



Invesco Fixed Income Investment Insights

What may LIBOR's phase-out mean for investors?

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Key takeaways

- With the phasing out of the London interbank offered rate (LIBOR), a new, more transparent benchmark has been established in US dollars.
- The new benchmark, known as the secured overnight financing rate (SOFR) is based on actual lending transactions, making it a more robust alternative to LIBOR.
- We examine historical differentials between SOFR and LIBOR and explain how swap rates are essential for pricing new bond issues based on SOFR.

With the clock ticking on LIBOR, the market begins the adjustment to SOFR

In the past few years, the London interbank offered rate (LIBOR) has faced well-publicized challenges. LIBOR was intended to reflect the cost at which large banks could borrow from each other and for decades was a benchmark for numerous private sector rates. However, the credibility of LIBOR was eroded after evidence of manipulation was identified in an international investigation in 2012, leading the UK Financial Conduct Authority to call for its eventual phasing out. Given LIBOR's importance as a financial market reference rate, financial authorities around the world have sought to identify new, more transparent benchmarks.

In the US, the secured overnight financing rate (SOFR) was recently launched to gradually replace LIBOR. We believe SOFR is an improvement over LIBOR because it is based on interest rates charged in actual lending transactions. In contrast, LIBOR is based on submissions of interbank lending rates by major banks that don't have to be tied to actual transactions, making it more susceptible to manipulation.

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In addition, the liquidity of US dollar interbank unsecured funding markets has declined significantly over the past several years. This was the goal of Dodd-Frank banking regulations, which sought to reduce systemic risk in the US financial system by dramatically reducing the lending exposure that banks have to other banks. This was achieved through onerous capital and liquidity requirements that made interbank lending uneconomical. As a result, average daily interbank lending volume in the US dollar is now extremely thin, although trillions of dollars in financial contracts still reference this interbank lending market via LIBOR.

The search for a LIBOR replacement

To identify a new, more transparent benchmark, the Board of Governors of the Federal Reserve (Fed) and the Federal Reserve Bank of New York convened the Alternative Reference Rates Committee (ARRC) in 2014 to find a replacement.

The committee considered several alternatives, including repurchase agreement (repo) rates. (A repo agreement is an agreement to sell securities one day and buy them back the following day.) The ARRC considered the following three repo rates:

- **The Tri-party General Collateral Rate (TGCR)** Based on trade-level, tri-party data collected from the Bank of New York Mellon.
- **The Broad General Collateral Rate (BGCR)** Calculated using the TGCR and the General Collateral Financing (GCF) repo rate as reported by the Depository Trust and Clearing Corporation.
- **The Secured Overnight Financing Rate (SOFR)** Based on BGCR and bilateral repo rates cleared by the Fixed Income Clearing Corporation (FICC).

After three years of careful study, the ARRC identified SOFR – the broadest of these rates – as its preferred alternative to LIBOR and established 2021 as the target date for LIBOR’s phase-out. On April 3 of this year, the Federal Reserve Bank of New York began daily publication of SOFR.

What is SOFR?

SOFR is a secured, overnight funding rate based on US Treasury repo transactions. It is considered one of the most robust indices available since it is based on a high volume (approximately USD800 billion) of daily overnight transactions.¹ Its calculation is derived from the TGCR, the GCF repo rate and the FICC-cleared bilateral repo rate. One of SOFR’s major advantages is that it provides market participants with greater transparency into the US Treasury repo market, a vital segment of the US financial system.

Dynamics impacting the volatility of SOFR

We expect some volatility in the SOFR benchmark due to factors that typically cause volatility in Treasury repo markets. These include changes in Treasury bill supply, dealer balance sheet management and excess cash flows of government-sponsored enterprises into and out of funding markets, to name a few.

How has the market responded to SOFR?

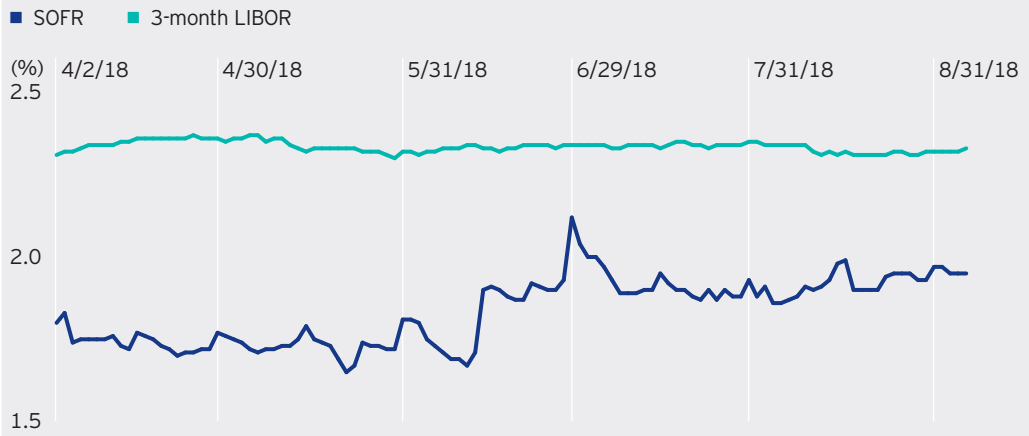
In late July, the Federal National Mortgage Association (Fannie Mae) became the first entity to issue a floating rate security benchmarked to SOFR – a meaningful step in the transition away from LIBOR. The market response appeared positive, as the deal was well oversubscribed. On the heels of the Fannie Mae transaction, the World Bank became the second notable issuer to generate a funding deal pegged to SOFR. Several private sector firms have recently followed suit. The Chicago Mercantile Exchange also launched SOFR futures contracts in May 2018.

In an important acknowledgement, Standard & Poor’s called the benchmark an “anchor money market reference rate” in its principal stability fund ratings methodology, which makes the SOFR index eligible for purchase by money market funds rated by the agency. And with the implementation of the SOFR futures market, investors now have a framework for forward-looking expectations and values of the benchmark.

Why is the transition important to investors?

The New York Fed has estimated that roughly USD10 trillion of corporate loans, floating rate notes, floating rate mortgages and securitized bonds utilized US dollar LIBOR as a reference rate as of the end of 2016.² With interest payments on such a large volume of financial contracts currently based on a reference rate due to be phased out in 2021, a reliable and credible alternative is essential. The most significant question yet to be resolved is how floating rate contracts that mature after the 2021 phase-out date will be modified. Simply switching from LIBOR to SOFR is not ideal for investors: the SOFR rate has exhibited volatility around days with increased repo trade volumes and there is a persistent pricing gap between SOFR and the most commonly used term for US dollar LIBOR, the 3-month rate.

Figure 1: SOFR historically lower versus 3-month LIBOR



Source: Bloomberg, L.P. data from April 2, 2018, to Sept. 6, 2018.

Structural differences and US Federal Reserve (Fed) interest rate policy drive differential between SOFR and 3-month LIBOR

Market rates for SOFR and 3-month LIBOR will likely rarely be equal due to two factors. First, SOFR is an overnight lending rate, while the most commonly used LIBOR rate is a 3-month lending rate. The difference in lending rates between overnight and 3-month loans will be largely driven by the market's expectations for the federal (fed) funds rate. Second, SOFR represents lending secured by US Treasury bonds, very high-quality collateral. Alternatively, LIBOR represents unsecured lending rates based on the general credit of the borrower. Naturally, lenders typically demand a higher yield to lend funds on an unsecured versus a secured basis. For investors in SOFR-based notes to receive the same floating rate yield as 3-month LIBOR-based notes, they must reconcile the market's expectations for the difference in SOFR and 3-month LIBOR until the bond's maturity date.

Figure 2: SOFR versus 3-month LIBOR characteristics





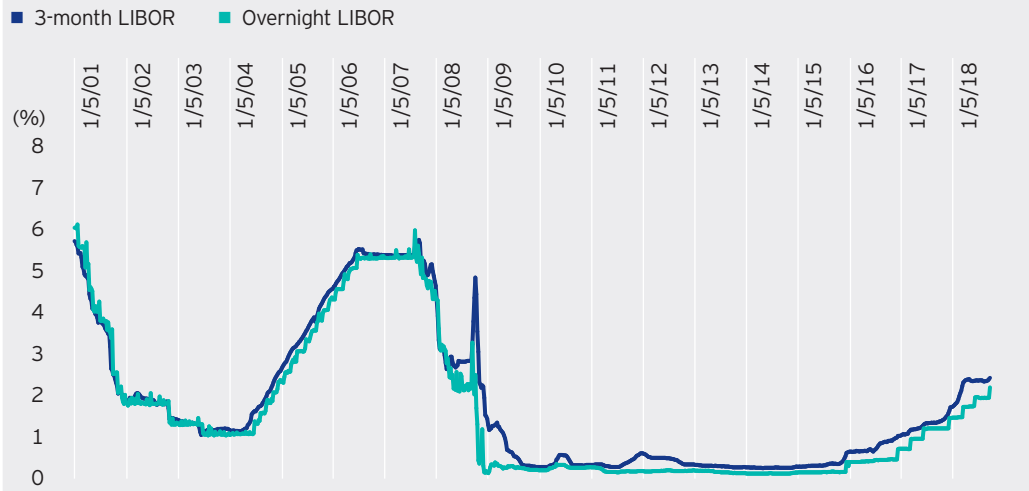
	SOFR	3-Month LIBOR
Time Frame	Overnight 	3 months 
Loan Collateral	Secured by US Treasury bonds 	Unsecured (no specific collateral) 

Figure 1 shows that SOFR has been consistently lower than 3-month LIBOR since its inception in April 2018. This is, however, a relatively short dataset upon which to draw conclusions about the likely differences between these rates going forward. We therefore examine historical overnight LIBOR as a reasonable proxy for SOFR, and compare 3-month LIBOR to overnight LIBOR from January 2001 to the present. We observed the following (Figures 3-4):

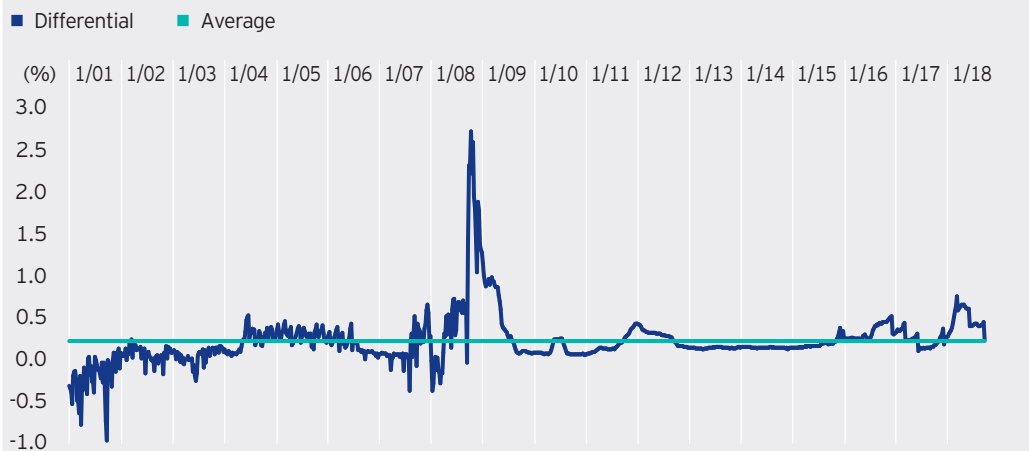
- The average rate differential (3-month LIBOR minus overnight LIBOR): +21.6 basis points
- Range of rate differential: +275 basis points to -98 basis points
- Excluding the global financial crisis (GFC) of 2008-09, the upper end of the range was +75 basis points (likely a better proxy for SOFR given elevated interbank counterparty risk during the GFC).

Figure 3: US dollar LIBOR: 3-month versus overnight rates



Source: Bloomberg L.P. Jan. 5, 2001 to Sept. 28, 2018.

Figure 4: US dollar LIBOR: 3-month versus overnight rate differential



Source: Bloomberg L.P. Jan. 5, 2001 to Sept. 28, 2018.

The relatively wide range in the historical differential between 3-month and overnight LIBOR, along with the presence of negative spreads in certain environments, lead us to two key conclusions:

- Fed interest rate policy will likely be the key driver in the difference between SOFR and LIBOR going forward
 - The 3-month/overnight LIBOR differential tends to be highest during periods of rising fed funds rates, which makes sense as the market anticipates (or “prices in”) rate hikes. The faster the expected path of rate hikes, the higher the likely spread.
 - The 3-month/overnight LIBOR differential has been lowest during periods of falling fed fund rates, and there is precedent for this spread to be negative when the market prices in an aggressive pace of rate cuts.
 - When the fed funds rate is stable, the 3-month/overnight LIBOR differential has also been stable at a low, positive level.

- When market concerns are elevated due to perceived systemic risks in the global financial system, it can temporarily drive the 3-month LIBOR/SOFR differential sharply wider.
 - This is the crux of the problem with the LIBOR benchmark and why a replacement is needed; this dynamic passes the higher cost associated with elevated banking sector risk to all entities, both corporate and consumer, that utilize the benchmark.
 - Some investors may lament the loss of higher coupons from LIBOR-based bonds during periods of banking sector stress, once the switch to SOFR-based bonds materializes.
 - However, we believe the benefits of reducing systemic risk in the global financial system by eliminating the “pass-through effect” to all LIBOR-based borrowers will benefit credit investors over the long run, and outweighs the benefit of a short-term jump in LIBOR driven by banking system credit concerns.

Interest rate swaps essential to price new SOFR-based bonds relative to LIBOR-based bonds

How should investors, therefore, price a new SOFR-based floating rate bond? Fortunately, we have observed two recent floating rate corporate bond issues using SOFR as their benchmark rate instead of LIBOR: a 2-year bond issued by Metropolitan Life, and a 1.5-year bond issued by Wells Fargo Bank. They have provided excellent low-risk test cases since they have relatively short maturity dates and were issued by highly rated, well established bond issuers. These issuers also had LIBOR-based bonds outstanding with similar maturity dates that provided guideposts for where new SOFR-based bonds should price.

Taking the simple difference between the SOFR and 3-month LIBOR rates at the time of new issue is a reasonable proxy for the differential we should demand in a SOFR-based bond relative to a LIBOR-based bond. However, using spot rates can be problematic during periods of elevated activity in overnight lending markets (typically quarter-end), when SOFR tends to be more volatile. Instead it is important to consider the market’s forward expectations by pricing an interest rate swap involving SOFR and 3-month LIBOR, where the term of the swap contract matches the maturity of the new bond issue. In our view, this generates a fair-market differential that accounts for the market’s forward-looking expectations for SOFR and LIBOR over the duration of the bond’s lifetime.

Ticker	Bond Issue Date	Maturity Date	LIBOR-based Bond	LIBOR Bond Market Spread +	SOFR-3mL Swap Spread +	Spread for Additional Maturity =	Est Fair Value, SOFR-based Bond	Actual Final Coupon, SOFR-based Bond
MET	8/30/18	9/7/20	3mL+.40% 6/12/2020	DM+.12%	0.40% (2y)	0.03% (3m)	SOFR+0.55%	SOFR+0.57%
WFC	9/18/18	3/25/20	3mL+.23% 1/15/2020	DM+.15%	0.30% (1.5y)	0.02% (2m)	SOFR+0.47%	SOFR+0.48%

Source: Bloomberg L.P., Oct. 5, 2018. DM is discount margin. The information provided is for illustrative purposes only; it should not be relied upon as recommendations to buy or sell financial instruments.

Looking ahead

We hope to see more note issuance based on SOFR, as this should provide a roadmap for how to effectively modify LIBOR-based contracts in a way that is acceptable for both investors and issuers of floating rate debt. Although the market is still a few years away from completing the transition from LIBOR to SOFR, we believe the success of some recent bond deals tied to SOFR suggests that SOFR will be a welcome replacement. Over the course of the next year, we expect greater adoption of SOFR by a broad range of issuers as entities collect data points tracking its volatility and liquidity, determine its performance versus other indices and establish the internal systems and procedures necessary to issue and price securities to the SOFR benchmark. As we approach 2021, investors may be wary of LIBOR-indexed securities as questions and concerns arise over whether LIBOR contributors will continue their voluntary submissions, which could lead to volatility of the LIBOR index.

Potential key benefits and challenges related to SOFR

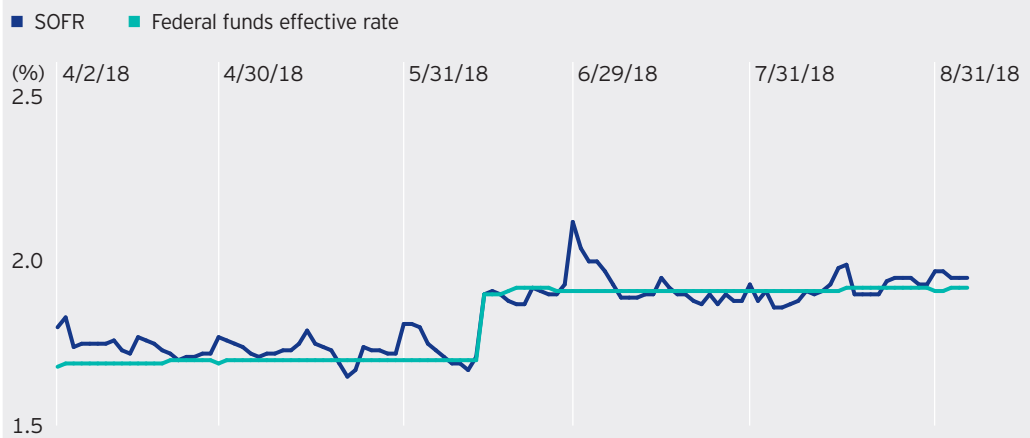
Potential benefits

- The SOFR index provides a fallback rate as LIBOR is phased out.
- SOFR is a robust benchmark supported by substantial transactional data for the issuance of floating rate securities.
- Increases in repo rates (due to increased Treasury supply, for example) should be reflected in the SOFR index.
- SOFR should automatically reset when the Fed raises rates, providing a quick update to securities pegged to the reference rate.

Challenges

- We expect the same factors that typically cause volatility in Treasury repo markets to cause some volatility in SOFR.
- Because SOFR is tied to overnight repo rates and Treasury collateral, falling repo rates (due, for example, to a credit event that causes a flight to quality) would likely reduce yields on floating rate securities pegged to SOFR.
- Markets will likely require an adjustment period to gauge SOFR's liquidity, determine its pricing and understand its potential performance versus other established indexes, such as the overnight bank funding rate, interest on excess reserves and the federal funds rate.

Figure 5: SOFR has closely tracked the fed funds rate



Source: Bloomberg, L.P., data from April 2, 2018, to Sept. 6, 2018. The federal funds rate is the interest rate at which depository institutions lend reserve balances to other depository institutions overnight on an uncollateralized basis.

What rates are likely to replace LIBOR globally?

The UK, Europe, Japan and Switzerland have each chosen new reference rates in anticipation of LIBOR's phase-out in 2021. In the UK, LIBOR will be replaced by the Sterling Overnight Index Average, or SONIA, which represents the effective overnight interest rate paid by banks for unsecured transactions. SONIA was originally introduced in 1997, but the Bank of England took over its administration in 2017. The benchmark was reformed in April 2018.

The European rate, chosen in September, is the euro short-term rate (also known as ESTER), which the European Central Bank (ECB) is currently developing. According to the ECB, ESTER will reflect the wholesale euro unsecured overnight borrowing costs of euro area banks. Publishing is set to begin by October 2019.

In Switzerland, the Swiss Average Rate Overnight (called SARON) was established as the Swiss franc LIBOR replacement in 2017. SARON is a secured rate that reflects interest paid on overnight interbank repo transactions.

In Japan, the Tokyo Overnight Average Rate (TONAR) is currently being considered to replace yen LIBOR. It is an unsecured, transaction-based benchmark for the uncollateralized overnight call rate market.

Conclusion

Because the SOFR index is based on a high volume of transactional repo market data, we believe it provides a robust replacement for LIBOR. The recent issuance and acceptance of funding transactions benchmarked to SOFR represent the beginning of the monumental transition away from LIBOR, which has historically served as the reference rate for most floating rate securities.

Going forward, Invesco Fixed Income expects greater adoption of SOFR by a broad range of issuers as entities collect data points tracking its volatility and liquidity, determine its performance versus other indices and establish the internal systems and procedures necessary to issue and price securities to the SOFR benchmark.

1 Source: Bloomberg, L.P., as of Sept. 13, 2018.

2 Source: Federal Reserve Bank of New York, Second Report of the Alternative Reference Rates Committee, March 2018.

Investment risks

The value of investments and any income will fluctuate (this may partly be the result of exchange rate fluctuations) and investors may not get back the full amount invested.

Interest rate risk refers to the risk that bond prices generally fall as interest rates rise and vice versa.

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