

The zero floor

Floored coupons in EUR, GBP and USD — scope, issuers, purpose and hedging

Research note — 27 July 2026

Executive summary

The 0% floor is a seam, not a view. It is the point at which four independent systems — derivatives documentation, cash-market documentation, accounting, and settlement plumbing — fail to agree on whether a negative number is a legitimate cash flow. ISDA has said yes by default since 2000. Bonds, loans and deposits said no. Everything in this note follows from that disagreement.

In bonds the floor is usually not written down at all. ICMA's Primary Market Handbook states that English-law vanilla bond terms "might sometimes expressly provide that the minimum interest due by the issuer in any case is zero ... **but generally would not, since it is implicit.**" The reason is not economic: a negative coupon would require a payment *from* a bearer of a negotiable instrument, which ICMA says "is not compatible ... with the concept that bonds are negotiable instruments," and would fail clearing and listing eligibility. **No EUR FRN is known to have paid a negative coupon.** The cost landed instead on issuers, through unfloored swap legs.

Where it was written down, it was retrofitted in a wave between 2015 and 2017 — and adoption is still not universal. CADES's base prospectus had no floor in June 2016 and one in September 2017. EIB's was absent in December 2014 and present by 2025. Crédit Mutuel-CIC Home Loan SFH moved between July 2016 and July 2017. But KfW's note programme has no default floor, and Deutsche Bank issued a floating Hypothekenpfandbrief in **June 2025** with no floor at all. Meanwhile deal-level floors long predate the era: CADES floored its TEC10 FRN with `Max[0; ...]` in **2004**, and the ESM floored a EUR 1.5bn Euribor FRN with a *negative* margin in **September 2013**, nine months before the ECB deposit rate went below zero.

The drafting choice that mattered was not whether to floor, but what to floor. On the realised path of 3M Euribor, a floor on the *index* was worth **2.50% of notional** cumulatively — about 31bp per annum across 2015–2022. The same floor written on the *all-in coupon* of a note paying Euribor + 50bp was worth **0.06%**. One clause, a fortyfold difference in value. The cash markets and the derivatives market resolved this question in opposite directions, and the LMA and the ARRC resolved it in opposite directions too.

GBP and USD are different animals. Bank Rate never went below 0.10%; the PRA nevertheless ran a formal supervisory exercise in October 2020 asking firms whether their *software* could handle a minus sign. SOFR has never printed negative in 2,076 observations, so a 0% floor on a USD note has never paid out — it is pure insurance. The economically live US floor was never at zero: it was the **1% Libor floor** in leveraged loans, which went from

under 5% of loans pre-2009 to over 80% by 2020, contributed a peak **68bp** to the index coupon in January 2013, and is worth **0.00%** today.

The floor is an option, and almost nobody who wrote one priced it. A 5-year strip of quarterly 0% floorlets was worth 1.2–3.1% of notional on the day the forward reached zero, depending on vol. Chatham valued a 7-year 1% Euribor floor at **4.23% of loan amount**, of which 1.68% was time value. Borrowers negotiated the intrinsic and ignored the rest. Dutch RMBS solved it honestly and unusually — by issuing **above par**, so investors paid the premium up front.

And in one market the floor was found to be an abuse. The Spanish *cláusulas suelo* — the same clause, “the rate shall not fall below X” — were held abusive for failure of material transparency, and the CJEU in *Gutiérrez Naranjo* (December 2016) required restitution from inception, not from judgment. **€2.24bn was refunded to more than 496,000 consumers** through the extrajudicial channel alone. Italy reached the opposite answer by a different route: interest is a *frutto civile* and cannot be negative, so the zero floor exists in Italian mortgages as a matter of law, whether or not anyone drafted it.

Part 1 — The scope: five different things called “a floor at 0%”

The phrase covers at least five distinct constructs with different legal status, different economics and different hedges. Conflating them is the commonest error in this subject.

#	Construct	Where it lives	Status
1	The implicit bond floor	English-law FRN terms, mostly unwritten	Implied by construction; ICMA says express wording is unusual because it is redundant
2	The express index floor	LMA/LSTA loan agreements: “if that rate is less than zero, EURIBOR shall be deemed to be zero”	Sits <i>inside</i> the benchmark definition. Floors the index, so the all-in rate floors at the margin , not at zero
3	The express coupon floor	Bond Final Terms: “Minimum Rate of Interest: 0.00 per cent.”	Floors the all-in rate including margin. Worth far less than (2)
4	The non-zero floor	US Term Loan B: 0.75%, 1.00%, 1.75% Libor floors	A genuine option struck away from zero, priced and traded. The only one with a liquid market convention
5	The deposit floor	Nowhere. Never documented	Set by the storage cost of banknotes, not by contract. Broke for large balances; held for small ones

A sixth belongs on the list for completeness and is discussed in Part 8: the **consumer floor** struck well above zero (Spanish *suelos* at 2–4%), which is economically construct (4) and legally a different universe.

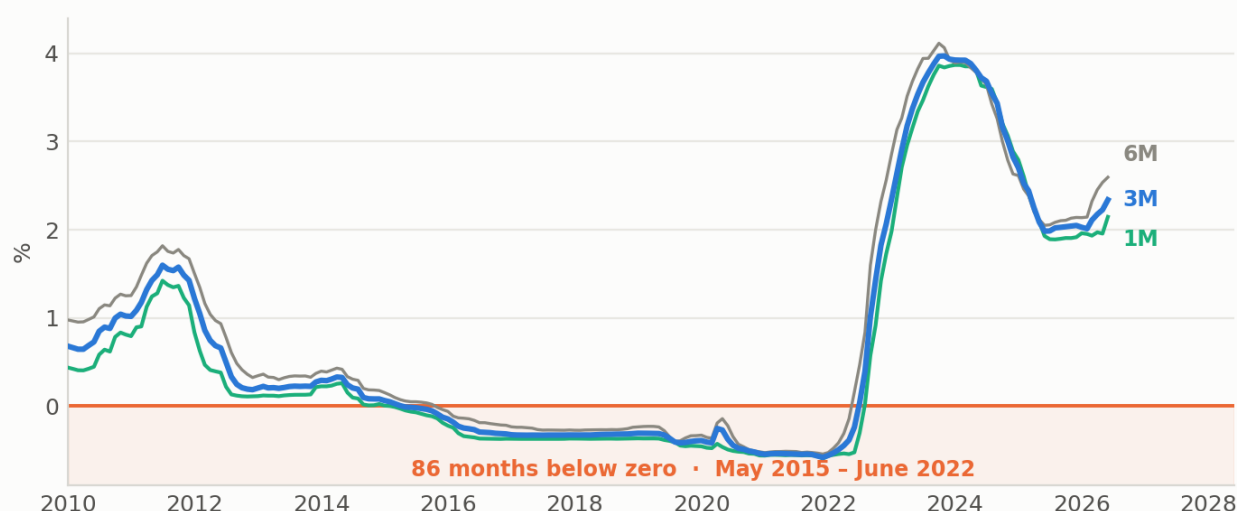
The distinction between (2) and (3) is where nearly all the money is. Part 6 quantifies it.

Part 2 — EUR: the only currency where the floor actually bit

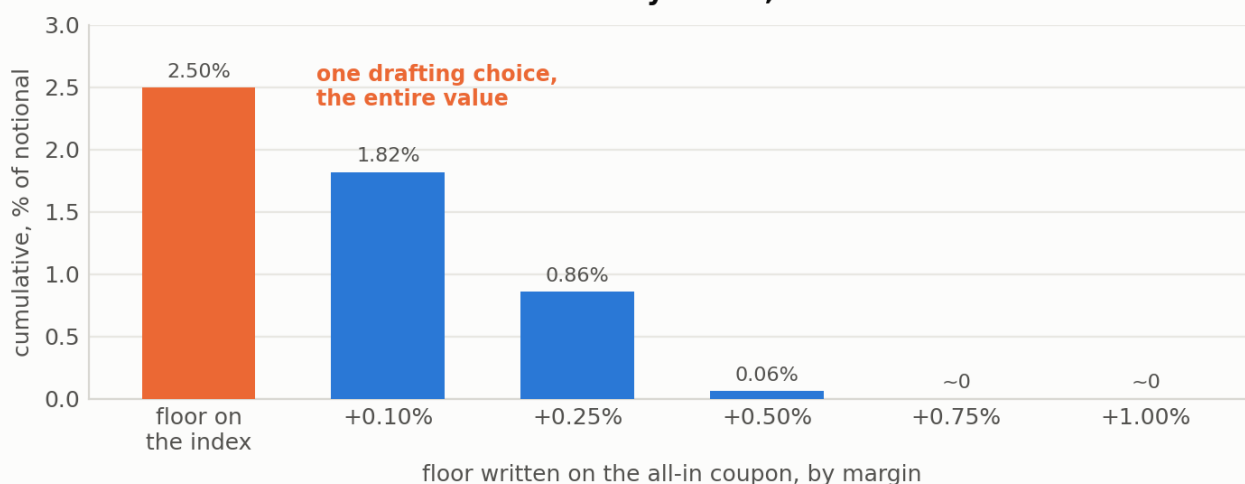
2.1 The era, dated

ECB deposit facility first negative	11 June 2014 (−0.10%), trough −0.50% from 18 Sep 2019, back to zero 27 July 2022 — negative for 8 years and 46 days
EONIA first negative fixing	28 August 2014 (−0.004%); pre-reform trough −0.458% (20 Sep 2019); never returned above zero before discontinuation on 3 Jan 2022
€STR	Born negative: first rate −0.549% on 1 October 2019. All-time low −0.593% on 31 March 2022 . Last negative 13 Sep 2022
1M Euribor	89 monthly averages below zero, Mar 2015 - Jul 2022 , trough −0.596%
3M Euribor	86 monthly averages below zero, May 2015 - Jun 2022 , trough −0.582%
6M Euribor	79 monthly averages below zero, Nov 2015 - May 2022 , trough −0.545%

Euribor below zero: the seven years the floor was in the money



What the same 0% floor was actually worth, 1999-2026



3M Euribor monthly averages, ECB Data Portal. Realised payout of $\max(0, -\text{rate})$, accrued monthly, undiscounted.

Euribor below zero, and the value of the floor by where it is written

2.2 Did any EUR FRN pay a negative coupon?

No verified case. The coupon stopped at zero by construction. ICMA's Appendix A9a (July 2016) is the definitive statement, and its reasoning is worth reading closely because it is legal rather than economic:

“Requiring payments of interest by investors is not compatible, at least under English law, with the concept that bonds are negotiable instruments. Indeed, any provision requiring payments by investors would alter the nature of the one-way promise to pay by the issuer and so require structural changes to bond documentation and secondary market trading practices. **Clearing system and stock exchange eligibility criteria are also unlikely to be satisfied.**”

Three independent obstacles, any one of which is fatal: the floor is implied so nobody drafts it; a negotiable instrument cannot impose a payment obligation on an anonymous bearer who acquired it by transfer; and the bond would fail listing and clearing eligibility anyway. Slaughter and May's counterpoint is worth keeping — there is “no legal principle standing in the way of an obligation to make payments being imposed on bondholders, but the bond

terms must be sufficient to evidence that obligation.” The floor is a rule of construction, not of law.

But the drafting *was* ambiguous, and in a specific way. Klaus and Selga’s 2021 paper identifies the culprit as Final Terms electing “**Minimum Rate of Interest: Not Applicable**” — the “N/A clause”. The slot existed in every ICMA-standard Final Terms; leaving it blank did not obviously mean “zero”. The fix, visible across programmes from 2016–17, was to hardwire the floor into the *Conditions* so a Final Terms election could no longer leave it open. UniCredit’s current EMTN Conditions are typical:

“Unless otherwise stated in the applicable Final Terms the Minimum Rate of Interest shall be deemed to be zero.”

2.3 The issuer list

Every row below was read from the issuer’s own base prospectus or final terms.

Floor hardwired at programme level

Issuer	Instrument	Wording	Dated
CADES	Debt Issuance Programme & GMTN	“The Minimum Rate of Interest, including for the avoidance of doubt any margin, shall not be less than zero”	Absent Jun 2016 → present Sep 2017 ; still in force Jul 2025
EIB	Debt Issuance Programme	“Unless otherwise stated in the relevant Final Terms, the Minimum Interest Rate shall be deemed to be zero”	Absent Dec 2014 → present by Nov 2025
Bpifrance Financement	Prospectus de Base	“le Taux d’Intérêt Minimum sera réputé être égal à zéro”	Present by Jul 2016
ICO (Kingdom of Spain guaranteed)	EUR 30bn GMTN	“Unless otherwise stated ... the Minimum Rate of Interest shall be deemed to be zero”	Nov 2024
UniCredit	EMTN	Same, repeated across ISDA Determination, Screen Rate, Compounded SOFR and CMS limbs	May 2025
AIB Group / Allied Irish Banks	EMTN	“Unless otherwise stated hereon, the Rate of Interest ... shall not be less than zero”	Mar 2025
Arkema (corporate)	EMTN	“In no event shall the applicable rate of interest (including ... any applicable margin) be less than zero”	Nov 2017
CAFFIL / SFIL	<i>Obligations foncières</i>	“in no event, will the relevant Interest Amount be less than zero”	Jun 2018
Crédit Mutuel-CIC Home Loan SFH	<i>Obligations de financement de l’habitat</i>	“the Minimum Rate of Interest (i.e. Relevant Rate plus Margin) ... shall be deemed to be zero”	Absent Jul 2016 → present Jul 2017
CA Auto Bank, Bank Norwegian	EMTN	Standard house sentence	2021, 2025

Floor at deal level only

Issuer	Deal	Floor
CADES	EUR 1bn TEC10 FRN due 25 Jul 2020, ISIN FR0010120436	Max[0; ...] — 2004 , a decade early
ESM	EUR 1.5bn Euribor FRN due 27 Mar 2015 (Cyprus funding)	Margin -0.21% , “Minimum Rate of Interest: 0 per cent.” — Sep 2013
ING Bank	€45bn Soft Bullet 2 covered bonds, Series 22, XS3299537426	“Minimum Rate of Interest: 0.00 per cent. per annum”, Feb 2026
BPCE SFH	Series 196, FR001400TEX3, EUR 1bn	“Minimum Rate of Interest: 0.00 per cent. per annum”, Oct 2024
Green STORM 2021 B.V. (Dutch RMBS)	Class A	“The rate of interest on the Notes shall at any time be at least 0.00 per cent.”
Bastion 2022-1 NHG B.V. (Dutch RMBS)	Class A1	“Euribor for three months deposit plus 0.60 per cent. ... with a floor of zero per cent. ”

The counterexamples — the floor is *not* universal

- **KfW** Note Programme (2009 and 2016 prospectuses): optional bracketed template only. **No default floor.**
- **Deutsche Bank** floating-rate *Hypothekendarlehen* DE000A4DFJL1, issued **18 June 2025**, 3M Euribor + 0.46%: no Mindestzinssatz, no floor.
- **Eni, FMO, RWE, Nestlé, BAWAG**: “Minimum Rate of Interest” appears only as an optional Final Terms line.
- **CDP** is the trap worth knowing: the zero floor appears in the **Risk Factors** from 2017 to 2024 — “under no circumstances shall the Rate of Interest ... be less than zero” — but the operative Condition 6.8 contains only the plain optional provision. Marketing document and operative terms diverge.

2.4 Who actually paid

The floor did not make the negative rate disappear; it moved it. In securitisation the cost landed on the issuer and thence the originator. RaboResearch’s Dutch RMBS primer states it plainly:

“...coupon payments may actually be negative, implying that investors need to pay the issuer. The latter is technically impossible, coupons are floored at zero, **resulting in the issuer essentially losing this income.**”

And then the genuinely interesting part — the market’s answer:

“By issuing notes above-par, the (future) negative coupons are in essence paid up-front by the investor to the issuer.”

That is the cleanest example anywhere of a zero floor being explicitly priced and monetised rather than absorbed. Risk.net reported the aggregate version in September 2016: “Implicit floors in notes leave originators facing cost of negative rates on hundreds of tranches.”

The Bank of England put a number on the exposed stock in May 2016: **“€350bn of euro-denominated FRNs referencing Euribor (28% of total outstanding) are affected by this 0% floor.”** That is the only aggregate figure of its kind I could find in any currency.

Portugal went the other way entirely. **Law 32/2018 of 18 July 2018** obliges banks to reflect negative rates in residential loans; where index plus margin is negative, the amount is either discounted from principal outstanding or converted into a credit for future set-off. The TAGUS / Green Belém No. 1 prospectus documents the transmission: 6M Euribor at **−0.124%** on 22 April 2020, and “the Servicer will discount such amounts from their respective Principal Outstanding Balance.” Negative interest became principal erosion.

Part 3 — GBP: the floor that never had to bite

Bank Rate bottomed at **0.10%** on 19 March 2020 and never went lower. The MPC's August 2020 Monetary Policy Report recorded that it "has judged in the recent past that the effective lower bound for Bank Rate was close to but slightly above zero," and was "currently considering whether the ELB ... could be below zero."

What happened next is the single best piece of evidence for the operational thesis of this whole subject. On **12 October 2020** the PRA sent a "Dear CEO" letter — *Information request: Operational readiness for a zero or negative Bank Rate* — scoped explicitly to "operational readiness and challenges with potential implementation, **particularly in terms of technology capabilities**," asking for both "short-term solutions or workarounds, as well as permanent systems changes." A central bank ran a formal supervisory information request, followed by a mandated remediation timetable, to establish whether regulated firms' software could process a minus sign.

Sterling FRNs do carry express floors, and the label is not standardised:

- **Lloyds Bank plc**, €60bn Global Covered Bond Programme, Series 2026-2 (XS3311132719), Compounded Daily SONIA: "Minimum Rate of Interest: **Zero per cent. per annum**"
- **Bank of Nova Scotia**, GBP 105m Floating Rate Senior Notes due Nov 2024: "Minimum Interest Rate: **Zero per cent. per annum**"

The Sterling RFR Working Group took a clear position for **loans** — "it is recommended that the floor be calculated daily (rather than at the end of an interest period) because loans accrue interest daily" — and, for legacy conversions, that where SONIA + CAS falls below a legacy floor, "CAS will remain unchanged; SONIA will be adjusted."

For **bonds** it issued no floor recommendation at all. Its *Statement on bond market conventions* (March 2020) does not mention floors. The GBP FRN convention therefore comes from ICMA and, indirectly, from the ARRC.

There is a neat mechanical reason the two markets diverged. The Bank of England's SONIA Compounded Index embeds unfloored daily compounding, so an index-based FRN structurally **cannot** express a daily floor — only a floor on the resulting compounded rate. As Slaughter and May put it, "the index may not be usable if SONIA turns negative yet a zero floor is to be applied."

On the retail side, the UK's near-miss produced one genuinely instructive episode — the mirror image of a floor. **Skipton Building Society** had promised its SVR "would not be more than 3% above Base Rate", with a right to remove the ceiling "in exceptional circumstances." When Bank Rate collapsed to 0.5% the cap became binding; Skipton removed it from 1 March 2010 and the SVR rose from 3.5% to 4.95%. Litigation followed in 2010 and again in 2014; no public judgment or settlement is on record. The related, decided case is *West Bromwich*, where the Court of Appeal held in June 2016 that the lender could not vary tracker rates absent a Bank Rate change — at an estimated cost of **£27.5m**, and after the Financial Ombudsman had ruled the same rise fair. Regulator and court, opposite conclusions, same product.

Whether UK trackers carry contractual 0% collars is, on the evidence I could gather, **broker assertion rather than documented fact**. No lender wording, no UK Finance statement, no FCA position was locatable.

Part 4 — USD: the floor that was never at zero

4.1 The zero floor is insurance that has never paid

SOFR observations, Apr 2018 – Jul 2026	2,076
Negative prints	0
All-time low	0.01% , on 89 separate days (first 24 Mar 2020, last 16 Jun 2021)
EFFR, 6,549 daily obs since 2000	0 negative prints; low 0.04%

The nuance almost nobody quotes: while published SOFR never went negative, the **1st percentile of underlying repo transactions did — on 137 days between March 2020 and February 2022, reaching –0.05%**. Negative USD repo trades happened; the benchmark did not print negative.

Treasury bills went negative in the secondary market — most negatively **–0.05% on the 13-week on 26 March 2020** — but never at auction, because 31 CFR 356.12(c)(1)(i) permits a bill bid to be “a positive number or zero” only. **54 auctions have stopped at exactly 0.000%**. Note the deliberate contrast in the same regulation: TIPS real yields and FRN discount margins may be negative; bill rates may not.

US Treasury FRNs carry the cleanest statutory statement of the convention anywhere: “the interest rate will be **the spread plus the index rate ... subject to a minimum daily interest accrual rate of zero percent**” — all-in, daily.

The floor is nonetheless ubiquitous in USD paper. EDGAR full-text search (2022 to date) returns 737 filings containing “Minimum Interest Rate: 0.00%”, 675 containing “will not be less than 0.00%”, 351 containing “subject to a minimum interest rate of 0.00%”, and 2,764 pairing “Minimum Interest Rate” with “Compounded SOFR”. Typical issuers: **Toyota Motor Credit** (Compounded Daily SOFR + 0.43%, Minimum Interest Rate 0.00%), **Citigroup** (inverse floaters at 9.375% – 1.25 × SOFR, floored at 0.00%), **Goldman Sachs, Morgan Stanley, Barclays, BofA Finance**.

One JPMorgan Compounded SOFR note from December 2025 is worth singling out, because it documents SOFR as a genuinely **signed** variable with a **1.00%** floor and works the arithmetic through negative territory:

“–1.00% + 0.55% = 1.00%* / –2.00% + 0.55% = 1.00%* / –3.00% + 0.55% = 1.00%*”

Fannie Mae states the convention as a matter of programme policy: “Fannie Mae floating rate notes will not accrue interest at a negative rate, and have an effective floor of zero.”

4.2 The floor that mattered: 1% Libor in leveraged loans

This, not the zero floor, is where the USD money was.

Share of US syndicated loans with a floor	<5% in 2008 → over 80% by 2020 (Roberts & Schwert)
Median floor level	1% , range zero to over 5%

Share of aggregate interest expense attributable to floors since 2010	~8%
Floor contribution to the Morningstar/LSTA index coupon	peak 0.68% in January 2013 ; post-crisis average 0.31–0.33%; 0.00% today
Jul 2019 – Feb 2020	fewer than one third of loans had floors
July 2020	95% of new institutional loans had a floor; most common level 100bp
Jan 2022	roughly half the index carried floors; index average 75bp, new issue 60bp

Two consequences worth carrying forward. First, the stated margin systematically understated the true all-in yield through ZIRP: a 1pp fall in Libor raised floor-adjusted spreads by about **29bp**. Second, and more elegantly, the **CLO floor mismatch**: CLO debt tranches were floored at 0% while the loans in the collateral pool were floored at 1%. That difference accrued to CLO equity, raising equity yields by **two to four percentage points from 2012 to 2015** — and decayed to nothing as rates rose in 2022–23. CLO equity was long a floorlet strip for free, and then wasn't.

On my own arithmetic from the verified inputs — a **\$1.47tn** index and roughly half of it floored in early 2022 — that is on the order of **\$700bn+ of floored TLB notional** at the peak. Neither source computes that product; the multiplication is mine.

The floors then got quietly stripped out at Libor cessation. Covenant Review found **21% of 2020 fallback amendments and 30% of 2021 amendments reduced the successor floor to zero** from a non-zero Libor floor.

Running a 1% floor against the realised SOFR path since 2018 gives **24bp per annum** on average, binding on 27% of days — against a peak index contribution of 68bp in 2013 under Libor. The instrument was worth what it was worth because of *when* it was written.

Part 5 — Why the floor exists

Five drivers, in rough order of how much work each is doing.

5.1 Derivatives said yes; everything else said no

The single structural fact:

	Default treatment of a negative floating rate
ISDA 2006 §6.4 / 2021 §§5.5, 6.8	Negative allowed; payment direction reverses. “The default will continue to be the Floating Negative Interest Rate Method”
ISDA CSA post-2014 protocol	Negative allowed; the pledgor pays the absolute value
LMA / LSTA loans	Optional zero-floor wording inside the benchmark definition, widely adopted from ~2011
Vanilla English-law bonds	Zero floor generally implicit , not express
Retail deposits	De facto floor at zero, never written

Under the ISDA default, the fixed payer pays the fixed leg **plus** the absolute value of the negative floating leg. The floating payer is not merely relieved of an obligation — it becomes a receiver on both legs. And note the timing: the 2014 Collateral Agreement Negative Interest Protocol opened on **12 May 2014**, a month *before* the ECB deposit rate went negative. Derivatives documentation was pre-emptive; cash documentation was reactive by three years.

The trap inside this is worth stating explicitly because it catches people. The **Zero Interest Rate Method is not a 0% floor on the rate**. As Wells Fargo’s own ISDA disclosure puts it, ZIRM “has the effect of flooring only the Floating Amount and not the floating benchmark rate unless the Floating Rate Spread is zero or negative.” On a swap paying Euribor + 100bp with Euribor at –50bp, the Floating Amount is +50bp — positive — so ZIRM does nothing at all. A borrower who elected ZIRM believing it matched a loan floored at “Euribor deemed zero” was still short 50bp. ISDA only built the thing people thought they were buying in 2021, as the **Zero Interest Rate Method Excluding Spread**.

5.2 The plumbing could not process a minus sign

ICMA: negotiability, plus “clearing system and stock exchange eligibility criteria are also unlikely to be satisfied.” The ACT: “The clearing systems are not set up to process payments by noteholders to the issuer.” Arnold & Porter, reporting banks’ own accounts: accounting and operating systems “often do not contemplate negative interest rates.” The ARRC put it in a footnote to its model FRN drafting: FRN coupons are floored at zero “because, among other reasons, **operational systems are not designed to accommodate investor payments to an issuer.**”

And then the PRA exercise described in Part 3. Firms floored coupons at zero in substantial part because their systems floored coupons at zero, and a convention hardened around the constraint.

5.3 The accounting made an in-the-money floor expensive to write

The rule is **IAS 39 AG33(b)**, carried into IFRS 9 B4.3.8(b) for liabilities:

“An embedded floor or cap on the interest rate on a debt contract is closely related to the host contract, provided the cap is at or above the market rate of interest and **the floor is at or below the market rate of interest when the contract is issued.**”

The IFRS Interpretations Committee took exactly the negative-rate question in 2015 and closed it in **January 2016** without amendment, observing that AG33(b) applies in negative-rate environments **identically** to positive ones — there is no “negative rates are special” carve-out — and that the comparison is of the overall floored rate (benchmark plus spreads) to the market rate for the same contract without the floor.

The instinct is that including the credit spread rescues the floor from being in the money. It does not — the spread appears on both sides and cancels. A loan at Euribor + 200bp with a 0% index floor, signed when 3M Euribor was −30bp, has a floored all-in level of 2.00% against a market rate of 1.70%: **in the money by exactly the amount the benchmark is negative.** That describes essentially the entire EUR market from mid-2015 to mid-2022. Bifurcation, fair value through P&L, every period.

The asymmetry is worth noting: IFRS 9 abolished bifurcation for financial *assets*, so the **lender** sees nothing — the floor passes SPPI as a variable rate with a boundary and sits at amortised cost. The **borrower**, who conceded the floor, carries a written floor at FVTPL. The party that wanted the term bears none of the accounting cost.

5.4 The lender’s own liabilities were floored, and nobody wrote that down either

The deposit floor is the only one in this note with no documentation anywhere — no LMA option, no ISDA election, no bond condition. It existed because cash is a competing instrument at par with a hard 0% return, because retail deposit contracts are consumer contracts where an adverse variation invites exactly the transparency challenge that killed the Spanish floors, and because no bank wanted the headline.

But it was never a bound on *deposits* — only on *small* ones. The ECB’s own work (Altavilla, Burlon, Giannetti and Holton) found that “sound banks pass on negative rates to their corporate depositors without experiencing a contraction in funding,” with the share of corporate deposits charged negative rates rising from **under 10% at end-2014 to about 25% at end-2019**, and that “sound banks do not experience deposit outflows even if they charge negative rates.” The constraint was a franchise constraint, not a mechanical one.

Where it broke, it broke properly. **Jyske Bank** cut its exemption limit to **DKK 250,000** — roughly €33,000, unambiguously mass-market — from 1 May 2020; by January 2021 up to half of Danish retail deposits were subject to negative rates. **PostFinance** charged −0.75% above CHF 100,000. **UBS** charged −0.25% above CHF 250,000, having cut the threshold from CHF 2m. Germany’s *Verwahrtgelt* was framed as a custody fee precisely to sidestep the legal question, and the Bundesbank had to publicly oppose banning the practice.

This is the cleanest available explanation for why lenders were immovable on loan floors: **a bank whose funding is floored at zero and whose assets are not has a structural negative-convexity exposure to rates below zero.** The 0% floor in the loan agreement is the asset-side hedge for the undocumented 0% floor on the liability side. The borrower was asked to close a gap in the bank's balance sheet created by its depositors' access to banknotes. That synthesis is mine, not a sourced claim — but nothing else explains the rigidity.

5.5 And sometimes, straightforwardly, to sell a coupon

Construct (4) in Part 1. A 1% Libor floor in a 2010 term loan was not plumbing or accounting — it was a lender extracting an option because it could. Arscott's finding is the sharpest version: floor-offering lenders attracted **33% more principal** between 2005 and 2016, and floors contributed **three to five times as much as upfront fees** to total lender compensation.

Part 6 — Where the floor sits, and what that is worth

Four placements exist. They are not variations on a theme; they differ by orders of magnitude.

Placement	Formula	Minimum all-in rate	Market that chose it
A. Index only	$\max(0, \text{index}) + \text{margin}$	the margin	LMA loans (IBOR and RFR forms)
B. Index + CSA	$\max(0, \text{index} + \text{CSA}) + \text{margin}$		ARRC loans; Sterling RFR WG; euro RFR WG
C. All-in coupon	$\max(0, \text{index} + \text{margin})$	zero	Bond Final Terms; ARRC FRN conventions; US Treasury FRNs
D. Floating Amount	ISDA ZIRM — floors the <i>amount</i> , not the rate	~never binds if spread > 0	ISDA 2006/2021 elective

6.1 What the choice was worth

Running the realised path of 3M Euribor monthly averages from 1999 to date, and accruing $\max(0, -\text{rate})$ monthly:

Where the floor is written	Cumulative value, % of notional	Months it paid
On the index (placement A)	2.498%	86
On the coupon, margin +0.10%	1.819%	79
On the coupon, margin +0.25%	0.859%	73
On the coupon, margin +0.50%	0.062%	17
On the coupon, margin +0.75% or above	0.000%	0

Over the negative window that index floor was worth about **31bp per annum** on 3M, 36bp on 1M, 26bp on 6M — the tenor ordering simply tracking how deeply each went negative.

A senior FRN paying Euribor + 50bp with the floor on the coupon received essentially nothing from its floor. The same note with the floor on the index would have collected 2.5 points. That is the whole argument between lenders and borrowers over RFR fallback drafting, priced.

6.2 Daily versus period flooring: a large argument over a small number

The other live drafting question was *when* the floor applies to a compounded RFR. The theory says daily flooring is strictly dearer — a strip of N daily floorlets versus a single option on the average, and by Jensen the strip is worth more for any nonzero vol.

The theory is right and the magnitude is small. Compounding actual €STR fixings over 27 quarters from October 2019, three ways — unfloored, daily-floored, and period-floored:

Quarters examined

27

Quarters where daily and period flooring gave different answers	1
That quarter	2022 Q3 — 53 of 66 fixings negative, compounded rate −0.072%
The gap in that quarter	13.3bp
Mean gap across all 27 quarters	0.49bp

The reason is structural: when every day of the period is negative, both methods return exactly zero. The gap only opens in the transition quarter, where some days are negative and the compounded rate has turned positive. In €STR's short life that happened once.

Worth noting what drove the choice. Both the ARRC and the euro working group say explicitly that daily flooring was chosen because **loans accrue interest daily and post to the general ledger daily** — a systems rationale, not an economic one. It happens to be the borrower-adverse choice, and there is no evidence in the primary documents that anyone priced it.

6.3 Three floors that do not offset

The practical consequence for anyone who borrowed and hedged in 2022: a loan floored at 0% on (RFR + CSA), applied daily; a swap with **no floor at all** by default; and, if they elected the closest-looking ISDA method, a floor struck at a different point in the calculation stack and applied to a period rate rather than daily. Three different strikes on the same underlying, none of which offset.

Part 7 — The hedging problem

7.1 The basis the swap creates

The arithmetic is simple and unforgiving. Loan margin 3%, benchmark -0.25% , floor on the index. The borrower pays 3.00% on the loan because the floor bites, and pays an additional 0.25% on the unfloored swap. All-in 3.25% , against the 2.75% it would have paid unhedged and unfloored. The swap did not remove a basis; it created one.

ICMA describes the same mechanism from the issuer's side, and identifies the decision behind it:

“Such issuers may be **unwilling to pay the extra cost to include a ‘floor’ on the floating leg of the swap**. This means that if LIBOR was negative ... the issuer would be bound to pay the swap counterparty the 3% fixed leg plus the ... negative margin on the floating leg. **In so doing, issuers are consciously taking a mismatch risk with the underlying bond.**”

The mismatch was not an oversight. It was a priced decision that most issuers took, and then lost.

7.2 The option nobody priced

Chatham's valuation of a seven-year EUR term loan with a **1.00%** Euribor floor, as at June 2014:

Total floor value	4.23% of loan amount
Intrinsic	2.55%
Time value	1.68% — about 40% of the total

Borrowers negotiate the intrinsic and ignore the time value. And a floor at zero written when the forward was near zero was never cheap. On a Bachelier model, a five-year strip of quarterly 0% floorlets:

Forward	40bp vol	60bp	80bp	100bp
2.00%	0.00%	0.06%	0.22%	0.47%
1.00%	0.11%	0.40%	0.80%	1.27%
0.50%	0.40%	0.89%	1.44%	2.01%
0.00%	1.23%	1.85%	2.46%	3.08%
-0.50%	2.90%	3.39%	3.94%	4.51%

Read the 0.00% row as the day the forward reached zero — which is exactly the day everyone wanted a floor.

That table also explains a piece of market history that otherwise looks like an accident. Standard lognormal models cannot price a strike at or below zero at all. The Bank of England described the fix in May 2016: “The simplest way to adapt the model ... is to ‘shift’ the distribution of rates lower, such that the lower bound is no longer zero, but somewhere between say -1% and -3% .” **The migration of the entire euro rates market from Black**

to shifted-lognormal and then to normal vol was driven by the need to price zero floors. The floor did not just create a hedging demand; it changed the industry's pricing convention.

The same piece confirms the demand was real: "Market contacts report growing demand in recent months by banks and other companies to hedge their FRN liabilities with interest rate options."

7.3 What breaks in the hedge

- **Cash-flow basis** — §7.1, equal to the amount by which the benchmark is below zero.
- **Strike mismatch** — an ISDA swap floors the *Floating Amount* (rate + spread); an LMA loan floors the *reference rate only*. Two different strikes on the same underlying.
- **Timing mismatch** — a daily-floored loan cannot be hedged with a standard floor, which references the period rate. The residual is an Asian-versus-strip basis with no market.
- **Character change under RFR transition** — the Sterling RFR Working Group noted that "caps and floors which reference compounded in arrears SONIA are different in terms of optionality than caps and floors which reference GBP LIBOR". An option on a compounded average has lower vega than a strip of forward-rate options; the transition silently changed what the embedded option was.
- **Hedge accounting.** Under IFRS 9's hypothetical derivative method the hypothetical must reflect the *hedged item* — a floored loan — while the actual instrument is an unfloored swap. Below zero their fair values diverge one-for-one, producing recognised ineffectiveness, and in the direction (over-hedge) that must be taken to P&L immediately. **This is reasoning from IFRS 9 B6.5.5's principle rather than a sourced rule; there is no IFRIC agenda decision on it and I could not verify a Big Four publication stating it.** Verify before relying on it.

Chatham's own advice to lenders, having priced the problem, is the honest conclusion: stop embedding floors in loans that will be swapped, and "let ALCO or Treasury manage the bank's interest rate risk." In their worked example, matching the loan floor with a floored swap lifted the fixed rate from 6.50% to 7.15% — "making the offer uncompetitive."

Part 8 — When the floor was the abuse

The same clause, in a consumer contract, produced the largest redress programme in this subject.

Spain. The Tribunal Supremo held on 9 May 2013 that *cláusulas suelo* were abusive for failure of the *control de transparencia material* — they passed formal transparency but consumers “had not been informed properly about the economic and legal burden which the contract would place upon them.” The Supreme Court limited restitution to sums paid after its own judgment; the CJEU in **Gutiérrez Naranjo** (Joined Cases C-154/15, C-307/15, C-308/15, Grand Chamber, 21 December 2016) held that such a limitation “deprives Spanish consumers ... of the right to obtain repayment in full” and was therefore “incomplete and insufficient” under Article 6(1) of Directive 93/13. Nullity is nullity; restitution runs from inception. Real Decreto-ley 1/2017 built the extrajudicial claims machinery, which alone refunded **€2,242m to more than 496,000 consumers**.

Italy reached the opposite conclusion by a different route. The ABF Collegio di Coordinamento held in November 2018 that “nel contratto di mutuo non è giuridicamente configurabile un tasso di interesse negativo” — reasoning from Articles 820–821 of the Codice Civile, which classify interest as *frutti civili*, civil fruits acquired day by day. Fruits cannot be negative. **The zero floor therefore exists in Italian mortgages as a matter of law whether or not anyone drafted it.** What the ABF struck down was a floor the bank *added unilaterally after signing*, for failure to follow the Article 118 TUB variation procedure. Italy is the inverse of Spain: the implicit zero floor is lawful and automatic; the explicit retrofitted floor is void.

Portugal legislated the other way, as Part 2 describes.

The UK never had to decide, because sterling never went negative.

The organising principle across all four is not economic. It is whether the counterparty could be expected to understand and price the option it was writing. That is precisely the material-transparency test the Tribunal Supremo applied — and it is the reason the identical clause is unremarkable in a syndicated loan, implicit in a listed bond, and abusive in a consumer mortgage.

Part 9 — What to watch

1. **The floor is now deeply out of the money everywhere, and that is when it gets conceded.** The Morningstar/LSTA floor contribution is 0.00%. New drafting is being negotiated by people who have never seen a floor pay. The 2004 CADES FRN and the 2013 ESM note are the reminder that the disciplined issuers wrote floors *before* they were needed.
2. **The adoption gap has not closed.** KfW's programme still has no default floor and Deutsche Bank issued an unfloored floating Pfandbrief in June 2025. If EUR rates return to zero, the same 2015 scramble runs again on a smaller but non-trivial stock.
3. **The placement question is unresolved in EUR loans.** The LMA position (floor the compounded RFR only) and the borrower position (floor RFR + CSA) differ by the CSA, and Part 6.1 shows the placement question is where the value lives.
4. **The daily-versus-period argument was worth 13bp, once.** Anyone re-litigating it should know the measured magnitude before spending fees on it.
5. **The deposit floor is the one to watch if rates fall again.** It broke for large balances last time — Jyske at DKK 250,000, PostFinance at CHF 100,000 — and the legal groundwork for charging is now laid in Denmark, Switzerland and Germany. The floor that everyone assumed was structural turned out to be a threshold, and the threshold moved.

Sources

Index and market data - ECB Data Portal — Euribor 1M/3M/6M monthly averages (`FM.M.U2.EUR.RT.MM.EURIBOR*MD_.HSTA`), €STR (`EST.B.EU000A2X2A25.WT`), EONIA (`EON.D.EONIA_TO.RATE`); [ECB key interest rates](#) - NY Fed [SOFR](#) and [EFFR](#) APIs; [US Treasury daily bill rates](#)

Documentation and conventions - [ICMA Primary Market Handbook, Appendix A9a, "Negative interest rates" \(July 2016\)](#) - [ISDA 2014 Collateral Agreement Negative Interest Protocol](#) · [Key Changes in the 2021 ISDA IRD Definitions](#) · [Wells Fargo negative interest rates disclosure](#) - [ARRC: SOFR FRN Conventions Matrix](#) · [FRN Matrix Appendix](#) · [SOFR Syndicated Loan Conventions](#) · [Updated Final Recommended Language, 30 Jun 2020](#) · [Daily Floor Examples workbook](#) - [Sterling RFR WG: SONIA loan conventions](#) · [supporting slides](#) · [bond market conventions](#) - [Working Group on Euro RFRs — EURIBOR fallbacks for corporate lending](#) - [Slaughter and May, Negative interest rates in a post-LIBOR world](#) · [ACT, Negative benchmarks in Europe](#) · [Arnold & Porter](#)

Issuer documents — [CADES 2016 and 2017 base prospectuses](#) · [EIB 2014 and 2025 offering circulars](#) · [ESM Cyprus FRN Final Terms, Sep 2013](#) · [Bpifrance 2016](#) · [ICO GMTN 2024](#) · [UniCredit EMTN 2025](#) · [CAFFIL 2018](#) · [ING covered bond Series 22](#) · [Deutsche Bank Pfandbrief DE000A4DFJL1](#) · [KfW Note Programme 2016](#) · [Green STORM 2021](#) · [Bastion 2022-1](#) · [TAGUS Green Belém No. 1](#) · [Lloyds covered bond Series 2026-2](#) · [Bank of Nova Scotia GBP FRN](#) · [Fannie Mae FRN primer](#)

Accounting — [IASB Staff Paper AP9, Sep 2015](#) · [IFRIC Update, January 2016](#)

Regulatory and central bank — [PRA operational readiness letter, 12 Oct 2020](#) · [BoE August 2020 Monetary Policy Report](#) · [Bank Underground, Life below zero, May 2016](#) ·

FOMC minutes, 29-30 Oct 2019 · ECB WP 2289, Altavilla et al. · BIS WP 848 · Brunnermeier & Koby, NBER WP 25406

Loan market and floors — Roberts & Schwert, NBER WP 27195 · Chatham/ACT, *Hidden costs of non-zero floors* · Houlihan Lokey, *Floors in loans* · LSTA *We're (LIBOR) Floored, Rate Floors & Simple SOFR, Flooring It!* · Morgan Stanley IM Floating Rate Loan Monitor Q1 2025 · RaboResearch, *Dutch RMBS: a primer*

Consumer — CJEU press release, *Gutiérrez Naranjo* · Real Decreto-ley 1/2017 · Skipton SVR Q&A

Caveats

- **All figures in Part 6 are my own computation on published fixings**, using `floor_model.py`, which accompanies this note. They are realised, undiscounted, and use monthly Euribor averages rather than actual reset-date fixings — so treat them as accurate to a basis point or two, not to the cent. The Part 7 Bachelier table is illustrative and assumes flat forwards and flat normal vol.
- **The \$700bn floored-TLB estimate in Part 4 is my multiplication**, not any source's. The index size and the floor share are separately verified; nobody computes the product.
- **Part 7's hedge-accounting paragraph is reasoning, not doctrine**. There is no IFRIC decision on a floored hedged item against an unfloored swap.
- **Verbatim texts I could not obtain**: ISDA 2006 §6.4 and 2021 §§5.5/6.8 (paraphrase and dealer restatement only); IFRS 9 B4.3.8(b) and B6.5.5; the LMA recommended forms (membership-gated, quoted only via law firms and one SEC-filed executed agreement).
- **Not obtained**: any GBP or USD aggregate of floored FRN notional; UK RMBS and covered bond floor wording; year-by-year TLB floor incidence 2010-2018; rating agency methodology on negative-index basis risk (S&P's global cash flow framework is silent on it, which is itself a finding).