

**Credit Sensitivity Group Workshop 2**  
**Meeting Minutes**  
**July 22, 2020**

**Workshop Attendees**

Alastair Borthwick (Bank of America)  
Ashish Kumbhat (Bank of America)  
Andrei Magasiner (Bank of America)  
Sharon Hamilton (BBVA)  
Chris Marshall (BBVA)  
Tom Feil (Capital One)  
Jeff Kuzbel (Capital One)  
Ana Volpi (Citizens Financial Group)  
Stasie Kostova (Comerica)  
Riley Saunders (Fifth Third Bank)  
Brennen Willingham (Fifth Third Bank)  
Hilary Gevondyan (First Republic Bank)  
Mike Selfridge (First Republic Bank)  
Mark Brell (Frost Bank)  
Mike Abarca (Huntington Bank)  
Derek Meyer (Huntington Bank)  
Chris Cole (Independent Community Bankers of America)  
Tony Bulic (KeyBank)

Jay Luzar (KeyBank)  
Doug Sheline (M&T Bank)  
Scott Warman (M&T Bank)  
Matt Engstrom (MUFG)  
Taro Matsuura (MUFG)  
Kieran Fallon (PNC Financial Services Group)  
Randall King (PNC Financial Services Group)  
Gagan Singh (PNC Financial Services Group)  
Deron Smithy (Regions Financial Corporation)  
John Finley (South State Bank)  
Darrell Duffie (Stanford University)  
Tom Baxter (Sullivan & Cromwell)  
Rodgin Cohen (Sullivan & Cromwell)  
Cori Krebs (US Bank)  
Joe Tessmer (US Bank)  
Brian Grabenstein (Wells Fargo)  
Alexis Pederson (Wells Fargo)

**Ex-Officio Attendees**

Joe Carapiet (Board of Governors of the Federal Reserve System)  
Darren Gersh (Board of Governors of the Federal Reserve System)  
Cindy Vojtech (Board of Governors of the Federal Reserve System)  
Evan Winerman (Board of Governors of the Federal Reserve System)  
Irina Leonova (Federal Deposit Insurance Corporation)  
Alex LePore (Federal Deposit Insurance Corporation)  
Pablo Azar (Federal Reserve Bank of New York)  
Alyssa Cambron (Federal Reserve Bank of New York)  
Ray Check (Federal Reserve Bank of New York)  
Marco Cipriani (Federal Reserve Bank of New York)  
Cam Fuller (Federal Reserve Bank of New York)

Eric LeSueur (Federal Reserve Bank of New York)  
Jamie Pfeifer (Federal Reserve Bank of New York)  
Will Riordan (Federal Reserve Bank of New York)  
Monica Scheid (Federal Reserve Bank of New York)  
Nate Wuerffel (Federal Reserve Bank of New York)  
Jay Gallagher (Office of the Comptroller of the Currency)  
Christopher McBride (Office of the Comptroller of the Currency)  
Chloe Cabot (U.S. Department of the Treasury)  
Peter Phelan (U.S. Department of the Treasury)  
Jason Leung (U.S. Securities and Exchange Commission)  
David Metzman (U.S. Securities and Exchange Commission)

- Due to the COVID-19 pandemic, the second Credit Sensitivity Group (CSG) workshop was held remotely via videoconference. Federal Reserve Bank of New York (FRBNY) staff, in their role providing secretariat services to the CSG workshops, opened the meeting by reviewing the purpose and approach of the CSG workshops as well as summarizing the [first workshop](#).
- FRBNY staff then summarized responses to a pre-workshop questionnaire on the type of funding costs workshop participants think a credit sensitive supplement to SOFR should reflect and how their short-term and long-term funding costs as well as lending rates and volumes evolved over time. The responses indicated a preference for the supplement to measure a commercial lender's marginal cost of funds rather than an average cost of funds, but did not provide a clear consensus on the type of institution, type of funding, or tenor of funding it should reflect. The summary is included as an appendix to the minutes. Following the summary, a number of workshop participants noted that measuring marginal (as opposed to average) cost of funds was important as marginal rates are more relevant to the costs of funding new lending activity.

- Staff from the U.S. Department of the Treasury led a review of the principles necessary for reliable and robust financial benchmarks. The Secretary of the Treasury chairs the Financial Stability Oversight Council (FSOC). Treasury staff highlighted the FSOC’s 2014 recommendation that U.S. agencies consider the International Organization of Securities Commissions’ (IOSCO) [Principles for Financial Benchmarks](#) in their ongoing assessment of financial benchmarks in the U.S. In particular, Treasury staff focused on principles related to the quality of the benchmark and the quality of the methodology. In discussing the IOSCO principles, it was noted that the design of the benchmark should take into account generic design factors that result in a reliable representation of the economic conditions it seeks to measure. The data used to construct a benchmark should be based on prices, rates, indices or values that have been formed by the competitive forces of supply and demand (i.e. an active market) and be anchored by observable transactions entered into at arm’s length between buyers and sellers. The IOSCO principles note that every individual benchmark determination does not need to be constructed solely from transaction data and can be determined predominantly or exclusively on bids and offers. Regarding methodology, the IOSCO principles state the methodology should be published and include a rationale so stakeholders can assess its representativeness of the economic conditions it seeks to measure. The principles also state that benchmarks should have robust fallback provisions in case of changing market conditions or disruptions and that they should comply with the principles in a proportional way based on the specific size and risks of the benchmark and those of its underlying data source. Treasury staff noted that in order for any potential credit sensitive supplement to SOFR to meet the IOSCO principles, it would need to be representative, proportional, robust, and fit for purpose. The main priority is moving the financial system off of LIBOR to robust reference rates. Doing so is a challenging process, so it is critical to ensure that the financial system does not need to go through a similar transition again in the future. Following the presentation by Treasury staff, there was a short discussion regarding the use of the prime rate as a benchmark in lending markets. Some participants highlighted that the prime rate is not based on transaction data. Others noted that the prime rate is typically based on the target level of the federal funds rate established by the Federal Open Market Committee with a fixed spread added on.
- FRBNY staff led a review of financial transaction types and data sources that could be relevant to measuring bank funding costs, incorporating input previously received from workshop participants. An inventory of several types of transactions is included as an appendix to the minutes. The transactions broadly fall into five categories: short-term unsecured wholesale funding transactions, retail deposits, Federal Home Loan Bank (FHLB) advances, corporate bond transactions, and credit default swaps. Staff noted that there is variation in the available characteristics of the underlying transactions, including (where applicable) borrower type, lender type, secured or unsecured nature, platform, and tenor of the transaction. There is also variation in the collection of transactional data, data access and availability, and associated current or potential calculated rates. FRBNY staff noted that, as the CSG workshops shift to a discussion around potential ways to design a robust supplement to SOFR, there are a variety of analyses that could be reviewed on the markets where the underlying transactions occurred. These could include liquidity, transaction volumes, market composition and resilience under stress conditions.
- The workshop proceeded to a panel and facilitated discussion on the type of funding costs a potential credit sensitive supplement to SOFR should reflect as well as experiences with funding costs and lending activity over time, including during the COVID-19 pandemic.
  - Panelists from the private sector included representatives from Bank of America, Comerica, South State Bank, and US Bank.
    - The panelists and many participants agreed that a credit sensitive spread should reflect marginal funding costs which they viewed to be more relevant to the costs of funding new loans than average funding costs.

- Panelists and participants discussed a variety of data sources that could be relevant to constructing a credit sensitive supplement, though different opinions were expressed concerning the type of transactions or the type of borrowers that a credit sensitive spread should reflect. Some participants indicated that it should reflect the funding costs of a broad set of banks and that it should include banks' short- and long-term wholesale borrowing. One participant suggested using the yield spread between prime and government money market funds as a reference point, but noted that further analysis would be needed. Another participant suggested including non-financial corporate transactions.
  - Several participants also noted the importance that a potential spread reflect the economic conditions it seeks to measure. Several indicated that lending rates are not solely derived from funding costs but also incorporate the cost of capital, credit risk, and other fixed costs. Many participants noted that during the recent COVID-19 pandemic, funding and credit markets behaved very differently before and after official sector actions, such as those taken by the Treasury and the Federal Reserve. However, participants also noted that official sector actions cannot be assumed in future periods of stress. It was discussed that a benchmark that reliably represents the economic conditions it seeks to measure should account for changing conditions including due to official sector actions.
  - It was also noted that the ability to measure economic conditions reliably is dependent on the availability of sufficient data.
  - There was also discussion on the use of floors in SOFR-based loans as an alternative way of managing risk in a declining rate environment. Participants noted that floors are currently used in some LIBOR loans, but may make it harder for borrowers to compare rates.
  - Participants discussed the use of observable transactions versus actionable pricing quotes in a potential credit sensitive spread. One participant suggested potentially including quotes from asset pricing data services, which are used by money market mutual funds to price their end of day net asset values (NAV) and by other financial market participants to value their balance sheets. Observable transactions were seen as more robust, but this participant suggested that actionable pricing quotes be considered. Other participants suggested that such quotes could supplement transaction data to broaden the data available for a credit sensitive spread.
  - There was a discussion about the risk of a credit sensitive supplement being used for broader purposes for which it was not designed or sufficiently robust, including in derivatives markets.
- Staff from the Board of Governors of the Federal Reserve System also presented, reviewing research from a recent [FEDS Note](#) that demonstrated that U.S. banks' reliance on the wholesale unsecured markets that are meant to underpin LIBOR has diminished considerably, and that these markets now represent a small fraction of overall bank funding.
  - The FEDS Note found that LIBOR is not more correlated with measures of bank funding costs than risk-free rates, even during the 2007-2009 crisis.
  - Federal Reserve Board staff also presented data from the COVID-19 pandemic showing that, for U.S. banks, core deposits rose more than commercial and industrial loans, both at the aggregate and individual bank level, in March and April 2020. Over the same time period, a volume-weighted rate of wholesale unsecured bank funding fell.
  - Discussion on the research highlighted the use of average funding costs in the analysis as opposed to the marginal funding costs many bank workshop participants seek to measure with a potential credit sensitive spread. In looking at the weighted unsecured

funding costs during the March and April period, many noted that the volume-weighted rate was likely influenced by the large volume of deposit inflows and increase in reserve balances during this period, and that as a result banks had less need for funding through wholesale transactions. Some participants expressed reservations about deposit growth being one of the primary factors of the analysis and suggested the analysis be separated into two time periods: before and after official sector action. Some participants noted other ways to expand the analysis, such as looking at lending rates rather than funding costs and assessing betas and spreads in addition to correlations.

- Professor Darrell Duffie of Stanford University also presented, providing an overview of a potential across-the-curve funding spread, which would average short- and long-term funding spreads. Professor Duffie highlighted that the composition of issuance volumes across maturities has changed substantially over the past decade, with banks increasing their reliance on longer-term debt after the 2008 financial crisis. He noted that issuance volumes for both short-term and longer-term debt by banking organizations does fluctuate, so incorporating data from both types of transactions into a credit sensitive supplement could help make such a benchmark more robust. Spreads on longer-term funding tend to be higher than short-term spreads.
- FRBNY staff concluded the meeting by noting that the third workshop will be held in August and will focus on considerations for potential design of a robust credit sensitive spread.

## Appendix: Credit Sensitivity Group (CSG) Workshop 2 Questionnaire Summary of Responses

Participants in the second CSG workshop were asked to complete a voluntary pre-workshop questionnaire aimed at understanding the type of funding costs workshop participants think a credit sensitive spread should reflect and how their short-term and long-term funding costs as well as lending rates and volumes evolved over time, including during the COVID-19 pandemic. Thirteen banks responded to the questionnaire.

- Several respondents indicated that a credit sensitive spread should reflect the funding costs of a broad set of banks of different sizes, though there was not a clear consensus on how to define a broad set of banks. A few indicated that it should reflect the funding costs of large institutions, which are more active in capital markets.
- Respondents generally noted that a credit sensitive spread should reflect the variety of funding sources utilized by banks but again did not reflect a clear consensus view. Funding sources mentioned included but were not limited to: retail and wholesale deposits (including certificates of deposit), Federal Home Loan Bank (FHLB) advances, federal funds, Eurodollars, commercial paper, and long-term unsecured debt.
- Respondents were mixed on the suggested tenor of a credit sensitive spread, with responses ranging from: money market tenors of 6 months and less; a term structure including funding tenors of a few years; and a broader term structure out to 10 to 30 years.
- Respondents generally noted that a credit sensitive spread should reflect marginal funding costs.
- In describing how their funding costs evolved during the COVID-19 pandemic, respondents indicated that rates on short-term funding instruments initially increased due to uncertainty as the pandemic was unfolding but subsequently fell after action by the official sector including the Treasury and the Federal Reserve. Several noted an increase in deposits during this period. A few noted they borrowed via FHLB advances. Some indicated that spreads on long-term unsecured debt widened.
- Some respondents indicated that lending volumes increased during the COVID-19 pandemic, as commercial customers accessed revolving lines of credit and Paycheck Protection Program loans. Respondents indicated that lending rates generally increased during March, but declined as broader market rates declined following official sector action. Some respondents indicated the use of LIBOR floors to offset the drop in loan rates, or charging wider spreads.

# Inventory for CSG Workshop 2

Notes: the below matrix is focused on underlying financial transactions. It is a draft for discussion and subject to revision.

Transaction Type	Characteristics of the Transaction				Available Fields for Transaction-level Data										Data Access and Availability						Data Quality and Controls			Current or Potential Rates											
	Borrower	Location of Borrower	Lender	Term	Platform (OTC or exchange)	Borrower / Reporter ID	Principal Amount	Trade Date	Settlement Date	Term / Maturity Date	Rate / Price	Counterparty ID	Reference Credit	Traded Security	Counterparty Type	Comments on available data fields	Data Source	Data Owner	Are transaction data commercially available and/or provided to the official sector?	If yes, at what frequency?	Are transaction data from this source publicly available?	If yes, at what frequency?	Are more aggregated data from this source publicly available?	If yes, at what frequency?	Source links for publicly available data	Are transaction data validated?	Other known data quality issues?	Current rate(s) calculated from these transactions	Term of current rate(s)	Frequency of current rate(s)	Publication lag of current rate(s)	Notes on Calculation Methodology	Publicly available?	Rate Administrator	Potential rate(s) associated with these transactions
Overnight	Depository institution	US	Bank, OIG or other eligible entity defined by Federal Reserve Regulation D	1 or more days	OTC	Yes	Yes	Yes	Yes	Yes	Yes	No	N/A	N/A	Yes	FR 2420	Federal Reserve	Yes, collected by official sector	Daily (T+1)	No	N/A	Yes, volumes of combined ED+SD can be inferred from the difference between EFR and OBR volumes. Summary statistics on the distribution of traded rates for overnight ED+SD transactions published on lagged basis. No data is available separating ED from SD.	Daily (on OBR volumes); quarterly (other overnight data)	https://apps.nw.gov/fedstat/overnight/efr/efr.html; https://www.frb.org/markets/autotrates/obtr/obtr.html; https://www.frb.org/markets/obtrinfo/obtrinfo.html	Yes, Fed staff reviews data submissions for errors that could affect quality of published statistics (EFR, OBR)	Effective Federal Funds Rate (EFR); Overnight Bank Funding Rate (OBR)	Overnight	Daily	T+1	Volume-weighted median	Yes	FRBNY	ICE Bank Yield Index (incorporates term unsecured wholesale borrowing transactions)		
Federal Funds (as reported to FR 2420)	Depository institution	US	any	1 or more days	OTC	Yes	Yes	Yes	Yes	Yes	Yes	No	N/A	N/A	Yes	FR 2420	Federal Reserve	Yes, collected by official sector	Daily (T+1)	No	N/A	Yes, volumes of combined ED+SD can be inferred from the difference between EFR and OBR volumes. Summary statistics on the distribution of traded rates for overnight ED+SD transactions published on lagged basis. No data is available separating ED from SD.	Daily (on OBR volumes); quarterly (other overnight data)	https://apps.nw.gov/fedstat/overnight/efr/efr.html; https://www.frb.org/markets/autotrates/obtr/obtr.html; https://www.frb.org/markets/obtrinfo/obtrinfo.html	Yes, Fed staff reviews data submissions for errors that could affect quality of published statistics (EFR, OBR)	Effective Federal Funds Rate (EFR); Overnight Bank Funding Rate (OBR)	Overnight	Daily	T+1	Volume-weighted median	Yes	FRBNY	ICE Bank Yield Index (incorporates term unsecured wholesale borrowing transactions)		
Federal Funds (as reported to FR 2420)	Depository institution	US	any	1 to 6 days	OTC	Yes	Yes	Yes	Yes	Yes	Yes	No	N/A	N/A	Yes	FR 2420	Federal Reserve	Yes, collected by official sector	Daily (T+1)	No	N/A	Yes, volumes of combined ED+SD can be inferred from the difference between EFR and OBR volumes. Summary statistics on the distribution of traded rates for overnight ED+SD transactions published on lagged basis. No data is available separating ED from SD.	Daily (on OBR volumes); quarterly (other overnight data)	https://apps.nw.gov/fedstat/overnight/efr/efr.html; https://www.frb.org/markets/autotrates/obtr/obtr.html; https://www.frb.org/markets/obtrinfo/obtrinfo.html	Yes, Fed staff reviews data submissions for errors that could affect quality of published statistics (EFR, OBR)	Effective Federal Funds Rate (EFR); Overnight Bank Funding Rate (OBR)	Overnight	Daily	T+1	Volume-weighted median	Yes	FRBNY	ICE Bank Yield Index (incorporates term unsecured wholesale borrowing transactions)		
Federal Funds (as reported to FR 2420)	Depository institution	US	any	1 to 6 days	OTC	Yes	Yes	Yes	Yes	Yes	Yes	No	N/A	N/A	Yes	FR 2420	Federal Reserve	Yes, collected by official sector	Daily (T+1)	No	N/A	Yes, volumes of combined ED+SD can be inferred from the difference between EFR and OBR volumes. Summary statistics on the distribution of traded rates for overnight ED+SD transactions published on lagged basis. No data is available separating ED from SD.	Daily (on OBR volumes); quarterly (other overnight data)	https://apps.nw.gov/fedstat/overnight/efr/efr.html; https://www.frb.org/markets/autotrates/obtr/obtr.html; https://www.frb.org/markets/obtrinfo/obtrinfo.html	Yes, Fed staff reviews data submissions for errors that could affect quality of published statistics (EFR, OBR)	Effective Federal Funds Rate (EFR); Overnight Bank Funding Rate (OBR)	Overnight	Daily	T+1	Volume-weighted median	Yes	FRBNY	ICE Bank Yield Index (incorporates term unsecured wholesale borrowing transactions)		
Selected deposits (as reported to FR 2420)	Depository institution	US	any	7 or more days	OTC	Yes	Yes	Yes	Yes	Yes	Yes	No	N/A	N/A	Yes	FR 2420	Federal Reserve	Yes, collected by official sector	Daily (T+1)	No	N/A	Yes, volumes of combined ED+SD can be inferred from the difference between EFR and OBR volumes. Summary statistics on the distribution of traded rates for overnight ED+SD transactions published on lagged basis. No data is available separating ED from SD.	Daily (on OBR volumes); quarterly (other overnight data)	https://apps.nw.gov/fedstat/overnight/efr/efr.html; https://www.frb.org/markets/autotrates/obtr/obtr.html; https://www.frb.org/markets/obtrinfo/obtrinfo.html	Yes, Fed staff reviews data submissions for errors that could affect quality of published statistics (EFR, OBR)	Effective Federal Funds Rate (EFR); Overnight Bank Funding Rate (OBR)	Overnight	Daily	T+1	Volume-weighted median	Yes	FRBNY	ICE Bank Yield Index (incorporates term unsecured wholesale borrowing transactions)		
Time deposits / certificates of deposit (CDs) (as reported to FR 2420)	Depository institution	US	any	For CDs: 7 or more days	OTC	Yes	Yes	Yes	Yes	Yes	Yes	No	N/A	N/A	Yes	FR 2420	Federal Reserve	Yes, collected by official sector	Daily (T+1)	No	N/A	Yes, volumes of combined ED+SD can be inferred from the difference between EFR and OBR volumes. Summary statistics on the distribution of traded rates for overnight ED+SD transactions published on lagged basis. No data is available separating ED from SD.	Daily (on OBR volumes); quarterly (other overnight data)	https://apps.nw.gov/fedstat/overnight/efr/efr.html; https://www.frb.org/markets/autotrates/obtr/obtr.html; https://www.frb.org/markets/obtrinfo/obtrinfo.html	Yes, Fed staff reviews data submissions for errors that could affect quality of published statistics (EFR, OBR)	Effective Federal Funds Rate (EFR); Overnight Bank Funding Rate (OBR)	Overnight	Daily	T+1	Volume-weighted median	Yes	FRBNY	ICE Bank Yield Index (incorporates term unsecured wholesale borrowing transactions)		
Retail deposits (as reported to RateWatch)	Depository institution	US	any	For CDs: 7 or more days	OTC	Yes	Yes	Yes	Yes	Yes	Yes	No	N/A	N/A	Yes	RateWatch	SEF Global Market Intelligence	Yes, commercially available. Also provided to official sector (DTCC)	Daily (T+1)	No	N/A	Yes, FDIC Weekly Average CD rates	weekly	https://www.fdic.gov/regulation/information/retail/	DTCC does not validate the data entered by DTCC participants	FDIC Weekly Average CD rates	1,3,6,12,24,36,48 months for Jumbo Deposits	weekly	simple average	Yes	FDIC	ICE Bank Yield Index (incorporates term unsecured wholesale borrowing transactions)			
Retail deposits (as reported to RateWatch)	Depository institution	US	any	7 or more days	OTC	Yes	Yes	Yes	Yes	Yes	Yes	No	N/A	N/A	No	DTCC CP/Institutional CD Data Service	DTCC	Yes, commercially available. Note: some overlap with FR 2420 reporting	Daily (T+1)	No	N/A	Yes, FDIC Weekly Average CD rates	weekly	https://www.fdic.gov/regulation/information/retail/	DTCC does not validate the data entered by DTCC participants	FDIC Weekly Average CD rates	1,3,6,12,24,36,48 months for Jumbo Deposits	weekly	simple average	Yes	FDIC	ICE Bank Yield Index (incorporates term unsecured wholesale borrowing transactions)			
Negotiable CDs (as reported to DTCC)	DTCC registered corporation	US	any	1 or more days	OTC	Yes	Yes	No	Yes	Yes	Yes (or can be calculated from other data fields)	No	N/A	N/A	No	DTCC CP/Institutional CD Data Service	DTCC	Yes, some data are commercially available. Also made available to official sector	Daily (T+1)	Yes, some anonymized data are commercially available	N/A	Yes, Federal Reserve CP data	Daily (provided sufficient data)	https://www.frb.org/retail/retail/retail.html	DTCC does not validate the data entered by DTCC participants	Federal Reserve CP rates	Overnight, 7d, 15d, 30d, 60d, 90d for AA, Nonfinancial, AA, AAEP, AEP, Nonfinancial	Daily	T+1	Incorporates fitted curve statistical technique	Yes	Federal Reserve Board of Governors	ICE Bank Yield Index (incorporates term unsecured wholesale borrowing transactions)		
Commercial paper (CP) (as reported to DTCC)	American Financial Exchange (AFX) participants: mostly small/mid US banks	US	American Financial Exchange (AFX) participants: mostly small/mid US banks	1 day, 30-day and 90-day unsecured loans; 7-day secured loans	Exchange (AFX)	Yes	Yes	Yes	Yes	Yes	Yes	No	N/A	N/A	Yes	AFX	AFX	Some data commercially available from AFX. Some trades may also be reported into FR 2420.	Daily	No	N/A	Periodic press releases on average AFX volumes	https://ameriba.com/	DTCC does not validate the data entered by DTCC participants	Ameribor	Overnight	Daily	End of day	Volume-weighted average	Yes	AFX	ICE Bank Yield Index (incorporates term unsecured wholesale borrowing transactions)			
American Financial Exchange (AFX) transactions (reported to AFX)	Non-US Bank	Non-US	any	1 or more days	OTC							No	N/A	N/A	No	No comprehensive data collection. Some offshore transaction data is collected in the ICE Bank Yield Index submission process.																			ICE Bank Yield Index (incorporates term unsecured wholesale borrowing transactions)
Offshore funding transactions (no comprehensive official collection)	N/A	N/A	N/A	N/A	OTC	Yes (with FINRA member is the reporting party)	Yes (with FINRA member is the reporting party)	Yes	Yes	N/A	Yes	No	N/A	Yes	TRACE	FINRA	Yes, provided to official sector	Daily (T+0)	Yes, with no dealer identifiers and punctuated volumes	Daily (T+0)	Yes, volume statistics published by SFMA	Monthly	https://www.frb.org/markets/autotrates/obtr/obtr.html	TRACE has some validation checks	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ICE Bank Yield Index (incorporates secondary bond trades)
Corporate Bond Secondary Trades (as reported to TRACE)	N/A	N/A	N/A	N/A	OTC						Yes	Yes	Yes	Yes	TRACE	HS Markit	Yes, provided to official sector	Daily (T+0)	Yes, with no dealer identifiers and punctuated volumes	Daily (T+0)	Yes, volume statistics published by SFMA	Monthly	https://www.frb.org/markets/autotrates/obtr/obtr.html	TRACE has some validation checks	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	As across-the-curve credit spread index
Credit Default Swaps (as reported to HS Markit)	PHLB Member	US	PHLB	Overnight to multi-year	OTC							N/A	N/A	Yes	No data source for transaction-level data	N/A	N/A	Yes, outstanding advance data available in quarterly financial reports. Some data on advance rates is available on PHLB websites and via Bloomberg; note these differ from dividend-adjusted rates	quarterly; aggregate volumes data	https://www.phlb.com/advance/advance.html; https://www.frb.org/markets/autotrates/obtr/obtr.html	DTCC does not validate the data entered by DTCC participants	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ICE Bank Yield Index (incorporates term unsecured wholesale borrowing transactions)	
Federal Home Loan Bank (PHLB) advances (as reported in quarterly financial reports)	PHLB Member	US	PHLB	Overnight to multi-year	OTC							N/A	N/A	Yes	No data source for transaction-level data	N/A	N/A	Yes, outstanding advance data available in quarterly financial reports. Some data on advance rates is available on PHLB websites and via Bloomberg; note these differ from dividend-adjusted rates	quarterly; aggregate volumes data	https://www.phlb.com/advance/advance.html; https://www.frb.org/markets/autotrates/obtr/obtr.html	DTCC does not validate the data entered by DTCC participants	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ICE Bank Yield Index (incorporates term unsecured wholesale borrowing transactions)

July 22, 2020

# Credit Sensitivity Workshop 2

*The views here are of the presenter and do not necessarily represent those of the Federal Reserve Bank of New York or Federal Reserve System.*

# Introductions

## Participants

- Bank of America
- BBVA
- Capital One
- South State Bank
- Citizens Financial Group
- Comerica
- Fifth Third Bank
- First Republic Bank
- Frost Bank
- Huntington Bank
- Key Bank
- M&T Bank
- MUFG
- PNC Financial Services Group
- Regions Financial Corporation
- US Bank
- Wells Fargo
- Independent Community Bankers of America
- Darrell Duffie
- Sullivan & Cromwell

## Official Sector Representatives

- Federal Reserve Bank of New York
- Board of Governors of the Federal Reserve System
- U.S. Department of the Treasury
- U.S. Securities and Exchange Commission
- Office of the Comptroller of the Currency
- Federal Deposit Insurance Corporation



# Purpose and Approach to CSG Workshops

- Following in person discussions, the official sector laid out a plan
- Official sector would initially convene a series of working sessions among banks of all sizes and borrowers of different types, with the goal of understanding the lending needs of these banks and their borrowers and how a robust credit sensitive rate/spread could be developed to address them.
- Workshops hosted by FRBNY. Secretariat will prepare minutes and summary outcomes of the discussions. This information will be made publically available on the FRBNY website.
- Workshops will cover:
  - Laying the Groundwork: What is the nature of the problem?
  - Reviewing the Data: What data could be used?
  - Constructing Robust Reference Rates: What are the design considerations?
  - Next Steps

# Overview of the Day

- 9:00 – 9:15 am: Welcome and Introductions
- 9:15 – 9:45 am: Background, Questionnaire Summary and Benchmark Principles
- 9:45 – 10:00 am: Review of Funding Data Sources
- 10:00 am – 12:15 pm: Panelist Discussion by Comerica, South State Bank, Federal Reserve Board, Bank of America, Darrell Duffie, and US Bank  
  
Facilitated Discussion
- 12:15 – 12:30 pm: Break
- 12:30 – 1:00 pm: Wrap Up and Next Steps

## Ground Rules for the Day

- Participants are free to use and discuss the information received during the workshop sessions, but statements made by participants during workshop sessions may not be attributed to the participant or his or her firm.
- While a participant may share his or her own view on these topics, participants should not make statements purporting to describe the views of the CSG as a whole.
- Participants should not disclose any confidential or commercially sensitive information in workshop sessions.
- The public minutes for each workshop session will include a list of attendees and firms represented and all presentation materials used in the session.
- Opinions expressed or statements made by official sector staff during workshop sessions are solely those of the individual and do not necessarily reflect the views of their agency.

# Antitrust Guidelines

- These workshops are being hosted by the official sector and are intended to serve a public purpose and to be pro-competitive. However, participants must be mindful of their obligation to observe applicable antitrust laws.
- By participating, all participants are agreeing to observe the antitrust guidelines that have been provided in advance of this workshop.
- Those guidelines are intended to assist participants to ensure their conduct is consistent with law, but each participant is individually responsible for his or her own conduct.
- Participants should police themselves, and should raise questions about and report suspected violations of the Antitrust Guidelines to an FRBNY attorney or an attorney for their respective firms. Anonymous reporting is also available using the FRBNY's Integrity Hotline: (877) 52-FRBNY.

# Summary of Workshop 1

- Presenters described that there could be a **mismatch between banks' unhedged cost of funds and SOFR-based commercial loans** during an economic downturn that could erode bank capital, and that a credit sensitive rate/spread would provide a natural hedge.
- Presenters noted that while SOFR was an appropriate benchmark for a range of types of transactions that currently reference LIBOR, there is a use case for a credit sensitive rate/spread to SOFR which would be **focused on a subset of loans, including revolving lines of credit, commercial real estate loans, and commercial and industrial loans**.
- Participants discussed the nature of the credit sensitive rate/spread, and **various types and tenors of credit and term risk it should reflect in order to represent the funding cost of different types and sizes of banking institutions**. Participants recognized that an economic downturn could have different effects on different types of institutions, based on their funding models, among other factors.
- Participants also discussed the **ability to create a credit sensitive supplement to SOFR**. Some participants were optimistic that it could be done with relative ease, noting a variety of sources that might be useful in constructing a spread. Others were skeptical that it could be done before the end of 2021 and noted the limited number of underlying bank transactions in term unsecured money markets, particularly during periods of stress.
- There was also discussion on **ways to mitigate the potential funding mismatch risk** between banks' SOFR-based loans and unhedged cost of funds **if the banks issued SOFR-based loans**, with some noting the potential use of interest rate floors and other hedging activities to help reduce the risk.

# Estimated Market Footprint of USD LIBOR

- The second report of the ARRC estimated that, around the end of 2016, total exposure to USD LIBOR was around \$200 trillion.
- Exposure to USD LIBOR in business loans, excluding undrawn lines, was estimated to be around \$3.4 trillion.
- Within business loans, workshop participants were focused on revolving lines of credit, C&I loans, and CRE loans.

## Estimated USD LIBOR Market Footprint by Asset Class

	Volume (Trillions USD)
Derivatives	190
<b>Business Loans</b>	<b>3.4</b>
Consumer Loans	1.3
Bonds	1.8
Securitizations	1.8
<b>Total USD LIBOR Exposure</b>	<b>199</b>

*Source: ARRC Second Report  
(March 2018)*

# Workshop 2 Purpose

The goal of Workshop 2 is to better understand:

- How short-term and long-term funding costs evolved over time, including during the COVID-19 pandemic
- How lending rates and lending volumes evolved over time, including during the COVID-19 pandemic
- The type of funding cost workshop participants think a credit sensitive rate/spread should reflect
- The transaction types and data sources that reflect that cost in a robust and representative manner

# **Questionnaire Summary**



# Principles for Robust Reference Rates

## Work of the Financial Stability Oversight Council (FSOC)

- In 2013, the FSOC annual report raised concerns with self-regulated and self-reported benchmarks, especially where transactions were limited or nonexistent.
- The report highlighted reliance on certain benchmark interest rates like LIBOR as a vulnerability given:
  - Widespread reliance on LIBOR across markets
  - Decline in transaction volume in wholesale, unsecured funding markets
  - Weakness of LIBOR's governance
  - Systematic manipulation of submissions
- The Council recommended that U.S. regulators promptly identify alternative interest rate benchmarks anchored in ***observable transactions*** and supported by ***appropriate governance structures***, which led to the convening of the ARRC.
- In 2014, FSOC recommended that US agencies consider the IOSCO Principles into their ongoing assessment of financial benchmarks in the U.S.

# Principles for Robust Reference Rates, contd.

## IOSCO Principles for Financial Benchmarks

- **Governance and Accountability**
- **Quality of the Benchmark**
  - Design must be an accurate and reliable representation of the economic conditions it seeks to measure
  - Data underlying benchmark is from an active market and anchored by observable transactions
- **Quality of the Methodology**
  - Methodology is published and includes a rationale so stakeholders can assess its **representativeness** of the economic conditions it seeks to measure
  - **Robustness** of fallback provisions in case of changing market conditions or disruptions
  - Benchmarks should comply with principles in a **proportional** way based on the specific size and risks of the benchmark and those of its underlying data source

# Review of Funding Data Sources

- An accompanying data inventory describes financial transactions and related data sources potentially relevant to bank funding costs, incorporating input from the first workshop and responses to this workshop's questionnaire.
  
- These transactions broadly fall into the following categories:
  - Short-term unsecured wholesale funding
  - Retail deposits
  - FHLB advances
  - Corporate bond transactions
  - Credit default swaps

# Example: Eurodollars reported into FR 2420

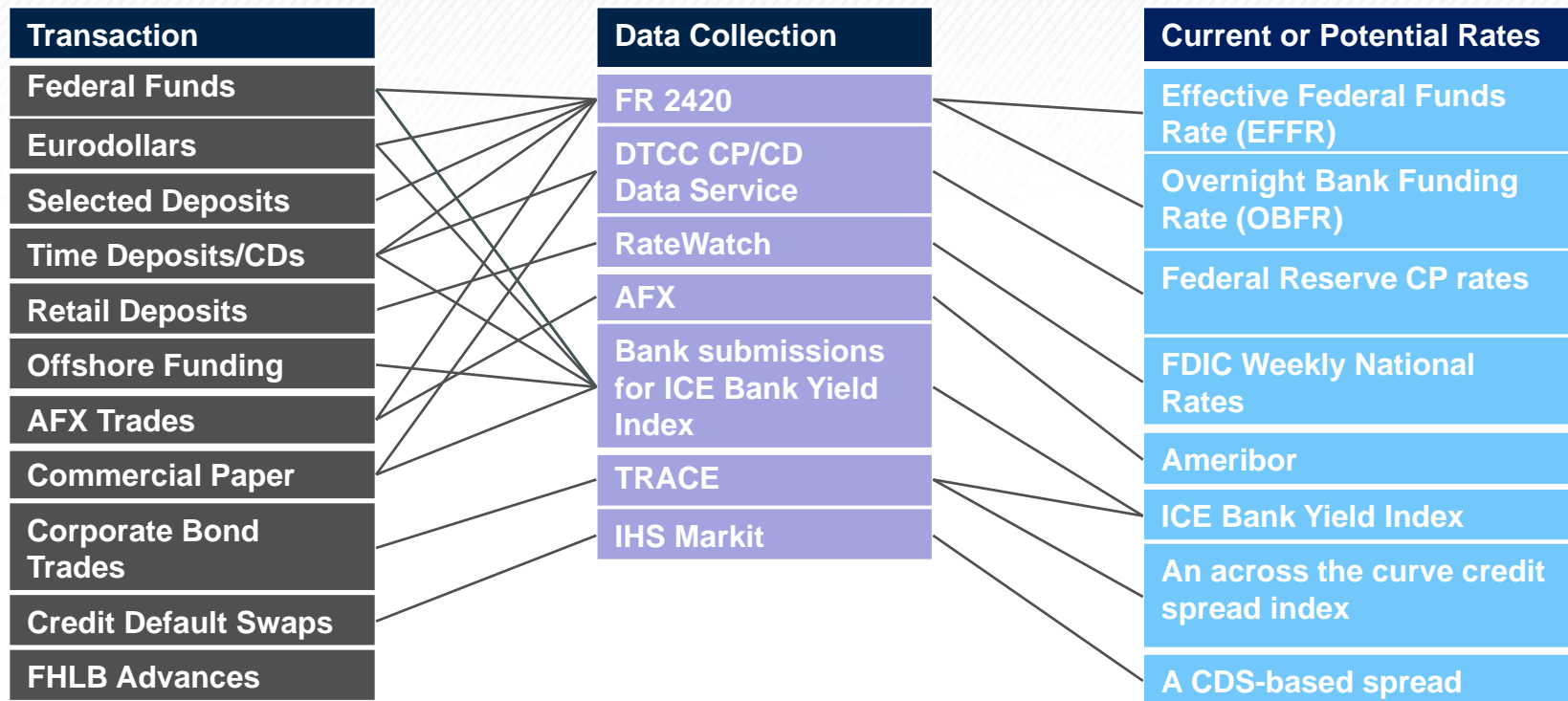
Borrower	Location of Borrower	Lender	Term	Platform (OTC or Exchange)	Borrower / Reporter ID	Principal Amount	Trade Date	Settlement Date
Depository institution	Outside US or at IBF	any	1 or more days	OTC	yes	yes	yes	yes
Term / Maturity Date	Rate / Price	Counterparty ID	Reference Credit	Traded Security	Counterparty Type	Comments on available data fields	Data Source	Data Owner
yes	yes	no	n/a	n/a	yes		FR 2420	Federal Reserve
Are transaction data commercially available and/or provided to the official sector?	If yes, at what frequency?	Are transactional data from this source publicly available?	If yes, at what frequency?	Are more aggregated data from this source publicly available?	If yes, at what frequency?	Source links for publicly available data	Are transaction data validated?	Other known data quality issues?
Yes; collected by official sector	Daily (T+1)	no	n/a	Yes; volumes of combined ED+SD can be inferred from the difference between EFFR and OBFR volumes. Summary statistics on the distribution of traded rates for overnight ED+SD transactions published on lagged basis. No data is available separating ED from SD.	daily (o/n OBFR volumes); quarterly (other overnight data)	<a href="https://apps.newyorkfed.org/markets/autorates/obfr">https://apps.newyorkfed.org/markets/autorates/obfr</a> <a href="https://www.newyorkfed.org/markets/obfrinfo">https://www.newyorkfed.org/markets/obfrinfo</a>	Fed staff reviews data submissions for errors that could affect quality of published statistics (EFFR, OBFR)	
Current rate(s) calculated from these transactions	Term of current rate(s)	Frequency of current rate(s)	Publication lag of current rate(s)	Notes on Calculation Methodology	Publicly available?	Rate Administrator	Potential rate(s) associated with these transactions	
Overnight Bank Funding Rate (OBFR)	Overnight	Daily	T+1	Volume-weighted median	Yes	FRBNY	ICE Bank Yield Index (incorporates term unsecured wholesale borrowing transactions)	

# Review of Funding Data Sources, contd.

- There is variation in the attributes of the transactions themselves and data sources:
  - Characteristics of the underlying transaction
    - Borrower type
    - Lender type
    - Secured or unsecured
    - Platform
    - Tenor
  - Collection and characteristics of transactional data
  - Data access and availability
  - Associated current or potential benchmark rates

# Linkages between Data Sources

- There are a variety of relationships between transactions, data collections, and current and potential rates:



Note: diagram is shown for illustrative purposes and is not meant to be comprehensive. Lines represent existing or potential linkages between sources. There are not clean linkages in all cases.

## Other Comments on Data Sources

- This review focused on underlying transactions and data sources. Later in this workshop, we will hear from different participants about their own funding costs, and which transactions best reflect those costs.
  
- Future discussions, including those around rate construction, can also consider:
  - Analysis of the underlying transaction markets (e.g., liquidity, transaction volumes, market composition)
  - Supplementary data sources tied to observable transactions data:
    - Quote aggregators
    - Pricing source composites
    - Data reflecting a portfolio of financial instruments (e.g., prime MMF yields)
  - Data sources complementary to transactional data:
    - Databases with issue/issuer information (e.g., CRSP)

# Panelist Discussion



# Facilitated Discussion

# Key Questions

- How have your short-term and long-term funding costs evolved over time, including during the COVID-19 pandemic?
- How have your lending rates and lending volumes evolved over time, including during the COVID-19 pandemic?
- What type of funding cost do you think a credit sensitive rate/spread should reflect? What transaction types and data sources reflect that cost in a robust and representative manner?

# Wrap Up & Next Steps

- Themes in data sources
- Next steps: Workshop 3 (Design Considerations) on August 12

# Discussion of LIBOR and Bank Funding Costs

July 22 CSG Meeting

Cindy Vojtech\*

Board of Governors of the Federal Reserve

\*The views expressed in this presentation are solely those of the author and do not necessarily represent those of the Federal Reserve.

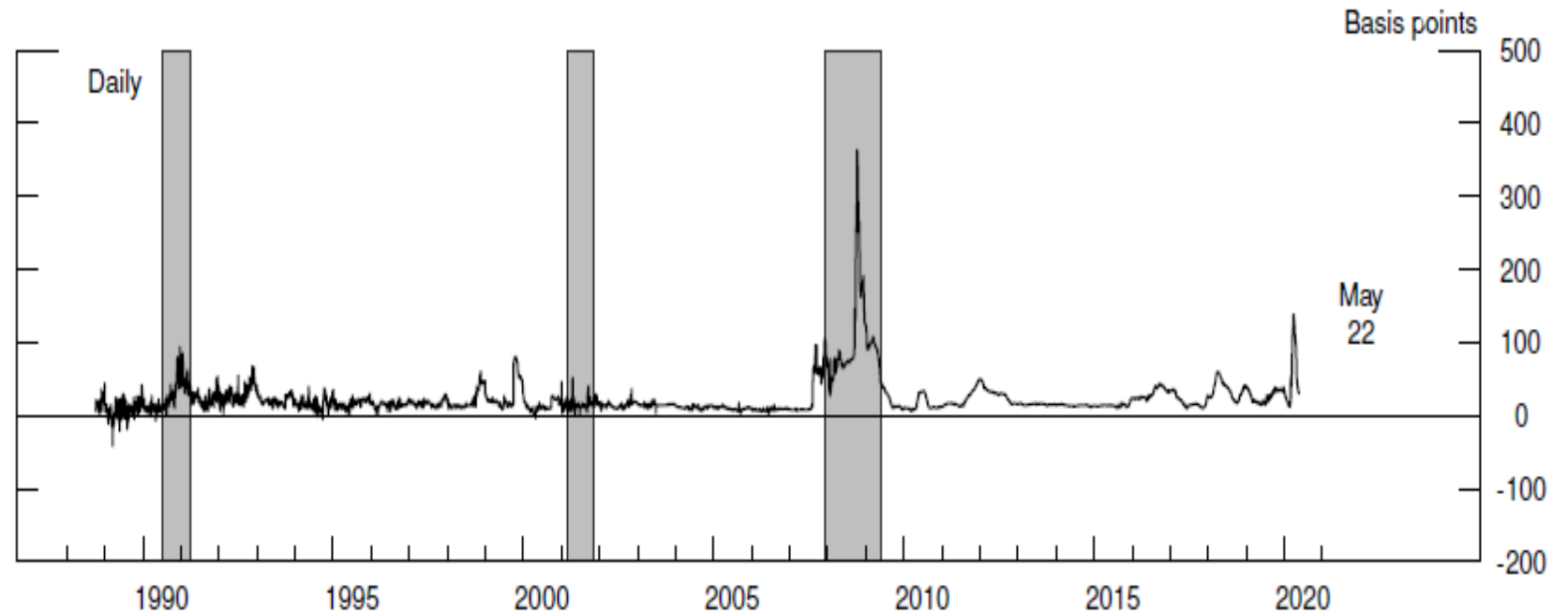
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# LIBOR and Recessions

LIBOR rose temporarily in March 2020, but much less than at the height of the 2007-09 Financial Crisis.

Looking back further, LIBOR did not reliably rise in past recessions. It did not rise in the 2001 recession and only rose a bit in the 1990-91 recession.

3-Month LIBOR-OIS Spread

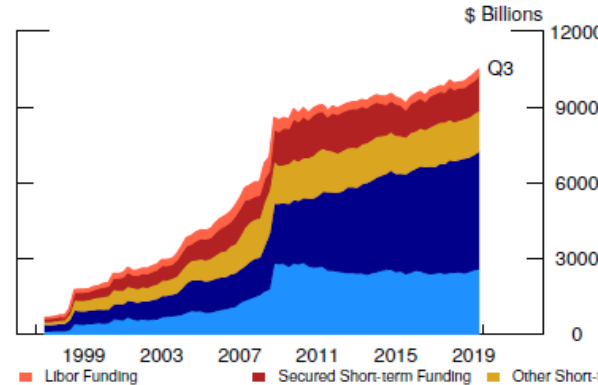


Source: Intercontinental Exchange via Haver Analytics, Refinitiv, Datascope Tick History, and authors' calculation.

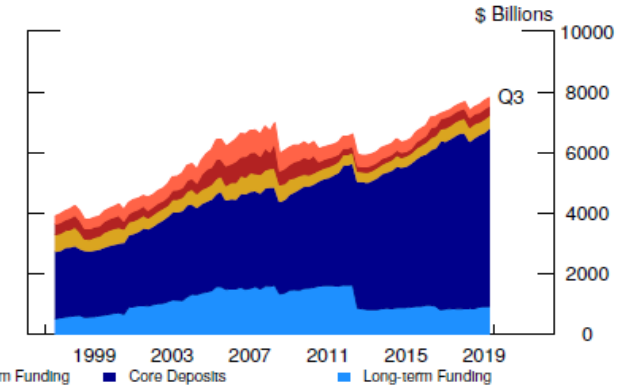
# The Role of Wholesale Unsecured Funding

- As has been noted often, wholesale unsecured funding (which LIBOR is meant to represent) has diminished since the financial crisis, while core deposits have increased significantly.
- We estimate that wholesale unsecured funding now represents 3-4 percent of overall bank funding. As will be shown later, much of this is overnight or short-term, not 1-3 month maturities.
- Secured funding actually represents a larger proportion of GSIB funding and a comparable proportion of funding for smaller banks.
- During the financial crisis, core deposits rose sharply and “LIBOR” funding declined.

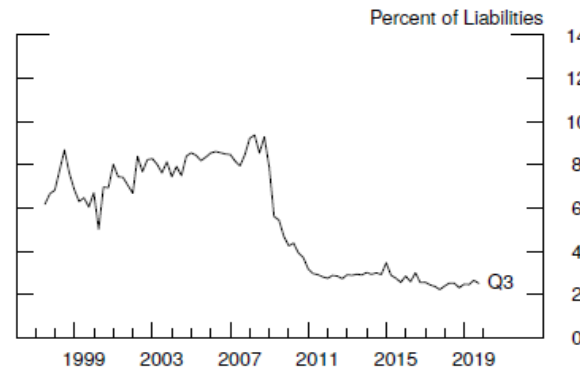
Composition of Bank Liabilities: GSIBs



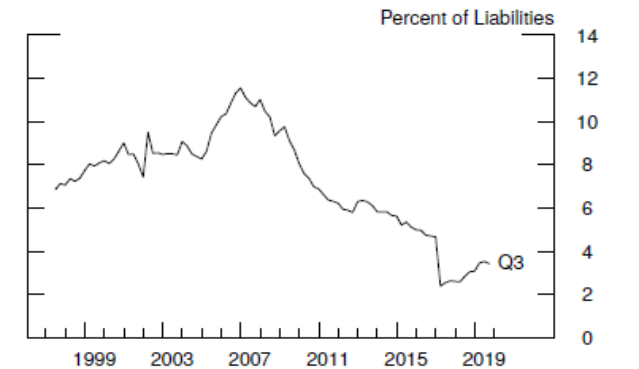
Composition of Bank Liabilities: Non-GSIBs



Share of LIBOR Funding in Bank Liabilities: GSIBs



Share of LIBOR Funding in Bank Liabilities: Non-GSIBs



Note: LIBOR funding consists of large time deposits with remaining maturity of less than one year, fed funds purchased and commercial paper. Secured short-term funding is repo and trading liabilities minus derivatives with negative fair value. Other short-term funding is foreign deposits and other borrowed money with maturity less than one year. All other liabilities are included in core deposits and long-term funding.

Source: FR-Y9C, Call Report.

# Correlations with Funding Costs

As a result of these factors, risk-free rates (RFRs) have actually been more correlated with bank funding cost than LIBOR, even during the financial crisis.

For larger banks, an “in arrears” rate or term RFR rate is typically most highly correlated with funding cost, while for smaller banks and during the crisis, an “in advance” average is actually most highly correlated.

Table 1: Average Correlation with Changes in Bank Funding Costs, 5-year windows

	3-Month LIBOR	3-Month SOFR in Advance	3-Month SOFR in Arrears	3-Month EFRR OIS
<b>GSIBs</b>				
Pre-crisis (2001:Q3-2006:Q2)	0.89	0.82	0.87	<b>0.90</b>
Crisis (2006:Q3-2011:Q2)	0.58	<b>0.69</b>	0.35	0.61
Post-crisis (2014:Q3-2019:Q2)	0.58	0.47	0.71	<b>0.73</b>
<b>Non-GSIBs</b>				
Pre-crisis (2001:Q3-2006:Q2)	0.77	0.76	0.77	<b>0.78</b>
Crisis (2006:Q3-2011:Q2)	0.38	<b>0.54</b>	0.36	0.49
Post-crisis (2014:Q3-2019:Q2)	-	0.13	0.30	0.29

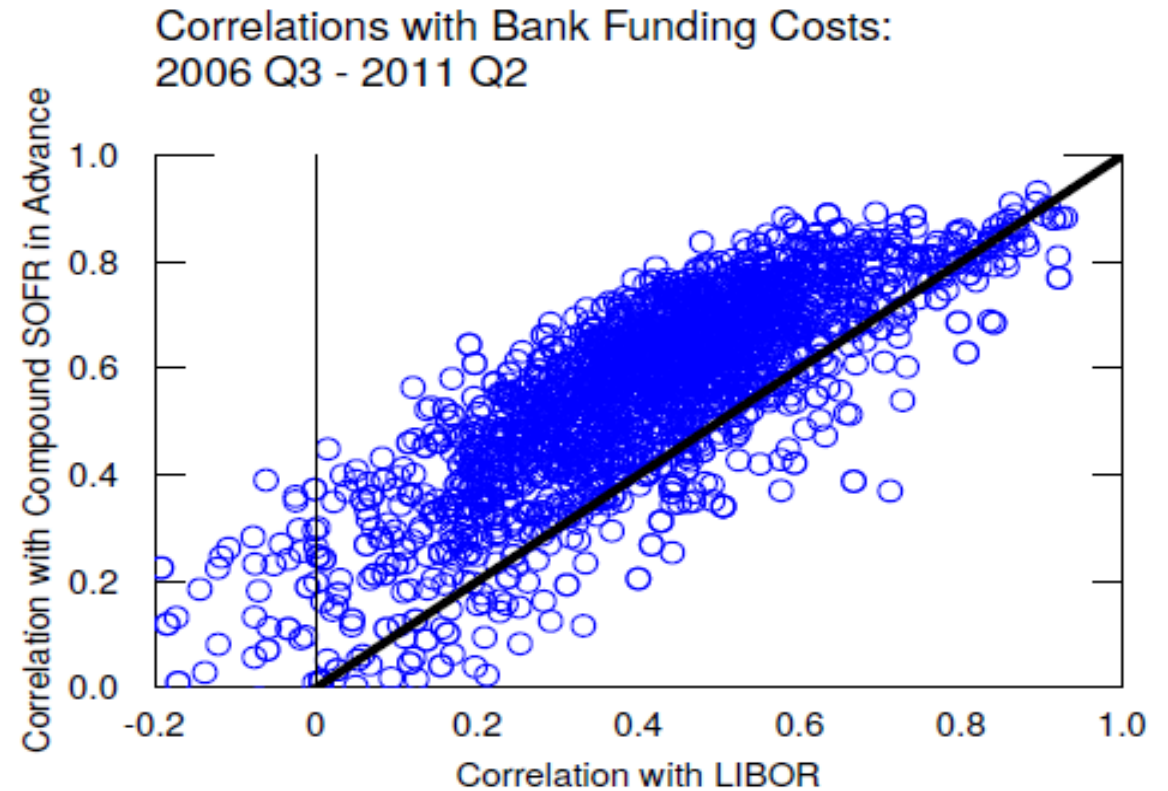
Note: Bolded number designates the rate with the highest correlation for a bank group-time period pair. Twenty-quarter (five-year) correlations are calculated at the bank level using total cost of funding and the designated market rate. Correlations are then averaged across banks in the group. The period 2011:Q3 to 2014:Q2 is not reported in the analysis to allow for equally long 5-year periods and to focus on the most recent period when the Federal Reserve's monetary policy target was predominantly above the effective lower bound. The total cost of funding equals total interest expense divided by bank liabilities. 3-month LIBOR, EFRR, and OIS rates are based on the first day of the quarter. SOFR in Advance is SOFR across the previous quarter. SOFR in Arrears uses the current quarter.

Source: Call Report, FR Y-9C, Federal Reserve Bank of New York, ICE Benchmark Administration, Refinitiv, Datascope Tick History, and authors' calculation.

# Correlations with Funding Costs (2)

These results hold in the cross section.

For most banks, a compound average of SOFR in advance was more highly correlated with their cost of funding than LIBOR was.



Source: Call Report, FR Y-9C, Federal Reserve Bank of New York, ICE Benchmark Administration, Refinitiv, Datascope Tick History, and authors' calculation.



# Many Synthetic Liabilities to LIBOR Can be Tied to RFRs

**Banks could readily tie their LIBOR funding exposure to another rate.**

Although U.S. banks' direct exposures to short-term wholesale unsecured funding appear to be about 2-4 percent of their overall liabilities, banks have also accumulated a number of other liabilities that they have chosen to tie to LIBOR, including:

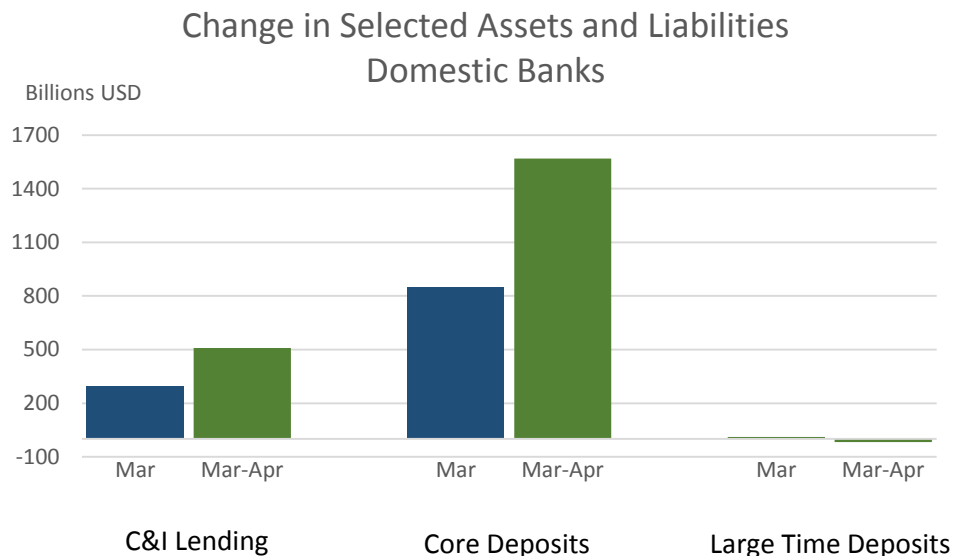
- Issuance of senior or subordinated floating rate debt that pays LIBOR
- Federal Home Loan Bank (FHLB) advances based on LIBOR
- Issuance of non-agency mortgage or asset-backed securitizations whose payments are tied to LIBOR
- Issuance of preferred equity tied to LIBOR
- Derivatives liabilities incurred through issuance of fixed-rate debt that is then swapped to LIBOR

Using data from Bloomberg, we estimate that U.S. banks have \$412 billion outstanding in senior or subordinated floating-rate debt that pays LIBOR. This debt has mostly been issued by large banks (those with \$50 billion or more in assets), and represents 3 percent of liabilities, more than their combined borrowing in wholesale unsecured funding markets.

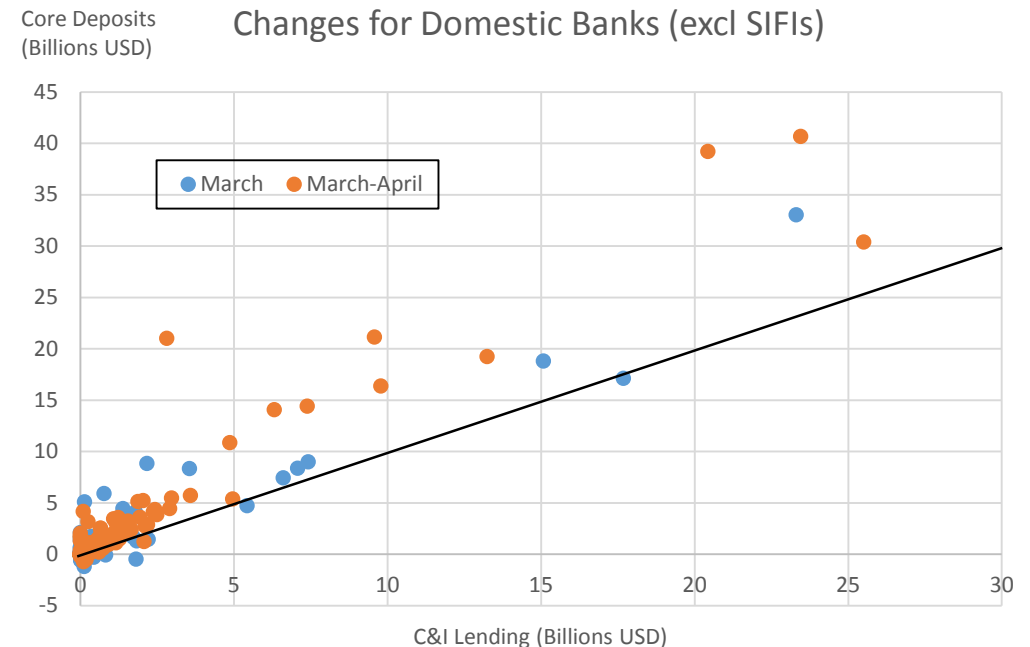
# Dynamics of Domestic Bank Funding in March-April

Some argue for a need for LIBOR-like rates to accommodate revolvers and the likelihood that these open lines of credit will be pulled down in times of stress, while banks will need to fund those draws in wholesale unsecured funding markets.

- Lines of credit (represented by C&I lending shown below) did rise in March and April.
- But for domestic banks, core deposits, which pay far less than LIBOR, rose much more than C&I draws.
- Borrowing in (wholesale unsecured) CDs fell slightly.



Source: Assets and Liabilities of Commercial Banks in the United States - H.8.



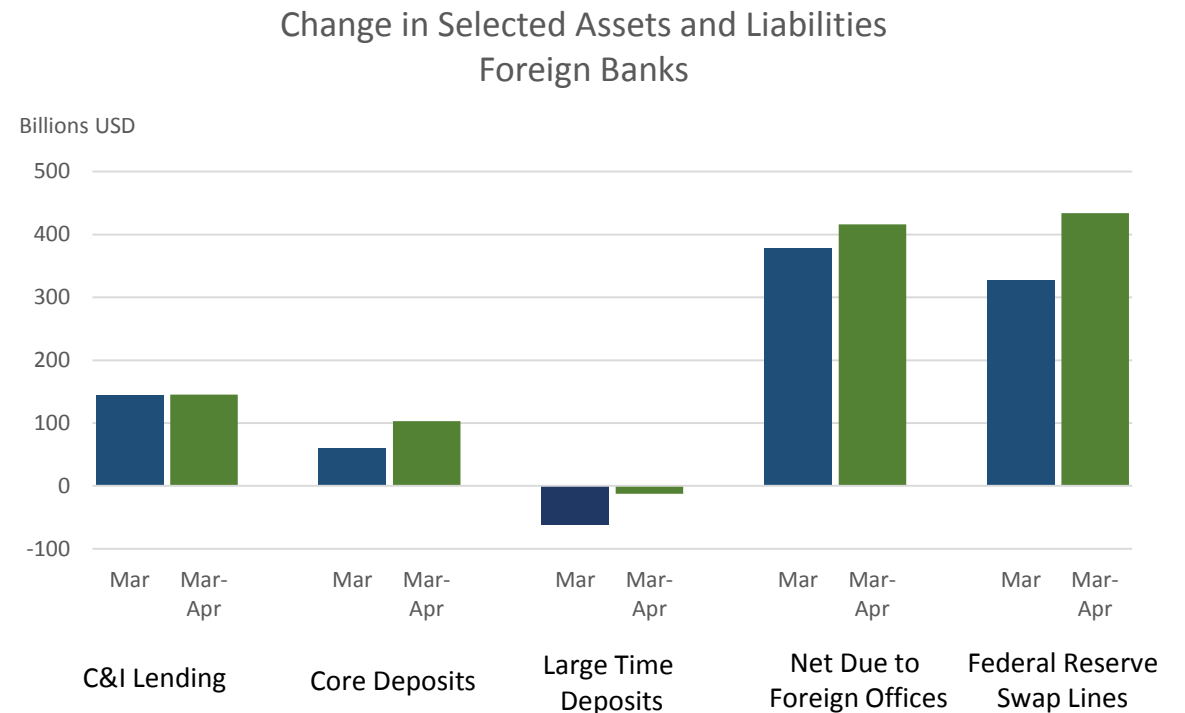
# Dynamics of Foreign Bank Funding in March-April

Foreign banks also experienced draws on lines of credit, and their core deposits did not rise as much as for U.S. banks.

However, the Federal Reserve's swap lines offered funding at rates well below LIBOR.

Foreign banks drew considerably on these lines in March and April, and FBO's were able to access such funding by borrowing from their parent banking organizations. Borrowing from foreign offices rose much more than C&I lending.

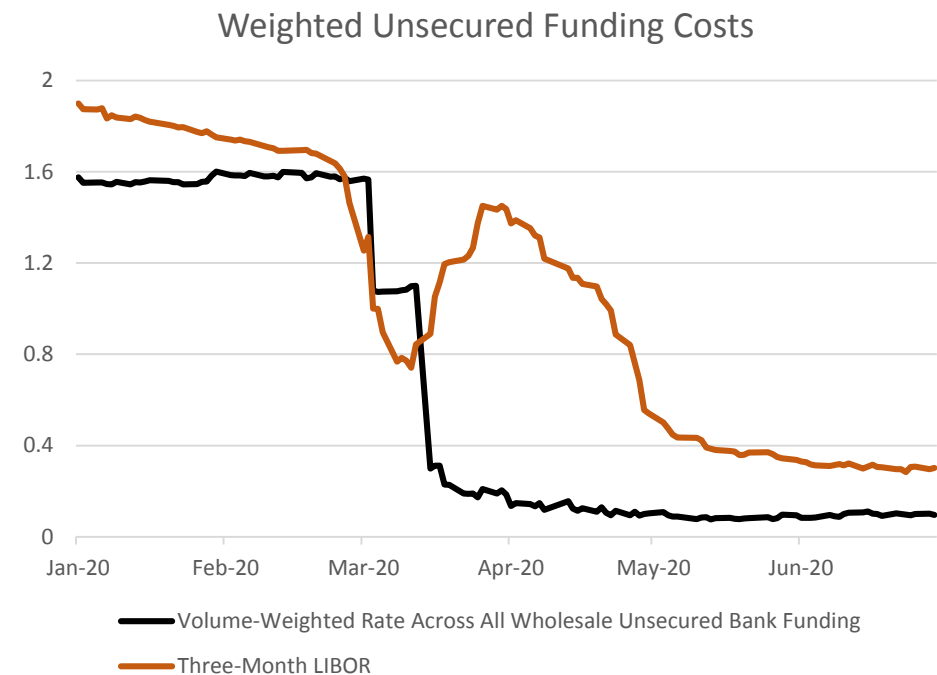
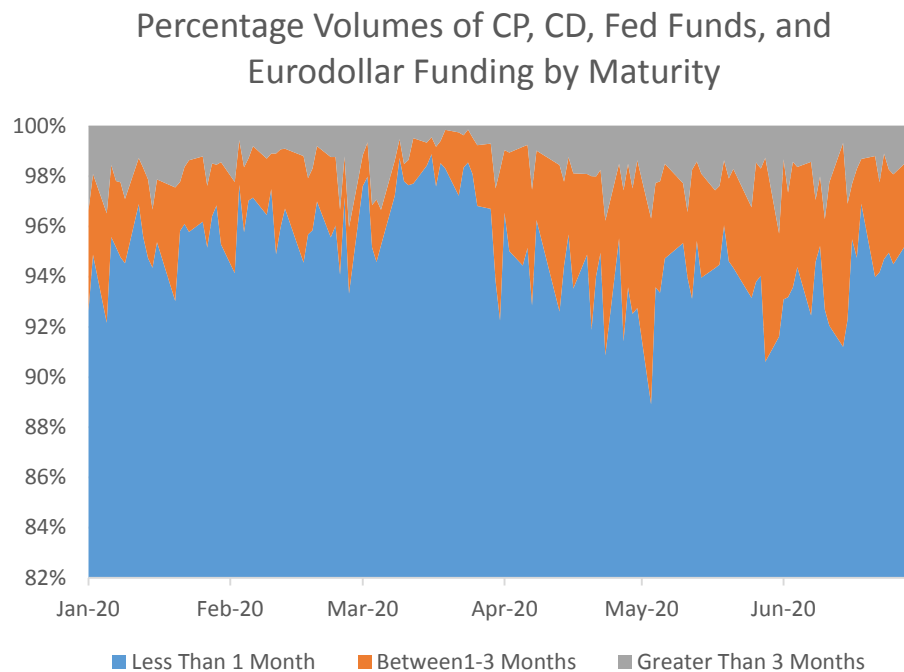
FBOs also hold considerable amounts of liquid assets in fed funds and repo, which receive rates below LIBOR, and made use of these funds.



Source: Assets and Liabilities of Commercial Banks in the United States - H.8.

# Wholesale Unsecured Funding Costs in March-April

Abstracting from other sources of funding that rose, even the overall cost of unsecured wholesale funding declined in March and April (this is not a statement on the accuracy, or lack of accuracy, of LIBOR as such). Looking across all commercial paper, certificates of deposit, fed funds and Eurodollar funding, a large proportion of this funding is overnight or very short term. Because overnight unsecured rates declined with the cuts in monetary policy, the volume-weighted cost across all maturities of funding declined.



This analysis/summary relies on information provided by The Depository Trust & Clearing Corporation and/or its affiliates.  
Source: FR 2420, DTCC CPCD data.

# Trading Activity in March

- Trading Activity is generally low at maturities of 1-month or higher, but was particularly low in March.
- For example, a typical trading day for 3-month CP in 2020 has seen less than \$1 billion in volume across 7 banks. For about half of the days, the Herfindahl index was highly concentrated.
- In March 2020, a typical trading day saw about \$200 million in volume across 3 banks.
- This is across all banks in our sample, and there is considerable heterogeneity in the rates each bank trades at.

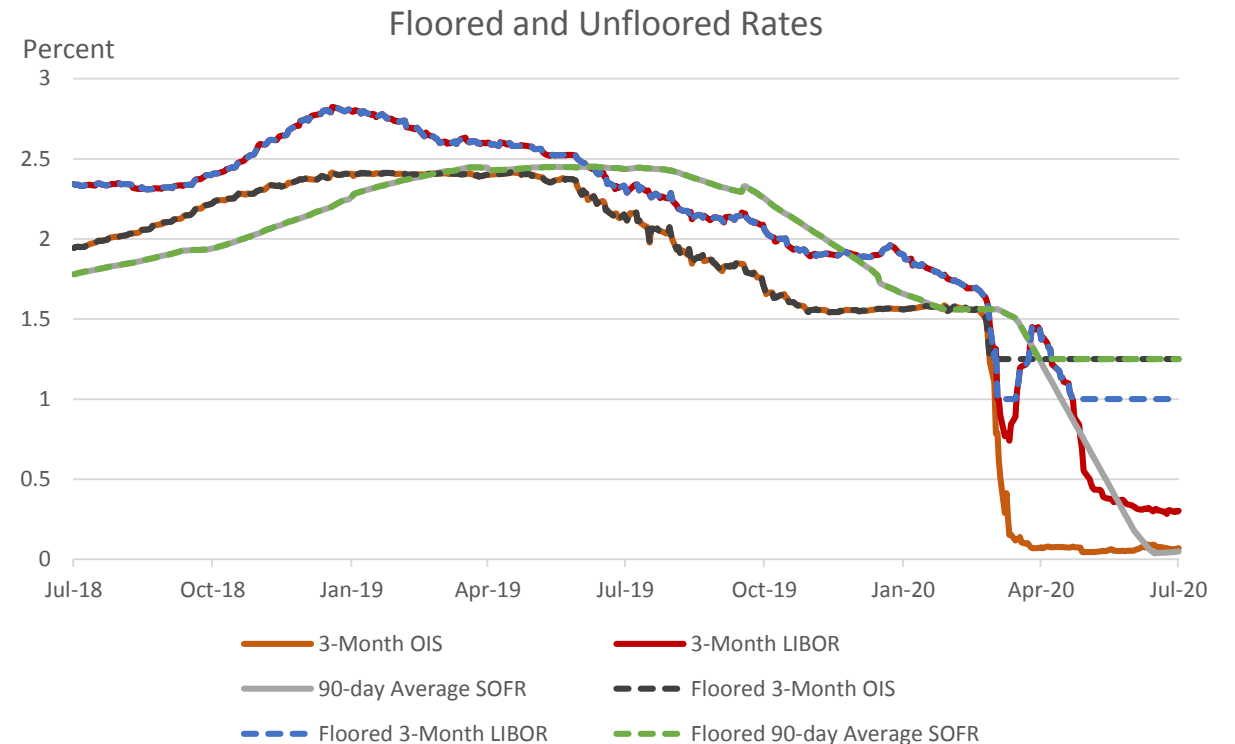
## Summary Statistics for 3-Month CP Trading Activity

	Trades	Banks	Volume	Herfindahl Index
2020H1				
average	23	7	\$1,009,412,110	0.30
median	21	7	\$872,982,500	0.24
March 2020				
average	10	3	\$434,803,235	0.60
median	5	3	\$214,000,000	0.52

This analysis/summary relies on information provided by The Depository Trust & Clearing Corporation and/or its affiliates.  
Source: DTCC CPCD data.

# Simpler Methods of Controlling for Rate Declines

- If banks' goals are to ensure that lending rates do not fall during downturns, there may be easier ways to accomplish that
- Currently, many lenders are now placing 100 basis points floors on new LIBOR loans. Thus there is a perception that even LIBOR is now too low.
- A floored RFR loan would have been quite close to a floored LIBOR loan in the current environment.



# Bank of America

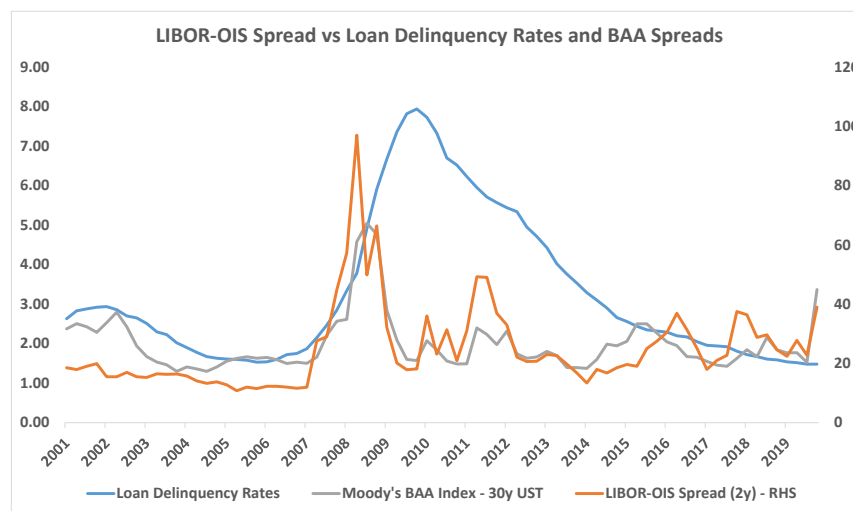
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# Desirable Properties of Credit Sensitive Benchmarks

## Purpose of Credit Sensitive Benchmark: *To Reflect Systematic Risk in Banking Sector and Economy*

- Credit sensitive rates historically are highly correlated with loan loss provisions, unsecured bank spreads, and revolver utilization increases
- Different purpose from client margin on a loan (idiosyncratic risk to the borrower)
- Revolving credit facilities (client spreads locked, disbursement timing sensitive to market conditions)
- Risk free rates such as SOFR are secured and reflect flight-to-quality during stress

Changing reference rate from a pro-cyclical one to a counter-cyclical one fundamentally changes the way banks manage and allocate capital, which ultimately would increase the cost of lending and reduce the availability of credit



Source: Bloomberg, St. Louis Fed, Moody's

## Unsecured Loans Should Reference an Unsecured Underlying Rate

- Credit sensitive rate maybe less suitable for derivative discounting



# Constructing Credit Sensitive Benchmarks

## Representativeness of Underlying Data

- Banks' reliance on wholesale unsecured funding has been in secular decline *but* significant transactions are still observable in:
  - Primary markets: term unsecured deposits, CP and negotiable CD issuance (DTCC data and FR 2420)
  - Secondary markets: TRACE/FINRA trades of bank issued debt + quotes streaming/aggregation services
- Size and liquidity of underlying should be robust relative to market referencing it (IOSOCO benchmark principle #6 on design)
- Approximately \$6Trn outstanding loans reference LIBOR. If half referenced a new credit-sensitive rate, this would be proportionate with other market precedents

Volume and Representativeness				
Benchmark Underlying	Size	Relative To	Size	Ratio
GC Repos in SOFR	~ 1 Tr	LIBOR Derivative Notional (Converting to SOFR via ISDA protocol)	~ 200 Tr	0.50%
Bank Unsecured Term Trades (CP / CD / Unsecured Deposits / TRACE) 5-day avg.	~ 30 B	Term loans referencing credit sensitive rate	~ 3 Tr	1.00%
Avg. Daily Stock Volume (3 Largest US Banks)	~ 5.6 B	Market Cap	~ 605 B	0.92%

## Spread Need Not Be Updated Daily or Reference Only Current Day's Transactions

- The representative sample transactions could be enlarged by using a rolling window of transactions (e.g., weekly)
- If published as a *spread to term SOFR*, the SOFR component would refresh daily and have credit spread added

# Pricing services used in the regulated financial sector

---

- There are several pricing services providers (e.g. Bloomberg, ICE Data Services, IHS Markit) that aggregate bank bond quotes and are used across the financial sector
- These providers capture a sufficiently large number of quotes across a sufficiently large population of bank issuers and CUSIP:

	<b>Panel banks (&lt;18mos)</b>	<b>All banks (&lt;18mos)</b>
Financials entities quoted	13	54
Total daily quotes	~16k	~25k
Daily avg. range of bonds	160-200	270-400
Cumulative bonds (annual)	~300	~800

*Estimates on best-efforts basis, applying market-level assumptions to internal data*

- Pricing services are used heavily across the regulated financial sector:
  - Dealers and institutional clients – used for many functions, including: high touch traditional and low touch electronic pricing, trade control processes, risk management, and price verification testing
  - Prime Money Market (2a-7) and Mutual funds – used for end-of-day NAV valuation. End-of-day NAV is the level at which investors enter or exit a particular fund
- Given these well-established use cases in other parts of the financial sector, there is merit in exploring how pricing services could be used to construct a credit sensitive benchmark for bank loans

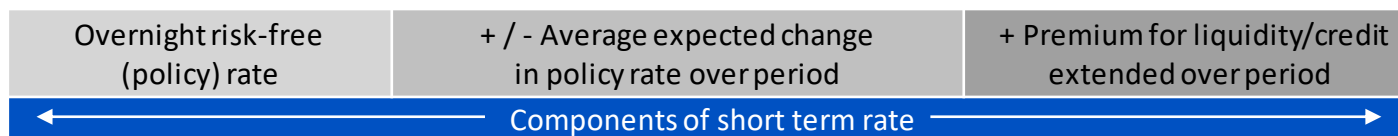
# Importance of Short-Term Rates, in addition to Overnight Rates

**Short-term rates (e.g. 1 month or 3 month) are generally more desirable than overnight rates for loans**

- Provide certainty of cash flow, known at beginning of the period
- Simpler for calculation and operations

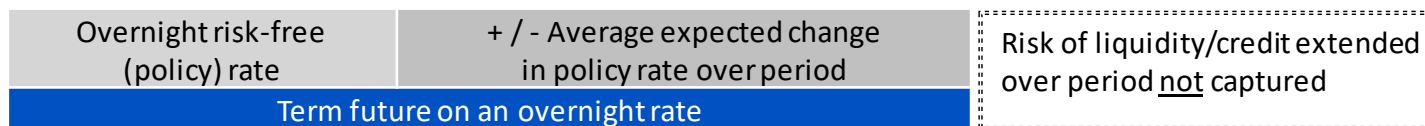
*Short-term rates do not delay monetary policy transmission. They reflect changes in policy rate immediately*

**From a credit sensitivity standpoint, short-term rates reflect 3 distinct risks:**



Overnight rates (secured or unsecured) such as SOFR and Fed Funds may be extended to a short-term rate equivalent by either observing futures markets or by providing averages of the overnight rate however:

***A one month future on an overnight lending rate  $\neq$  one month short-term rate***



**To be truly credit sensitive, a reference rate needs to reflect that liquidity is at risk for term of loan (credit duration), not simply an expectation of an overnight rate during the period.**

**Term of borrowing has important relationship to Liquidity Coverage Ratio**

Unsecured loans are *not* High Quality Liquid Assets

- For a bank to make an incremental unsecured loan, it must raise funding >30days
- Also cannot pledge any existing HQLA to raise the funding and maintain LCR coverage
- Only an unsecured liability >30-days can be used to fund an incremental unsecured loan LCR neutral

## Across-the-Curve Funding Spreads

Antje Berndt    Darrell Duffie    Yichao Zhu  
ANU            Stanford            ANU

Credit Sensitivity Group Meeting  
Federal Reserve Bank of New York  
July 22, 2020

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## Wholesale funding costs: Across the curve

1. Regulations have induced U.S. banks and bank holding companies to term out their funding significantly, making LIBOR unrepresentative of funding costs.
2. Using TRACE and other data, we first estimate average wholesale long-term unsecured funding spreads, using weights that depend on:
  - ▶ issuance volumes, for representativeness of funding costs.
  - ▶ secondary market transactions volumes, for statistical robustness.
3. The composition of issuance volumes across maturities changes substantially over the past decade.
4. Long-term spreads occasionally move quite differently from short-term spreads.
5. An across-the-curve approach to estimating funding costs seems appropriate.

# Composition of trailing annual issuance in four maturity buckets

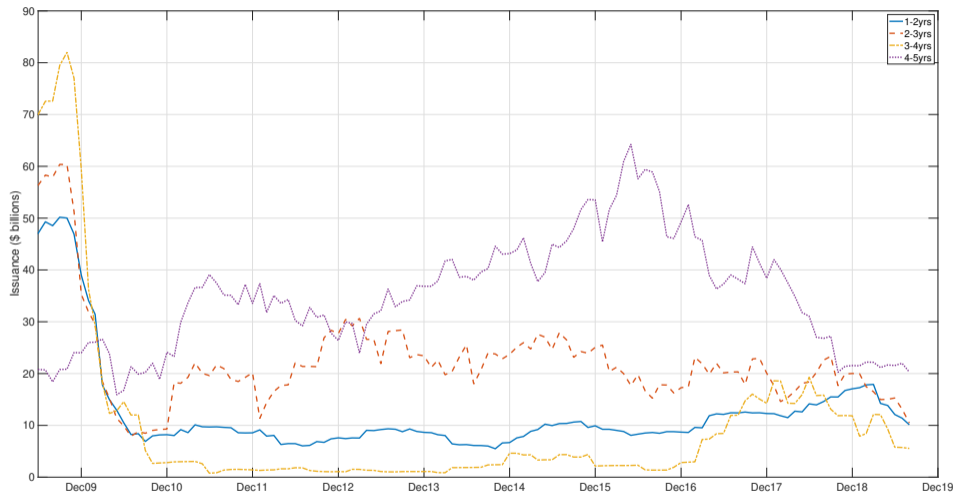
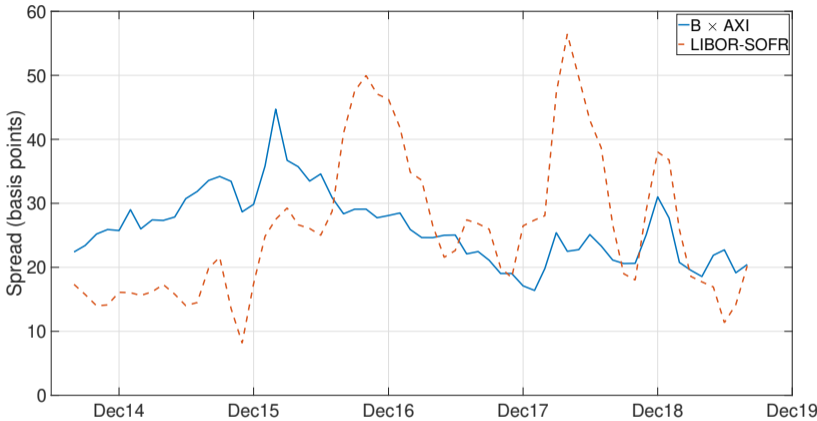


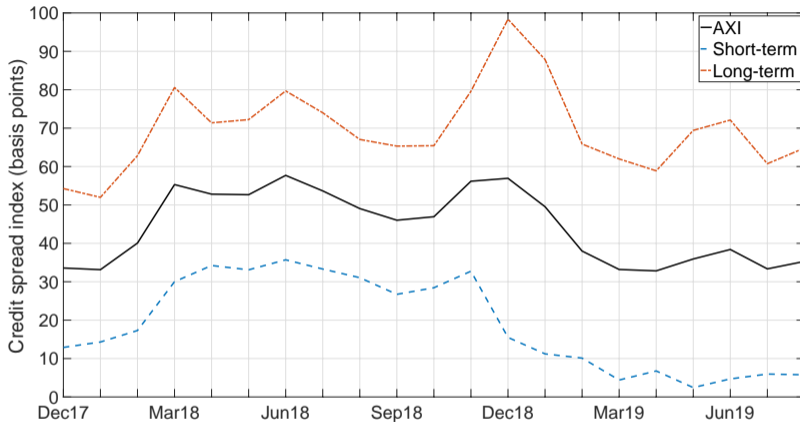
Figure: Trailing annual issuance (principal amount) in each of four maturity ranges. Underlying data: TRACE.

# Short-term versus long-term spreads scaled to the same mean



**Figure:** In red, the spread of 3-month LIBOR over 3-month SOFR, compounded in arrears. In blue, long-term (weighted average 1-year to 5-year) spreads, scaled by  $B_{3mo} = 26/83$ , which is the ratio of the mean of LIBOR-SOFR over the indicated sample period (26 bps) to the mean of long-term spreads over the same sample period (83 bps).

## An average of short term and long term spreads



**Figure:** The black line (AXI) is a roughly estimated across-the-curve average spread index, constructed as the simple average of (a) weighted average long-term spreads (1-5 year bond spreads, TRACE data) and (b) weighted average short-term spreads, using data from ICE Benchmark Administration on wholesale deposits, CP, and CD primary issuances of a panel of 14 banks, restricted to issuances over \$10 million and maturities under 250 days. Short-term spreads are weighted by average issuance and a rough estimate of average maturity.