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The Hidden Costs of Non-Zero Interest Rate Floors in European Variable-Rate Debt Facilities

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White Paper

EXECUTIVE SUMMARY

Floors above zero percent[1] in leveraged finance transactions are not nearly as prevalent in Europe as they have been in the USA, but they have featured in an increasing proportion of European deals in recent years. The rationale for a floor is simple enough: when absolute levels of interest rates are depressed, it provides a targeted minimum yield for lenders without increasing the loan margin.

In practical terms, however, floors impose two sets of burdens on the borrower:

1. Direct and indirect increases to interest expense, with the latter resulting from the *time value* inherent to options.
2. Considerable accounting complexity for the debt and any interest rate hedging under IFRS.

The goal of this paper is to explain the effects of these floors and conclude with a few examples of perhaps more efficient and less burdensome alternate means to satisfy the rationale for non-zero floors in variable-rate facilities. Although borrowers would certainly welcome a reversal of the trend altogether, a few subtle changes to the current market practice for floors could result in a more equitable outcome for all parties.

INTRODUCTION

Sometimes referred to as a "minimum LIBOR provision," a non-zero floor is a high base level of interest beneath which a benchmark index, or variable rate, such as LIBOR or EURIBOR does not apply within a debt facility. This is not to be confused with a floor at zero percent, which is a popular topic of late given the extraordinary measures taken recently by some central banks. Those structuring and investing in leveraged loans, in particular in the US market, have insisted on LIBOR floors since short-term interest rates have plummeted in the wake of the financial crisis. To further clarify the difference to 0% floors, the floors described in this paper are routinely in the region of 0.75% to 1.25%.

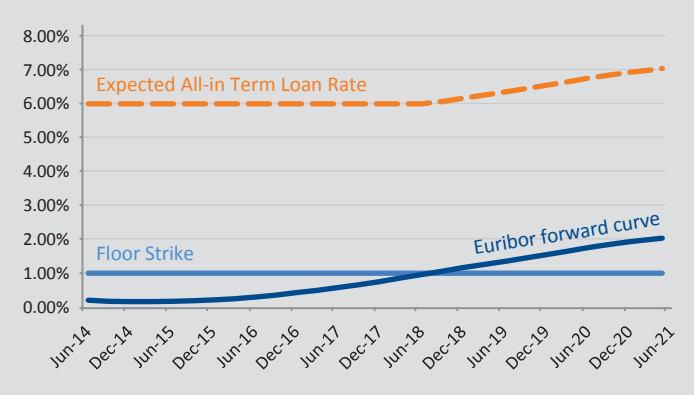
Although any lender could include a floor in a variable-rate loan, the feature has been most prevalent in the higher-risk corporate debt facilities in leveraged buy-out transactions. Their incidence in European leveraged finance markets has been fairly low until recently, but it is not clear whether the trend will continue.

It is important to clarify the mechanics of a floor in a loan before delving into the details. To illustrate the concepts and to maintain consistency, this paper considers the following example throughout, using market data from the end of June 2014:

- Seven-year euro-denominated Term Loan "B" facility
- 500bp[2] margin over EURIBOR
- 1.00% floor / minimum EURIBOR[3] provision
- Prevailing EURIBOR of 0.25% is substantially below the floor level
- Market forward curve "implies"[4] that EURIBOR will exceed 1.00% by end of year four

Diagram 1

Example of expected all-in rate of a 7-year EUR Term Loan, given the 3-month EURIBOR forward curve and the 1% floor level



Source: Chatham Financial. Market data as of 30 June 2014

To be clear, end June date for market data was chosen somewhat arbitrarily because it was the mid-point of 2014 and not because it represents an average of the interest rate conditions in 2014.

[1] The Loan Market Association standard is for a floating-rate index to have a floor at zero percent, which protects lenders against margin deterioration implicit to negative benchmark rates but this is not the subject of this paper.

[2] This round number is chosen for simplicity, not to suggest that floors are more or less appropriate or prevalent at margin levels such as this.

[3] This paper assumes 3-Month EURIBOR and quarterly interest period elections, although other tenors of EURIBOR and different interest period elections would have substantively similar results.

[4] Market forward rates for indices such as EURIBOR are derived objectively from market activity and can thus be seen a neutral approximation of "market expectations." They are historically poor predictors of actual market interest rates but are an alternative to relying upon a (potentially biased) personal view.

In this scenario, the lenders would expect to receive interest coupons of 6.00% initially when EURIBOR was likely to be below 1.00%. For later periods of the loan facility, to the extent that EURIBOR settings were higher than 1.00% the floor would be of no consequence to either party during these periods and interest coupons would revert to EURIBOR + 500bps. From where the forward curve crosses the floor strike rate in Diagram 1, it is anticipated that EURIBOR would rise above 1% in mid-2018. In any case the coupon amount would never fall below 6.00%.

A floor is fairly intuitive in all but one respect: the uncertainty of when, if ever, EURIBOR will exceed the floor level and thus discontinue the benefit to the lenders. This uncertainty is not trivial. It ultimately drives the true value of the floor, which in turn leads to substantial and non-obvious economic costs and accounting challenges borne by the borrower.

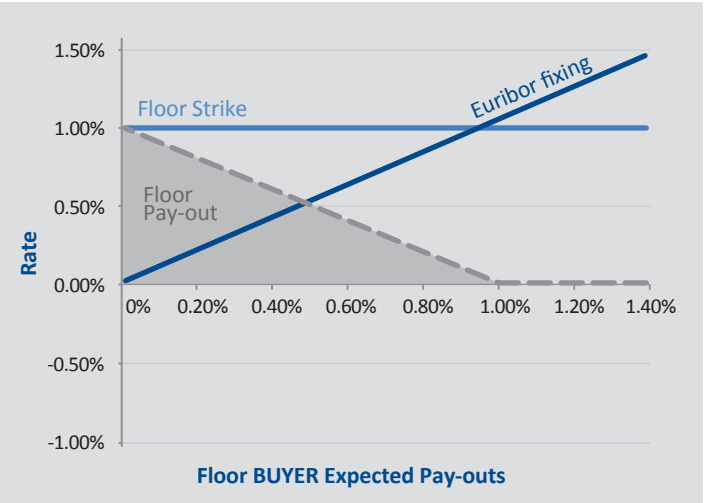
Conceptually, a floor is a temporary subsidy feature but technically it can be seen as a financial instrument – a derivative – in its own right. By agreeing to a floored rate in the facility, the borrower has effectively sold an option to the lenders. More specifically, it has sold a call option on the underlying EURIBOR index for each index setting date during the loan term at a strike rate equal to the floor level. Although the borrower will not have executed or formally documented this derivative transaction, as long as it is a party to the term loan facility[5] the floor behaves as if it the borrower sold a series of call options to the lenders.

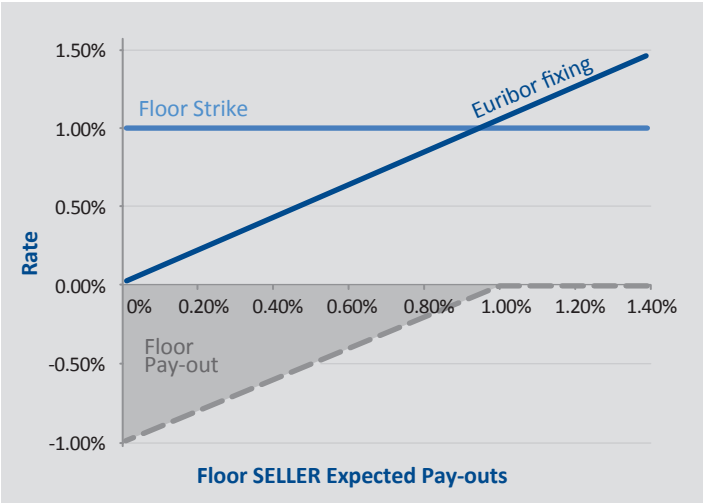
The market value of the floor – that is, the premium amount that would have been payable to the borrower had the floor been executed as an arms' length transaction – can be calculated fairly accurately by either party at any point in time. In practice, however, this will not be agreed or published between lender and borrower.

The borrower will need to formally calculate, or at least wrestle with, the market value of the floor on at least two occasions: once on the closing date (for accounting reasons) and again when it executes an interest rate hedge (typically within a few months of closing). The accounting rationale for obtaining a valuation on the closing date is detailed in **section two**. Before delving into that, **section one** examines the true economic impact of a floor on the borrower's interest rate hedging decision and strategy implementation.

Diagram 2

Illustrative floor option pay-outs at any given EURIBOR level, both from a buyer and a seller's perspective





[5] Note that the borrower effectively maintains a no-cost cancellation option mirroring its own loan repayment rights. The authors are aware of no example of a loan with a "true" or embedded floor provision which entailed any floor-related break costs upon a loan repayment event, although this is conceivable.

SECTION ONE: TIME VALUE AS AN EXCESS COST TO BORROWERS

The direct cost of a floor is that a borrower pays additional interest, compared to a "pure" variable-rate loan, to the extent EURIBOR sets at a rate below the floor level during the loan term. The indirect cost is that a borrower will incur additional costs to the extent it seeks to mitigate the risk of increased interest expense under the floor.

With any derivative such as the series of call options comprising the floor as described above, the two components of its valuation are *intrinsic value* and *time value*. The *intrinsic value* is effectively the present value of the sum of each future cash flow arising from the difference between the market forward rate of the underlying index and the strike rate. For the example TL B scenario, the underlying rate is the forward EURIBOR curve at the time the floor is purchased and the strike rate is the 1% floor rate.

An additional valuation component in certain derivatives, namely products containing options such as caps, floors and option collars, is *time value.* In the floored loan example (which, again, behaves like an option contract) there is a chance that the EURIBOR curve could be lower or flatter over the loan term than what was implied by prevailing market expectations at inception. This would make the borrower's "cost" of the 1% floor higher than they would have expected at inception.

Because an option purchaser will not be offsetting any of these potentially higher future payouts with future payments, the option seller will require compensation above and beyond any *intrinsic value*. This additional value is, just as in a formal option contract, *time value*.

In the example scenario, a seven-year EURIBOR floor at 1.00% has a market value of 4.23% of the loan amount (See Table 1). Since the present value of the difference between the EURIBOR forward curve and 1.00% can be calculated and equals 2.55%, the remaining 1.68% is its *time value*. The proportions vary across each prospective annual period, given the expected progression of the underlying index.

One could argue that the true market value of the floor is academic, for several reasons. In the first instance, the borrower received no premium for the option it "sold" by agreeing to the loan provision. The value of the floor will have fluctuated between agreeing the provision and closing the loan, in any case. Further, at least in the authors' experience, borrowers are not obligated to convert the financing back to a pure floating-rate loan. Doing so would require purchasing the same floor in the derivatives market at a fair market price. Last, a truly accurate market value would also have to account for the cancellation feature enjoyed by the borrower in a loan repayment scenario, unlike the calculations in Table 1.

Table 1

Pricing of 1.00% 3months EURIBOR floor premium for a 7-year maturity, and breakdown in intrinsic and time value components by year, as of 30 June 2014

	Average EURIBOR During Year	Total Value of the floor	Intrinsic Value	Time Value	Time Value as % of Total
Year 1	0.18%	0.83%	0.83%	0.00%	0%
Year 2	0.21%	0.84%	0.81%	0.03%	4%
Year 3	0.40%	0.71%	0.61%	0.09%	13%
Year 4	0.71%	0.63%	0.29%	0.34%	54%
Year 5	1.11%	0.51%	0.01%	0.50%	98%
Year 6	1.50%	0.40%	0.00%	0.40%	100%
Year 7	1.88%	0.32%	0.00%	0.32%	100%
Total (7 years)		**4.23%**	**2.55%**	**1.68%**	**40%**

The floor's true market value is not academic insofar as interest rate hedging is concerned. This presents a more "direct" side to an indirect cost because hedging for two to three years is required on a majority of European leveraged finance transactions, with or without a floor. Indeed, many investors exceed the requirement by hedging for a longer term. Whatever the hedging decision, the floor's true market value (*intrinsic value* plus *time value*) is reflected in the relative costs of interest rate hedging strategies. In Chatham's experience, the absence of *time value* is a key differentiator for those making interest rate hedging decisions.

The three most widely-employed hedging strategies for variable-rate loans with floors each contain *time value*:

1. Borrower buys cap at floor rate. The net result is that the borrower's interest costs on the hedged amount are "fixed" at the floor level for the chosen term of the cap. In three and five year examples, the total up-front cost of the cap is a premium of 0.20% and 1.10%, of which *time value* reflects 100% and just under 90%, respectively.

Table 2

Pricing of 1.00% 3months EURIBOR Cap premium for several maturities, and breakdown in intrinsic and time value components, as of 30 June 2014

Cap at 1.00%	Total Value	Intrinsic Value	Time Value	TV as % Total
3-year	0.20%	0.00%	0.20%	100%
5-year	1.10%	0.12%	0.98%	89%
6-year	2.00%	0.64%	1.36%	68%
7-year	3.16%	1.53%	1.63%	52%

2. Borrower buys cap well higher than the floor rate. The net result is that the borrower's interest costs on the hedged amount will float somewhere between the floor rate and the chosen cap strike rate – if EURIBOR ever rises above the floor rate – for the chosen term of the cap. In three and five year examples at a cap strike rate of 2.00%, the total up-front cost of the cap is a premium of 0.10% and 0.55%, of which *time value* reflects 100% of the total cost for both cases.

Table 3

Pricing of 2.00% 3months EURIBOR Cap premium for several maturities, and breakdown in intrinsic and time value components, as of 30 June 2014

Cap at 2.00%	Total Value	Intrinsic Value	Time Value	TV as % Total
3-year	0.10%	0.00%	0.10%	100%
5-year	0.55%	0.00%	0.55%	100%
6-year	1.05%	0.00%	1.05%	100%
7-year	1.75%	0.00%	1.75%	100%

3. Borrower "buys back" the floor and enters into an off-market interest rate swap. That is, the swap is standard except that the swap rate is adjusted to account for the full cost of purchasing the floor (containing both *intrinsic value* and *time value*) on the hedged amount for the hedge term in lieu of making an up-front cash payment. The result is a substantially off-market swap rate at a level higher than the floor in all cases; however, the borrower has effectively fixed its interest costs on the hedged amount for the hedge term.

Table 4

Debt and swap payments under 5-year and 7-year floor-adjusted swaps (ie, floor is "repurchased")

5-year Swap with Floor Repurchased				
	Euribor fixing	0.10%	0.60%	1.20%
Debt	borrower pays (excl. margin)	1.00%	1.00%	1.20%
Swap	borrower pays	1.21%	1.21%	1.21%
	borrower receives	1.00%	1.00%	1.20%
	All-in cost	1.21%	1.21%	1.21%

7-year Swap with Floor Repurchased				
	Euribor fixing	0.10%	0.60%	1.20%
Debt	borrower pays (excl. margin)	1.00%	1.00%	1.20%
Swap	borrower pays	1.45%	1.45%	1.45%
	borrower receives	1.00%	1.00%	1.20%
	All-in cost	1.45%	1.45%	1.45%

Diagram 3

Cash flow matching between the underlying debt and the hedge with floor-adjusted swap

A fourth strategy entails no *time value*, but the borrower bears extra risk as a consequence. The result is a fairly imperfect hedge, the economics of which are demonstrated in Table 5 below.

4. Borrower ignores the floor, entering into a vanilla swap. The net result is that the borrower continues to pay a floored EURIBOR on the debt while receiving a "pure" EURIBOR rate on the swap. The implication is that to the extent that EURIBOR falls during the hedge term, the all-in interest costs will increase, and vice versa. This strategy is typically not recommended.

Table 5

Debt and swap payments under 5-year and 7-year vanilla swaps (ie, without floor "repurchased")

5-year Vanilla Swap				
	Euribor fixing	**0.10%**	**0.60%**	**1.20%**
Debt	borrower pays (excl. margin)	1.00%	1.00%	1.20%
Swap	borrower pays	0.52%	0.52%	0.52%
	borrower receives	0.10%	0.60%	1.20%
	All-in cost	**1.42%**	**0.92%**	**0.52%**

7-year Vanilla Swap				
	Euribor fixing	**0.10%**	**0.60%**	**1.20%**
Debt	borrower pays (excl. margin)	1.00%	1.00%	1.20%
Swap	borrower pays	0.85%	0.85%	0.85%
	borrower receives	0.10%	0.60%	1.20%
	All-in cost	**1.75%**	**1.25%**	**0.85%**

Source: Chatham Financial. Market data as of 30 June 2014

In summary, the direct economic costs related to a floor are analogous to the *intrinsic value* component of the cost to repurchase the floor in the market. The indirect costs can be substantial as well, and are analogous to the *time value* component of the cost to repurchase the floor in the market. Both cost components are manifested in the costs of implementing a hedging strategy. If the borrower hedges in a way that avoids paying the associated *time value*, it takes on a counter-intuitive form of interest rate risk in that overall interest expense increases to the extent interest rates fall.

SECTION TWO: THE ACCOUNTING UNDER IFRS

Both IAS 39 – *Financial Instruments: Recognition and Measurement* ("IAS 39") and IFRS 9 – *Financial Instruments* ("IFRS 9") require companies to consider whether the floor in the loan contract liability is considered a separable *embedded derivative.* If yes, the entire floor feature needs to be bifurcated from the debt instrument (its host contract) and marked to fair value through the company's P&L each period. This may seem innocuous, but it is far from it. In the example, the value of the floor for the entire seven-year term of the term loan financing is not only substantial at inception, its fair value can change considerably – up or down – during the term of the loan as a function of interest rate volatility. It bears repeating that this value comprises changes to both *intrinsic value* and *time value*. Furthermore, the ongoing valuation of the floor would introduce additional operational cost and complexity.

The determination of whether the floor is accounted for as a separable *embedded derivative* is based

on whether the floor is "in-the-money" when the debt instrument is issued. Generally speaking, this refers to whether the underlying floating rate index, such as EURIBOR as in the example, is below the floor rate at any of the individual interest periods, or *floorlets*. Unfortunately, there are nuances to the assessment and there are potentially a number of different ways to determine if a floor is in-the-money. The most prevalent are as follows:

1. To assess the intrinsic value by considering the floor as a series of floorlets comparing the forward rate at inception for each individual interest period, or *floorlet*, to the floor rate
2. Assessing the floor as a single instrument, comparing either the prevailing floating rate or a prevailing swap rate for a swap of the same period to the floor rate

It should be noted that, at the time of writing, whatever method is used it would be expected that floors in the region of 0.75% to 1.25%, would be considered in the money and require bifurcation under IAS 39 and IFRS 9.

If the embedded floor in the loan is "out-the-money" at inception, no *embedded derivative* needs to be bifurcated from the loan. The result is a loan instrument – albeit one with a floor feature – that is accounted for at amortised cost. But as indicated in the first paragraph of this section, if the floor in the loan is in-the-money at inception, the borrower would need to bifurcate the floor as an embedded derivative held at fair value through P&L. The loan instrument, absent the floor, is then accounted for at amortised cost.

This gives rise to the dominant accounting challenge associated with floors in otherwise standard variable-rate loans: ***how to ensure that there is no undesirable P&L volatility from the change in value of a seven-year floor without adding interest rate risk or unnecessary costs***.

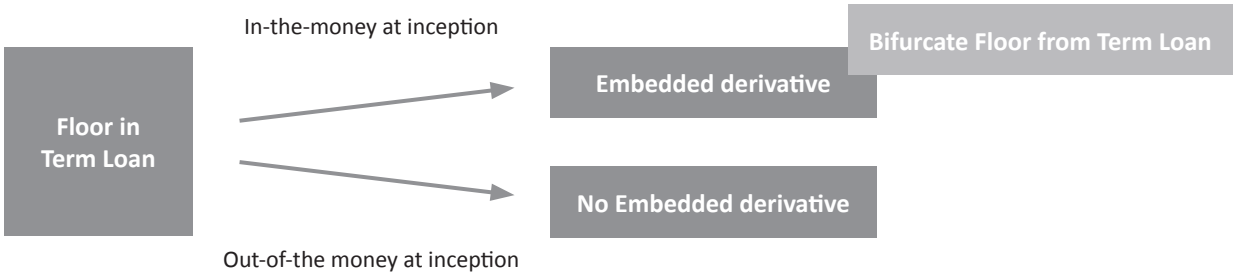
Assuming the floor in the loan is in-the-money and requires bifurcation as an *embedded derivative*, the company could elect at the loan's inception, purely for accounting reasons, to make an up-front purchase of an identical seven-year, 1% interest rate floor so that its changes in market value would perfectly offset those of the *embedded derivative*. Given the huge cost involved – recall that the market value for such a floor would be over 4% of the total debt amount in our example – it is unrealistic to expect a company to adopt this approach.

Although there are certainly a variety of possible approaches, in Chatham's experience an off-market swap blending the cost of a repurchased floor is the most prevalent hedging strategy adopted by borrowers in this situation. This is the third strategy from the previous section, and it partially achieves the result of the expensive approach described in the previous paragraph. The key differences are:

- The borrower does not pay cash for the purchased floor; rather it pays over time via a worse-than-market rate on the accompanying interest rate swap hedging the variable-rate risk on the loan
- The term of the purchased floor matches only the desired hedging term, not the full loan term
- The size of the purchased floor matches only the desired hedging notional, not the full loan size

Diagram 4

Floor "Money-ness" and impact on hedge accounting treatment



As ever, there are nuances which may affect the exact accounting treatment, and many layers of detail will have to be discussed with auditors. For one representative example, if the off-market swap has been confirmed with the counterparty bank as a single instrument and the company seeks to designate it as a cash flow hedge for hedge accounting, it may find in discussions with its auditors that a certain amount of "hedge ineffectiveness" will arise. The most likely source of this ineffectiveness being that the swap rate includes the purchased floor cost or value, whereas the hypothetical derivative mirroring the loan instrument absent the floor would be based on an at-market swap rate.

Again continuing with this representative example, the company may find that the best way of handling this from an accounting perspective would have been to obtain the transaction confirmation from the counterparty bank for 3 separate instruments: a vanilla swap based on the at-market swap rate, a purchased floor, and a deferred premium loan account to reflect the payment stream agreed in lieu of up-front cost of the purchased floor. This would facilitate the accounting treatment with minimal P&L volatility as the swap would be designated as a cash flow hedge of the variable rate loan with no floor. The purchased floor and embedded floor would be marked to their fair value through P&L, creating a natural offset on the hedged portion of the overall floor. The deferred premium would be accounted for at amortised cost.

The above scenario deals with a situation where the floor in the loan is in-the-money at inception and requires bifurcation as an *embedded derivative*. However, there may be situations where the floor is out-the-money and does not require bifurcation as an embedded derivative whereas the company wishes to hedge its interest rate risk in the loan with an off-market swap blending the cost of a repurchased floor.

The company could find that the most robust way of obtaining optimal hedge accounting treatment with minimal P&L volatility for situations where the floor in the loan is out of the money would be having the counterparty bank confirm the transaction as 3 separate instruments as described above. In doing so, the company would designate the swap as a cash flow hedge of the variable rate loan with no floor, the purchased floor would be designated as a fair value hedge of the floor embedded in the loan and the deferred premium would be accounted for at amortised cost. However, it should be noted that more simplistic approaches may be appropriate in some cases, depending on the specific circumstances of the company and the approach the company takes to determining hedge ineffectiveness.

In summary, when viewed through the lens of IFRS the indirect costs associated with floors can expand rapidly beyond the economic aspects summarised at the end of the first section. Navigating the complex accounting treatment for debt with a potential *embedded derivative* and any IFRS hedge accounting for associated hedging transactions is not at all straightforward. In Chatham's experience, finance teams dealing with these features for the first time find them much more burdensome than expected, not to mention more costly in terms of auditor and other advisory fees.

SECTION THREE: ALTERNATE MEANS TO TRANSFER A FLOOR'S BENEFIT

Recall that the rationale for a non-zero floor in a financing is to create certainty of a minimum rate of return for the lenders. This return rate would need to be reflective of sufficient compensation for the deemed credit exposure of the loan, irrespective of the interest rate environment. Additionally, it would need to include the necessary margin to cover other applicable costs, such as any regulatory or capital charges.

As mentioned in the first section, at a loan's inception the direct benefit to the lender from the floor would be limited to its *intrinsic value*, whereas the economic costs to the borrower will be higher given the element of *time value* present. Further indirect costs are borne via the additional accounting complexity. A perhaps ideal solution would eliminate this gap in value without any impact on a lender's minimum return expectation or additional burdens for either party. In Chatham's view this can most easily be accomplished by exploring alternatives that transfer only the *intrinsic value* of a contemplated floor (which can be

labelled the "Alternate Value" for simplicity) in the most lender-friendly and accounting-friendly manner possible.

Determining the Alternate Value would entail a formal assessment or calculation of the floor's *intrinsic value* at the appropriate time. Presumably this moment would need to be formally agreed between lenders and borrower either at the time of negotiating other economic terms of the financing or at closing.

To be clear, the purpose of calculating the Alternate Value would be so that the contemplated floor could be removed altogether from the debt. Beyond the economic benefit of removing *time value* as a source of costs borne by the borrower altogether, it would eliminate the accounting and hedge accounting difficulties addressed in the previous section.

Alternative 1: Up-front Payment

The most direct means of transferring the agreed Alternate Value from one party to the other would be to make the payment at closing. Perhaps this could be integrated in the documentation as an additional up-front fee, or part of the Original Issue Discount (OID) which may be amortised over the life of the debt instrument.

From the lenders' perspective, this would be a boon given the time value of money benefit of front-loading the expected value of the floor. Conversely, the zero-sum game of an adjustment to "day one" proceeds of what could be several percentage points (2.55% from the example – see Table 1) implies a serious drawback or even a fatal flaw for the borrower. This would be especially true if the borrower is, like many private equity managers borrowing in the European leveraged finance market, an IRR-driven investor. Although a good start point for exploring how to deal with Alternate Value transfer, this alternative is probably unrealistic in practical terms.

Alternative 2: Supplemental Margin

Instead of an up-front transfer, parties could agree to an additional spread or margin over the loan term, the present value of which would be equal to the Alternate Value. This would be substantially more IRR-friendly for borrowers, but it might be seen as a poor substitute for a floor by lenders. A detractor from the lenders' perspective would be that spreading the benefit evenly over the full loan term makes it less likely that they would receive the full Alternate Value, as margin would not survive a refinancing or repayment. This is a step down relative to the status quo in which the vast majority of the floor's expected value is in the early periods when a repayment is unlikely or prohibited. Even if a lender agreed conceptually to spreading out the value over time, potentially forsaking a portion of the benefit owing to decisions outside a lender's control would be another matter.

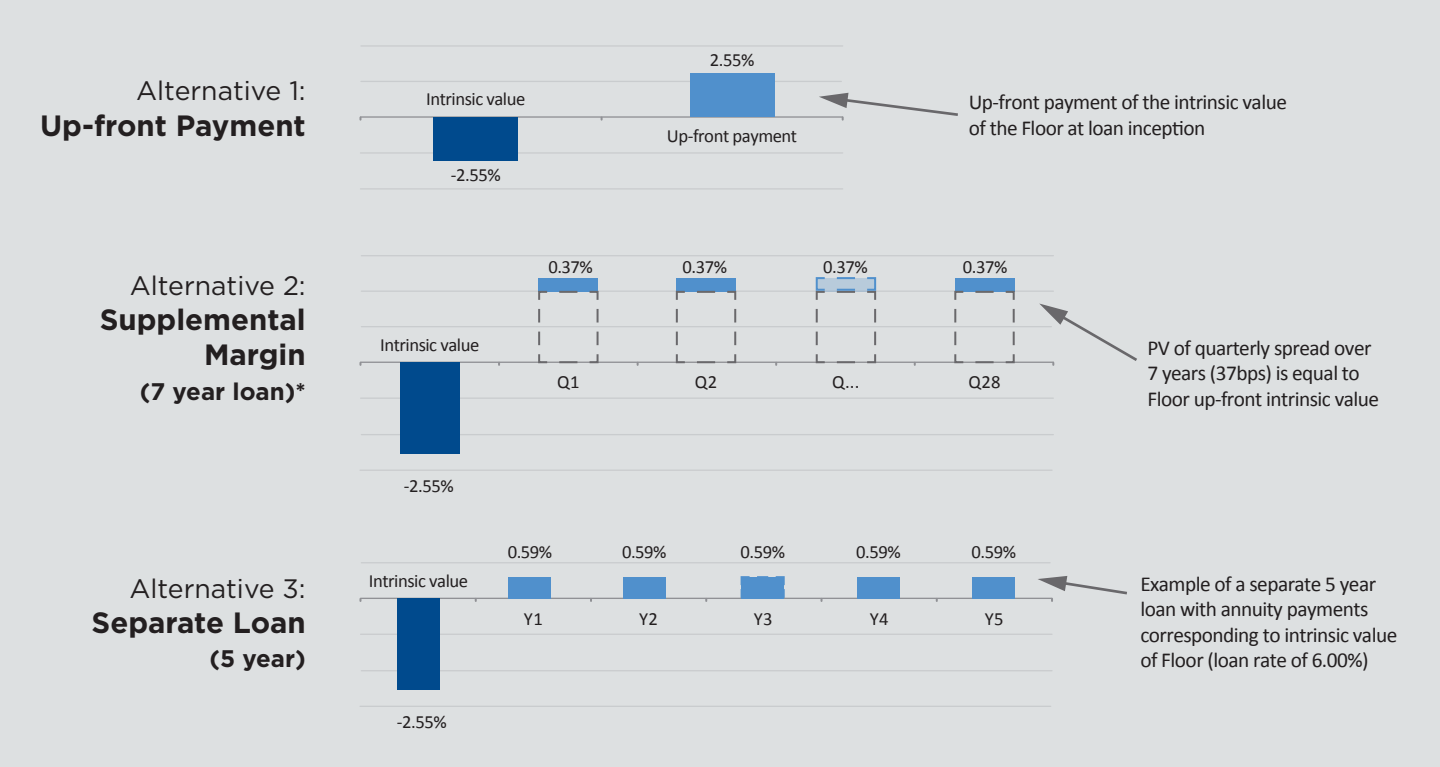
Another potential drawback is that from the borrower's perspective, the additional spread could be combined with the "true" loan margin by someone analysing the financial details of the financing. Whereas a floor at say 1% would be unlikely to imply lower creditworthiness of the borrower, an "all-in margin" comprising the original and supplemental margins at a level even fractionally above what would otherwise be the case could give such an impression unless accompanied by a sufficiently clear explanation in the financials. And this is additional to the more obvious implication that locking in the Alternate Value in the credit spread would, in hindsight, make the overall interest costs higher than the status quo if the variable index actually rose more quickly than expected over the loan term.

Alternative 3: Even payments with repayment protection for lenders

A more lender-friendly version of Alternative 2 would be one in which a supplemental margin came with a "make whole" provision. To address the potential confusion with a credit-driven margin, the mechanism could be identified as an amortized fee or even as a small, separate tranche of fully-amortising debt. Whatever its form, the key economic feature would be that the Alternate Value is spread evenly over the full term of the financing, with any balance being payable upon prepayment or refinancing.

Diagram 5

Various alternatives to pay the intrinsic value of the Floor



CONCLUSION

Variable-rate lending facilities are far from standardised, and this is not going to change. In particular, especially in Europe there is no consensus on how lenders and credit funds should achieve a minimum return when benchmark rates are at historic lows without a permanent adjustment to the margin. The increasing prevalence of a floor feature near 1% in European corporate debt facilities could be seen as a late arrival of the standard market practice in US leveraged finance. Yet there are reasons why borrowers and lenders alike may look for other ways to achieve the intended results.

Although the direct costs would be fairly clear to any borrower faced with the imposition of a non-zero floor when negotiating loan terms, the indirect costs might only be appreciated well after closing. The additional economic costs, notably due to the *time value* contained within the floor as a derivative with inherent optionality, are substantial and unavoidable even if interest rate hedging is not undertaken. There are other indirect costs that are likely to apply, notably in the form of extra accounting implications and burdens where IFRS applies.

This paper highlighted the primary additional economic and non-economic challenges of floors so that borrowers and lenders can be more aware of their implications when negotiating variable-rate debt facilities in 2015 and beyond. While not explicitly targeting a compromise, the final section explored a progression of alternatives which specifically address the topics on which the first two sections elaborate, aiming to achieve a more efficient outcome. Although not intended to prescribe solutions to address each possible situation, the approach is warranted given the consternation and economic costs accompanying non-zero floors. Certain alternatives to a floor can sufficiently – and in the authors' view, more equitably – satisfy the rationale underlying a contemplated floor to warrant early discussions between borrowers and lenders.

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