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## The Derivatives Market ‘X Factor’

Addressing the big unknowns in the transition from LIBOR to SOFR.

By **David Munves** | February 24, 2022



Much ink has been spilled over the sunsetting of the London interbank offered rate (LIBOR) and its replacement (in U.S. dollars) by the Secured Overnight Funding Rate (SOFR). The SOFR benchmark rate measures the cost to banks of borrowing cash overnight on a collateralized basis. To date, the commentary has mostly focused on the enormous sums involved—the \$223 trillion in LIBOR instruments outstanding—and the behaviors uncovered in the 2013 LIBOR scandals that led regulators to decree that LIBOR had to be replaced by a new benchmark.

Less attention has been paid to the question of how trading in SOFR instruments will evolve over time. Yet this is what really matters. Trading is where money will be made and lost in the new market—it's where the rubber hits the road. In time, SOFR will become an effective replacement benchmark for LIBOR. However, the current lack of a developed SOFR derivatives market will have many unforeseen, and adverse, impacts on both financial market participants and businesses and consumers exposed to LIBOR-based products.

## Derivatives Dominate

The LIBOR landscape is dominated by derivatives activity, with bonds and loans accounting for only 4 percent of outstanding instruments (see Figure 1, below). It's also noteworthy that activity in over-the-counter (OTC) derivatives is much greater than for their exchange-traded counterparts.

Trading in SOFR derivatives falls far short of the LIBOR alternatives. To be sure, SOFR volumes have been rising steadily. For example, the outstanding volume of contracts for SOFR-based interest rate futures is now approaching \$1 trillion (see Figure 2, below). But this number pales in comparison with the \$11 trillion of such instruments that are outstanding in the LIBOR market.

This will change.

**Figure 1:**

### U.S. Dollar LIBOR Market Breakdown (as of June 2021)

SECTOR	INSTRUMENT	AMOUNT
OTC derivatives	Interest rate swaps	\$81 trillion
	Forward rate agreements	\$47 trillion
	Interest rate options	\$20 trillion
	Cross-currency swaps	\$23 trillion
	TOTAL	\$171 trillion
Exchange-traded derivatives	Interest rate options	\$32 trillion
	Interest rate futures	\$11 trillion
	TOTAL	\$43 trillion
Cash instruments	Business loans	\$5 trillion
	Consumer loans	\$1 trillion
	Bonds & securitizations	\$3 trillion
	TOTAL	\$9 trillion
GRAND TOTAL		\$223 trillion

Sources: New York Federal Reserve Bank, ARRC, ft.com.

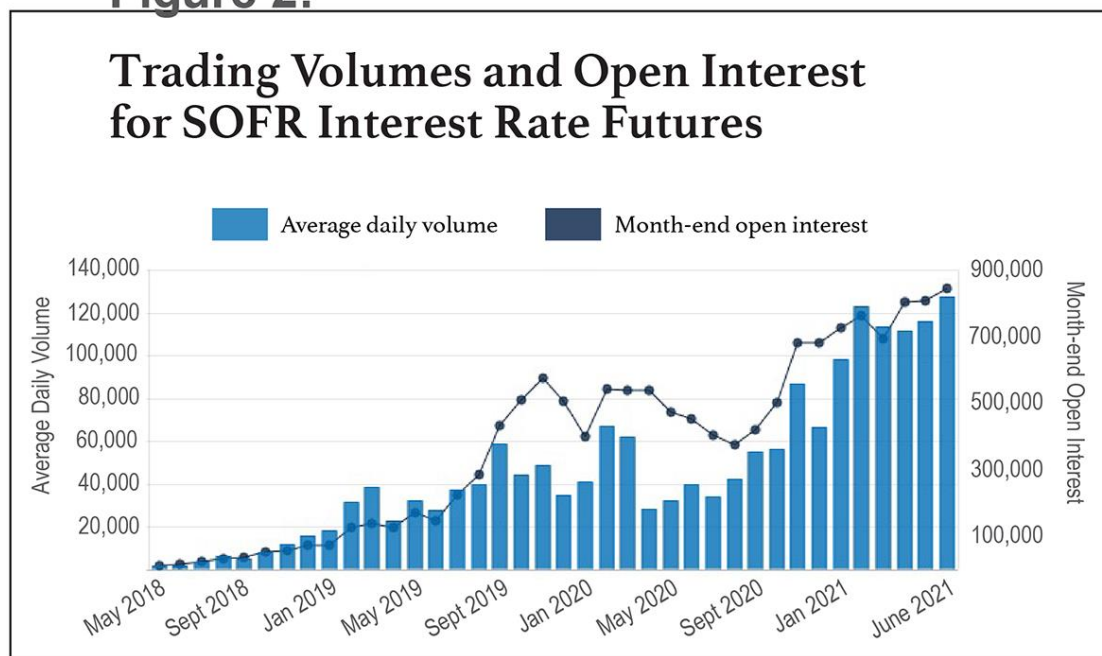
Recall that derivatives trading is driven by two factors: traders “taking a view” (market-speak for building a position in the hopes of profiting from it) and the risk management activities of financial institutions and their clients, many of which are corporate entities. These are primordial drivers of market behavior. Because the SOFR market will need to meet these fundamental requirements, it will in time come to look like its LIBOR counterpart.

What’s a lot less certain is how the SOFR market, particularly in derivatives, will actually develop. This uncertainty has significant implications for the risk management activities of banks and other financial intermediaries, which rely on a vast, well-established ecosystem of LIBOR-based financial models, instruments, and market practices, all grounded in 35 years of data. The abrupt switch to SOFR benchmarks will bring all this to an end. But the institutions’ cash assets, large derivatives holdings, and risk management operations will remain in place, and will have to function without the support of a developed and predictable derivatives market. Flying blind is not in the comfort zone of banks, nor of their regulators, but it seems unavoidable in the short term.

As end users of LIBOR instruments in their financing and risk management activities, corporate treasurers will not be able to escape the inevitable fallout of SOFR’s uncertain development path. Corporate treasury teams will likely find that the models they have relied on to predict the impact of interest rate behavior on the value of their LIBOR-based holdings are outdated.

To take one example, we’ve found that a common assumption among traders and corporate treasury groups is that SOFR markets for various instruments will behave like their LIBOR equivalents. This assumption allows market participants to make a few simple changes to their existing models—mainly to account for the known differences in how the rates are calculated—and call it a day. Taking the path of least resistance (and of lower cost) is always attractive, but in many cases, this simplistic approach won’t work and might prove to be quite expensive.

**Figure 2:**



Source: CME Group.

“Corporate treasuries need to adjust their financial risk management to account for the differences between LIBOR caps/floors and SOFR caps/floors.”

In a [whitepaper](#) FINCAD published last summer, we analyzed SOFR interest rate caps and floors, instruments that are widely used to hedge the impact of changes in interest risk on derivatives positions. We showed that their prices vary from those of their LIBOR equivalents. Further, we demonstrated that this is due to the lower level of liquidity in the new market and suggested adjustments to standard pricing models to take this into account.

Without such insights, and absent such model modifications, market participants could end up with price outputs from their models that don't match how the instruments actually trade. Related metrics, such as sensitivities to changes in interest rate levels and volatilities, would not reflect reality either.

In the quant world, this is known as “model risk.” In practical terms, it signals the risk of writedowns of positions and unexpected price movements—thus, P&L volatility in cases where derivatives-based hedging strategies don't perform as expected.

## Removing the Fix

Another potential source of price uncertainty and possible losses for users of LIBOR and SOFR instruments concerns how the benchmark levels themselves are determined. There are two aspects to this.

The first concerns the very nature of the benchmarks. LIBOR levels are set, or “fixed,” by select groups of market participants for periods of up to one year. That is why their daily calculations are called “fixings,” and it's also why they are open to manipulation, as came to light almost a decade ago. Given this sordid history, regulators wanted a LIBOR replacement that could not be gamed by insiders. One way to assure themselves on this point was to focus on instruments that are actually traded—in other words, instruments whose value does not reflect the discretionary judgments of individuals.

SOFR fits that bill nicely. But since it's a traded instrument, the only data available on it is, by nature, historical. By contrast, LIBOR fixings are done on a “term”—i.e., forward-looking—basis. This characteristic fostered the rise of term exchange-traded contracts and the wide range of over-the-counter variants based on them, as shown in Figure 1.

This brings us to the second point: For LIBOR, *current* benchmark levels are strongly influenced by market participants' views of *future* developments, as conveyed via feedback loops generated by the

\$214 trillion in outstanding derivatives contracts. These mechanisms are almost completely absent in the SOFR sector. Their development, while part of the desirable maturation of the market, will create an almost limitless number of paths for prices and trading patterns to evolve in unexpected ways.

Corporate treasury groups will feel the effects in their asset-liability management (ALM) processes. For ALM, they need a full scope of interest rate modeling, as well as the ability to use derivatives to manage risk. They will need to change their ALM forecasting models to reflect the lack of forward-looking pricing in SOFR markets. That change will need to happen soon.

Corporate treasuries will also need to adjust their financial risk management activities to account for the differences between LIBOR caps/floors and SOFR caps/floors. LIBOR is trading like it is SOFR plus a spread, so LIBOR-based derivatives are implicitly hedging SOFR risk. Nonetheless, the hard switch to managing interest rate risk exclusively in terms of SOFR is looming.

## Growing Pains

Over the years, many benchmarks have gone the way of the dodo. We need only to think of the gold standard in this regard. However, most benchmarks disappeared as the result of market and economic changes, not regulatory fiat. With LIBOR, replacing the world's most widely used benchmark reflects a need, as perceived by the authorities, to fix a problem that has nothing to do with the daily functioning of this vast and multifaceted market.

We are confident that all will come out right in the end. But we are equally confident that one result of this top-down approach will be a lot of unforeseen and, for many players, unpleasant risks along the way.



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