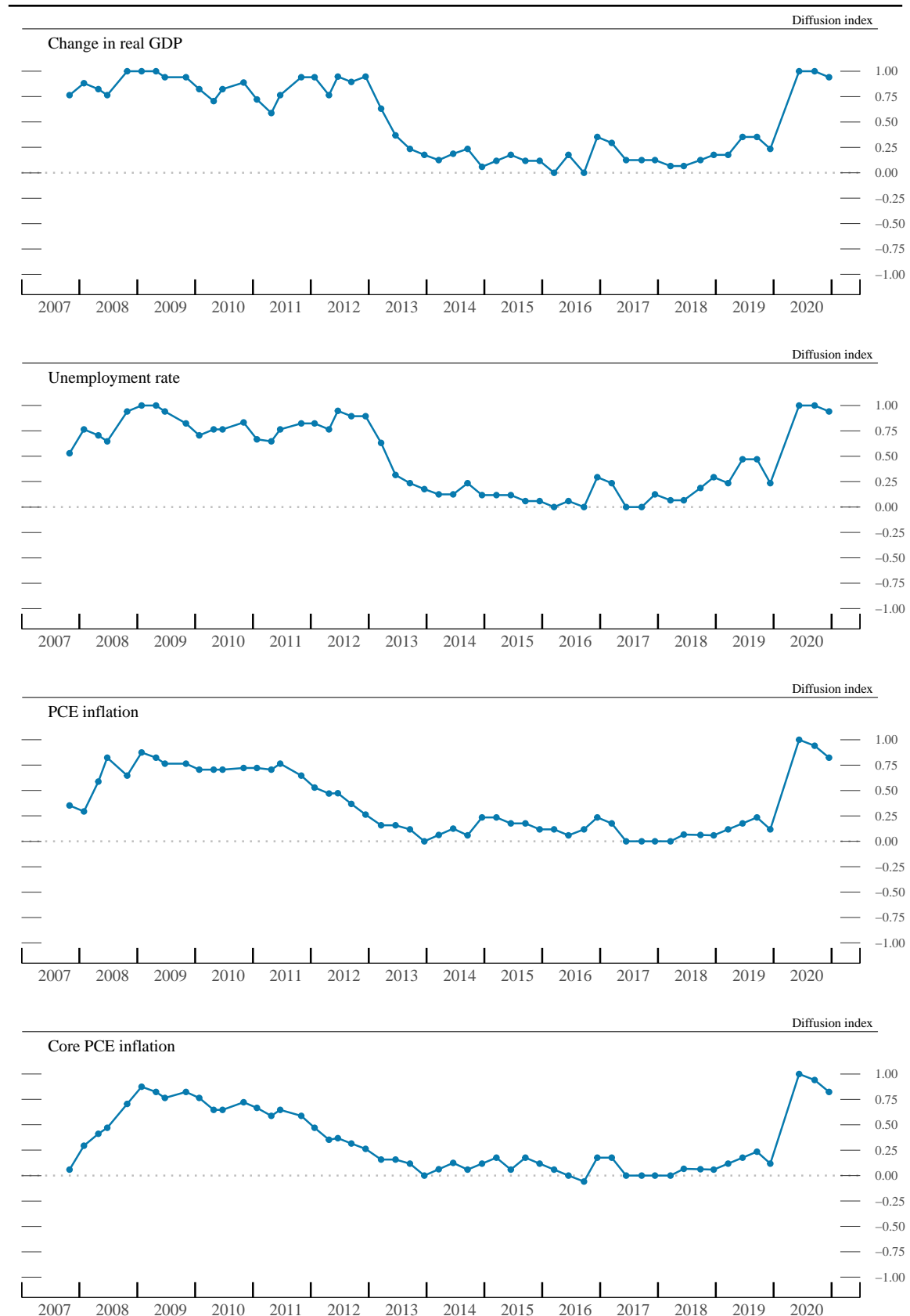
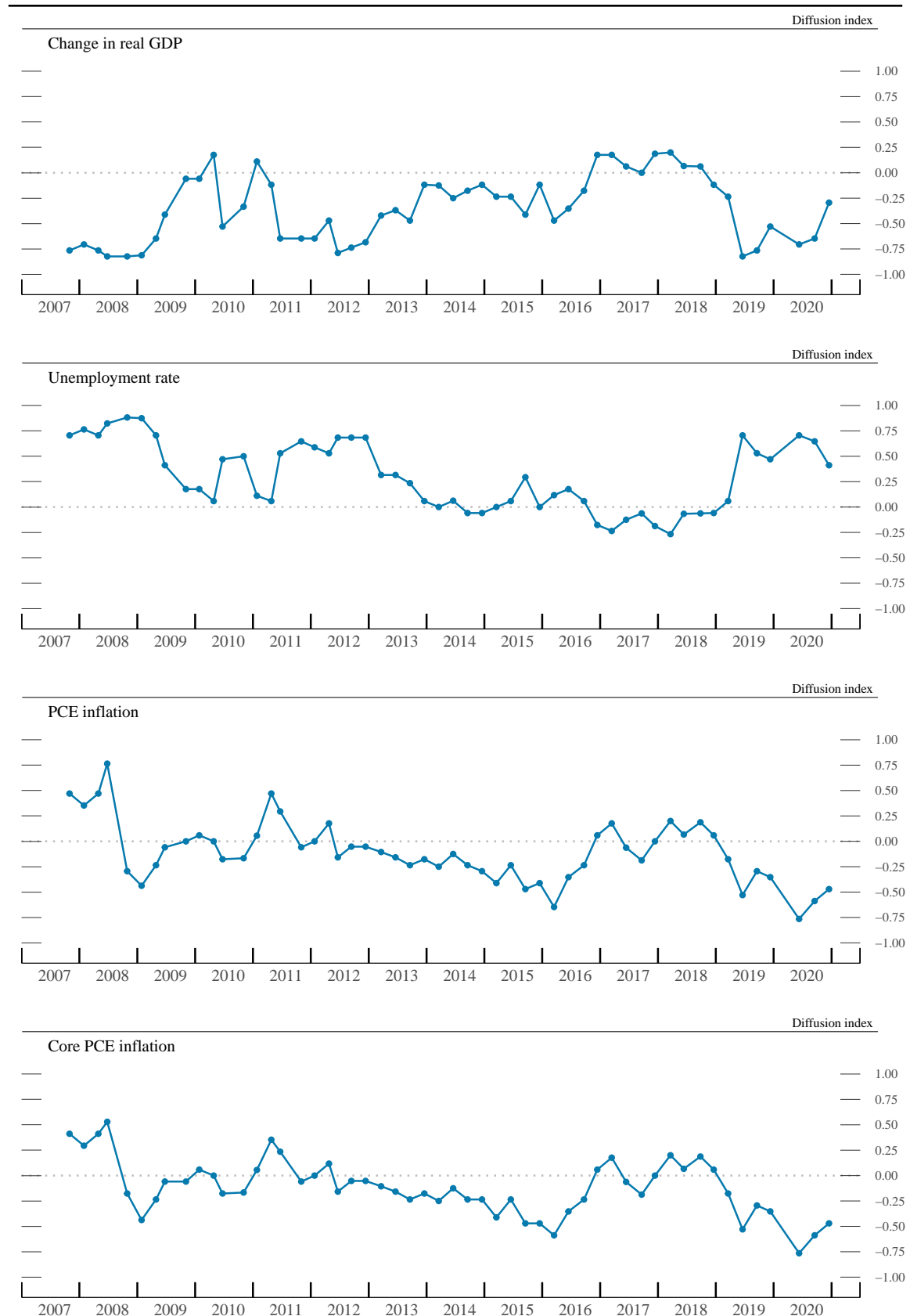


Exhibit 4. Diffusion indexes of participants' uncertainty assessments



NOTE: For each SEP, participants provided responses to the question "Please indicate your judgment of the uncertainty attached to your projections relative to the levels of uncertainty over the past 20 years." Each point in the diffusion indexes represents the number of participants who responded "Higher" minus the number who responded "Lower," divided by the total number of participants. Figure excludes March 2020 when no projections were submitted.

Exhibit 5. Diffusion indexes of participants' risk weightings



NOTE: For each SEP, participants provided responses to the question "Please indicate your judgment of the risk weighting around your projections." Each point in the diffusion indexes represents the number of participants who responded "Weighted to the Upside" minus the number who responded "Weighted to the Downside," divided by the total number of participants. Figure excludes March 2020 when no projections were submitted.

Appendix 5: Materials used by Mr. Reeve

Class I FOMC – Restricted Controlled (FR)

Material for the Briefing on

Monetary Policy Alternatives

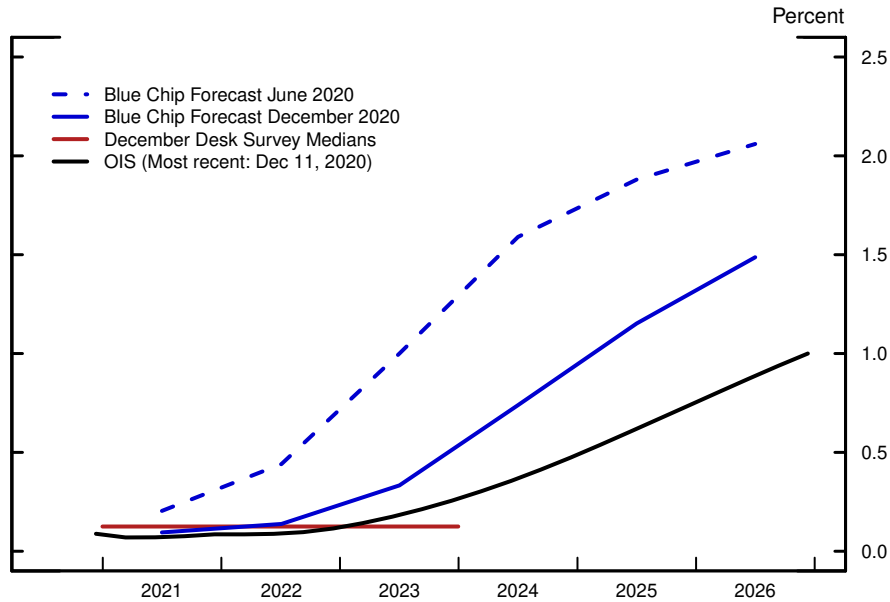
Trevor A. Reeve

Exhibits by Luke Morgan

December 15-16, 2020

Monetary Policy Considerations

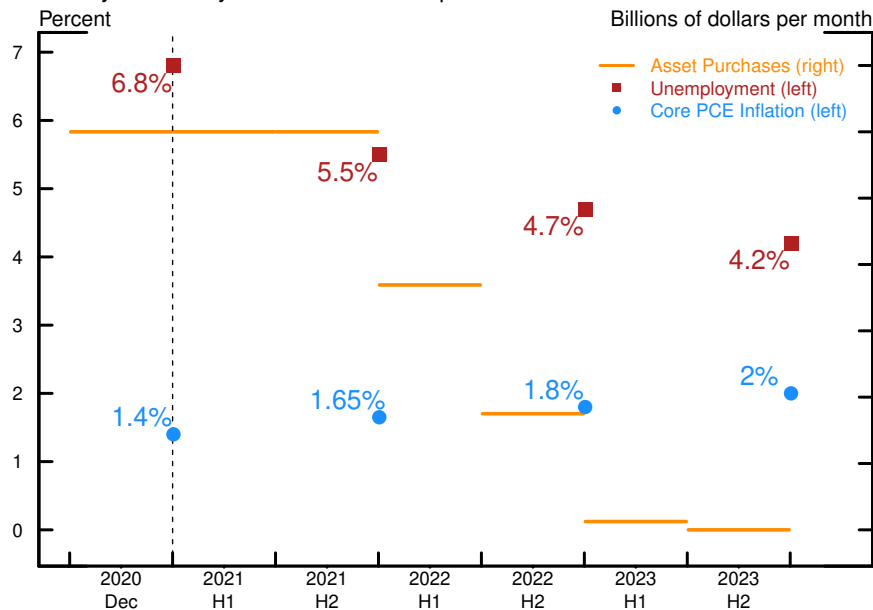
Federal Funds Rate Paths



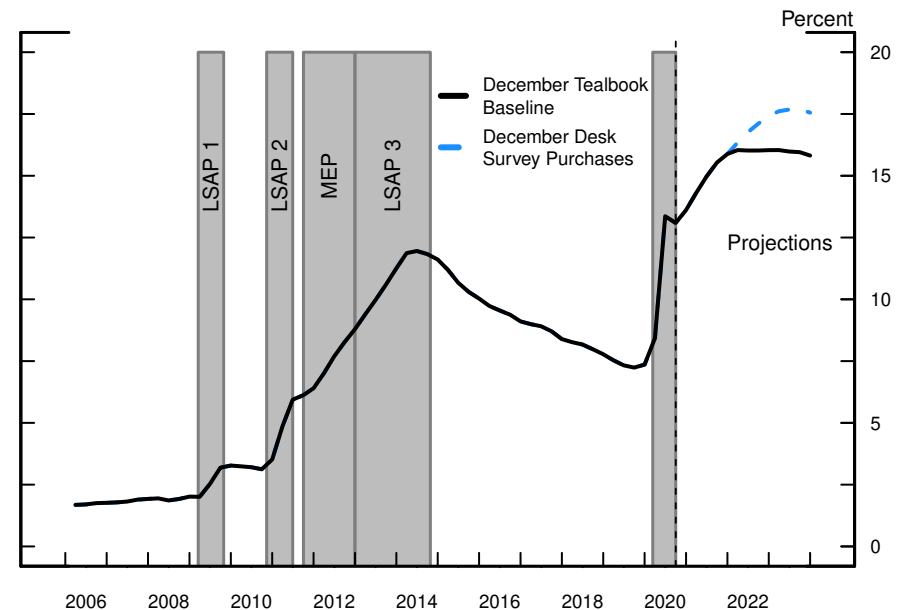
Key Considerations

- Path of pandemic and consequences for economy remain highly uncertain.
- Considerable uncertainty surrounding fiscal stimulus.
- Outcome-based guidance well suited for providing appropriate policy accommodations, especially at times of highly uncertain outlook.
- Having updated forward guidance on federal funds rate, the Committee may want to consider enhancing guidance for asset purchases.

Survey of Primary Dealers Median Expectations

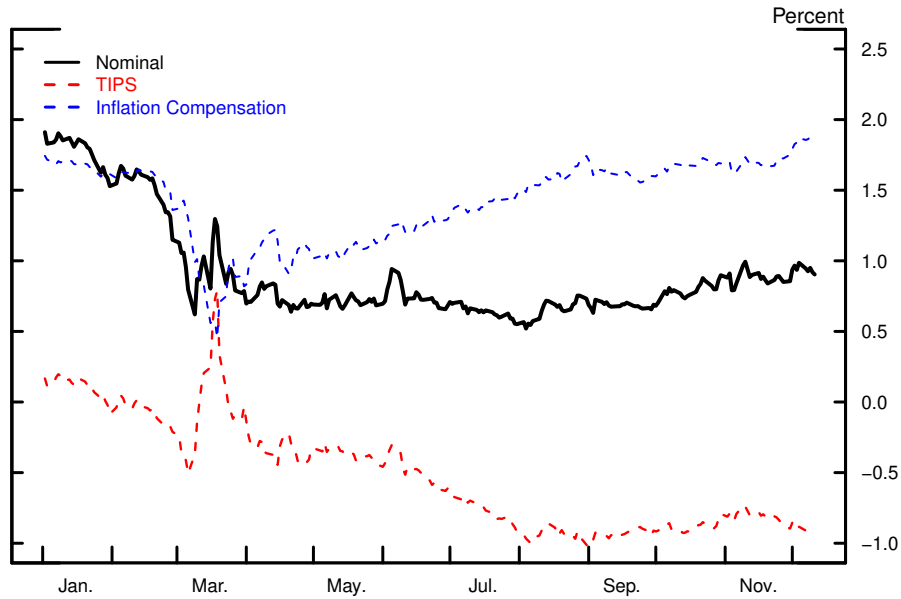


SOMA Treasury 10-Year Equivalents as a Percentage of Nominal GDP

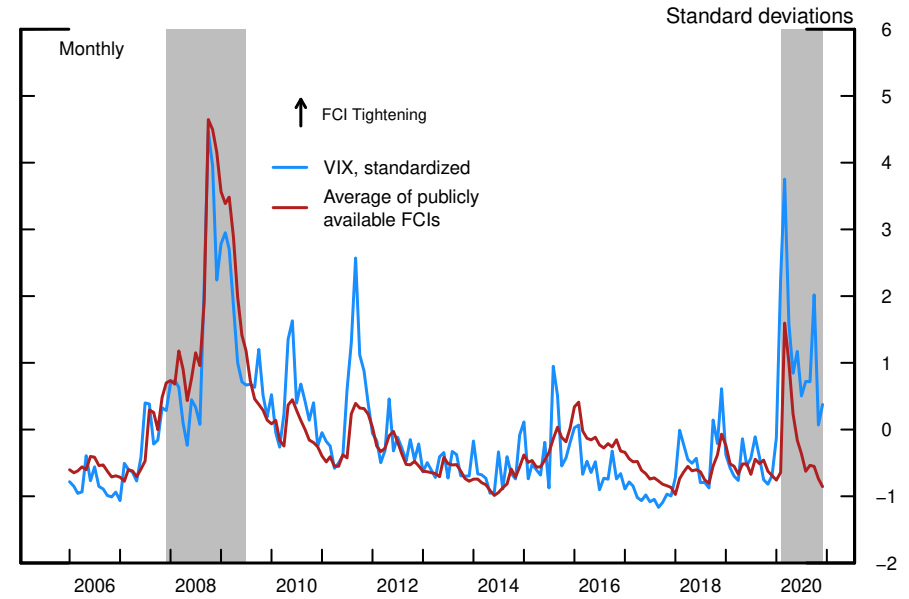


Monetary Policy Considerations (continued)

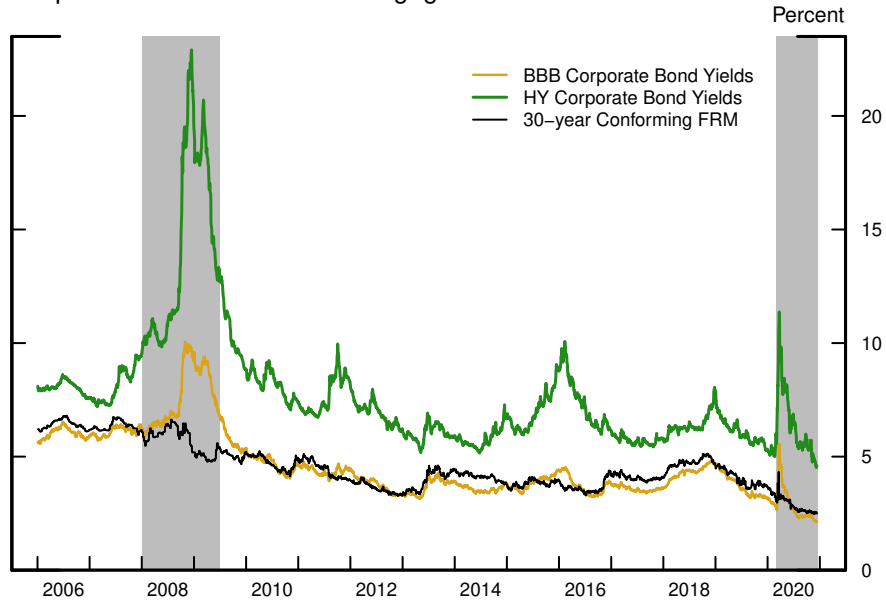
10-Year Treasury Yield



Financial Conditions Indexes and the VIX



Corporate Bond Yields and Mortgage Rates



Alternatives

- Alternatives differ with regard to guidance on and changes to asset purchases.
- Alternatives A and B offer outcome-based guidance on asset purchases.
- Alternative A also announces that purchase of Treasury securities will be weighted toward longer maturities.
- Alternative C maintains the November statement.

Exhibit Notes

Exhibit 1:

Top-left panel:

OIS path estimated using overnight index swap quotes with a spline approach and a term premium of 0 basis points. Source: Bloomberg; Board staff calculation; Blue Chip Financial Forecasts, June and December 2020; December 2020 Desk Survey of Primary Dealers.

Bottom-left panel:

Monthly values for half-years calculated assuming constant pace of purchases within the half-year. Source: December 2020 Desk Survey of Primary Dealers; Board staff calculations.

Bottom-right panel:

Quarterly TYE (ten-year equivalent) values are month-end averages. TYE value for 2020 Q4 contains two historical month-end values and one projected month-end value. Source: December 2020 Tealbook; December 2020 Desk Survey of Primary Dealers; Board staff calculations.

Exhibit 2:

Top-left panel:

Inflation compensation is the difference between the nominal and TIPS yields. Source: Board staff calculations; Federal Reserve Bank of New York.

Top-right panel:

Shaded areas indicate NBER recessions. Source: Bloomberg; Federal Reserve Banks of Chicago, St. Louis, and Kansas City.

Bottom-left panel:

Shaded areas indicate NBER recessions. Corporate bond yields are at 10-year maturities. HY is high-yield; FRM is fixed-rate mortgage rate. Mortgage rate data prior to November 5, 2009 is weekly. Source: Intercontinental Exchange (ICE) Indices, Freddie Mac (mortgage rate prior to 2010), Optimal Blue (mortgage rate after 2010).

NOVEMBER 2020 FOMC STATEMENT

1. The Federal Reserve is committed to using its full range of tools to support the U.S. economy in this challenging time, thereby promoting its maximum employment and price stability goals.
2. The COVID-19 pandemic is causing tremendous human and economic hardship across the United States and around the world. Economic activity and employment have continued to recover but remain well below their levels at the beginning of the year. Weaker demand and earlier declines in oil prices have been holding down consumer price inflation. Overall financial conditions remain accommodative, in part reflecting policy measures to support the economy and the flow of credit to U.S. households and businesses.
3. The path of the economy will depend significantly on the course of the virus. The ongoing public health crisis will continue to weigh on economic activity, employment, and inflation in the near term, and poses considerable risks to the economic outlook over the medium term.
4. The Committee seeks to achieve maximum employment and inflation at the rate of 2 percent over the longer run. With inflation running persistently below this longer-run goal, the Committee will aim to achieve inflation moderately above 2 percent for some time so that inflation averages 2 percent over time and longer-term inflation expectations remain well anchored at 2 percent. The Committee expects to maintain an accommodative stance of monetary policy until these outcomes are achieved. The Committee decided to keep the target range for the federal funds rate at 0 to 1/4 percent and expects it will be appropriate to maintain this target range until labor market conditions have reached levels consistent with the Committee's assessments of maximum employment and inflation has risen to 2 percent and is on track to moderately exceed 2 percent for some time. In addition, over coming months the Federal Reserve will increase its holdings of Treasury securities and agency mortgage-backed securities at least at the current pace to sustain smooth market functioning and help foster accommodative financial conditions, thereby supporting the flow of credit to households and businesses.
5. In assessing the appropriate stance of monetary policy, the Committee will continue to monitor the implications of incoming information for the economic outlook. The Committee would be prepared to adjust the stance of monetary policy as appropriate if risks emerge that could impede the attainment of the Committee's goals. The Committee's assessments will take into account a wide range of information, including readings on public health, labor market conditions, inflation pressures and inflation expectations, and financial and international developments.

ALTERNATIVE A FOR DECEMBER 2020

1. The Federal Reserve is committed to using its full range of tools to support the U.S. economy in this challenging time, thereby promoting its maximum employment and price stability goals.
2. The COVID-19 pandemic is causing tremendous human and economic hardship across the United States and around the world. Economic activity and employment have continued to recover but remain well below their levels at the beginning of the year. Weaker demand and earlier declines in oil prices have been holding down consumer price inflation. Overall financial conditions remain accommodative, in part reflecting policy measures to support the economy and the flow of credit to U.S. households and businesses.
3. The path of the economy will depend significantly on the course of the virus. The ongoing public health crisis will continue to weigh on economic activity, employment, and inflation in the near term, and poses considerable risks to the economic outlook over the medium term.
4. The Committee seeks to achieve maximum employment and inflation at the rate of 2 percent over the longer run. With inflation running persistently below this longer-run goal, the Committee will aim to achieve inflation moderately above 2 percent for some time so that inflation averages 2 percent over time and longer-term inflation expectations remain well anchored at 2 percent. The Committee expects to maintain an accommodative stance of monetary policy until these outcomes are achieved. The Committee decided to keep the target range for the federal funds rate at 0 to 1/4 percent and expects it will be appropriate to maintain this target range until labor market conditions have reached levels consistent with the Committee's assessments of maximum employment and inflation has risen to 2 percent and is on track to moderately exceed 2 percent for some time. In addition, over coming months the Federal Reserve will continue to increase its holdings of Treasury securities by at least \$80 billion per month and of agency mortgage-backed securities by at least at the current pace to sustain \$40 billion per month until substantial further progress has been made toward the Committee's maximum employment and price stability goals. To promote a stronger economic recovery, purchases of Treasury securities will be weighted toward those with longer maturities. These asset purchases help foster smooth market functioning and ~~help foster~~ accommodative financial conditions, thereby supporting the flow of credit to households and businesses.
5. In assessing the appropriate stance of monetary policy, the Committee will continue to monitor the implications of incoming information for the economic outlook. The Committee would be prepared to adjust the stance of monetary policy as appropriate if risks emerge that could impede the attainment of the Committee's goals. The Committee's assessments will take into account a wide range of information, including readings on public health, labor market conditions, inflation pressures and inflation expectations, and financial and international developments.

ALTERNATIVE B FOR DECEMBER 2020

1. The Federal Reserve is committed to using its full range of tools to support the U.S. economy in this challenging time, thereby promoting its maximum employment and price stability goals.
2. The COVID-19 pandemic is causing tremendous human and economic hardship across the United States and around the world. Economic activity and employment have continued to recover but remain well below their levels at the beginning of the year. Weaker demand and earlier declines in oil prices have been holding down consumer price inflation. Overall financial conditions remain accommodative, in part reflecting policy measures to support the economy and the flow of credit to U.S. households and businesses.
3. The path of the economy will depend significantly on the course of the virus. The ongoing public health crisis will continue to weigh on economic activity, employment, and inflation in the near term, and poses considerable risks to the economic outlook over the medium term.
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5. In assessing the appropriate stance of monetary policy, the Committee will continue to monitor the implications of incoming information for the economic outlook. The Committee would be prepared to adjust the stance of monetary policy as appropriate if risks emerge that could impede the attainment of the Committee's goals. The Committee's assessments will take into account a wide range of information, including readings on public health, labor market conditions, inflation pressures and inflation expectations, and financial and international developments.

ALTERNATIVE C FOR DECEMBER 2020

1. The Federal Reserve is committed to using its full range of tools to support the U.S. economy in this challenging time, thereby promoting its maximum employment and price stability goals.
2. The COVID-19 pandemic is causing tremendous human and economic hardship across the United States and around the world. Economic activity and employment have continued to recover but remain well below their levels at the beginning of the year. Weaker demand and earlier declines in oil prices have been holding down consumer price inflation. Overall financial conditions remain accommodative, in part reflecting policy measures to support the economy and the flow of credit to U.S. households and businesses.
3. The path of the economy will depend significantly on the course of the virus. The ongoing public health crisis will continue to weigh on economic activity, employment, and inflation in the near term, and poses considerable risks to the economic outlook over the medium term.
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5. In assessing the appropriate stance of monetary policy, the Committee will continue to monitor the implications of incoming information for the economic outlook. The Committee would be prepared to adjust the stance of monetary policy as appropriate if risks emerge that could impede the attainment of the Committee's goals. The Committee's assessments will take into account a wide range of information, including readings on public health, labor market conditions, inflation pressures and inflation expectations, and financial and international developments.

Implementation Note for December 2020, Alternative A

Release Date: ~~November 5~~ **December 16**, 2020

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 ~~November 5~~ **December 16**, 2020:

- The Board of Governors of the Federal Reserve System voted unanimously to maintain the interest rate paid on required and excess reserve balances at 0.10 percent, effective ~~November 6~~ **December 17**, 2020.
- 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 ~~November 6~~ **December 17**, 2020, 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 0 to 1/4 percent.
- Increase the System Open Market Account holdings of Treasury securities **by \$80 billion per month** and **of** agency mortgage-backed securities (MBS) ~~at the current pace~~ **by \$40 billion per month. Beginning with the January 2021 monthly purchase schedule, weight Treasury purchases toward longer-dated securities.**
- Increase holdings of Treasury securities and agency MBS by additional amounts, **adjust the maturity composition of Treasury purchases**, and purchase agency commercial mortgage-backed securities (CMBS) as needed to sustain smooth functioning of markets for these securities.
- Conduct term and overnight repurchase agreement operations to support effective policy implementation and the smooth functioning of short-term U.S. dollar funding markets.
- Conduct overnight reverse repurchase agreement operations at an offering rate of 0.00 percent and with a per-counterparty limit of \$30 billion per day; the per-counterparty limit can be temporarily increased at the discretion of the Chair.
- Roll over at auction all principal payments from the Federal Reserve's holdings of Treasury securities and reinvest all principal payments from the Federal Reserve's holdings of agency debt and agency MBS in agency MBS.
- Allow modest deviations from stated amounts for purchases and reinvestments, if needed for operational reasons.
- Engage in dollar roll and coupon swap transactions as necessary to facilitate settlement of the Federal Reserve's agency MBS 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 0.25 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 reinvestments may be found on the Federal Reserve Bank of New York's [website](#).

Implementation Note for December 2020, Alternative B

Release Date: ~~November 5~~ **December 16**, 2020

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 ~~November 5~~ **December 16**, 2020:

- The Board of Governors of the Federal Reserve System voted unanimously to maintain the interest rate paid on required and excess reserve balances at 0.10 percent, effective ~~November 6~~ **December 17**, 2020.
- 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:

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 - Increase the System Open Market Account holdings of Treasury securities **by \$80 billion per month** and **of** agency mortgage-backed securities (MBS) ~~at the current pace~~ **by \$40 billion per month**.
 - Increase holdings of Treasury securities and agency MBS by additional amounts and purchase agency commercial mortgage-backed securities (CMBS) as needed to sustain smooth functioning of markets for these securities.
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 - Engage in dollar roll and coupon swap transactions as necessary to facilitate settlement of the Federal Reserve's agency MBS 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 0.25 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 reinvestments may be found on the Federal Reserve Bank of New York’s [website](#).

Implementation Note for December 2020, Alternative C

Release Date: ~~November 5~~ **December 16**, 2020

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 ~~November 5~~ **December 16**, 2020:

- The Board of Governors of the Federal Reserve System voted unanimously to maintain the interest rate paid on required and excess reserve balances at 0.10 percent, effective ~~November 6~~ **December 17**, 2020.
- 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 ~~November 6~~ **December 17**, 2020, 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 0 to 1/4 percent.
 - Increase the System Open Market Account holdings of Treasury securities and agency mortgage-backed securities (MBS) at the current pace. Increase holdings of Treasury securities and agency MBS by additional amounts and purchase agency commercial mortgage-backed securities (CMBS) as needed to sustain smooth functioning of markets for these securities.
 - Conduct term and overnight repurchase agreement operations to support effective policy implementation and the smooth functioning of short-term U.S. dollar funding markets.
 - Conduct overnight reverse repurchase agreement operations at an offering rate of 0.00 percent and with a per-counterparty limit of \$30 billion per day; the per-counterparty limit can be temporarily increased at the discretion of the Chair.
 - Roll over at auction all principal payments from the Federal Reserve's holdings of Treasury securities and reinvest all principal payments from the Federal Reserve's holdings of agency debt and agency MBS in agency MBS.
 - Allow modest deviations from stated amounts for purchases and reinvestments, if needed for operational reasons.
 - Engage in dollar roll and coupon swap transactions as necessary to facilitate settlement of the Federal Reserve's agency MBS 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 0.25 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 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

Interest on required and excess reserve balances

Leave the interest rate paid on required and excess reserve balances unchanged at 0.10 percent.

Establishment of the primary, secondary, and seasonal credit rates

Approve establishment of the primary credit rate at the existing rate of 0.25 percent and establishment of the rates for secondary and seasonal credit under the existing formulas specified in the staff's December 11, 2020, memo to the Board.