

## LIBOR Transition

# Floors in Loans

## Considerations in the Current Market Environment

### Introduction

A LIBOR floor is a provision in a loan agreement that establishes a minimum base floating rate to be paid by the borrower before the fixed spread. These floors have been a prominent feature of broadly syndicated loans since 2008, but with the rapid drop of short-term rates to almost zero, the floor embedded in a loan agreement has now become a *highly certain cash flow*. Call protection also reinforces the certainty of the floor cash flow. The current environment of close-to-zero short-term rates is expected to remain for several years, raising a question about the value of including a floor rather than simply increasing spread. Using the tools of option theory, the value of floors can be isolated and valued. Priced as a stand-alone derivative, typical LIBOR floor values are in the range of two to eight points, giving both borrowers and lenders reason to focus on these instruments in new-issue, amendment, and refinance contexts. Further, the upcoming cessation of LIBOR and the conversion to SOFR will be a negotiation issue in every loan and will be a potential value transfer when converting a LIBOR floor to a SOFR floor.

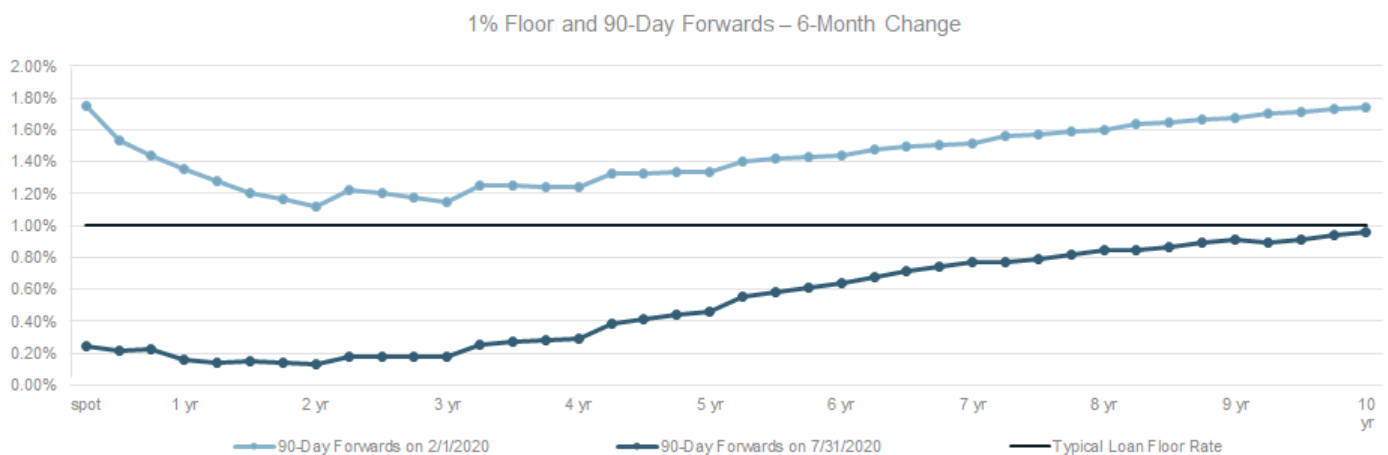
#### *Our current questions are:*

Now that rates are downward-sloping and bounded by federal policy against negative rates, could the market just widen spreads and forgo structuring floors and call protection?

When the loan is renegotiated to hardwired fallback (SOFR), what happens to the floor, and what are relevant value concerns for borrowers and lenders?

## Two Market Structure Changes in 2020

The introduction of quasi-fixed cash flows (e.g., original issue discount or OID, call premiums, deep-in-the-money floors) has changed the duration and convexity characteristics of loans into those of a hybrid security whose value could be measured stochastically, not deterministically. Traditionally, quasi-fixed streams like OID and call premiums are priced through negotiation using heuristics. The recent dramatic rates rally has resulted in the first five years of forwards below 50 bps, well below the common 1% floor. The floor now represents a highly certain stream, so current loan pricing methodology is appropriate. Although a probabilistic analysis of credit spread movements, instead of rates movements, could inform the likelihood of refinancing and the associated cessation or acceleration of cash-flow components, market participants universally value these cash flows as deterministic, not stochastic.



Source: Bloomberg.

The second structural change is the recommended adoption of hardwired fallback language in all loans between September 30, 2020, and June 30, 2021 (in new issue or by amendment). Since SOFR is not the same as LIBOR, the terms that change may be substantial enough to cause a potential value transfer and even the elimination of the floor altogether in exchange for wider loan spreads.

## Floor as an Option With Several Factors

A contract that pays the difference between a minimum rate (strike) and the index rate is called a floor. In derivatives, pricing a floor contains both intrinsic value (in-the-money) and option value, which uses the volatility of the index to project the probability of being in-the-money in the future. A floor can be specified by tenor, frequency, index, and strike—three-year quarterly LIBOR 1% floor is priced at 2.25% of notional. Because this option is so in-the-money, it is easy to understand—the market expects LIBOR to be roughly 25 bps for the next three years, resulting in 75 bps per year of cash flow for three years, totaling 225 bps (ignoring discounting). This option is almost entirely intrinsic value; in fact, doubling the volatility input to this calculation only increases the price to 250 bps.

In the past, borrowers would agree to floors that were more out-of-the-money, where the floor strike was below the LIBOR forwards, calculated from an upward-sloping curve. In that environment, the floor value was a larger percentage of option value and smaller in total value. The loan plus floor cash flows in the current rate environment are a hybrid of fixed and contingent characteristics, described in the following table:

Cash Flow	Cash Flow Characteristics	Stochastic Driver
OID is a feature that protects lenders from prepayment, primarily from tightening credit spreads driving a repricing or refinance.	Once at maturity or a schedule of payments, not contingent, but is accelerated in the event of a refinance or call	None, fixed schedule
Call protection is a feature that protects lenders from losing the value of the floor stream in the event of prepayment, primarily from the tightening of credit spreads. It is often expressed as a payment that declines on each potential call date in the future (DTP, or declining to par).	The only payment is the premium associated with the date of the call (a single contingent payment from a series, or possibly not at all).	Credit spreads
Credit Spread	Fixed, % of loan amount	None, fixed spread
Floor	Variable, difference between strike and index	Short-term interest rate index

## Decompose to a Spread Plus a Floor

Traditional variable-rate loan pricing typically generates all the cash flows from the loan (including coupon, OID, floor rate, call premiums, etc.) and discounts these cash flows at the base rate plus spread. The spread would be appropriate to the riskiness of the loan, driven by credit quality and other factors. The resulting present value would be the loan value. This method also assumes all cash flows will occur on schedule, resulting in the forecasted cash-flow stream (deterministic model). The alternative method separates the floor stream from the loan. The isolated floor value is calculated in an option pricing model (stochastically) and added to the decomposed spread value.

Empirically, loans refinance when conditions are advantageous for the borrower to do so—this is the significant option embedded in most corporate loans. It is also the reason that loans rarely price above par for a significant amount of time or at a significant premium; under most circumstances, the borrower would be expected to refinance to market terms (par). However, in the current environment where floors are a significant component of price, traditional loan valuation continues to include the full forecasted cash flows of the floor, where the decomposed approach results in premium valuations.

Loan Characteristics	Traditional Price	Decomposed Spread	Isolated Floor (bps)	Recomposed Price
5 years, no floor, no OID, no call protection	100.0	100.0	0	100.0
5 years, 2% floor, no OID, 102 DTP by 0.5% per year,	100.0	92.6	860	101.6
5 years, 1% floor, 98 OID, 101 DTP by 0.5% per year,	98.0	95.0	400	99.0
5 years, 1% floor, 98 OID, 101 DTP by 0.5% per year, matures at two years	99.3	97.8	150	99.3
5 years, 2% floor, 98 OID, 102 DTP by 0.5% per year, matures at two years	100.25	97.0	325	100.25

## So, Why Not Just Increase Spread?

In the current environment, where even the contingent cash flows are highly certain and the offsetting protections are so strong, borrowers and lenders could easily arrive at the spread adjustment that results in indifference between a structure with no features and all the features. However, while borrowers are generally considered a uniform class with similar motivations, lenders are not. Different lenders (e.g., levered or unlevered, bank or non-bank alternative, private or public) all have different cost structures associated with their business models along with other biases and motivations. For example, equity in a collateralized loan obligation (CLO) benefits from the excess floor cash flows, while the senior notes do not. A market structure analyst could responsibly predict that these loan features may not persist as the relationships of rates, credit spreads, volatilities, and lender motivations change over time.

The first two pricings above support this possibility. Essentially, priced traditionally as a deterministic cash flow using the current forward rates, the first two structures are equivalent par value. The same structure decomposed to isolate the floor is priced at par, indicating the possibility that *if today's conditions remained unchanged and the loan persisted to maturity, the lender will receive 160 basis points of excess cash flows*. However, if a borrower and lender wanted to eliminate the floor and call protection in the second structure, they could do so with no change in value.

## Amendment to SOFR as a Floor Renegotiation

New issue is not the only time that floors and call premiums may be considered; an amendment may be an opportunity for renegotiation of these terms. One of the most prevalent amendments that will occur over the next 12 to 18 months is the modification of loans to remove LIBOR reference since LIBOR is expected to cease by the end of 2021. In this modification, the minimum base rate will need to be reconsidered, as the potential replacements for LIBOR do not work the same and do not replicate the payments. Floors will have to be rewritten and potentially restruck.

The International Swaps and Derivatives Association and the Alternative Reference Rates Committee's approach to minimize value transfer when a contract is converted from a LIBOR reference rate to SOFR is to add a fixed spread to the SOFR rate for the remaining life of the contract. That rate is determined by calculating the five-year historical difference in appropriate rates. In the loan market, every contract will be amended between September 30, 2020, and June 30, 2021, to a similar calculation. The floor rate will also need to be considered. One approach would be to simply accept that the new SOFR plus spread adjustment would be subject to the nominal floor (1% or 2%), but another way would be to calculate the value of the floor independently from the loan and determine the floor rate that returns the equivalent isolated floor value when priced as a stand-alone derivative, as in our analysis above.

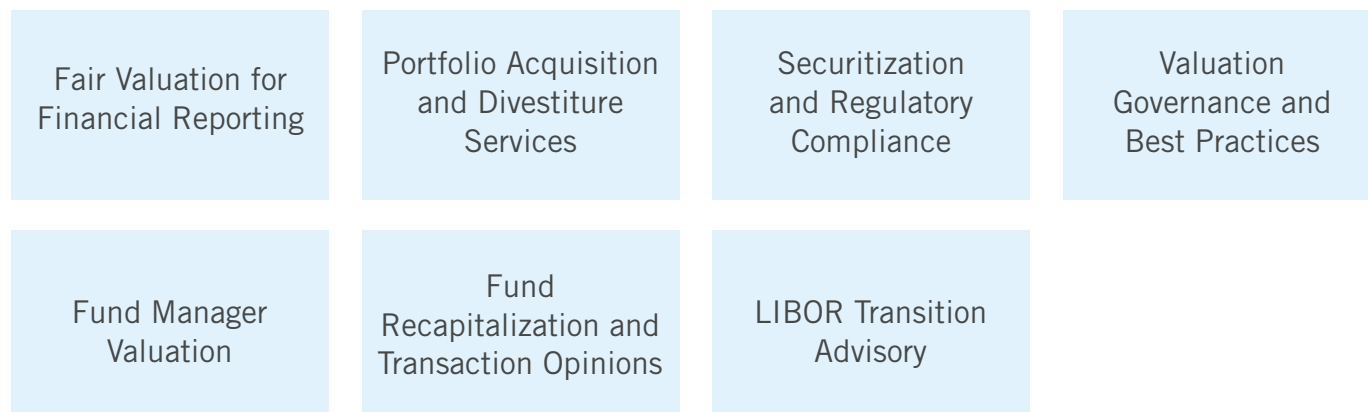
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