

**Development of Financial Relations**

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**THE COLLATERAL-ADJUSTED SIZE PREMIUM:
HOW MUCH OF THE EURO AREA SME LOAN-
SIZE PREMIUM IS ATTENUATED UNDER FULL
COLLATERALISATION****Abstract**

Euro-area small and medium-sized enterprises (SMEs) pay more for bank credit than large firms, a gap summarised by the loan-size premium, the rate on new-business loans of €0.25 million or less minus that on loans above €1 million. How much of the premium is attenuated among loans with collateral or guarantees worth at least their full value remains unquantified. The original scientific contribution is the Collateral-Adjusted size premium Gap (CAG), the collateral-attenuated portion of that premium, with its cross-country dispersion and rise-then-plateau profile. The public European Central Bank interest-rate size premium for non-financial corporations is decomposed through the regulatory split between all loans (A2A) and fully collateralised loans (A2AC, at least 100% cover under Regulation (EU) No 1072/2013); the CAG is the A2A premium minus the A2AC premium. Earlier work priced the SME financing premium or mapped rate fragmentation, never conditioning it on collateral status. The sample covers 20 countries and the euro area monthly from January 2015 to May 2026, with a floating-rate robustness band and a secondary quarterly panel. The euro-area CAG widened from 0.21 percentage points (pp) in June 2019 to 0.48 pp in December 2024, while the residual premium surviving full collateralisation fell from 0.79 to 0.15 pp; phase means rose from 0.18 to 0.38 pp, and the cross-country interquartile range reached 0.91 pp in August 2023. The Survey on the Access to Finance of Enterprises confirms SMEs paid higher rates than large firms in all 17 waves. The evidence is descriptive, not causal.

Key Words:

bank lending rates, collateral, euro area, financial fragmentation, MIR statistics, monetary policy pass-through, size premium, SME credit.

JEL: G21, G32, E43, E52.

4 formulas, 4 figures, 5 tables, 25 references.

Problem Statement

Small and medium-sized enterprises (SMEs) in the euro area pay systematically more for bank credit than large firms, a gap that persists across member states and the business cycle. The public counterpart of this firm-size penalty is the loan-size premium: the interest rate on new loans to non-financial corporations (NFCs) of €0.25 million or less minus the rate on new loans above €1 million. The loan-amount bracket is a proxy for firm size, and the premium can be read directly from published European Central Bank (ECB) statistics. Yet the premium conflates a genuine size and risk penalty with the scarcity of pledgeable collateral among smaller borrowers, whose thinner balance sheets limit the security they can post. Holton & McCann (2021) document the small-firm financing premium within euro-area banks, and the standard cost-of-borrowing indicators report it in level form, yet neither conditions the premium on whether the loan is secured.

That composition matters for policy, because a premium sustained by scarce collateral answers to different instruments than one sustained by borrower risk, and the regulatory statistics permit the split directly. Within all loans to NFCs (A2A), Regulation (EU) No 1072/2013 (European Central Bank, 2013b) defines the subset of loans collateralised or guaranteed at 100% or more of the loan amount (A2AC). The size premium on this fully collateralised subset is the portion that survives full cover; the difference between the two premia is the portion attenuated under full cover, labelled the Collateral-Adjusted size premium Gap (CAG; Figure 1).

Two questions organise the paper. First, how much of the euro-area SME loan-size premium is attenuated under full collateralisation? Second, how does that attenuated portion vary across member states and over the 2022–2024 tightening? The cross-country dimension is central, because a common monetary policy meets national credit markets that differ in collateral practice, bank balance-sheet health and sovereign risk.

Over the sample the euro-area all-loans premium fell from 1.00 percentage points (pp) in June 2019 to 0.63 pp in December 2024, while the CAG rose from 0.21 pp to 0.48 pp (Figure 2): a shrinking headline premium coincided with a widening collateral-attenuated portion, so the premium read on its own would misstate what happened to collateral-conditioned SME credit costs.

The contribution is to introduce and measure the CAG by decomposing the size premium through the public A2A/A2AC split, rather than by summing a premium

series and a dispersion series. Prior work reports either the size premium in level form or the cross-country dispersion of loan-rate levels, but not the size premium conditioned on collateral status, and not through 2026. The analysis covers 20 euro-area countries and the euro-area aggregate, monthly from January 2015 to May 2026, draws only on public data, and is descriptive and associative; no causal claim is made.

Literature Review

The small-firm financing premium is the empirical anchor. Holton & McCann (2021) measure the within-bank spread between the rates charged to small and large borrowers in the euro area, document its widening after 2008, and attribute it to bank market power, sovereign exposures, and balance-sheet weakness. The public loan-size premium in the ECB monetary financial institution (MFI) interest rate statistics (MIR), the rate gap between small and large new-business loans, is its aggregate counterpart, with the loan-amount bracket as a proxy for firm size. The two objects agree on the persistence of the penalty but differ in reach: the bank-level series is precise yet ends around 2015, while the aggregate series is current but pools loans regardless of collateral cover. Neither can say how much of the gap would remain under full collateral cover.

A second strand measures fragmentation in lending-rate levels rather than in the size premium. Holton & Rodriguez d'Acri (2015) show that interest-rate pass-through fragmented across countries during the crisis, with policy-rate cuts passing through more weakly to smaller loans. Later work agrees that transmission is uneven but disputes the margin: Tran et al. (2026) find asymmetric, downwardly rigid lending-rate adjustment; Vilerts et al. (2025) trace loan-level heterogeneity to reference-rate maturity and fixed-versus-floating pricing; Gagnon & Gimet (2023) treat fragmentation as structural, with common policy narrowing price dispersion more than credit volumes; Altavilla et al. (2024) decompose the external finance premium on euro-area loans into country, bank, and firm components, with stronger policy transmission where balance sheets are weaker. The composite cost-of-borrowing indicators (European Central Bank, 2013a) provide the standard volume-weighted summary of that level. Throughout the strand, dispersion is measured on rate levels, never on a size premium conditioned on collateral, and most samples predate the 2022–2026 tightening and easing.

Collateral theory supplies the mechanism but not the measurement. Stiglitz & Weiss (1981) show that under asymmetric information the interest rate alone need not clear the credit market and that demanding more collateral can itself worsen selection; Bester (1985) replies that collateral can separate borrowers, with lower-risk firms posting more cover for lower rates. The empirical record qualifies both positions: Jiménez et al. (2006) find in a Spanish credit register that observed collateral is more frequent for riskier borrowers, the reverse of the sorting prediction on observables, while Berger & Udell (1995) associate longer lending relationships with lower rates and less frequent collateral pledging in United States small-firm data. Degryse et al. (2025) document in AnaCredit that most euro-area corporate credit is collateralised, that secured loans carry lower rates than comparable unsecured loans, and that the

strength of the collateral channel varies across countries. Altavilla et al. (2025) move from pledged collateral to third-party guarantees: guaranteed credit substitutes for non-guaranteed credit and shifts risk to the guarantor, most strongly for smaller and riskier firms. Together these studies imply that full cover, by collateral or by guarantee, should compress the rate a small borrower pays, yet none quantifies that attenuation within the size premium.

A fourth strand links sovereign stress and fragmentation to SME borrowing conditions and motivates the covariates of the secondary panel. Bofondi et al. (2018) find that banks more exposed to sovereign risk cut lending and raised rates during the debt crisis; on micro-data from the ECB Survey on the Access to Finance of Enterprises (SAFE), Ferrando et al. (2017) and Calabrese et al. (2021) report higher SME rejection, rationing, and loan rates under stress and fragmentation, with weaker firms most affected; Kallandranis et al. (2023) use the same survey to show that rejection and borrower discouragement decline monotonically with firm size and differ markedly across euro-area countries; Finnegan & Kapoor (2023) find that unconventional policy transmitted unevenly across stressed and non-stressed members; and the European Central Bank (2024) documents stalled financial integration. These findings agree on direction, differ in channel, and leave the collateral margin of the size premium unmeasured.

Against these strands, the CAG differs in unit, data, coverage, and conditioning. Holton & McCann (2021) report a within-bank spread on bank-level data that ends in 2015; the fragmentation strand measures dispersion in rate levels; the CAG is an aggregate monthly gap in pp between the all-loans and the fully collateralised size premium, computed from the public A2A and A2AC categories (European Central Bank, 2013b) for 20 countries and the euro-area aggregate over 2015–2026. No earlier approach conditions the euro-area size premium on collateral status, quantifies the attenuated fraction, or covers the 2022–2026 cycle at the country level. The construction decomposes one premium into a residual part that survives under full collateralisation and an attenuated part; it does not sum a premium measure and a dispersion measure into a composite index, and the dispersion reported later describes the attenuated portion, not rate levels.

Methodology

The analysis decomposes the public euro-area SME loan-size premium by the regulatory collateralisation split of Regulation (EU) No 1072/2013 (European Central Bank, 2013b). For interest-rate segment k in country c and month t , the size premium is the new-business MIR rate on the smallest loan bracket to NFCs minus the rate on the largest:

$$SizePrem_k(c,t) = R_k(c,t, \leq \text{€}0.25M) - R_k(c,t, > \text{€}1M) \quad (1)$$

where R denotes the annualised agreed rate on new loans and $k \in \{A2A, A2AC\}$. A2A covers loans to NFCs other than revolving loans, overdrafts and credit card debt; A2AC restricts the sample to loans whose collateral or guarantees reach at least 100% of the amount, the fully collateralised category of the Regulation. Because A2AC is a subset of A2A, the two premia are measured on nested samples,

and every comparison below is a conditional attenuation rather than a causal effect. The loan-amount bracket serves as a proxy for firm size.

The primary measure, in pp, is the CAG:

$$CAG(c,t) = SizePrem_{A2A}(c,t) - SizePrem_{A2AC}(c,t). \quad (2)$$

A positive CAG indicates that the size premium is smaller within the fully collateralised segment; the residual premium that survives full collateralisation is $SizePrem_{A2AC}$. A secondary, scale-free companion, the collateral-conditioning share (CCS), expresses the gap as a share, unstable when the denominator approaches zero:

$$CCS(c,t) = 1 - SizePrem_{A2AC}(c,t) / SizePrem_{A2A}(c,t). \quad (3)$$

Cross-country dispersion of the CAG, the fragmentation measure, is summarised each month by the sample standard deviation across the reporting countries:

$$SD_t = \sqrt{[1/(n_t - 1)] \sum_c (CAG(c,t) - CAG_t)^2}, \quad n_t \geq 12 \quad (4)$$

where CAG_t is the cross-country mean of the CAG in month t .

The interquartile range accompanies (4) as the more robust companion, since the standard deviation is sensitive to individual country outliers. Figure 1 summarises the construction of the measure and the sequence of the analysis.

Data inventory. The core series come from the MIR statistics (European Central Bank, 2026b): the A2A and A2AC categories crossed with amount bracket and maturity, for NFCs, in euro, across 20 euro-area countries and the euro-area aggregate (U2), for 563,884 observations retrieved from the ECB Data Portal. Croatia adopted the euro in January 2023, so most of its observations precede euro-area membership. Bulgaria adopted the euro in January 2026 and is not in the country panel; the euro-area aggregate is published on a changing-composition basis, so it covers 21 members over the last five months of the window. The secondary panel draws bank-sector covariates from ECB Consolidated Banking Data (CBD2; European Central Bank, 2026a): the Common Equity Tier 1 (CET1) ratio (I4008) and the non-performing loan (NPL) ratio (I3632) for domestic banks, quarterly over 2014Q4–2025Q4. Sovereign conditions use the Eurostat 10-year government bond yield ($irt_lt_mcb_m$) from Eurostat (2026), with Greece coded EL in Eurostat and GR in the ECB series; the sovereign spread is each country's yield minus the German yield in the same month, averaged to the quarter for the panel. Firm-size evidence comes from SAFE (European Central Bank, 2026c).

Window and phases. The headline window runs from 2015-01 to 2026-05, set after the two documented MIR structural breaks (June 2010 and December 2014) so that the series is break-free. Three phases partition it: a pre-tightening phase (2015-01 to 2022-06), a restrictive phase (2022-07 to 2024-05), and an easing phase (2024-06 to 2026-05). Country-by-phase means of the CAG populate Table 1.

Robustness battery. Because the maturity aggregate (MAT=A) is volume-weighted over fixation periods, a floating-rate band, CAGF (MAT=F), recomputes (2) on short-fixation loans, and the absolute deviation $|CAG - CAGF|$ reports the sensitivity. The battery also tracks the share of country-months in which the all-loans premium falls below the 0.50 pp floor applied to the denominator of (3), the coverage and completeness counts per country, and flags for cells with fewer than 15 complete

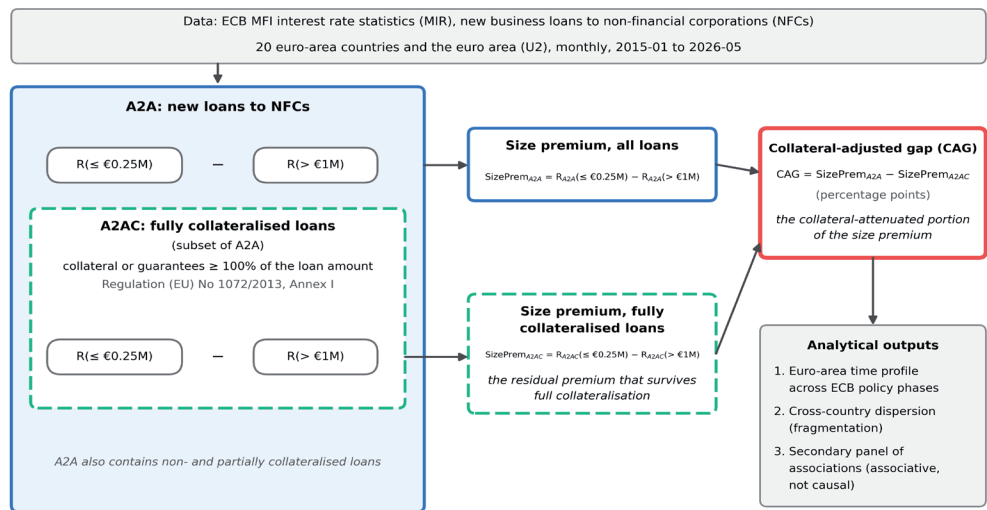
restrictive-phase months or with coverage below 120 of 137 months. Unstable values of the ratio (3) are marked, and sign flips of the CAG between fixation bands are recorded.

Secondary panel. A quarterly panel relates the CAG to the NPL ratio, the CET1 ratio, and a sovereign spread constructed from the 10-year yields, with two-way (country and time) fixed effects, reported a priori as secondary and associative. The monthly CAG is averaged to quarterly frequency to match the covariates, which follow the sovereign-stress and fragmentation literature (Bofondi et al., 2018; Calabrese et al., 2021; Ferrando et al., 2017) and carry no claim to identify determinants. Standard errors follow Driscoll & Kraay (1998), robust to cross-sectional dependence and autocorrelation, alongside country-clustered errors; estimation in levels and in first differences shows how the level associations behave under differencing.

SAFE specification. Two semiannual SAFE series (FREQ=H) corroborate the direction of the measure: the level of the rate charged for credit lines and bank overdrafts, by firm size (Q8B), supports the loan-amount bracket as a proxy for firm size, and the collateral-requirement change by size (Q10, item 10E, SMEs versus large firms) supports the direction of the collateral channel. Both series are tabulated in Appendix A (Tables A1 and A2), and the 2024 SAFE redesign is flagged in the Table A2 note; the ECB maintains the semiannual series across it and it is used unaltered, and the post-2024 quarterly series is not mixed in.

Figure 1

Analytical framework and construction of the CAG



Note: A2AC is a subset of A2A, so the CAG is a conditional attenuation measured on nested samples, not a causal effect.
The reading is descriptive; the loan-amount bracket (≤ €0.25M versus > €1M) proxies firm size.

Notes: A2A covers new loans to non-financial corporations other than revolving loans, overdrafts and credit card debt. A2AC (collateral or guarantees ≥ 100%, Regulation (EU) No 1072/2013, Annex I) is a subset of A2A, so the CAG is a conditional attenuation, not a causal effect; the loan-amount bracket proxies firm size. Formal definitions are in equations (1)–(4).

Source: ECB MFI Interest Rate Statistics (MIR) (European Central Bank, 2026b); author's elaboration.

Research Results

Figure 2 tracks the euro-area size premium and its CAG over 2015-01 to 2026-05. Both premia decline across the sample, but the residual premium on fully collateralised loans (A2AC) falls faster than the all-loans premium (A2A), so the gap between them widens. The four-date snapshot reads as follows, in the order A2A / A2AC / CAG in pp, with the secondary CCS in parentheses: 2019-06, 1.00 / 0.79 / 0.21 (21 per cent); 2021-12, 0.77 / 0.32 / 0.45 (58 per cent); 2024-12, 0.63 / 0.15 / 0.48 (76 per cent); 2026-05, 0.83 / 0.44 / 0.39 (47 per cent). Economically, the shift is compositional: in 2019-06 most of the size penalty persisted under full cover; by 2024-12 fully collateralised small and large loans were priced almost alike. Before 2020 the CAG averages 0.13 pp and never exceeds 0.27 pp. Over the full sample its highest monthly value is 0.59 pp, reached in 2023-07. Phase means describe a rise-then-plateau profile: the CAG averages 0.18 pp in the pre-tightening phase, 0.38 pp in the restrictive phase and 0.36 pp in the easing phase, a restrictive-minus-pre change of +0.20 pp. The 2024-12 value of 0.48 pp is a single month inside the easing phase and sits above that phase mean; it is not the restrictive-phase level, whose Table 1 window closes in 2024-05. In the easing tail both premia recover and the gap narrows, while remaining well above its pre-2020 level.

Table 1 reports the CAG by country and phase, and heterogeneity is the leading feature: the euro-area phase means mask a wide spread across members. Austria, Germany and Latvia sit at the high end in the restrictive phase, and Luxembourg and Spain move into that group from near zero before tightening, while Belgium, Portugal and Lithuania stay near zero across all three phases. Several members record negative cells in parts of the sample, among them Cyprus, Slovenia, Malta and Italy, where the fully collateralised premium exceeds the all-loans premium in the relevant window. The easing phase reshuffles the ranking rather than reproducing it: Croatia and Finland rise to the top of the distribution from near zero before tightening, while Slovakia falls back towards zero, so no single ordering holds across the three phases; the country values themselves remain confined to Table 1. Two completeness caveats apply: the restrictive-phase cell rests on fewer than 15 complete months for Cyprus and Ireland (†), and total coverage falls below 120 of 137 months for Austria, Cyprus, Greece, Ireland, Luxembourg, Latvia and Malta (‡).

Figure 3 measures the cross-country dispersion of the CAG, computed on months with at least 12 reporting countries. The standard deviation averages 0.51 pp before tightening and 0.60 pp during the restrictive phase, while the interquartile range widens from 0.46 to 0.66 pp and peaks at 0.91 pp in 2023-08. This width is economically material: the restrictive-phase interquartile range of 0.66 pp is more than three times the +0.20 pp restrictive-minus-pre rise in the euro-area mean, so the gap varies more across countries than the mean varies over the cycle. The interquartile range is the more reliable gauge, because the standard deviation is sensitive to individual outliers: its 0.99 pp reading in 2015-03 comes from two extreme country values, -2.21 pp and +2.31 pp, in a month whose interquartile range, 0.53 pp, is unremarkable.

Table 2 collects the diagnostics and the fixation-band robustness. For the euro area the floating-rate band gives a mean CAGF of 0.08 pp against a full-sample mean CAG of 0.24 pp, with an absolute deviation between the two band means, $|CAG - CAGF|$, of 0.17 pp, so the floating band confirms the direction of the result at a smaller magnitude. The ratio measure is unstable in eight countries (marked ¶), which is why the additive CAG stays primary, and four countries (marked §) show

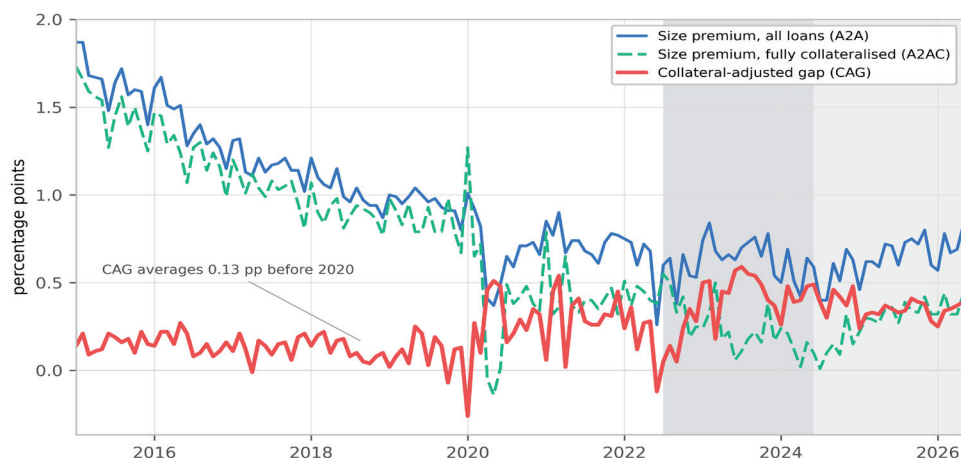
a sign flip between fixation bands: in Belgium, Cyprus and Portugal both bands lie within 0.06 pp of zero, while in the Netherlands they differ by 0.37 pp, the second-largest deviation in the table.

Table 3 reports the secondary quarterly panel, which relates the CAG to the NPL ratio, the CET1 ratio and the sovereign spread under two-way fixed effects. In levels the NPL coefficient (+0.0246) and the sovereign-spread coefficient (−0.1791) are significant at the one-per-cent level under both Driscoll-Kraay and country-clustered errors, CET1 is insignificant, and the within- R^2 is close to zero; a univariate check preserves both signs. These associations collapse in first differences, where the NPL coefficient loses significance and only the sovereign spread keeps marginal significance, with a within- R^2 of 0.03. The panel therefore records low-frequency co-movement, not a set of determinants. Figure 4 gives the pre-tightening and restrictive phase means country by country.

The SAFE survey corroborates the two building blocks separately. On the level, Table A1 shows that euro-area SMEs paid higher interest rates than large firms in all 17 waves from 2014-S1 to 2022-S1, and the full ordering micro $\geq$ small $\geq$ medium $\geq$ large held in 16 of the 17 waves, the exception being 2020-S1 at the onset of COVID; this supports the reading of the loan-amount bracket as a proxy for firm size. On the collateral channel, Table A2 shows that the net share of SMEs reporting tighter collateral requirements exceeded the large-firm share in 31 of 34 waves from 2009-S1 to 2025-S2, averaging +6.3 pp in 2022–2023 against +4.3 pp in 2018–2021, a change measure that corroborates the direction of the channel, not the attenuation captured by the CAG.

Figure 2

The euro area SME loan-size premium and its CAG



Notes: Euro-area (U2) size premium on new loans to non-financial corporations (rate on loans $\leq$ €0.25M minus rate on loans $>$ €1M), monthly over 2015-01 to 2026-05, for all loans (A2A) and for fully collateralised loans (A2AC, cover $\geq$ 100%), and their difference, the CAG. Shaded bands mark the ECB restrictive (2022-07 to 2024-05) and easing (from 2024-06) phases. A2AC is a subset of A2A, so the CAG is a conditional attenuation, not a causal effect; the loan-amount bracket proxies firm size.

Source: ECB MFI Interest Rate Statistics (MIR) (European Central Bank, 2026b); author's calculations.

The collateral-adjusted size premium: How much of the Euro area SME loan-size premium is attenuated under full collateralisation

Figure 2 measures the attenuation for the euro area as a whole. The same decomposition, applied country by country, shows whether the members resemble that aggregate.

Table 1

CAG by country and ECB policy phase

Country	Pre	Restrictive	Easing	Δ (Rest.–Pre)
AT	0.51	0.71‡	0.71	0.20
BE	–0.01	0.01	0.03	0.02
CY	0.07	–0.53†‡	–0.16	–0.60
DE	0.51	0.73	0.61	0.23
EE	0.13	0.07	0.15	–0.06
ES	–0.02	0.66	0.31	0.68
FI	–0.04	0.07	0.75	0.11
FR	0.29	0.35	0.45	0.06
GR	0.13	0.11‡	0.21	–0.01
HR	0.00	0.35	0.98	0.35
IE	0.79	0.22†‡	0.16	–0.57
IT	–0.17	–0.23	0.04	–0.06
LT	–0.01	–0.07	0.04	–0.07
LU	0.02	0.67‡	0.44	0.66
LV	0.36	0.69‡	0.58	0.32
MT	–0.74	–0.53‡	0.33	0.21
NL	0.13	0.37	0.09	0.23
PT	–0.02	–0.04	0.05	–0.02
SI	0.16	–0.42	–0.63	–0.58
SK	0.50	0.59	0.03	0.10
Euro area	0.18	0.38	0.36	0.20

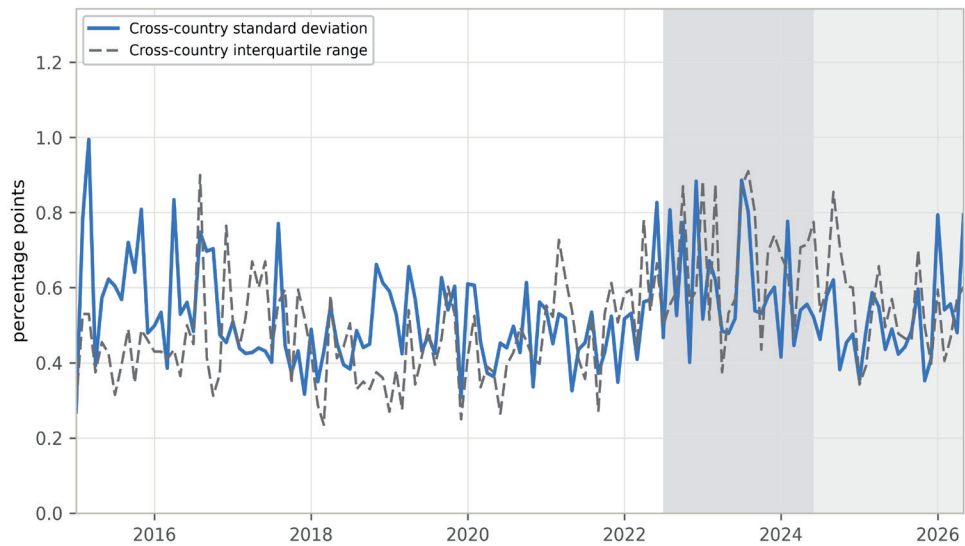
Notes: Phase-mean CAG (pp). $CAG = SizePremA2A - SizePremA2AC$. A positive CAG means the size premium is smaller within the fully collateralised segment. A2AC is a subset of A2A, so the CAG is a conditional attenuation, not a causal effect; the loan-amount bracket proxies firm size. † restrictive-phase mean on fewer than 15 complete months; ‡ coverage below 120 of 137 months. Gaps are computed from unrounded values and may differ from the difference of the rounded figures by 0.01.

Source: ECB MFI Interest Rate Statistics (MIR) (European Central Bank, 2026b); author's calculations.

Phase means fix each member at one value per phase and say nothing about when the members drew apart. How far apart they stood month by month is a separate reading.

Figure 3

Cross-country dispersion of the CAG



Notes: Cross-country standard deviation and interquartile range of the country-level CAG across up to 20 euro-area countries, monthly over 2015-01 to 2026-05, for months with at least 12 reporting countries. Shaded bands mark the ECB restrictive (2022-07 to 2024-05) and easing (from 2024-06) phases. The interquartile range is the more robust measure.

Source: ECB MFI Interest Rate Statistics (MIR) (European Central Bank, 2026b); author's calculations.

Two things underlie the readings so far: the choices made in constructing the measure, and the completeness of the series behind it. Table 2 takes up both.

Table 2

Measurement diagnostics and fixation-band robustness of the CAG

Country	CAG (pp)	Share	Below floor (%)	CAGF (pp)	CAG–CAGF	Coverage
AT	0.59	0.78	13.8	0.55	0.04	116
BE	0.00	0.30¶	97.8	–0.01§	0.01	135
CY	–0.06	0.04¶	61.6	0.02§	0.08	99
DE	0.56	0.47	2.9	0.37	0.19	136
EE	0.12	0.07	7.4	0.14	0.02	135
ES	0.15	–0.01¶	43.1	0.14	0.02	137
FI	0.13	0.11	2.4	0.28	0.15	123
FR	0.33	0.53¶	65.0	0.24	0.09	137
GR	0.14	0.10	9.3	0.14	0.01	108

The collateral-adjusted size premium: How much of the Euro area SME loan-size premium is attenuated under full collateralisation

Country	CAG (pp)	Share	Below floor (%)	CAGF (pp)	CAG-CAGF	Coverage
HR	0.23	0.13	18.2	0.21	0.02	137
IE	0.58	0.28	14.0	0.50	0.08	107
IT	-0.14	-0.11	0.0	-0.19	0.04	128
LT	-0.01	0.11¶	70.1	-0.05	0.04	137
LU	0.25	0.40¶	26.9	0.26	0.01	104
LV	0.48	0.44	20.8	0.31	0.17	106
MT	-0.45	0.10¶	57.7	-0.65	0.21	104
NL	0.17	0.11	0.8	-0.21§	0.37	133
PT	-0.01	-0.01	10.9	0.02§	0.03	137
SI	-0.07	0.11¶	27.0	-0.14	0.07	137
SK	0.43	0.25	6.6	0.04	0.39	137
Euro area	0.24	0.25	6.6	0.08	0.17	137

Notes: CAG is the full-sample additive mean (the primary measure). Share is one minus the ratio of mean premia, that is, the fraction of the all-loans premium attenuated under full cover; ¶ flags shares that are unstable because the all-loans premium is near zero (Below floor = share of months in which it falls below the 0.50 pp floor applied to the ratio). CAGF recomputes the gap on the shortest fixation band (MAT=F: floating rate or initial rate fixation of up to one year); § marks a sign change between fixation bands. Coverage is complete-case months out of 137. The absolute deviation is computed from unrounded values and may differ from the difference of the rounded figures by 0.01.

Source: ECB MFI Interest Rate Statistics (MIR) (European Central Bank, 2026b); author's calculations.

The diagnostics bear on how the measure is built, not on what it moves with. What it moves with is the subject of the quarterly panel that follows.

Table 3

The CAG and bank and sovereign fundamentals: secondary panel associations

Specification	NPL ratio	CET1 ratio	Sov. spread	within-R ²	N	Entities
Levels 2wFE (Driscoll-Kraay)	0.0246*** (0.0060)	0.0126 (0.0103)	-0.1791*** (0.0458)	-0.0000	804	20
Levels 2wFE (cluster country)	0.0246*** (0.0085)	0.0126 (0.0192)	-0.1791*** (0.0523)	-0.0000	804	20
Levels 2wFE univariate: NPL	0.0105*** (0.0028)			-0.0083	804	20
Levels 2wFE univariate: sovereign spread			-0.0355* (0.0203)	0.0013	804	20
First differences (cluster country)	0.0107 (0.0088)	0.0203 (0.0232)	-0.0918* (0.0544)	0.0318	777	20

Notes: Secondary and descriptive. Two-way (country and time) fixed-effects regressions of the quarterly CAG on the bank NPL and CET1 ratios and the 10-year sovereign spread, 20 euro-

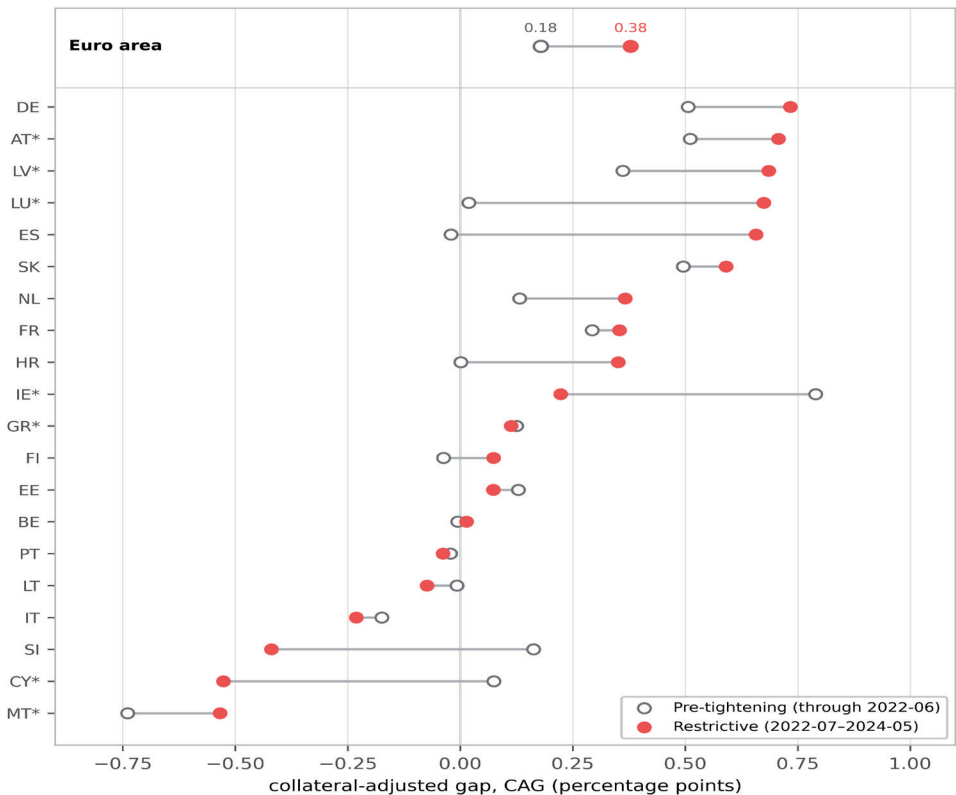
area countries, 2015Q1 to 2025Q4 (unbalanced; the panel ends in 2025Q4 with the CBD2 covariates). The strong level associations weaken sharply under first-differencing, and the within- R^2 in levels is near zero. Standard errors in parentheses; the two univariate rows report Driscoll-Kraay standard errors; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Source: ECB MFI Interest Rate Statistics (MIR) (European Central Bank, 2026b); ECB Conso-lidated Banking Data (CBD2) (European Central Bank, 2026a); Eurostat (2026); author's calculations.

The panel absorbs the differences between members into country fixed effects. Figure 4 restores those differences, setting out two phase means one member to a line.

Figure 4

Cross-country heterogeneity in the CAG: pre-tightening versus restrictive phase



Notes: Country mean CAG in the pre-tightening phase (2015-01 to 2022-06) and the restrictive phase (2022-07 to 2024-05), ordered by the restrictive-phase value; the euro area (U2) is a separate anchor row. An asterisk marks the countries flagged in Table 1: coverage below 120 of 137 months (\$) or a restrictive-phase mean on fewer than 15 complete months (†). Descriptive phase means, not causal country effects.

Source: ECB MFI Interest Rate Statistics (MIR) (European Central Bank, 2026b); author's calculations.

Discussion

A substantial and time-varying portion of the euro-area SME loan-size premium is attenuated among loans carrying collateral or guarantees at full cover. The phase means trace a rise-then-plateau profile, not a symmetric cycle. A wider CAG against a shrinking A2AC means that collateralisation accounts for a larger share of a premium that has shrunk since 2019: less of the size penalty survives full cover, not more. Because A2AC loans are a subset of A2A, the CAG measures a conditional attenuation of the observed premium and not a causal effect of collateral on pricing, since the two segments differ in borrower composition as well as in cover. The reading agrees with Holton & McCann (2021) on a material small-firm financing premium; it diverges on composition. That within-bank spread ends in 2015 and never conditions on collateral status, while the residual that survives full cover shrinks here from 0.79 to 0.15 pp between 2019-06 and 2024-12, a contraction the unconditional measure cannot reveal, in a sample that extends through the 2022–2026 cycle beyond that study's reach. The pattern is also coherent with the classical view of collateral as a screening and sorting device that lets lower-risk borrowers separate on price (Bester, 1985), and with the European evidence on the determinants of collateral (Jiménez et al., 2006).

The cross-country dispersion of the CAG widened alongside its level and persisted through the restrictive phase rather than resolving as policy rates peaked (Figure 3). The results agree with the fragmentation literature on the persistence of cross-country heterogeneity, whether it is read from pass-through to lending rates (Holton & Rodriguez d'Acri, 2015; Tran et al., 2026; Vilerts et al., 2025), from the transmission of a common policy (Gagnon & Gimet, 2023), or from SME access and cost (Calabrese et al., 2021). The departure lies in the object: those studies measure rate levels or access conditions, not the collateral-conditioned component of the size premium, which a level reading cannot separate. The dispersion describes divergence in the CAG; it is not evidence of unequal monetary transmission, which these data cannot identify.

Two features of the survey evidence support the interpretation without overstating it. The loan-amount bracket is a proxy for firm size, and the SAFE firm-size series corroborates its direction: SMEs paid higher interest rates than large firms in every wave of the rate-level item, and the full micro, small, medium, large ordering held in all waves but one, at the COVID onset (Table A1). On the collateral channel, the SME minus large gap in reported collateral tightening was positive in nearly all waves and widened in 2022–2023 relative to 2018–2021 (Table A2), which corroborates the direction of the channel, that collateral demands press harder on smaller firms. The interest-rate-change item is excluded, because both segments rose during the hikes and the gap turns negative, reflecting the level of rates rather than the collateral condition at issue.

The secondary panel warrants a cautious reading and marks the clearest divergence from the empirical literature. In levels the CAG co-moves positively with the NPL ratio and inversely with the sovereign spread, while the CET1 ratio is insignificant and the within- R^2 is close to zero; the associations weaken sharply in first differences, where only the sovereign spread keeps marginal significance (Table 3). Loan-level, bank-level and survey evidence links sovereign stress and bank balance-sheet weakness to firms' cost of credit and to SME access (Bofondi et al., 2018;

Ferrando et al., 2017; Holton & McCann, 2021); for the collateral-conditioned gap, the panel supports only low-frequency co-movement with those conditions, a structural background rather than a set of determinants.

For central banks, the CAG is computable monthly and by country from published MIR statistics, so the collateral-conditioned component of SME borrowing costs can be tracked without new data collection; it rose with the tightening and has remained elevated since. For supervisors, the dispersion documented above means that the collateral-conditioned component of SME borrowing costs differs materially across members of one monetary union, an input for monitoring access to finance. For lenders, the composition of the premium has shifted: most of it survived full cover in 2019-06 (0.79 of 1.00 pp), while only about a quarter did in 2024-12 (0.15 of 0.63 pp), a reference point for collateral requirements and small-loan pricing.

Several limitations qualify the measure. MIR rates are country-level averages by amount bracket: with no loan- or firm-level information, borrower, bank, and relationship characteristics cannot be held constant, and the same firm is never observed with and without full cover. The A2A minus A2AC gap mixes non-collateralised and partially collateralised loans and cannot be read as a premium on loans without any collateral. The headline maturity aggregate is volume-weighted across fixation periods, a concern the floating-band robustness addresses by confirming the direction at a smaller magnitude (Table 2). Country coverage is uneven; the easing phase is read from a 24-month window that is not yet closed, and the restrictive-phase cells for Cyprus and Ireland rest on fewer than 15 complete months (Table 1). The CAG is best understood as a descriptive, public, high-frequency indicator of the attenuated portion of the size premium and of its cross-country divergence. It is not a causal estimate, not a welfare measure, and not a substitute for loan-level analysis.

Conclusions

The conclusions to draw from this study concern less the estimates themselves, which the preceding sections report in full, than what the decomposition changes for the study of SME finance. The euro-area loan-size premium, long treated as a single summary of small-firm financing frictions, contains two distinct components: a residual premium that persists even under full collateralisation, and a collateral-attenuated portion that rose into the restrictive phase and remained elevated thereafter. Comparisons of headline premia across countries or over time therefore conflate a component that survives full collateralisation with a component that does not, and research on monetary transmission and financial fragmentation gains a dimension that level-based cost-of-borrowing indicators and earlier within-bank spread estimates do not observe.

In practical terms, the CAG is a monitoring instrument rather than a policy lever. It can signal, month by month and at no collection cost, where the size premium is most attenuated under full collateral cover, and its cross-country dispersion offers a collateral-conditioned reading of fragmentation that complements the standard cost-of-borrowing composites tracked by central banks.

The indicator has to be used with its construction in mind. The underlying data are country aggregates by loan-amount bracket, without loan-level or firm-level

detail, so within-bracket composition remains unobserved; the amount bracket is a proxy for firm size, not firm size itself; A2AC is a subset of A2A, so the gap records a conditional attenuation across collateral status rather than the effect of collateral on any given loan; and the secondary panel documents level associations with bank and sovereign conditions that weaken sharply under first differencing, leaving only the sovereign spread marginally significant, which restricts that evidence to low-frequency co-movement. These constraints, examined more fully in the Discussion, mark the boundary of what the measure can support.

The same boundary defines the research agenda. Loan-level records, whether AnaCredit or national credit registers, would permit the attenuation to be separated into pricing and composition within brackets and related to borrower characteristics. The framework itself travels: any statistical system that publishes lending rates by collateral status crossed with loan-amount bracket can replicate the measure, and European Union member states outside the euro area, together with banking systems in which collateral practices differ, provide natural settings in which to examine whether the profile documented here recurs. A further extension is to relate the indicator to real outcomes, such as investment, employment and firm survival, rather than to loan pricing alone. Because the series is updated monthly, the indicator can also be followed through the next phase of the rate cycle as it unfolds rather than reconstructed afterwards. The finding that motivates this agenda is deliberately modest: in the euro area of 2015–2026, the SME size premium is attenuated under full collateralisation, unevenly across countries, but it is not removed.

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Appendix A

SAFE firm-size corroboration

Table A1

SAFE: level of interest rates on credit lines and bank overdrafts, by firm size

Wave	Micro	Small	Medium	Large	SME	SME–Large
2014-S1	7.71	5.79	3.88	3.23	5.96	2.73
2015-S1	5.57	4.31	3.44	2.58	4.43	1.84
2017-S1	4.73	2.91	2.04	1.44	3.22	1.79
2019-S1	4.27	3.13	1.98	1.39	3.09	1.70
2021-S1	3.30	2.19	1.75	1.06	2.35	1.29
2022-S1	3.68	3.17	2.35	2.17	3.00	0.83

Notes: Euro area. Weighted-average interest rate charged on the credit line or bank overdraft applied for (per cent), by firm size, from the SAFE interest-rate level item (Q8B, discontinued after 2022-S1). The item covers an instrument outside the A2A category, which excludes revolving loans, overdrafts and credit card debt; it corroborates the direction of the firm-size gradient in bank pricing, not the level of the A2A premium. Selected representative waves are shown; the full 17-wave series over 2014-S1 to 2022-S1 underlies the reported statistics, over which SMEs paid more than large firms in all 17 waves and the SME–Large gap ranges from 0.83 to 2.73 pp. Gaps are computed from unrounded values and may differ from the difference of the rounded figures by 0.01.

Source: ECB Survey on the Access to Finance of Enterprises (SAFE) (European Central Bank, 2026c); author's calculations.

Table A2 turns from the cost of credit to the security demanded against a loan. What it records is a reported movement, not a level.

Table A2

SAFE: change in collateral requirements, SMEs versus large firms

Wave	SME	Large	SME–Large
2021-S1	13.2	4.1	9.1
2021-S2	14.7	10.7	3.9
2022-S1	21.4	12.8	8.6
2022-S2	21.4	16.6	4.8
2023-S1	23.2	17.5	5.7
2023-S2	19.6	13.4	6.2
2024-S1	17.0	12.6	4.5
2024-S2	13.5	9.6	3.9
2025-S1	14.5	16.1	–1.7
2025-S2	16.6	9.2	7.4

Notes: Euro area. Net percentage of firms reporting increased collateral requirements (increased minus decreased), by firm size, semiannual over 2009-S1 to 2025-S2; the 10 most recent waves are shown and the full series underlies the reported statistics. A positive SME–Large gap indicates that the net share of SMEs reporting tighter collateral requirements exceeded the large-firm share. The 2024 SAFE redesign (round 30, first quarter of 2024: a smaller sample and a reframed questionnaire) is flagged; the ECB maintains the semiannual series across it and it is used unaltered, and the post-2024 quarterly series is not mixed in. The gap is a change measure that corroborates the direction of the collateral channel, not the magnitude of the collateral-attenuated portion measured by the CAG. Gaps are computed from unrounded values and may differ from the difference of the rounded figures by 0.1.

Source: ECB Survey on the Access to Finance of Enterprises (SAFE) (European Central Bank, 2026c); author's calculations.

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