

# Bloomberg Short-Term Bank Yield Index

**BSBY report:** Additional analysis and key facts

July 1, 2021

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## Executive summary

Bloomberg is proud to support the efforts of the public sector and market participants to facilitate the orderly transition from the London Inter-bank Offered Rate (LIBOR) and other inter-bank offered rates (IBORs) to risk-free rates (RFRs), including the provision of a robust and transparent credit-sensitive rate (CSR).

The aim of this paper is to further inform public-sector and industry-level discussion around how CSRs—including BSBY—can facilitate benchmark transition.

## Background

As the December 31, 2021, initial deadline for LIBOR cessation approaches, market participants are actively heeding the call of regulators and industry groups to transition away from LIBOR and other IBORs and replace them with alternative rates.

The primary alternative rates that will form the backbone of the financial markets post-LIBOR are RFRs, such as the Secured Overnight Financing Rate (SOFR, for USD-denominated derivatives) and the Sterling Overnight Index Average (SONIA). These RFRs are seen as preferable to LIBOR—and less prone to potential manipulation—because they are based on data from observable transactions.

Public sector and industry groups, along with benchmark providers, including Bloomberg, have been working with market participants to facilitate the orderly transition from IBORs to RFRs. However, it has become clear that when it comes to use cases for reference rates, one size does not fit all.

This is due to RFRs being structurally different from IBORs. As overnight rates, they exhibit different liquidity and volatility characteristics that are not aligned with banks' borrowing and funding costs. Bloomberg Index Services Limited (BISL) is the official provider of fallbacks for the International Swaps & Derivatives Association, Inc. (ISDA), calculating adjustments to the RFRs under ISDA's methodology, which is based on feedback that ISDA received from several market consultations regarding these inherent differences.

While RFRs may address the majority of legacy LIBOR use cases, many lenders and borrowers see the need for credit sensitive alternatives—CSRs—for various reasons, as discussed below.

In particular, this paper addresses the following key points:

- Market participants and the public sector have declared the need, and support, for CSRs, primarily for the lending market
- CSRs are accepted and used in many markets around the world, alongside RFRs
- BSBY is fundamentally and structurally different from LIBOR
- Testing has demonstrated BSBY's resistance to potential manipulation
- Expected money market reforms will likely have minimal impact on the robustness of BSBY

From February 2020 to January 2021, the Federal Deposit Insurance Corporation, the Federal Reserve Bank of New York, the Board of Governors of the Federal Reserve System, the Office of the Comptroller of the Currency, and the U.S. Department of the Treasury, convened several Credit Sensitivity Group workshops to explore the need for CSRs and how they may factor into benchmark transition for loan products. The Credit Sensitivity Group workshops were separate from, and supportive of, the work of the Alternative Reference Rates Committee (ARRC). It was noted in a letter to the regional bank participants that included the Commodity Futures Trading Commission, and Securities and Exchange Commission, that:<sup>1</sup>

**"... the official sector supports the continued innovation in, and development of, suitable reference rates, including those that may have credit sensitive elements."**

Further to this notice, the agencies agreed that a bank may use any reference rate for its loans that the bank determines is appropriate for its funding model and customer needs.

As Bloomberg has been at the forefront of supporting benchmark transition, we have deep knowledge of the use cases for CSRs, and have worked with market participants to develop and produce a transparent and robust CSR based on transaction-related data to address the needs of the lending market and accelerate the overall LIBOR transition.

1. See: <https://www.newyorkfed.org/newsevents/events/markets/2020/0225-2020>

## Why BSBY?

Bloomberg developed BSBY in response to requests from a number of lending market participants. These firms were seeking a series of credit sensitive reference rates which measure the average yields at which investors are willing to invest USD funds on a senior, unsecured basis in systemically important banks. BSBY was developed to complement SOFR by providing the lending market with an index that can help banks with asset/liability management (ALM) to better ensure availability of funds during times of market stress.

To underscore the importance of this complementary relationship, a seminal report by the Bank of International Settlements (BIS)<sup>2</sup> stated:

“...the new RFR-based benchmarks clearly fulfill the first two of the three desirable features of an all-in-one benchmark rate. **Where they seem to fall short is the third key feature, i.e. serving as a benchmark for term funding and lending by financial intermediaries.** Term rates derived from market prices for RFR-linked derivatives (e.g. OIS or futures) will readily yield a risk-free term structure that can be used for discounting purposes and fulfil various needs in the market. **But banks will still lack a benchmark that adequately reflects their marginal funding costs as a substitute for LIBOR. This speaks to the limitations of using O/N rates, instead of those based on term transactions, to create term benchmarks....”**

Since then, there have been several efforts to remedy this gap including, for example, fixed spreads over term RFRs. Such rates may likely benefit borrowers in the current environment but still do not mitigate funding stress and the associated ALM mismatch that bank lenders would face in a counter-cyclical rate environment, as discussed in more detail later in this report.

BSBY is designed and produced in alignment with the IOSCO Principles for Financial Benchmarks (IOSCO Principles).<sup>3</sup> The rate is based on consolidated, anonymized transaction-related data and firm executable quotes of commercial paper (CP), certificates of deposit (CD) and bank deposits from Bloomberg’s electronic trading solutions, and the trades of senior unsecured bank corporate bonds as reported in the Trade Reporting and Compliance Engine (TRACE). BSBY will also soon include data sourced from the Depository Trust & Clearing Corporation (DTCC).

BSBY aggregates the above input data over a three-day rolling window, filters this data by a list of eligible systemically -relevant banks, and uses a specialized curve-fitting methodology to calculate overnight, 1-month, 3-month, 6-month and 12-month yields. The mix of input data is based on banks’ reliance on these products to meet wholesale funding needs and allows them to determine their lending rates based on their funding costs. By lending at rates tied to funding costs, banks can ensure that they maintain a positive net interest income and manage their asset/liability exposure while borrowers enjoy the transparency of a market rate.

2. Beyond Libor: A primer on new reference rates, March 2019, available here: [https://www.bis.org/publ/qtrpdf/r\\_qt1903e.pdf](https://www.bis.org/publ/qtrpdf/r_qt1903e.pdf)

3. IOSCO Principles of Financial Benchmarks Final Report, available here: <https://www.iosco.org/library/pubdocs/pdf/IOSCOPD415.pdf>. BISL’s assurance report is available here: <https://www.bloomberg.com/bsby>. Note: BSBY is not currently available for regulated use in the UK. BISL is in the process of bringing BSBY within the UK Benchmark Regulation framework.

### Bank ALM and the need for credit-sensitive term rates

In the post-LIBOR world, banks will face additional challenges if they are restricted to an actuarial approach of determining and applying a fixed credit-spread add-on to an SOFR term rate based on long-term historical relationships. In this scenario, they could face increased risk of an ALM mismatch and would be unable to offer short term lending rates to customers that effectively capture their market price of credit risk in a stressed market environment.

For example, if liquidity in funding markets begins to dry up and institutional corporate borrowers are challenged to meet their short-term cash-balance needs, they will naturally tap their credit lines and revolving credit facilities, which are tied to short-term money market rates. In a counter-cyclical environment with the policy rate trending down sharply, any credit line tied to the SOFR rate plus a fixed credit spread is going to see a sharp decline in value from the lenders' perspective, as the SOFR rate is strongly correlated to the Federal Reserve policy rate while the fixed add-on spread remains unchanged.

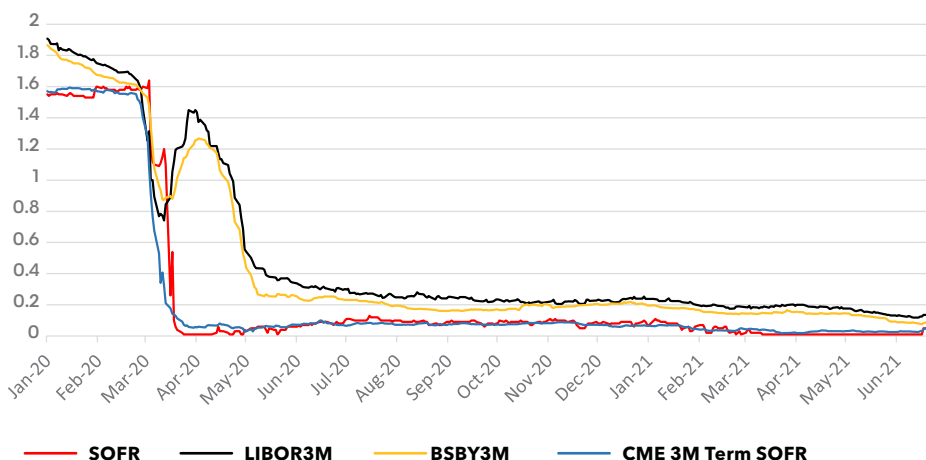
On the funding side, lenders need to fund the surge in tapped lines of credit at considerably wider spread levels, reflecting the elevated levels of stress in credit markets. This could result in a strong decoupling: lower asset-side and higher liability-side rates in a stressed market environment leading to overall weakness in the lending sector as net interest margins undergo extreme compression. Revolving credit facilities and credit lines are especially important during times of stress and the lack of a credit-sensitive rate would make lenders reluctant to provide this key source of liquidity when institutional corporate clients need it the most. The following graph highlights an example of decoupling of risk-free rates (SOFR) and CSRs (LIBOR, BSBY) at the onset of the pandemic in March 2020.

One unintended consequence of requiring lenders to take a fixed historical spread plus term SOFR approach could be higher fixed spreads that vary subjectively across lenders (additional add-ons to their historical spreads as a counter-cyclical buffer) and possibly also dampen lender willingness to provide SOFR-linked loans. This would be particularly harmful to smaller and midsize banks which do not typically have the capacity to engage in complex hedging strategies.

From a borrower's point of view, a widely acceptable standard market rate that represents the wholesale cost of short-term funding enables more efficient management of their forward-looking borrowing costs. Furthermore, the development of a liquid derivatives market linked to that rate allows borrowers to transform a variable-rate loan to a fixed-term liability, enact more optimized ALM strategies, and perform risk management activities.

The ability for lenders to make loans linked to CSRs would remedy this shortcoming to the extent a widening credit spread offsets the rapid reduction in the RFR component in stressed market conditions, protecting against any adverse net interest margin (NIM) compression. With borrowing and lending rates aligned, banks would be more willing to extend credit in normal market conditions as well as during stressful times.

BSBY is designed to be used in the lending markets on a fit-for-purpose basis. The dynamic credit sensitivity built into BSBY makes it suitable for both lenders and borrowers, especially as a majority of the loans outstanding today are already tied to credit-sensitive benchmarks (such as LIBOR).



**Figure 1:** Comparison of risk-free and credit-sensitive rates.

**Source:** Bloomberg Finance L.P. Estimates as of June 2021.

In addition, having a choice of rates suitable for clients and banks based on their funding model will help accelerate the transition away from LIBOR, given the broad market acceptance of CSRs. A major positive development during the LIBOR transition process was the broad understanding and acceptance of fallbacks in various instruments linked to the choice of benchmarks. Recent activity has shown that clients have chosen SOFR as a fallback rate to BSBY as per the guidance from the official sector. This should give further comfort to the market and regulators that a LIBOR-like situation will not be easily replicated with the availability and adoption of multiple benchmarks and a fallback framework that is now being incorporated by the market.

The need for a CSR complement to RFRs is not limited to the U.S. loan market. Lending markets around the globe have adopted a multi-benchmark approach.

The European markets have opted to reform EURIBOR (the second most widely-used benchmark after LIBOR), retaining the rate rather than eliminating it entirely. Reformed EURIBOR now co-exists with €STR, the EUR RFR rate administered by the European Central Bank (ECB). Figure 2 highlights the estimated size of the lending market in Europe, which is comparable in magnitude to the U.S.

Nor is this dual-rate approach—a reformed CSR benchmark complementing a local currency RFR—limited to the two largest developed markets. A multi-benchmark approach has been adopted in other markets, such as TIBOR (CSR) alongside TONA (RFR) in Japan; CDOR (CSR) alongside CORRA (RFR) in Canada; and reformed BBSW (CSR) alongside O/N RBA cash rate (RFR) in Australia.

This suggests that while the banking sector may want to be less reliant on unsecured wholesale funding post the 2008 financial crisis, it is still a material source for their total funding needs, maintaining the need for credit-sensitive term benchmarks for these markets. Indeed, the BIS predicted a market environment where "... different benchmarks could emerge that are better fit for individual purposes than the 'Swiss army knife approach' implicit in a single benchmark."<sup>4</sup>

And, to be clear, the secured/unsecured nature of a rate does not make it more or less eligible or appropriate as a benchmark rate in the lending markets. Of the five major RFR rates, only SOFR and SARON represent secured borrowing while reformed SONIA, €STR and TONA are all unsecured rates.<sup>5</sup> What matters is the construction of the credit-sensitive benchmark, the robustness and dynamics of the underlying markets, and its resistance to manipulation, topics to which this report now turns, beginning with key differences between BSBY and LIBOR.

Reference index	USD		EUR		GBP	USD
	LIBOR	SOFR	EURIBOR	€STR	SONIA	BSBY
<b>Underlying volume</b>	N/A	>800	5	44	45	>200*
<b>Expected linked market</b>	220,000	220,000	109,000	22,000	30,000	30,000
<b>Loan market volume</b>	6,100	6,100	3,599	3,599	348	6,100

**Figure 2:** Underlying transaction volumes of interest rate benchmarks and amounts outstanding in billions (local currency) in instruments linked to such benchmarks.

\*\$165 billion in transactions supplemented with \$35+ billion firm offers (executable quotes) over rolling three-day window.

**Source:** Bloomberg Finance L.P. Estimates as of June 2021.

4. Beyond Libor: A primer on new reference rates, March 2019, available here: [https://www.bis.org/publ/qtrpdf/r\\_qt1903e.pdf](https://www.bis.org/publ/qtrpdf/r_qt1903e.pdf)

5. Financial Stability Board (2019): "Overnight Risk-Free Rates, A User's Guide" June 4 2019, table 1, available here: <https://www.fsb.org/wp-content/uploads/P040619-1.pdf>

### BSBY vs. LIBOR: Key differences

Currently, USD LIBOR is the reference rate for approximately \$220 trillion of instruments, while the commercial loan markets represent 2.5% of that total, or about \$6.2 trillion. Commercial loans are the primary market segment that BSBY has been created to serve.

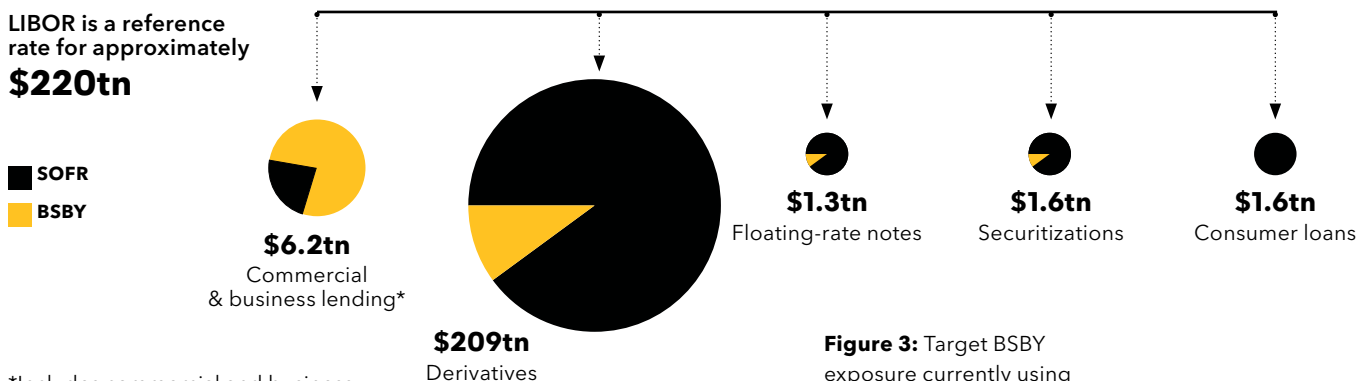
Figure 3 below depicts estimates of the target addressable market for BSBY, focused on commercial loans and associated derivatives resulting from risk management and hedging-related activities. Some floating-rate instruments and securitizations are also expected.

With this narrower set of use cases, BSBY is explicitly **constructed to differ from** LIBOR:

- BSBY is designed to not rely on subjective inputs or “expert judgment.” With our three-day rolling window averaging more than \$200 billion of data, BSBY relies on transaction-related data in the same instruments that banks use to fund themselves.<sup>6</sup>
- BSBY does not rely on submissions from individual banks. While LIBOR was based and dependent on input data contributed by a panel of contributor banks, BSBY transaction-related data is sourced from Bloomberg’s electronic trading solutions and SRO data sets including FINRA and, pending final integration, DTCC. The data is filtered and anonymized. Participants are not aware of the specific mix of the pre-defined and transparent sources in any particular calculation, which, based on rate calculation algorithms, may change from one day to the next.
- BSBY incorporates data from a larger portion of the funding market than LIBOR. While the USD LIBOR

calculation is currently based on input data and subjective judgment from a panel of 16 contributor banks, BSBY incorporates data from instruments issued by global systemically important banks (G-SIBs) published by the Financial Stability Board, plus certain other systemically relevant banks, and excluding state-owned banks. This results in a dataset that incorporates transaction-related data from (currently) 34 banks—more than twice the number of the LIBOR panel.

- BSBY is only available in USD. LIBOR is currently published in seven tenors across five currencies, with each setting underpinned by varying levels of transaction data. BSBY focuses on the USD market, which is characterized by robust underlying transaction volumes. When BSBY’s underlying transaction volumes are examined in comparison to its target addressable and linked markets, it is well within the range of proportions of these key rates. See Figure 2 above, which reflects the underlying transaction volumes of various key interest rate benchmarks and estimated amounts outstanding in instruments linked to such benchmarks.
- BSBY is based primarily on transaction-related data arising from issuers in the money markets seeking to fund themselves at the lowest rate and investors looking for the highest rate of return, as outlined in the next sections of this report. LIBOR, on the other hand, has shown susceptibility to the subjective judgment of banks who could have aligned interests.
- BSBY has been independently reviewed for its adherence with the IOSCO Principles.



\*Includes commercial and business lending products, such as revolving, C&I loans, and letters of credit

**Figure 3:** Target BSBY exposure currently using LIBOR as a reference rate.

**Source:** Bloomberg Finance L.P. Estimates as of June 2021.

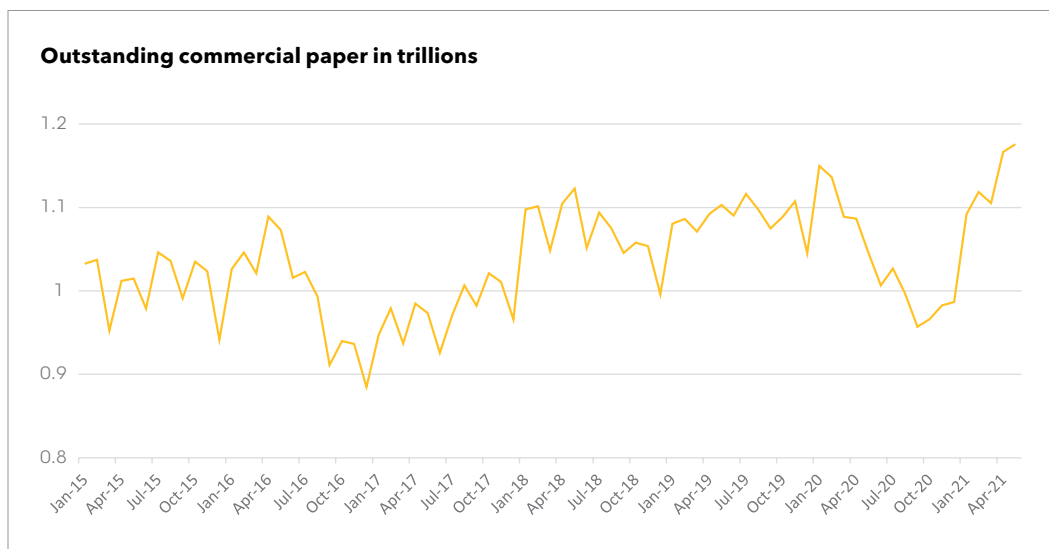
6. In contrast to the waterfall methodology of LIBOR, BISL may only use expert judgment or discretion in its administration of BSBY under limited circumstances (e.g., whether to carry forward a prior day’s rate and/or during a market emergency). BSBY’s methodology is available at: <https://www.bloomberg.com/bsby>

### Fundamentals of money markets in the U.S.

CP, CD and bank deposits are used by corporations and financial institutions to manage their short-term funding, cash flow and liquidity needs. These same instruments are fundamental to money market funds (MMFs), securities lending firms, local government liquidity funds and investment managers employing short-term investment strategies. The structure of financial market regulation in the U.S. consolidates and facilitates the short-term nature and high turnover of the market. CP programs regularly authorize multiple dealers to sell an issuer’s paper and these programs are used like revolving lines of credit for issuers.

Today, the size of the USD CP market is approximately \$1.2 trillion—20% greater than in 2020. This is the highest level seen over the last six years, according to data made available by the Board of Governors of the Federal Reserve System, on the Federal Reserve Bank of St. Louis Economic Database (FRED).<sup>7</sup> Daily issuance has averaged \$82 billion from January 2018 through February 2021, and financial institutions’ contribution to issuance and outstanding has grown to 59% of the total CP market in 2021, from 50% in 2019.

CDs are only issued by banks and are typically purchased by both retail and institutional investors. The institutional CD market has averaged \$11.3 billion in daily issuance over the last few years. Institutional CDs can have maturities that extend for several years, but the bulk of maturities are within one year.



**Figure 4:** Outstanding monthly volume of CP over the past six years.

**Source:** Federal Reserve Bank of St. Louis

<sup>7</sup> See: <https://fred.stlouisfed.org/series/COMPOUT>



### How money market issuance and trading occur

There are approximately 2,500 banks, financial institutions and corporations that participate in the CP/CD market. Typically, an issuing institution will use the services of multiple dealers to facilitate the placement of their paper with institutional investors. This is referred to as “dealer placed” paper and is estimated to be 90% of the market. The alternative method is “direct issued” paper, which is conducted by a few large institutions that maintain their own in-house funding desks.

Primary issuers in CP, CD and bank deposits seek to raise cash at the lowest cost, while the investors who buy this paper want to maximize the returns on their short-term investments. These competing interests between issuer and investor create a competitive and efficient market. The dealers who place the paper on behalf of the issuers work for a fixed spread and often compete to place the paper, since it is common for multiple dealers to work on the same programs, offering the same issuer’s paper at the same rate for the same maturity period.

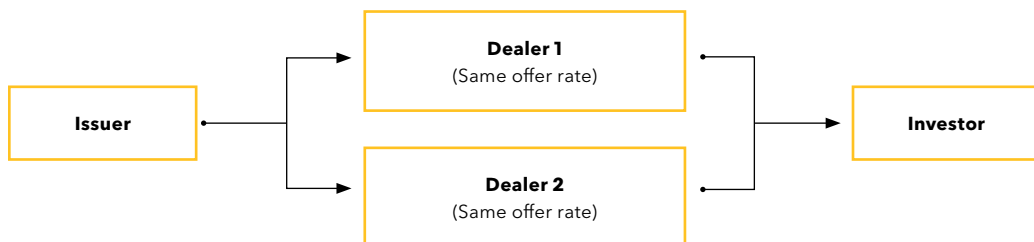
The economics of this model (issuer-to-investor), where the issuer and investor have competing objectives and the ultimate transaction resolves this conflict, differs starkly from the dealer-to-dealer LIBOR model, in which subjective judgement plays a key role and both sides to the funding transaction might not have competing economic objectives.

Issuers’ funding needs are determined daily by their treasury departments, which calculate the amount and term of their funding needed for that day. Working with their broker-dealer or their in-house funding desk, these institutions post their issuance needs to various platforms that are used by the investment community to facilitate their investment and cash management process.

The investment community for these products include

institutional money managers, securities lending firms, local government investment funds, MMFs, short term bond funds and other banks. There are hundreds of such institutional investors acting as daily participants in this market.

The market for these funds is competitive and efficient with processes in place to automate credit review, relative value analysis, and trade execution processes. The transparency, price-discovery, analytics, and execution technologies available to the investment community on various platforms are highly sophisticated and have created a competitive rate-setting and trading process. Some large fund complexes have developed algorithms that identify opportunities that are as little as 0.5 bps from the market rate for a given issuer or credit provider. This level of efficiency facilitates a competitive market where any anomaly or mispricing is quickly identified and acted upon. Much of this market is fully electronic and “firm” click-to-trade offers are commonplace. For example, Bloomberg’s electronic trading solutions had more than 450 unique-user investment firms over the past six months.



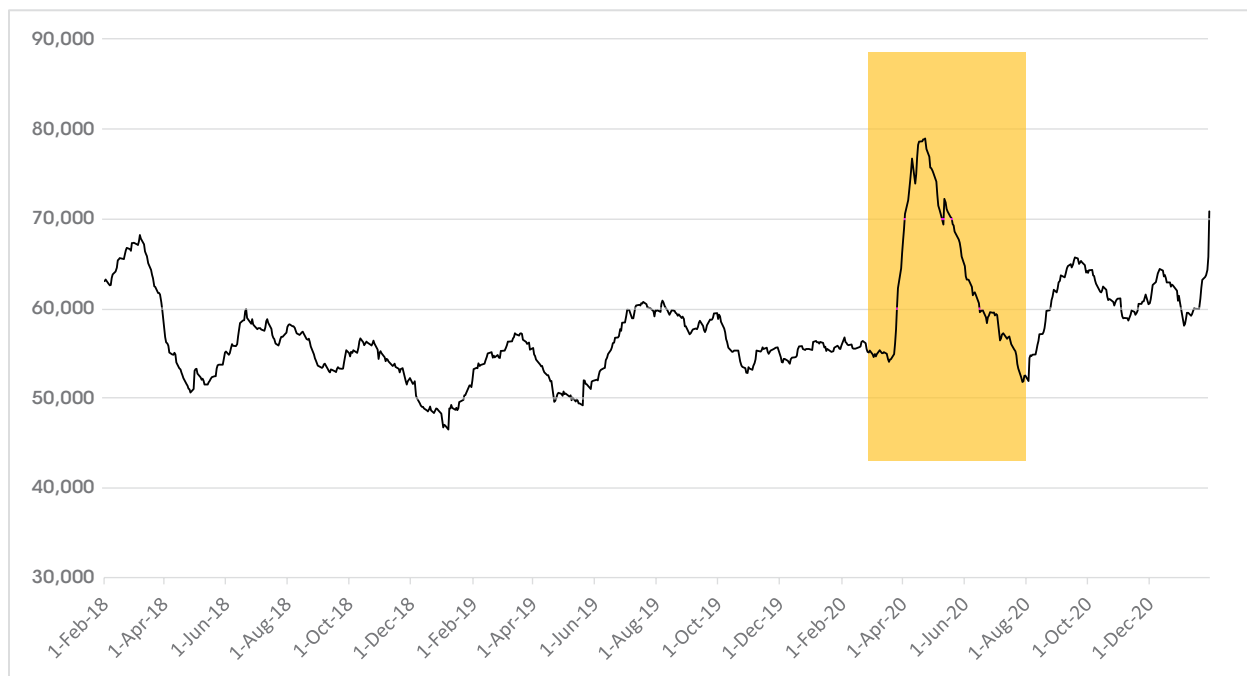
**Figure 5:** Issuance and trading in money markets.

### Robust volumes in times of market stress

One of the frequent concerns with the CP/CD and bank deposit markets is how robust the volume of issuance is during times of extreme market stress (e.g., Black Swan events). A review of the short-term funding market for CP during March 2020 shows a robust primary issuance market that performed well for both issuers and investors, and their access to the liquidity needed. Data from Bloomberg’s electronic trading solutions for commercial paper show that even at the height of COVID market stress, there was a daily average of \$68 billion CP transactions.

Figure 6 highlights the monthly average during this period. After the Federal Reserve announced the Commercial Paper Funding Facility (CPFF)—which bolstered issuer, investor and dealer confidence—significant increases in volumes occurred. This illustrates a scenario in which investors and issuers were able to access liquidity in the primary short-term funding market, during times when other markets experienced extreme stress and liquidity challenges.

In addition, while BSBY’s underlying markets have been robust, including during recent periods of stress, BSBY’s design, volume thresholds, and inputs, will be periodically reviewed by BISL’s governance and oversight bodies to ensure BSBY remains a reliable measure of its intended market interest (i.e., the average yields at which investors are willing to invest USD funds on a senior, unsecured basis in systemically important banks). Should underlying markets change, and material changes to BSBY’s design or inputs be needed, BISL has a well-established history of working closely with stakeholders to maintain the relevancy of its benchmarks. As noted previously, we have already demonstrated our commitment to BSBY by acquiring additional data from DTCC to further enhance our offering and protect against potential changes to market trading practices.



Source: Bloomberg Finance L.P.

**Figure 6:** Rolling monthly average volume in million dollars of settled CP transactions.

### Mitigating the risk of manipulation

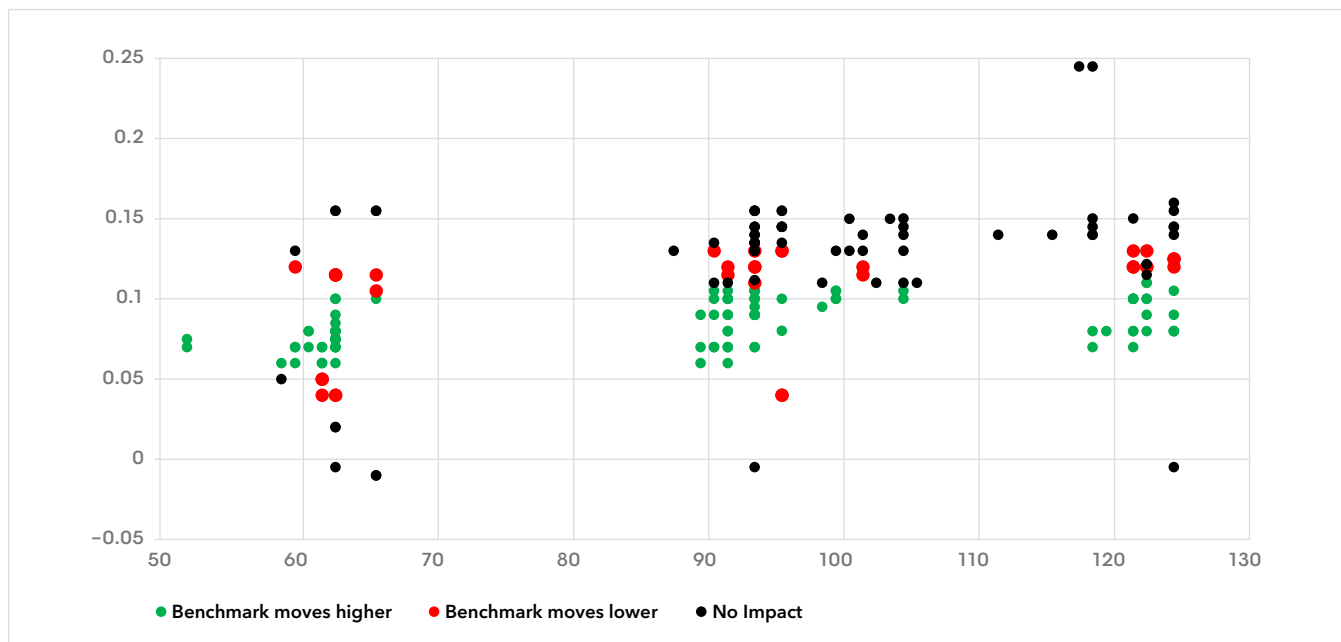
BSBY has been constructed to be highly resistant to outlier data points that may be expected under manipulation scenarios, and BISL conducted multiple tests to demonstrate that the construction algorithm is successfully designed to be robust against data concentrations and potential gaming of the index.

The BSBY methodology has several built-in protections against manipulation:

- The weight of each transaction is capped at \$500 million to help ensure stability and reduce the risk of the rate being unduly influenced by any single data point
- BISL has imposed a single issuer (bank) cap of 20% to ensure any given BSBY tenor is an average rate across an appropriately broad sample of banks
- All yields above the 75th volume percentile and below the 25th volume percentile are eliminated from the final calculation

As an initial test, we investigated the sensitivity of BSBY to moves in yields in any of its constituents' data on a given date. In our test for May 26, 2021, for example, we shifted the yields of the top 200 largest volume transactions, individually, by 5 bps upwards, and reviewed the impact of each scenario on the rate. The largest impact was measured at 0.05 bps on that day (the BSBY3M rate published at 10.637 bps).

Most notably, of the 200 scenarios of +5 bps shift, only 40% resulted in the final rate moving *higher*. (See Figure 7 below.) The other 60% of scenarios resulted in the rate moving in the *opposite* direction—or had no impact on BSBY. This unpredictability of how a potential manipulation attempt might affect the actual rate is due to the outlier elimination logic, capping, and the volume-weighted regression used by the algorithm to generate the final interest rate.



Source: Bloomberg Finance L.P.

**Figure 7:** Sensitivity of BSBY3M to 5 bps up-move in constituents' yields.

We then investigated the potential impact of bad actors willing to offer egregious quotes or—in the case of direct issuers—executing trades outside the context of the market in an effort to move the BSBY3M index to their advantage. In this scenario, the hypothetical dealer enters \$8 billion volume of executable offers (or \$1 billion in executed trades in direct issue dealer-to-dealer trades)<sup>8</sup> broken down into fairly similar <\$500 million blocks (to avoid the transaction size cap our methodology imposes). BSBY3M requires a minimum of \$10 billion volume and has averaged \$28 billion in total volume (executed trades plus executable offers) over the past three years. The assumed \$8 billion of executable offers in this scenario (or \$1 billion trades) hovered around the maximum volume allowed for a given issuer (20% bank cap) before the algorithm started trimming the entered positions.

This exercise was repeated daily over a full year (May 29, 2020, to May 28, 2021) with quotes that were 5 bps, 10 bps, 20 bps and 50 bps respectively higher than the BSBY3M for that day. Figure 8 below highlights the overall effect of these four scenarios on the final rate, which did not exceed a tenth of a basis point at the 95th percentile. The impact decreases with the size of the shift and flattens after the +10 bps scenario.

For these 5-to-50 bps-shift scenarios, the analysis shows that the impact of a bad actor willing to misquote CP and CD instruments is, at worst, on one of the top 1% of impactful days, a 0.2 bps move. Under more typical circumstances, a bad actor under these scenarios might reasonably expect a 0.01-0.03 bps move. In each case, however, it would not be certain as to the *direction* of the impact.<sup>9</sup>

	Shift 5 bps	Shift 10 bps	Shift 20 bps	Shift 50 bps
<b>Average impact in bps</b>	0.03	0.02	0.02	0.02
<b>Median impact in bps</b>	0.01	0.01	0.01	0.01
<b>Worst day in bps</b>	0.47	0.19	0.19	0.19
<b>95th percentile</b>	0.10	0.07	0.07	0.07

Source: Bloomberg Finance L.P.

To break even, the bad actor would need to be highly leveraged on BSBY-based derivatives. They would also need to target the rate on low-volume days and around settlement/reset days of the rate, all while avoiding detection and correctly predicting the direction of the move. Their out-of-market quotes would also be subject to the dynamics of the market, i.e., firm offers at too high a rate may be automatically executed against; offers too low would not serve the funding needs of the bank issuer. And getting the direction of the impact incorrectly would invert the potential gain into an equal and opposite loss.

The unpredictability of the direction of the impact of hypothetical manipulation attempts on BSBY, as illustrated by Figure 7, and the small size of the potential P&L benefit from doing so (see Figure 8) should make potential rate manipulation attempts difficult, and provide deterrence against any attempts.<sup>10</sup> Put another way, the inherent risk of manipulation of BSBY is much lower than that of LIBOR.

It should also be noted that, in addition to robust daily QA controls, BISL has a dedicated team which examines trend and outlier analysis and has obligations to report suspicious activity that is identified. This team reports to BISL's governance and oversight bodies, including with recommendations for enhancements to controls and updates to benchmark design.

**Figure 8:** Impact in bps of misquoting \$8 billion in executable quotes (equivalent to \$1 billion in trades) by 5, 10, 20 and 50 bps.

8. Executable quote volume is scaled by 12.5%, as indicated in the BSBY methodology document available here: <https://www.bloomberg.com/professional/product/indices/bsby/>

9. Based on the analysis, a move up to 0.47 bps was theoretically possible if the bad actor could accurately predict the single worst day. Again, the direction would not be certain.

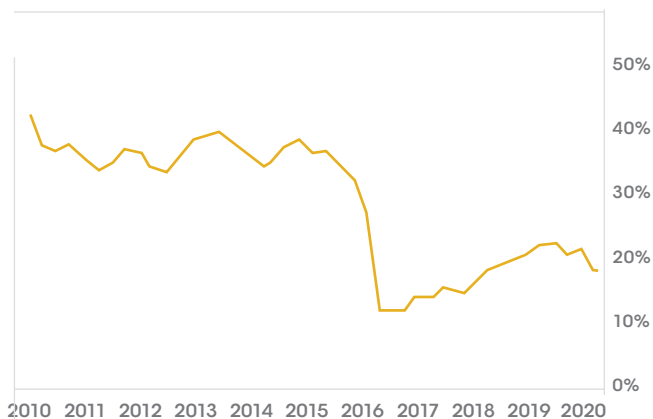
10. This not intended to be an exhaustive list of potential manipulation scenarios. Part of our trend analysis is aimed at identifying other possible scenarios and designing both detective and post-calculation controls accordingly. For example, additional scrutiny and post-calculation analysis may be warranted around rate reset and settlement dates or during periods of lower volumes.

### Potential impact of money market reform on CP/CD volumes

U.S. regulators are contemplating money market reform, and some believe that such reform would have a large impact on prime and tax-exempt MMFs. The contemplated regulation has caused observers to speculate that the robustness of the CP and CD market will decline, resulting in diminished data volume for BSBY’s daily calculation.

Prime funds are significant buyers of CP and CDs and the concern is that further regulation may cause the conversion of prime funds to government MMFs, thereby reducing the demand for CP/CDs. In 2016, an earlier round of MMF reforms resulted in an 84% reduction in institutional demand for prime funds and a 43% reduction in retail demand for such funds. Concerns, however, with regard to potential reform efforts should be put into context. As the Federal Reserve’s Flow of Funds data shows, prime funds, as of May 2021, only hold 19% of CP outstanding. See Figure 9 below. Therefore, the overall demand for CPs and CDs is not unduly tied to the prevalence of prime funds in the market.

**MMF held 18% of CP outstanding as of Q4 2020**



**Figure 9:** MMF holdings of commercial paper outstanding (% of total).

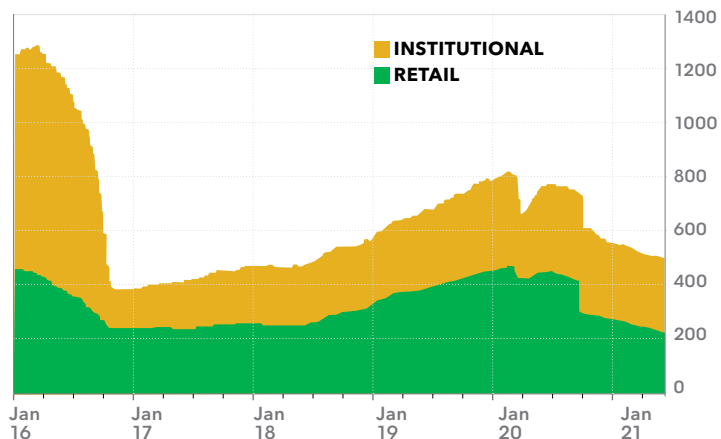
**Source:** Federal Reserve Flow of Funds

It should also be noted that over 60% of prime fund investors are institutional investors who are seeking higher returns than government funds offer. Figure 4 above shows extended periods of upward-trending CP issuance; much of this has been driven by the non-U.S. banking sector, which has traditionally relied on CP issuance to access USD funding.

Should demand recede due to a reduction in the number of prime funds, it would likely not result in a diminished appetite for CP/CDs, but rather a transition in the investor vehicles accessing the paper. CP yields are likely to drift higher in the face of steady supply, attracting new buyers in the current historically record low-yield environment, creating new sources of demand for CP. Furthermore, institutional investors will likely find new vehicles like short-duration separately managed account (SMA) structures in which to invest.

**Prime money market fund assets: Institutional vs. retail**

ICI data: Wednesday levels in billions of dollars



**Figure 10:** Prime MMF assets: Institutional vs. retail.

**Source:** Investment Company Institute

### Economic outlook and ramifications for the money markets

As the U.S. economy recovers from the pandemic, most metrics for inflation have been skewed towards the upside and the market is beginning to price Federal Reserve tightening by the end of 2022 / beginning of 2023.

Additionally, the risk remains that in a scenario where the U.S. recovery is deemed sufficiently strong, the bond markets could reprice for the Fed to shrink its balance sheet first by ending quantitative easing and resuming sales (“taper”) of its Treasury and mortgage portfolio before commencing a tightening cycle. This sequence of policy actions should initially result in a higher and steeper yield curve similar to the “Taper Tantrum” of 2013, when the Fed announced its intention to commence tapering at its May FOMC meeting.

In either of these scenarios, asset managers will have a strong demand for money market assets such as CP, CD and short maturity floaters, as they sharply decrease their exposure to rising interest rates. On the supply side, bank issuers are likely to have a need to fund strong growth in their loan books as market expectations for strong economic growth and prospects for higher policy rates in the future will most likely be a trigger for the Fed to embark on an asset-sale program.



**Figure 11:** Federal Open Market Committee (FOMC) members’ projections as of June 23, 2021.



**Figure 12:** 2013 “Taper Tantrum” saw higher yields and a steeper curve, U.S. Treasury curve changes from May 22, 2013, to January 2, 2014.

## Conclusion

While risk-free rates will be the primary alternative rates for LIBOR and other IBORs, many market participants, industry groups and regulatory bodies recognize there remains a need for credit-sensitive term rates to complement RFRs and meet the needs of the lending markets. Past and current use of CSRs alongside RFRs in multi-benchmark regimes has proven to be successful in many markets around the world.

BSBY, purpose-built for use in the U.S. lending markets, is fundamentally different from LIBOR and has been tested to demonstrate robustness during recent periods of market stress, as well as resistance to potential manipulation. Further, expected money market reforms will likely have minimal impact on the robustness of BSBY, making it a resilient benchmark for issuers and investors in multiple economic scenarios.

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