Criteria | Financial Institutions | General:

Risk-Adjusted Capital Framework Methodology

May 5, 2026

*(**Editor's Note:** On July 13, 2026, we republished this criteria article to correct a publication error in Appendix 8, Sector And Industry Variables. See the "Revisions And Updates" section for details.)*

1. S&P Global Ratings uses its risk-adjusted capital framework (RACF) criteria to evaluate the capital adequacy of bank and certain nonbank financial institutions. RACF is the foundation of our capital analysis for a variety of financial institutions globally. We use it to arrive at a measure that is not affected by differences in jurisdictional definitions of capital, the ways in which financial institutions define and calculate capital, and the methods they use to calculate regulatory risk-weighted assets. The criteria capture enhanced bank disclosures subject to Basel III capital standards globally, as well as the experience of financial institutions as they navigated the aftermath of the global financial stress that began in 2008. For information about the initial publication of this article as of May 5, 2026, including key changes, the impact on ratings, and superseded criteria, see "Updated Financial Institutions Risk-Adjusted Capital Framework Methodology Published," May 5, 2026.

2. The RACF criteria apply to banks and certain nonbank financial institutions and financial services companies (including nonoperating holding companies of such groups), all referred to as financial institutions. These criteria do not apply to insurance companies.

METHODOLOGY

3. Financial institutions face risks that arise from their balance sheets and operations. They manage these through their risk management and governance, and they shield senior bondholders from these risks using their capital and earnings. We expect that in a typical economic cycle, on average, firms will have earnings sufficient to absorb normal (or expected) losses. In the more stressful periods of the cycle, we expect earnings will not be sufficient and capital will be called upon to absorb unexpected losses. We use the total losses we expect through a cycle, including both the benign and stressful periods, to calibrate the metrics we use in our quantitative analysis of financial institutions.

4. We use RACF to calculate a risk-adjusted capital (RAC) ratio by comparing our measure of capital--total adjusted capital (TAC)--to the risks a firm takes, as measured by S&P Global Ratings risk-weighted assets (RWAs), which differ from regulatory risk-weighted assets. We derive RWAs by multiplying a financial institution's main risk exposures by the relevant risk weights for various categories of exposure, stated as a percentage. Risk weights adjust the exposures to reflect our view of their relative degree of risk--meaning, the greater the risk we see, the higher the risk weight we apply and, consequently, the higher the resulting RWAs.

Analytical Contacts

Matthew B Albrecht, CFA
Englewood
1-303-721-4670
matthew.albrecht
@spglobal.com

Methodology Contacts

Michelle M Brennan
London
44-20-7176-7205
michelle.brennan
@spglobal.com

Steven Ader
New York
1-212-438-1447
steven.ader
@spglobal.com

Mathieu Plait
Paris
33-14-420-7364
mathieu.plait
@spglobal.com

See complete contact list at end of article.

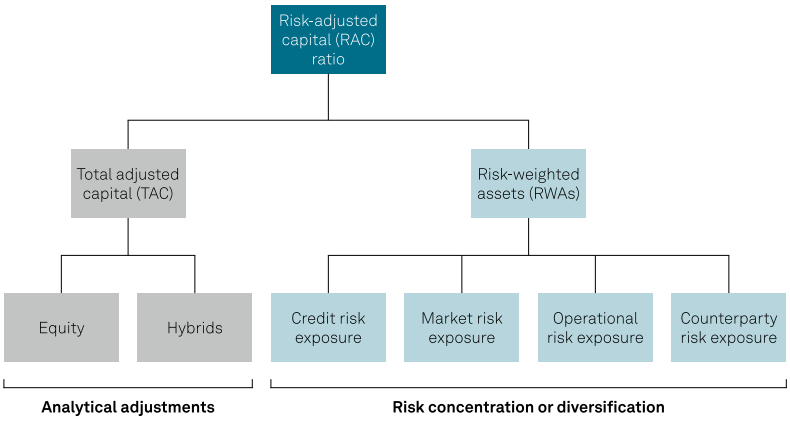
5. The RAC ratio is one of the key measures in our rating analysis of financial institutions because it helps us form an opinion of a financial institution's relative level of capitalization in the context of the economic and industry risks the financial institution is exposed to. Capital, in combination with other factors, is one of the main entity-specific factors that we analyze in determining a financial institution's stand-alone credit profile (SACP), which is a component of the issuer credit rating (ICR). All references in this article to ICRs and ratings are global scale ratings.

6. We calibrated the RACF so that a RAC ratio of 8% means that an institution should have sufficient capital to withstand a substantial stress scenario in developed markets, which we typically equate to an 'A' stress, as defined in the appendix of "S&P Global Ratings Definitions." We use the main output of the RACF, the RAC ratio, as a starting point in our capital analysis, which we complement with other capital measures. It is not a substitute for other capital measures, including regulatory ratios, but rather, it enables us to reach a more informed opinion of a financial institution's capital adequacy relative to peers.

7. We expect financial institutions to price their products and services such that they can provision for the losses we expect, on average, in benign periods of a typical economic cycle and still generate positive earnings. We refer to the losses we expect, on average, throughout a typical cycle as "normalized losses" (see the "Risk Calibration" section). Normalized losses are calibrated through observations of credit losses during past economic cycles and are used in our company-specific analysis of earnings.

Chart 1

Building blocks for the risk-adjusted capital framework



Source: S&P Global Ratings.
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Calculating The RAC Ratio

8. TAC is the numerator of the RAC ratio. We calculate TAC by adding, subject to certain limits, preferred stock and hybrid instruments that we qualify as having at least "intermediate" equity content to adjusted common equity (ACE), our measure of core capital. We determine the equity content of hybrids according to our hybrid capital criteria (see "Related Publications"). Under the criteria for RACF, we calculate ACE by adjusting reported common equity to our global standard. These adjustments are outlined in section "A. Standard adjustments to capital."

9. Our figure for RWAs is the denominator of the RAC ratio. Under RACF, we derive a financial institution's total RWAs by multiplying the financial institution's main risk exposures by the

relevant risk weights, stated as a percentage. Risk weights adjust the exposures to reflect our view of their relative degree of risk. The greater the risk we see, the higher the risk weight we apply and the higher the resulting RWAs. The main exposure categories in our computation are credit risk, market risk, operational risk, and counterparty risk. RACF uses regulatory and financial accounting data to capture the risk exposures and translate them into RWAs by applying the relevant risk weight. Product pricing and provisioning can typically absorb an average, or "normal," level of losses, which we refer to as "normalized losses" (see the "Risk Calibration" section), but financial institutions must hold capital to absorb unexpected losses. We determine our risk weights by considering the total losses we expect for a given asset class in an 'A' stress scenario (our idealized losses), and then subtracting the normalized losses that we expect an institution to absorb using earnings.

10. We capture the risk of a parent's potential unexpected losses arising from investments in insurance subsidiaries by deducting these investments from reported shareholder funds in calculating ACE (apart from those situations described in paragraph 43). We do, however, reflect in our calculation of RWAs the potential additional impact on a financial institution's capital position of under- or over-capitalization of its insurance subsidiary with respect to the subsidiary's ability to withstand a substantial stress level.

11. Credit risk exposures differ according to asset classes--that is, whether they are retail, corporate, sovereign, or financial institution exposures. The risk weights for the financial sector exposures may vary, depending on our BICRA. A BICRA reflects the risks that an individual financial institution faces operating in a banking industry (see "Banking Industry Country Risk Assessment Methodology And Assumptions"). We assess that risk on a scale from '1' to '10', ranging from the lowest-risk banking systems ('1') to the highest-risk banking systems ('10'). The risk weights for corporate and retail banking exposures also vary depending on how we assess economic risk in our BICRA analysis, for which we also use a '1' to '10' scoring scale.

12. Countries for which we do not perform BICRAs are assigned estimates or proxies (depending on the magnitude of rated entities' aggregate exposure to issuers in these jurisdictions) for the purpose of computing RAC ratios (see the appendix for more details). These estimates are performed using a simplified BICRA analysis for jurisdictions that rated banks have significant aggregate exposure to--typically aggregate exposure of US$5 billion or more (across all the entities we rate). We may also perform a BICRA estimate if rated banks' aggregate exposure is not significant, but we consider it appropriate to assign an estimate. Our BICRA "proxies" are usually calculated for jurisdictions for which global exposure is not very significant (i.e., typically below US$5 billion). The proxies are based on our foreign currency sovereign rating on the country for which we estimate the BICRA and economic and industry risk scores. Countries with foreign currency sovereign ratings of 'B' and lower are assigned an economic risk score proxy of '10' and a BICRA group proxy of '10'. For a country with a foreign currency sovereign rating of 'B+' and higher, we derive the BICRA proxy from the estimated anchor. (In line with the bank criteria, the anchor reflects the economic and industry risk assessments for each jurisdiction. We use it to derive a globally consistent, relative ranking of creditworthiness across national banking markets that is the starting point in our bank analysis.) Estimated anchors are determined by notching from the foreign currency sovereign rating on the relevant country. We typically use the same notching for all countries rated 'B+' and higher, and the factor is based on the average number of notches historically between the anchors for countries that have BICRAs and the associated foreign currency sovereign ratings. For example, based on this historical difference, we may determine at a given point in time that BICRA proxies are derived from estimated anchors that are one notch below the foreign currency sovereign rating, but this notching differential could

change over time depending on the evolution of both the sovereign foreign currency ratings and BICRAs for countries that do have BICRAs.

13. We apply risk weights to government and securitization exposures based on the rating on the sovereign or securitization. Market risk exposures are a combination of trading book risk and price volatility risk on equity exposures. We apply risk weights to regulatory capital requirement figures for trading risk as well as to institutions' equity investments, the latter based on our estimate of the volatility of stock prices in the different countries. We apply risk weights to revenue or assets under management (AUM) and assets under custody (AUC) to account for operational risks.

14. The calibration of the risk weights takes into account not only the stress scenarios presented in the appendix of "S&P Global Ratings Definitions," but also the losses we have observed across various asset classes in the last crisis, and in particular since 2010. We have also tested our risk weights against the results of stress tests that regulators began to administer in the years since the recent financial crisis.

15. RACF also quantifies the potential impact of risk concentration or diversification on RWA (see the "Calculating The Adjustment For Concentration Or Diversification" section). This quantitative adjustment helps inform our analytical conclusions about the additional risks associated with concentration and the benefits of risk diversification. Our framework takes into account nonfinancial corporate single-name concentration (the aggregate of large exposures to a single nonfinancial corporate borrower or counterparty), as well as the correlation of risk by geography, sector, and business line.

Table 1

Computing risk-adjusted capital

Risk-adjusted capital (RAC)	**=**	**Total adjusted capital (TAC)/Risk-weighted assets (RWA)**
Where		
TAC	=	See table 2
RWA	=	RWA credit risk + RWA market risk + RWA operational risk + RWA counterparty risk
RWA credit risk	=	RAC charges x 12.5 x adjusted exposure
RAC charges	=	Unexpected losses that we define as losses incurred beyond normalized losses in a given stress scenario
Adjusted exposure	=	Amount S&P Global Ratings anticipates will be the exposure at the point of a debtor's default. This amount may not be the same as the amount outstanding at a particular reporting date. (For Basel III* institutions, it is the same as the regulatory exposure at default with a few exceptions.)
Normalized loss	=	Average “through the cycle” annual loss rates that are expected to occur for a given class of exposure (and a given country)--see the "Normalized Loss Rates" section

*Basel III refers to the requirements set out under the Bank for International Settlement’s June 2011 publication of regulatory frameworks for capital and liquidity.

Deriving The RAC Ratio Components

1. Total Adjusted Capital (TAC)

16. TAC is our main capital measure. Under RACF, TAC is a globally consistent measure of the amount of capital a financial institution has available to absorb losses. TAC includes hybrid capital components that are, in our view, of somewhat weaker quality than those included in ACE, our measure of consolidated core capital. This reflects our view of the equity content of hybrid capital instruments (see our hybrid capital criteria).

17. ACE reflects a narrow definition of core capital that does not include capital components that we classify as relatively weaker than common equity. ACE is based on common equity and elements of capital reserves that can be used to absorb losses in all circumstances. It is a measure of tangible equity (although it can differ from regulatory measures of tangible common equity). We exclude all hybrid capital instruments from ACE.

18. We make various adjustments to a financial institution's reported shareholders' funds to calculate ACE and TAC (see table 2). Our adjusted ACE and TAC figures therefore differ from accounting and regulatory measures of capital.

19. The calculation of intermediate ACE described in table 2 is only used in our analysis of an institution's capital as an intermediate step for calculating the amounts of deferred tax assets (DTAs), if any, that we deduct, if appropriate, from shareholder funds to calculate ACE.

Table 2

Calculation of total adjusted capital*

Starting point: Common shareholders' equity
Add "Minority interests: Equity"
Deduct dividends not yet distributed
Deduct revaluation reserves: deferred gains/losses related to cash-flow hedges
Deduct goodwill and nonservicing intangibles
Deduct interest-only strips
Add or deduct postretirement benefit adjustments
Add or deduct cumulative effect of credit-spread-related revaluation of liabilities
Deduct investments in insurance subsidiaries (as per paragraphs 41-43) and significant minority investments in financial institutions
Add or deduct other equity adjustments
Deduct deferred tax assets (DTAs) that rely on future profitability
= Intermediate ACE
Deduct certain DTAs arising from timing differences (subject to threshold)
= Adjusted common equity (ACE)
Add preferred stock and hybrid capital instruments (subject to limits)
= Total adjusted capital (TAC)

*For details on each of the adjustments and measures of capital included in this table, please see the relevant sections.

20. We typically assess factors that could restrict the flow of capital within a group to absorb losses as part of our analysis of the quality of capital and not as a quantitative adjustment to our capital measures. Such constraints may include ownership issues, regulations, and legal or tax matters.

21. In determining our analytical adjustments, we consider how regulators generally treat capital, but our capital ratios are likely to be different from those of regulators. Regulators focus on issues at a national or regional level when defining their capital measures, whereas our goal is to produce capital measures that are globally comparable to enhance ratings comparability as much as possible.

A. Standard adjustments to capital

22. **Shareholders' equity:** Common shareholders' equity is the starting point for our capital calculation. The components of common shareholders' equity include common stock, additional paid-in capital, capital surplus, retained earnings, and various revaluation and other reserves. It excludes any preferred stock, preferred securities, other hybrid capital instruments, and minority interests that are reported in total shareholders' equity.

23. If a financial institution reports treasury stock as an asset, we deduct this figure from total shareholders' equity to produce a consistent measure of the resources available to absorb losses.

24. We include warrants in our definition of common shareholders' equity, adding them to the reported figure if the financial institution has excluded them. We do this whether the warrants are issued with preference shares or on a stand-alone basis.

25. **Minority interests:** ACE includes the holdings of minority investors (so-called "non-controlling interests") associated with consolidated operating financial subsidiaries (which excludes insurance subsidiaries). The reason for this is we typically view the investment of minority investors in consolidated subsidiaries as a component of equity supporting group activities.

26. ACE does not include any hybrid capital instruments reported under "minority interest: equity" on an entity's balance sheet. Subject to our criteria for the equity content of hybrids, we may include these instruments in our definition of TAC.

27. In some circumstances, we reflect factors restricting the flow of capital within a group as a quantitative adjustment. We exclude from "minority interest: equity" the portions of capital that we consider unavailable to absorb losses, and instead, we classify them as "minority interest: non-equity." We include in TAC hybrids that we regard as having equity content, however. For example, we would reclassify as "non-equity" the minority interests in a fully consolidated insurance subsidiary whose resources are not available to absorb non-insurance-related losses within the group. Minority interests we reclassify as "non-equity" also include:

- Minority interests in certain special-purpose entities or joint ventures that do not represent operating subsidiaries, such as banks or certain other types of financial institutions, that, in our assessment, represent portions of capital not available to absorb losses of the parent entity;
- Large minority interests in fully consolidated property companies; and
- Minority interests in industrial or commercial companies controlled under private-equity operations.

28. **Dividends (not yet accrued or distributed):** ACE excludes any dividends not yet accrued, including dividends to minority interests in subsidiaries retained in equity (see the "Minority interests" section), that are likely to be distributed if reported equity does not reflect imminent dividend distributions. If an entity has not formally announced a dividend, or the information is otherwise unavailable, we deduct our estimate based on such factors as the company's stated dividend policy or historical payout. We also deduct dividends that will be paid in the form of ordinary shares, unless there is a clear strategy not to eliminate the dilutive effect. We do not deduct dividends not yet accrued in situations where the owners have clearly stated their intention to reinject dividends into the institution.

29. **Revaluation reserves:** We adjust reported capital to remove the impact of revaluation reserves associated with deferred gains/losses related to cash flow hedges. If the revaluation reserves are

positive, we deduct them from reported equity (that is, we exclude them from ACE and TAC). If the revaluation reserves are negative, we add them back to reported equity.

30. We do not make adjustments for the impact of foreign exchange translation gains or losses recorded within equity and included under other comprehensive income under U.S. generally accepted accounting principles (GAAP). These gains or losses are reflected in ACE and TAC.

31. We do not adjust capital for property revaluations included within reported capital reserves, except in circumstances described in section "B. Other adjustments."

32. **Goodwill and nonservicing intangibles:** We make several adjustments to reflect goodwill and nonservicing intangibles:

- We deduct reported goodwill and nonservicing intangible assets from reported equity to calculate ACE, net of any related deferred tax (i.e., by adding back the associated deferred tax liability);
- We do not adjust capital for servicing assets that are included in the reported goodwill or intangible assets figures; and
- We deduct the value of intangibles created through mergers and acquisitions (M&A) from reported capital. Such intangibles include the premium to acquire core deposits and credit card relationships.

33. ACE excludes the goodwill on acquired businesses to reflect a consistent treatment of the market value of an entity's business units, which does not depend on whether the entity acquires the businesses (in which case, goodwill is reported as an asset) or develops them internally (in which case, there is no goodwill).

34. We distinguish mortgage servicing rights (MSRs), which are servicing-related intangible assets, from nonservicing intangible assets. This is because MSRs are written contractual obligations that can be sold. Rather than deducting a portion of the MSRs from our equity measures, as some regulators do, we reflect the risk of fluctuating MSR values by applying a RACF capital charge to servicing intangibles.

35. We do not adjust reported capital if an M&A transaction generates negative goodwill, but we consider the implications of such a transaction when we assess an entity's business position and earnings capacity.

36. We deduct from reported equity (on an aftertax basis) the credit-enhancing interest-only strips that arise in the U.S. from securitization sale accounting. This is because under U.S. GAAP, the securitization sale leads to an upfront recognition of future earnings, although the transaction does not represent a full transfer of risk.

37. **Postretirement benefits:** We assess the surplus or deficit of an institution's various employer-sponsored defined-benefit pension and other postretirement benefit plans (collectively, PRB) and adjust for the tax-affected net position (see table 3). The adjustment depends on how the net position is reflected in the reported capital figures. We view deficits and surpluses under PRB as amounts that should be included in the net assets of the sponsoring financial institution. Accordingly, if, in our view, an institution does not fully reflect these deficits or surpluses in its financial statements, we may make an adjustment when calculating ACE and TAC.

38. We only include the surplus on PRB in our calculation of ACE to the extent that the relevant regulator recognizes the surplus in its measure of capital. This is because we take this as an indication that the institution has access to the assets in the fund and we believe that it can use the surplus. Otherwise, we exclude the surplus from our calculation of ACE.

Table 3

Adjustments for postretirement benefit obligations

Status	Net deficit	Net surplus
No unrecognized amounts; all are on the balance sheet	No adjustment is necessary because the net deficit is already fully reflected in equity	No adjustment is necessary because the net surplus is fully reflected in equity. We will, however, reduce capital by that amount of the surplus that we view as unrealizable. This is typically the amount that the relevant regulator does not recognize in its assessment of capital (on an aftertax basis). We only include the surplus to the extent that there is evidence that it is realizable.
Unrecognized off-balance-sheet losses	Reduce equity by the amount of unrecognized losses, after tax	Reduce equity by the amount of unrecognized losses, after tax. This adjustment adds the surplus to reported capital when calculating ACE and TAC. We deduct from capital that amount of the surplus that we view as unrealizable. This is typically the amount that the relevant regulator does not recognize in its assessment of capital (on an aftertax basis). We only include the surplus to the extent that there is evidence that it is realizable.
Unrecognized off-balance-sheet gains	Increase equity by the amount of unrecognized gains, after tax, only when this approach is consistent with that of the relevant regulators	Add the amount of unrecognized gains, after tax, when calculating ACE and TAC. Nevertheless, the adjustment for unrecognized gains would be reduced by the amount of the surplus that we view as unrealizable. This is typically the amount that the relevant regulator does not recognize in its assessment of capital. We only include the surplus to the extent that there is evidence that it is realizable.

39. **Cumulative effect of credit-spread-related revaluation of liabilities:** To calculate ACE, we deduct from reported equity the tax-affected cumulative gains or losses resulting from valuing liabilities, including derivative liabilities, at fair value that are due to changes in the institution's credit standing. These are often referred to as "own credit adjustment" and "derivatives valuation adjustment."

40. **Mark-to-market gains or losses reported on financial assets and liabilities:** In computing ACE, we do not adjust reported equity for other mark-to-market gains or losses reported on financial assets and liabilities such as trading securities, fair value hedges, derivatives, and any other item recognized at fair value through earnings under the fair value accounting option. This is because we consider that these other gains and losses reflect the way these financial instruments are managed.

41. **Investments in insurance subsidiaries and minority interests in financial institutions:** To calculate ACE, we deduct from reported shareholder funds investments in insurance subsidiaries and "significant" unconsolidated minority investments in financial institutions. RACF defines unconsolidated minority investments in financial institutions as "significant" if the ownership rate

is greater than 10%, or, it is lower than 10%, but S&P Global Ratings views the investment as sufficiently important for the entity's business operations.

42. For the purposes of these criteria, we consider all capital investments in insurance subsidiaries, and, thus, we deduct capital instruments, including common equity and subordinated debt (all regulatory Tier capital instruments, as long as they are issued out of the insurance subsidiary and held by the financial institution group). See the "Treatment Of Insurance Subsidiaries In The Risk-Adjusted Capital Framework" section for more details on the key factors determining how we calculate investments in subsidiaries.

43. Whenever insurance risks represent a substantial part of a group's risk profile, we typically take a different approach to the parent exposure to the insurance subsidiary's capital instruments if there are regulatory capital instruments the parent owns that we do not include in our measure of TAC for the insurance subsidiary. Instead of deducting the amount invested by the parent in such instruments to arrive at the parent's ACE, we apply the risk weights for unlisted securities in table 12 to these amounts, taking into account the country in which the insurance subsidiary is domiciled, and add them to S&P Global Ratings RWAs. We deduct the remaining amounts invested by the parent in those capital instruments that are included in our TAC measure for the insurance subsidiary.

44. When insurance risks represent a substantial part of a group's risk profile, we also typically take into account the degree of over- or under-capitalization of the insurance subsidiary relative to what we believe it would need to withstand a substantial level of stress. To reflect this, we will typically calculate the deficit or surplus, and then apply a 375% risk weight to the figure and add it to or deduct it from, respectively, S&P Global Ratings RWAs. This approach takes into account in the capital analysis of the parent entity:

- The potential additional capital needs of insurance subsidiaries in a substantial stress scenario when the insurance subsidiaries have a capital shortfall, and
- The potential availability of excess capital at the insurance subsidiary level in a stress scenario (when it exists) to absorb unexpected losses arising elsewhere within the group when capital may be sufficiently fungible within the group.

45. When assessing the level of capitalization of a material insurance subsidiary relative to a substantial stress scenario, we typically rely on our own assessment of the insurance subsidiary's level of capitalization in accordance with our criteria (including "Insurer Risk-Based Capital Adequacy--Methodology And Assumptions," Nov. 15, 2023).

46. In determining whether insurance risks are substantial to a group, we undertake an entity-specific analysis that considers several factors, including both quantitative metrics and qualitative factors. One of the quantitative metrics we typically use is the comparison between the RAC RWAs before and after incorporating the RWA equivalent of the amount in capital instruments invested by the parent in insurance subsidiaries (derived by multiplying the invested amount in capital instruments of insurance subsidiaries by 1250%). Our assessment of the strategic importance of the subsidiary is one of the qualitative factors we may consider relevant for the analysis of the materiality of the insurance risks to a group. See the "Treatment Of Insurance Subsidiaries In The Risk-Adjusted Capital Framework" section for examples of the analysis of materiality of insurance subsidiaries.

47. In RACF, we take into account the insurance subsidiaries' credit and operational risks through the treatment of the investment amount and the assessment of capitalization. Therefore, for banks that Basel II does not apply to, where we typically use primarily accounting data for calculating RAC ratios, we exclude the relevant assets (stocks, bonds, etc.) and AUM held by insurance

subsidiaries from the assets and AUM reported in consolidated financial accounts we use as disclosure for the calculation of the RAC ratio.

48. To compute ACE, we also deduct from reported shareholder funds "significant" equity investments in unconsolidated financial institutions, while non-significant investments are applied our equity charges defined in the "Equity investments" section. We apply our financial institution risk weights, as defined in the "Financial sector" section, to investments in debt-like instruments issued by unconsolidated financial institutions.

Deferred tax assets

49. **DTAs that rely on future profitability:** To calculate ACE, irrespective of whether the entity operates in jurisdictions where Basel III is implemented, we deduct from reported common equity the net DTAs that rely on future profitability for their recoverability (including tax loss carry-forwards). We deduct net DTAs to reflect the regulatory approach that allows institutions to offset their DTAs against their deferred tax liabilities (DTLs). In these instances, if there is a net DTL, we make neither a deduction nor an addition to calculate ACE. When netting DTAs and DTLs, we exclude DTLs related to goodwill, intangibles, and pensions--if any--because they're already accounted for when adjusting for such items. We deduct the full amount of these DTAs, irrespective of any Basel III transitional arrangements that regulators may apply.

50. **DTAs arising from timing differences:** For all institutions, the treatment of DTAs arising from timing differences (sometimes referred to as temporary) depends on whether they're "readily convertible" or "not readily convertible."

51. If the amount of not-readily-convertible DTAs arising from timing differences exceeds 10% of the intermediate ACE, we deduct from the intermediate ACE the amount of these DTAs in excess of the 10% threshold. The amount of DTAs we consider for this calculation is net of DTLs when the regulator allows such netting. We consider DTAs arising from timing differences as readily convertible if they're convertible into claims against the government to be settled in the form of liquid assets (for example, cash or government bonds) without delay when the institution incurs a loss and we expect the government to be able and willing to deliver the liquid assets. DTAs that can only be netted against other taxes due over time or that are only converted in the event of liquidation are examples of DTAs we don't consider readily convertible.

52. In certain exceptional cases, we may consider deducting a greater amount of DTAs that arise from timing differences than the amount resulting from the calculation in the previous paragraphs. This may be the case when both the regulatory deduction of such DTAs (that arise from timing differences) is higher than the deduction described in the previous paragraph and we consider that this higher deduction appropriately reflects the risks of unexpected losses embedded in the stock of DTAs accumulated by the institution.

53. DTAs arising from timing differences that aren't deducted from intermediate ACE to calculate ACE are subject to the following RACF risk weights:

- 375% if we view them as not readily convertible; and
- 250% if we view them as readily convertible.

54. When netting DTAs and DTLs, we exclude DTLs related to goodwill and intangibles and pensions because they are already accounted for when adjusting for such items.

B. Other adjustments

55. We aim to apply a reasonably consistent definition of ACE and TAC, but specific circumstances or reporting differences may require additional adjustments to reported common shareholders' equity. For example, adjustments may apply when we assess that some transactions artificially inflate reported equity. Examples of such transactions include unseasoned revaluation of an entity's own premises, reciprocal cross holdings, or the issuance of capital instruments that are indirectly funded by the entity through a related party, such as a holding company or sister company. When adjusting for unseasoned property revaluations, the regulatory approach may guide the amount we deduct. Similarly, we could consider deducting more than just the equity investment in unconsolidated minority investments in financial institutions. We could do so if regulatory capital measures deducted other types of exposures to such institutions and we considered it appropriate to reflect the full extent of potential unexpected losses given the nature of the risks involved.

2. Risk-Weighted Assets (RWAs)

56. To determine an institution's RWAs--in a globally consistent manner--we multiply the exposure amount by the associated risk weight. The sources of the exposure amounts include data from Basel Pillar 3 disclosure (Basel banks), if available, or data from the published accounts of institutions that don't use the Basel framework or don't publish sufficient detail in their Pillar 3 disclosures (non-Basel banks). For U.S. banks, we generally use nonoperating holding companies' regulatory reports as the source. For nonbank financial institutions, we typically rely on financial statements. We may complement these data sources with additional information. We use a consistent format to capture adjusted exposure. The risk weights align with our stress scenarios for developed markets, as explained in the "Risk Calibration" section.

57. In our general classification of asset classes and corresponding risk weights, we aim to accurately differentiate the risks generally on entities' balance sheets on a globally consistent basis. But occasionally, a financial system or institution may have unique risks that we choose to capture by reclassifying exposures to alternative asset classes than the ones we typically use. We do this to reflect our expectation of materially and consistently higher or lower losses for that unique set of exposures for a system or an entity than likely would be the case for the typically corresponding asset class in the given BICRA, economic risk, or rating category.

58. We obtain the risk weights by dividing the RAC charge by 8%, which is equivalent to multiplying the RAC charge by 12.5. We chose to calibrate our framework so that a bank with a RAC ratio of 8% has just enough capital to absorb unexpected losses in an 'A' stress scenario. We use the risk weights to adjust the value of an institution's exposure amounts relative to our view of their riskiness and potential for default, in a method similar to that broadly used in the banking industry globally. This helps us make comparisons between the RAC ratio and regulatory-based capital ratios, where available.

A. Credit risk and counterparty risk and associated risk weights

59. RACF breaks credit risk down into five categories: governments, financial sector, corporate sector, retail and personal sector, and securitizations. It then accounts for the impact of collateral and other risk mitigation. The guidance for rating inputs applied in the calculation of risk weights for governments, securitizations, and single-name concentration exposures is consistent with the principles prescribed in "Methodology For Determining Ratings-Based Inputs" for “secondary rating drivers.”

60. **Governments:** We classify government-related risks in two categories--central governments and regional and local authorities--and apply different risk weights according to the rating on the sovereign issuer (see table 4). Our risk weights for sovereign, regional, and local authority exposures are based on our foreign currency credit rating on the sovereign. In the case of domestic securities issued by a central government in local currency, however, if we know the amount the entity holds, then the risk weight is based on the local currency rating.

Table 4

Risk weights for government exposures

Long-term foreign currency sovereign credit rating	Sovereign (%)	Local government/public-sector entities (%)
AA- and above	3	4
A+	5	6
A	9	11
A-	15	18
BBB+	26	31
BBB	40	48
BBB-	57	68
BB+	76	92
BB	99	119
BB-	125	150
B+	153	184
B	185	222
B-	219	263
CCC+	257	308
CCC	297	356
CCC-	340	408
CC	386	428
SD/D	428	428

61. Central government includes direct exposure to the sovereign, as well as to central banks, the government's administrative bodies, noncommercial undertakings, multilateral development banks, and international organizations. However, central bank exposure does not include cash or reverse repos with central banks. We believe a more severe stress scenario than we have calibrated our risk charges for would be required to cause cash to become valueless, not including the effects of inflation. We consider reverse repos with central banks to have the same risk characteristics as deposits with central banks. We, therefore, consider cash (in hand or at the central bank) as well as reverse repos with central banks to be akin to a risk-free asset in the context of RACF.

62. If we lowered a sovereign rating to 'SD' because of a default event that we expect to be short-lived and technical in nature, or if we lowered the sovereign rating to the 'CCC' category or to 'CC' in anticipation of such an event, the risk weighting for sovereign exposures will be the risk weighting from table 4 using the expected post-default sovereign rating or the upper end of the range of the expected post-default sovereign rating, as indicated in conjunction with the related sovereign rating action.

63. **Financial sector:** Financial exposures fall into three categories: financial institutions, central counterparties (CCPs, also known as clearinghouses), and covered bonds. For financial institutions and covered bonds, we apply risk weights according to our BICRA for the country in which the exposures are domiciled (see table 5).

Table 5

Risk weights for financial sector exposure

BICRA group	Financial institutions (%)	Covered bonds (%)
1	15	10
2	17	11
3	23	16
4	33	22
5	48	32
6	68	45
7	103	68
8	144	96
9	192	128
10	248	165

64. The "Financial institutions" column in table 5 includes exposures to all credit institutions, investment firms, and finance companies. Reflecting the typical granularity of disclosures, credit exposure to insurance companies and asset managers is included under corporate exposures.

65. Exposures to CCPs include trade exposures, initial margins, and contributions to guarantee funds. The risk weight we apply to trade exposures and initial margins is the one we apply to sovereign exposures but at a level typically one notch below the foreign currency rating on the sovereign in which the CCP is domiciled. We risk weight guarantee funds contributions at 250%, which is similar to the risk weight we apply in other cases when factoring in uncertainties about the timing, liquidity, and recovery value of an exposure (see the treatment of "readily convertible" DTAs in paragraph 53, for example). Finally, we cap the total RAC charge on exposures to CCPs (resulting from adding the RAC charges for trade exposures, initial margins, and contributions to guarantee funds) at the level of the financial institutions risk weight applied to trade exposures and initial margins only. This cap reflects our view that it is not riskier for entities to clear transactions with CCPs than to have exposures uncleared.

66. For entities subject to Basel III regulation, whenever exposures to CCPs excluding guarantee funds contributions are not disclosed, we typically use either regulatory risk-weighted assets or accounting information available to determine the level of these exposures. Thus, we may determine these exposures as a percentage of derivatives receivables (asset side of the balance sheet), with multipliers calibrated conservatively on a sample of representative entities. We use two multipliers, one for entities in jurisdictions for which derivatives are presented on a gross basis (as in IFRS) and one for entities in jurisdictions for which derivatives are presented on a net basis (as in U.S. GAAP). Alternatively, we may also infer the level of exposures from the regulatory risk-weighted assets pertaining to these exposures. For example, in jurisdictions where CCP exposures (excluding guarantee funds contributions) carry generally a 2% regulatory risk weight, we may infer exposures as 50x the regulatory risk-weighted assets. The current values of the

multipliers referred to in this paragraph can be found in the Sector And Industry Variables section of the appendix.

67. Whenever guarantee funds contributions are not disclosed separately, we typically determine these exposures as a flat percentage of trade and initial margins exposures, with a multiplier calibrated conservatively on a sample of representative entities. The current values of the multipliers referred to in this paragraph can be found in the Sector And Industry Variables section.

68. We apply the standard financial institution risk weight to exposures to financial institutions that we consider government-related entities (GREs) under our criteria.

69. In our view, the creditworthiness of financial institutions is generally lower than the creditworthiness of the sovereigns in which the financial institutions are domiciled. To reflect this, the RAC risk weight pertaining to financial institutions is generally the higher of the RAC risk weight derived from table 5 or the RAC risk weight corresponding to the foreign currency rating on the sovereign in which the entity is domiciled (derived from table 4). For example, financial institutions exposures in a country in BICRA group '5' with a 'BB+' foreign currency rating will be applied a risk weight of 76%, as reflected in table 4, and not 48%, as reflected in table 5.

70. We take a different approach to that described in the previous paragraph when a sovereign is already in distress and has defaulted on its foreign currency obligations. In this case, the RAC risk weight for financial institutions is the risk weight for a sovereign rated 'CC' (from table 4). This reflects that banks may not default despite the foreign currency default of the relevant sovereign. If we lowered a sovereign rating to 'SD' because of a default event that we expect to be short-lived and technical in nature, or if we lowered the sovereign rating to the 'CCC' category or to 'CC' in anticipation of such an event, the risk weighting for financial institutions might not be affected directly in terms of the sovereign rating action. In such a scenario, the financial institution risk weights would be the higher of:

- The risk weighting from table 4 using the expected post-default sovereign rating or the upper end of the range of the expected post-default sovereign rating, as indicated in conjunction with the related sovereign rating action, or
- The risk weighting from table 5.

71. **Corporate sector:** Corporate exposures fall into two categories: corporate, and construction and real estate development (see table 6). We apply risk weights according to the economic risk score from our BICRA analysis.

Table 6

Risk weights for corporate sector exposures

Economic risk group	Corporate (%)	Construction and real estate development (%)
1	60	180
2	66	198
3	75	225
4	87	261
5	102	307
6	121	363
7	142	426
8	167	501

Risk weights for corporate sector exposures

Economic risk group	Corporate (%)	Construction and real estate development (%)
9	194	582
10	225	675

72. Because of inconsistencies in data reported by institutions in different jurisdictions, we apply a single risk weight for a wide variety of corporate risks. The broad category for corporate exposure includes direct exposure to corporate entities, income-producing commercial real estate, object finance, purchased receivables, and project finance. RACF does not differentiate between large, blue chip corporates, and small and midsize enterprises (SMEs).

73. We apply the standard corporate risk weight to exposures to corporate entities that we consider GREs under our criteria.

74. We apply greater risk weights to construction loans and exposures to real estate developers, based on historical evidence that these assets tend to produce more losses in adverse economic conditions. In cases where we cannot ascertain the entity-specific amount of construction and real estate development exposures within the corporate exposure, but where system data (such as central bank statistics on sectoral lending) are available, we may use the system-level figure. Where there is insufficient information for us to distinguish construction and real estate development exposures from corporate exposures and there are no system-level figures available, we consider 5% of the corporate exposures as relating to construction and real estate development.

75. **Retail and personal:** We classify retail exposures into six categories: prime residential mortgages, auto loans, credit cards, self-certified and non-U.S. nonprime mortgages, other unsecured/retail lending to SMEs, and Lombard (margin) loans (see table 7). RACF risk weights for exposures for each of these categories are determined according to the economic risk assessment in the BICRA for the country in which the exposures are located.

Table 7

Risk weights for retail and personal exposures

Economic risk group	Prime residential mortgages (%)	Self-certified and non-prime non-U.S. mortgages (%)	Credit cards (%)	Auto loans (%)	Other unsecured/SME retail (%)	Lombard (%)*
1	20	81	89	48	60	12
2	23	93	96	51	66	13
3	29	115	105	56	75	15
4	37	146	118	63	87	17
5	47	187	134	71	102	20
6	60	239	153	81	121	24
7	75	299	176	93	142	28
8	92	370	201	107	167	33
9	113	450	230	122	194	39
10	135	540	263	139	225	45

*The risk weights for Lombard (or margin) loans in this table are the floor risk weights we apply to this kind of exposures. The floor is applicable when the application of RACF haircuts to financial collateral in table 9 results in a RAC risk weight below the risk weights in this table.

76. Other unsecured exposures refer to consumer loans, excluding credit card-type exposures and including the uncovered part of Lombard (margin) loans--that is, the exposure amount net of financial collateral after the RACF haircut (see table 9).

Example Of The Risk-Weighting Approach To Lombard (Margin) Loans

The following example shows how we compute RAC risk weights on Lombard (margin) exposures. Bank A has $100 million of Lombard (margin) exposures in Country X for which we assess the economic risk to be '5', according to our BICRA. These exposures are backed by $150 million of stocks. After applying the 40% haircut pertaining to stocks in table 9, we break down the $100 million exposure into a fully covered part (for $90 million) and an uncovered part for $10 million. The uncovered part receives a 102% risk weight according to table 7 (while the covered part does not carry any risk from a RAC perspective). This puts RAC RWAs, before applying the floor, at $10.2 million. The floor for Lombard (margin) loans in a country with an economic risk score of '5' is 20% (see table 7), putting total risk-weighted assets on the portfolio at $20 million. The floor is binding in this example.

77. SME retail refers to granular exposures to SME that Pillar 3 banks report as retail. For institutions that do not publish Pillar 3 reports, these exposures are classified as corporate exposures.

78. The risk weight applicable to nonprime residential mortgages in the U.S. is 6.5x the risk weight applicable to prime residential mortgages in the U.S. When the split between prime and nonprime mortgages is not available, we assume 10% of the U.S. mortgage exposure as nonprime and 90% as prime.

79. **Counterparty risk (for an overview of the treatment of counterparty risk, see chart 2):** We differentiate between the risk of posting losses due to the default of counterparties and the risk of having to post additional provisions due to a deterioration of the creditworthiness of derivatives counterparties, absent any default (see chart 2).

80. The risk of posting losses due to the default of derivatives counterparties is captured in RACF through the charges applicable to the type of counterparties (sovereign, corporates, or financial institutions).

81. If an entity reports aggregate counterparty risk as an exposure separately from the reported exposure on any specific asset class, RACF would consider 50% of the aggregate exposure as exposure to financial institutions and 50% as exposure to corporates (unless we have more granular information).

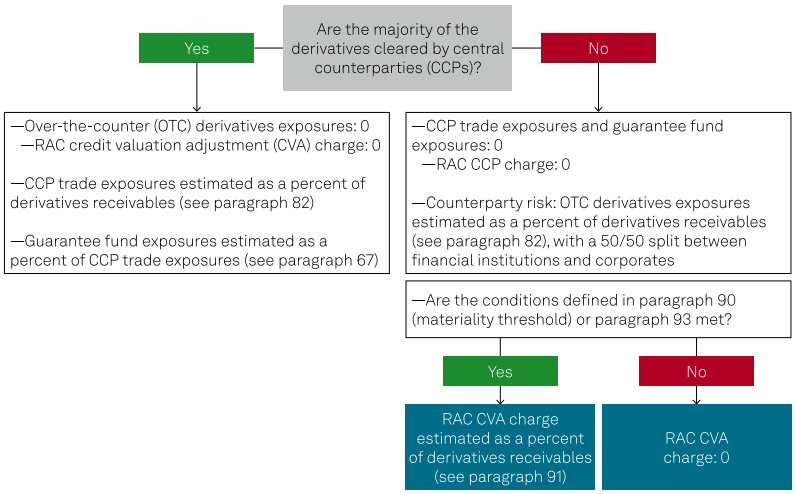
82. For entities that do not report according to Basel standards (e.g., securities firms or banks that do not publish a Pillar 3 or a Y9 report--a U.S. regulatory filing), we determine all derivatives exposures as a percentage of derivatives receivables (asset side of the balance sheet), with multipliers calibrated on a set of representative entities. We use two sets of multipliers, one for entities in jurisdictions for which derivatives are presented on a gross basis (as in IFRS) and one for entities in jurisdictions for which derivatives are presented on a net basis (as in U.S. GAAP). We assume over-the-counter (OTC) derivatives exposures to be zero if a majority of derivatives are cleared by CCPs. Conversely, we assume CCPs exposures to be zero if a majority of derivatives are non-cleared OTC. The current value of the other multipliers referred to in this paragraph can be found in the Sector And Industry Variables section of the appendix.

83. For U.S. banks, RACF classifies exposures to OTC derivatives according to their regulatory risk weights, which vary based on counterparty according to regulatory definitions. OTC derivatives for which we don't know the type of counterparty are viewed as 50% exposures to financial

institutions and 50% to corporates. There are separate risk weights in RACF for counterparty risks associated with securities lending, sale and repurchase agreements (repos), reverse repos, and Lombard (margin) loans because we do not typically receive collateral details to determine net counterparty exposure. In the absence of that information, we approximate collateral coverage, apply our own financial collateral haircut (from table 9) to determine net exposure, and then risk weight the exposures as we do above (50/50 financial and corporate counterparties). We assume that securities lending transactions are backed by equities and overcollateralized by 30%. We assume in a repo transaction that cash is received, but we do not believe these are riskless transactions, so we apply a small risk weight. We assume reverse repos are collateralized by mixed financial collateral and overcollateralized by 20%, and our risk weight for Lombard loans is equivalent to the floor risk weight in table 7. These risk weights may vary based on the BICRA and economic risk score of the U.S. (the current values can be found in the Sector And Industry Variables section).

Chart 2

Counterparty risk for financial institutions that do not report information according to the Basel Standard



Source: S&P Global Ratings.
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84. The risk of having to post additional provisions due to a deterioration of the creditworthiness of derivatives counterparties, absent any default, is captured in RACF by a separate charge: the RAC credit valuation adjustment charge (RAC CVA).

85. Whenever the bank is domiciled in a Basel III jurisdiction--and subject to a regulatory CVA charge--the RAC CVA charge is defined as the regulatory CVA charge times a multiplier.

86. The multiplier scales up the regulatory CVA charge to fit the core RACF assumptions for market risk: one-year horizon and 99.9% confidence level. A current value of the multiplier can be found in the Sector And Industry Variables section of the appendix.

87. In jurisdictions that exempt some asset classes from the regulatory CVA charge, we apply--in addition to the multiplier defined above--a second multiplier that aims to ensure a level playing field with banks domiciled in jurisdictions that don't apply the exemptions. This second multiplier is based on the average proportion of nonexempted counterparties from a large sample of banks. The current value of the second multiplier can be found in the Sector And Industry variables

section of the appendix and is applicable unless we believe that applying a bank-specific multiplier may be material to our analysis.

88. When we believe that applying a second multiplier based on bank-specific information is material to our analysis, the second multiplier is computed as follows: 1 + (1 + add-on)*(1 – non-exempted counterparties exposures as a % share of total OTC derivatives exposures)/non-exempted counterparties exposures as a % share of total OTC derivatives exposures. This add-on is our estimate of the incremental risks represented by exempted counterparties compared with nonexempted counterparties per unit of OTC derivatives exposures. The current value of the add-on referred to in this paragraph can be found in the Sector And Industry Variables section.

89. We only apply the RAC CVA charge when OTC derivatives exposures represent a substantial part of the balance sheet and when we expect the RAC CVA charge to represent a significant part of total RAC risk-weighted assets. We would typically consider this the case when one of the following applies (note that we compute derivatives receivables as the sum of trading book derivatives and derivatives in the banking book that are used for cash flow hedges):

- Derivatives receivables represent more than 3% of total assets for entities reporting under IFRS (or under local GAAP similar to IFRS for the accounting of derivatives) and are domiciled in countries for which our BICRA group is '1' to '4'.
- Derivatives receivables represent more than 5% of total assets for entities reporting under IFRS (or under local GAAP similar to IFRS for the accounting of derivatives) and are domiciled in countries for which our BICRA group is '5' and above.
- Derivatives receivables represent more than 0.5% of total assets for entities reporting under U.S. GAAP.

90. The RAC CVA charge is zero when we expect derivatives receivables to remain lower, on average, than the thresholds defined in the previous paragraph.

91. For entities that don't publish the Basel III regulatory CVA charge (because, for example, they aren't domiciled in Basel III jurisdictions) or apply the fallback approach (a regulatory capital requirement equal to 100% of the bank's capital requirement for counterparty credit risk) in a revised Basel III jurisdiction, but exceed the above thresholds, we compute the RAC CVA charge as a percentage of derivatives receivables (asset side of the balance sheet), with multipliers calibrated on a set of representative banks. We use two multipliers, one for entities in jurisdictions for which derivatives are presented on a gross basis (as in IFRS) and one for entities in jurisdictions for which derivatives are presented on a net basis (as in U.S. GAAP). The current multipliers can be found in the Sector And Industry Variables section of the appendix.

92. For entities not subject to a regulatory CVA charge (e.g., some securities firms or banks in non-Basel III jurisdictions) and that exceed the above thresholds, the RAC CVA charge is zero if we believe that exposures to OTC not cleared through a CCP derivatives represent only a very small fraction of derivatives exposures for the firm.

93. For entities not subject to a regulatory CVA charge and above the thresholds defined in paragraph 89, the RAC CVA charge is zero if we believe that most of the non-cleared OTC derivatives transactions are conducted with entities rated 'A' or higher and with CSA agreements exhibiting some strong risk-mitigating factors. Examples of such strong risk-mitigating factors include automatic termination events for counterparties rated speculative grade, very low thresholds and minimum transfer amounts, high independent amounts if the rating falls below the 'A' category, and one-way CSA so that the entity receives collateral but does not post any. (See the Glossary for definitions of these terms.)

Example Of Computing The RAC CVA Charge For A Bank In A Jurisdiction That Exempts Some Asset Classes From The Computation Of The Regulatory CVA Charge

The following example shows how we compute the RAC CVA charge for a bank domiciled in a jurisdiction that exempts some asset classes from the computation of the regulatory CVA charge, such as the EU as of July 20, 2017 (the EU exempted sovereigns and nonfinancial corporate entities as of that date).

The regulatory CVA charge for Bank X, domiciled in a BICRA '3' country in the EU, and reporting under IFRS, is €100 million. The ratio of derivatives receivables-to-total assets is 5%, and we expect the ratio to remain constant over our rating horizon. We assess that, for Bank X, 45% of its OTC derivatives exposures are vis-à-vis financial institutions (which are included in the scope of the regulatory CVA charge) and 55% are vis-à-vis exempted counterparties (nonfinancial corporate entities and sovereigns).

As of July 20, 2017*, we applied a 1.3 multiplier with respect to paragraph 85, to reflect that the most commonly used regulatory approach (the standardized CVA approach) targets a one-year, 99% confidence level (and not 99.9%). We also applied an add-on of 38% with respect to paragraph 88, reflecting our estimate of the incremental risks of exempted counterparties as compared to non-exempted ones in the EU per unit of OTC exposures. Overall, the second multiplier referred to in paragraph 87 is computed as 1+(1+38%)*(1-45%)/45% (see paragraph 88), and the RAC CVA charge for this bank is (1.3*2.7) = 3.5 times the regulatory capital charge.

Since the ratio of derivatives-to-total assets for that bank (5%) exceeds the materiality threshold for a bank in a BICRA '3' country (3% as in paragraph 89), the RAC CVA charge for bank X is 3.5*100 = €350 million. We then convert this RAC CVA charge into RWAs and add them to RACF RWAs.

*See the Sector And Industry Variables section in the appendix for the current values.

94. **Securitizations:** Under RACF, we apply the risk weights to different tranches of securitizations according to the global scale rating on the tranche (see table 8).

Table 8

Risk weights for securitizations

Securitization rating	Risk weights (%)
AAA	20
AA	30
A	50
BBB	100
BB	626
B	1,050
CCC-C	1,250
Not rated or deducted from regulatory capital*	1,250

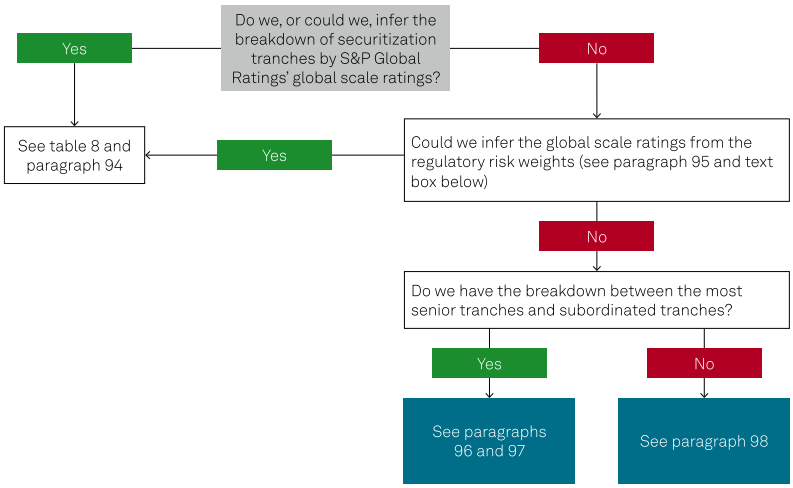
*This risk weight applies when we have received a breakdown by rating or regulatory risk weight, but some exposures are unrated or deducted from regulatory capital. When we do not have a breakdown by rating or regulatory risk weight for any of the exposure, paragraph 96-98 applies.

95. In some instances, when the tranche ratings are unavailable, we may use the regulatory risk weight to infer a rating equivalent for the tranche, and then use the risk weight that pertains to that rating according to table 8 (see text box "Examples Of How We Infer The Rating Equivalent From The Regulatory Risk Weights For Securitization Exposures" for the use of regulatory risk weights).

96. In instances where we do not have a global scale rating for securitization tranches (or are unable to infer it for any reason), but we do have the breakdown between senior and non-senior tranches, we may reclassify the most senior tranche of a securitized portfolio and treat it as part of the underlying asset class. (An instance in which we would be unable to infer a global scale rating would be if regulation is such that the regulatory risk weights correspond to ratings by domestic rating agencies and there is no mapping between the local ratings and S&P Global Ratings' regional/global scale.) For example, we may treat the most senior tranche of residential mortgage-backed securities in country X as "prime mortgages," carrying the risk weight defined in table 7 for that country. This is because we believe that the most senior tranche behaves in line with--or better than--the performance of the underlying asset. If we are unaware of the underlying assets, we may treat the most senior tranche as part of "other items" (and apply risk weights we use for this asset class--see paragraph 140). In instances where this paragraph applies, we apply a risk weight of 375% to the subordinated tranches (i.e., to all the tranches excluding the most senior one).

Chart 3

Securitization



Source: S&P Global Ratings.
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97. We can raise the risk weight applied to subordinated tranches above 375% if we view such exposures as carrying elevated risks. This would typically be the case, for example, for non-senior tranches in a CMBS transaction in countries with economic risk scores of 7-10. In these countries, the risk weight applied on the underlying assets ("construction and real estate development" asset class) is higher than 375%. In such instance, we can set a floor for the risk weight of subordinated tranches at the level defined in the last column of table 6, so that subordinated tranches do not carry a lower risk weight than the most senior tranche.

98. Whenever paragraphs 94-97 do not apply, we apply the following treatment:

- RACF typically applies a 250% risk weight.

- In other cases, such as for exposures that we view as having higher or lower risk, we may apply a different risk weight. One example might be for exposures to securitizations that are guaranteed by GREs, for which we may apply the risk weight corresponding to the issuer rating.

99. In all instances, we apply our risk weights to the nominal value of exposures minus markdowns already reported in the bank's profit and loss account.

TEXT BOX: Examples Of How We Infer The Rating Equivalent From The Regulatory Risk Weights For Securitization Exposures

Bank A domiciled in Country X and Bank B domiciled in Country Y report the breakdown of their securitization exposures by regulatory risk weights (and not by ratings). According to the regulation in Country X, a regulatory risk weight of 30% corresponds to exposures rated 'AA' (according to S&P Global Ratings' global scale). In accordance with paragraph 95, a rating committee can decide, for Bank A, to view the entire pool of exposures classified in the 30% regulatory bucket as rated 'AA'. In accordance with table 8, these exposures would be applied a 30% RAC risk weight.

According to the regulation in Country Y, a regulatory risk weight of 20% corresponds to exposures rated 'NS AAA' by S&P Global Ratings' national scale. A rating committee determines that such exposures are typically rated 'BBB' on the global scale (see "National And Regional Scale Credit Ratings Methodology"). In accordance with paragraph 95, a rating committee can decide, for Bank B, to view the entire pool of exposures classified in the 20% regulatory bucket as rated 'BBB' (global scale). In accordance with table 8, these exposures would be applied a 100% RAC risk weight.

100. We take a different approach to risk weight unrated single-tranche pass-through securities issued by certain government-sponsored agencies based on expected government support. We reflect the better recovery prospects for investors in these securities by using recovery data for senior tranches instead of the junior tranches that we otherwise use for rating levels below 'AAA'. This approach takes into account the ratings on agencies, which reflect their link to the government and their role in supporting the housing market, instead of ratings on the securities, since the securities are not rated. To determine the risk weight for these securities, we use three-year cumulative default rates for securitizations rated at the same level as the issuer. We also assume recoveries are akin to those for investors in senior tranches, since the structure is not tranched. We consider pass-through securities issued by Ginnie Mae to be equivalent in risk to U.S. government debt, and risk weight them the same as we do U.S. Treasury bonds.

101. **Mortgage servicing rights:** We apply a 375% risk weight to MSRs. A feature of the U.S. mortgage securitization market, MSRs represent the fair value of future cash flows for performing specified mortgage servicing activities for other parties. MSRs are either purchased from third parties or retained upon the sale or securitization of mortgage loans. The valuation of MSRs can fluctuate significantly and is subject to the bank's accounting assumptions on such factors as the level and volatility of future interest rates and the pace of prepayments.

102. **Collateral and other credit risk mitigation:** We account for financial collateral and other credit risk-mitigation techniques through a combination of different risk weights, reduction of exposure

amounts, recognition of credit substitution, and standard adjustments. We may lower our risk weights to reflect our view of the effects of credit risk mitigation, which may take the form of:

- Financial collateral,
- Guarantees from a financial institution or a sovereign, and
- Credit default swaps.

103. If financial collateral is available, we deduct the covered exposures--after haircuts--from the adjusted exposure of the relevant asset class. We apply this treatment in particular to Lombard (margin) loan exposures (loans secured by collateral in the form of securities).

104. For banks that report Pillar 3 disclosures using the standardized or foundation internal ratings-based (IRB) approach, RACF adopts the relevant regulatory haircuts on the collateral value and deducts the disclosed covered exposures from adjusted exposures. For banks using the advanced IRB approach and for other institutions, the haircuts are according to the type of financial collateral (see table 9).

Table 9

Haircuts on financial collateral

Collateral type	Haircut (%)
Cash or cash equivalent	0
Sovereign bonds, maturing in less than one year and rated 'AA-' or higher	1
Other sovereign bonds	10
Other securities	20
Gold	30
Equity	40
Unspecified financial collateral	30

105. Whenever table 9 applies, we establish a floor RAC risk weight on Lombard (margin) loans at one-fifth the RAC risk weight applicable to unsecured retail lending.

106. RACF does not adjust related exposures for nonfinancial collateral other than gold. This reflects our concerns about discrepancies among the valuation methodologies institutions may use and that we have already factored typical loan collateralization into our industry benchmarks for corporate exposures.

107. RACF regards a guaranteed exposure as a direct exposure to the guarantor, provided that the guarantee is eligible for this kind of substitution under regulatory guidelines. For example, a corporate exposure that is guaranteed by a bank is viewed in RACF as a direct exposure to that bank.

108. We lower RACF RWAs on corporate exposures by 50% of the notional of the credit default swaps (CDS) hedging these exposures. We also take into account a direct exposure to the credit-protection provider (usually a financial institution) for the totality of the notional. The 50% risk weight reflects our view that CDS underlying are, on average, in the low investment-grade category, and typically better rated than the average corporate exposure in banks' portfolios.

109. Where an entity has material equity in the banking book exposure, and depending on the quality of information to determine hedges' effectiveness, we lower the equity in the banking book exposure hedged by derivatives as follows:

- By 75% when we believe the hedge is both well matched to the exposure by risk and applies for a sufficient residual maturity, and
- By 50% when the hedge is less well-matched or we are unable to determine the hedge effectiveness.

For example, we expect to consider hedges accepted by regulators as effective (carrying a 75% multiplier), as well as single name options or total return swaps with residual maturities of typically at least three years. We don't expect to consider index options or swaps as effective hedges for single name exposures and would most likely apply a 50% multiplier to them. Where we do reduce the equity exposure for hedges, we take into account a direct equivalent exposure to the hedging counterparty (usually a financial institution).

B. Market risk and associated risk weights

110. RACF is intended to capture market risk on a bank's trading activities and equity investments not accounted for in the trading business. In this section, we define a "Basel 2.5 jurisdiction" as one that has implemented "Revisions to the Basel II market risk framework," Bank for International Settlements (first published in July 2009). A Basel III jurisdiction for this section is defined as one that has implemented "Minimum capital requirements for market risk," Bank for International Settlements (January 2019 [rev. February 2019]).

111. **Trading activities:** Our RAC market risk charges capture the risk of loss on a bank's trading portfolio at a one-year horizon and a 99.9% confidence level. This implies that, over a period of one year, trading losses should be statistically below the RAC market risk charges in 99.9% of the cases. We believe the one-year horizon reflects the illiquidity of many assets. This horizon also takes into consideration that, even if positions could be unwound in a matter of days or weeks, they would likely be replaced by new trading positions as the bank continues to take risks to support its income-producing activities.

112. Our RAC market risk charges factor in both general risk (such as potential losses stemming from a change in interest rates or a variation in stock indices) and specific risk (such as the potential losses stemming from swings in credit spreads, or from rating migrations and defaults) at the chosen time horizon and confidence level.

113. **Entities that are domiciled in Basel III jurisdictions, applying the standardized approach:** We apply a multiplier to the regulatory capital charge calculated under the sensitivities-based method. This multiplier will be updated as market conditions warrant. We derive it by incorporating assumptions for a typical bank's trading book, applying the Basel framework. The resulting calibration reflects the risk of loss on a bank's trading portfolio to a one-year horizon and a 99.9% confidence level. The current multiplier can be found in the Sector And Industry Variables section of the appendix. We apply a 1x multiplier to the default risk and residual risk add-on regulatory capital charges when the breakout of these components is available. We apply the sensitivities-based multiplier to the balance of the regulatory capital charge when the breakout of these components isn't available.

Table 10

RAC charges for market risk exposure from trading activities--Basel III standardized sensitivities approach

Sensitivities-based method	Multiplier from the Sector And Industry Variables section times the regulatory charge
Default risk	1.0x regulatory charge
Residual add-on	1.0x regulatory charge
Standardized approach when no breakout by component is available	Multiplier from the Sector And Industry Variables section times the regulatory charge

114. **Entities that are domiciled in Basel III jurisdictions, applying the simplified standardized approach:** We apply a 1.2x multiplier to the simplified standardized approach regulatory charge.

115. **Entities that are domiciled in Basel 2.5 jurisdictions and do not have regulatory-approved internal market risk models:** We apply a multiplier of 1.5x to the regulatory capital requirement figure if it is derived from the Basel standardized approach. This reflects our opinion that the standardized approach is typically more conservative than value-at-risk (VaR) models regulators approved, particularly with regard to asset diversification.

116. **Entities that are domiciled in Basel 2.5 jurisdictions and have regulatory-approved internal market risk models:** We apply a multiplier of 1.0 to the incremental risk charge (IRC) and comprehensive risk measure (CRM) charges because they are already consistent with a one-year capital horizon and a 99.9% confidence level.

117. We apply a multiplier of 2.3 to the regulatory stressed VaR (SVaR) charge to get a proxy of a 99.9%, one-year SVaR. Unlike the 3.0 and 4.0 multipliers for banks that are not domiciled in jurisdictions subject to the Basel 2.5 market risk framework, this multiplier includes no add-on for fat-tail events. This is because, in our view, the regulatory SVaR already captures periods of significant stress.

118. Under our RACF, we multiply by 1.5 any regulatory charge that has been computed using internal models (including VaR, SVaR, IRC, and CRM) when a bank does not disclose which model or which combination of models it has used. We apply this multiplier in particular when a bank reports the total of the regulatory charge, computed according to internal models, without providing any breakdown by component.

119. In line with the previous paragraph, the RAC capital charges we apply are 1.5x the regulatory capital charges for positions outside the VaR model (and excluding securitization positions), which are treated according to the Basel standardized approach.

Table 11

RAC charges for market risk exposure from trading activities--Basel 2.5

Incremental risk charge, comprehensive risk measure	1.0 times regulatory charge
Stressed VaR	2.3 times regulatory charge
Standardized approach in the Basel framework	1.5 times regulatory charge
Internal models approach when no breakdown by component is available	1.5 times regulatory charge

120. The RAC capital charges we apply to a bank's securitization positions in its trading book, excluding correlation trading positions (which are included in the CRM charge), are:

- When a bank discloses the breakdown of exposures by external ratings, the RAC risk weights we apply are in table 8.
- When a bank discloses the breakdown by regulatory risk weight range (but not by ratings), we may infer the ratings from the regulatory risk weights and then apply the RAC risk weight in table 8 that pertains to the inferred ratings (see also text box "Examples Of How We Infer The Rating Equivalent From The Regulatory Risk Weights For Securitization Exposures").
- When a bank does not disclose the breakdown by external rating or by regulatory risk weight range, we apply a 1.5 multiplier to the regulatory charge.
- We cap the RAC charge at 1.5x the regulatory charge for securitization exposures in the trading book that are not deducted from regulatory capital to ensure a level playing field.
- We apply a 1,250% RAC risk weight to securitization exposures in the trading book that are deducted from regulatory capital. This is consistent with our RACF treatment for securitization exposures in the banking book that are deducted from regulatory capital

121. **Entities that have regulatory-approved internal market risk models but are not domiciled in Basel 2.5 or Basel III jurisdictions:** For banks with VaR models validated for general risk only, we apply a 3.0x multiplier to the regulatory capital requirement figure. This is to align the VaR charge with a one-year horizon and make it consistent with a 99.9% confidence level. The multiplier includes a 50% add-on to account for extreme (fat-tail) events in a hypothetical portfolio consisting of equities, interest rate positions, commodities, and foreign exchange.

122. For banks with VaR models validated for both general and specific risk, we apply a 4.0x multiplier to the regulatory capital requirement figure. This higher multiplier reflects our assessment that migration and default risks are poorly captured in VaR-specific risk models.

123. **Entities not in a Basel III regime with no approved market risk internal models for regulatory purposes:** We apply a 1.5 multiplier to the regulatory capital requirement figure if it is derived from the Basel standardized approach.

124. If the regulatory capital figure for market risk is not available, the market risk RAC charge is zero, and we treat securities in the trading book as if they were recorded in the banking book (i.e., in the available-for-sale [AFS] or held-to-maturity portfolios). For example, in our RACF, we classify stocks as equity holdings in the banking book, corporate bonds as corporate exposures, and collateralized debt obligations as securitization exposures, and the risk weights we apply are the same as those we apply to banking book exposures.

125. **Equity investments:** Our charges on equity investments (for equity exposures that are not captured elsewhere, such as equities that are classified in banks' trading books) capture the risk of loss at a one-year horizon in an 'A' stress scenario. They correspond to our estimates of potential losses in the stress scenario on the assumption of a "buy and hold" strategy.

126. We apply risk weights to two different types of equity investments: listed securities and unlisted securities. RACF classifies listed equity investments into four equity market groups by country, based on several factors such as the volatility we have observed in that country's main stock market index over the past 30 years, the level of stress in the economy experienced in the worst one-year performance of the domestic index, the BICRA capital markets assessment, the foreign currency sovereign rating, and the inclusion of the country in one of the MSCI world indices.

Group 1 is the least risky and group 4 is the most risky. Our risk weights on unlisted equity investments depend on the equity market group for the listed investments (see table 12).

Table 12

Risk weights for equity investment exposures

Equity market group	Listed securities (%)	Unlisted securities (%)
1	625	750
2	750	875
3	875	1,000
4	1,000	1,125

127. For unlisted equities, we add 10% (equivalent to a 125% risk weight add-on) to the charge we apply for listed equity investments (see table 12). This reflects our view of the higher average risk profile of unlisted stocks, owing to their generally higher leverage, as well as their illiquidity.

128. The RAC charges apply to the fair value of equity holdings unless that information isn't available, in which case we would apply risk weights to the carrying value.

129. This paragraph has been deleted.

130. We apply a 688% risk weight to investments in mutual funds and other collective investment undertakings if the underlying exposures are not disclosed. This risk weight is the average of risk weights for listed securities in equity market groups 1 and 2, reflecting that mutual funds tend to invest in reasonably liquid markets. When the underlying investments are available, RACF treats stocks as equity, sovereign bonds as central government exposure, and corporate bonds as corporate exposure.

C. Operational risk and associated risk weights

131. We apply risk weights to all business lines according to either their revenue contribution or the size of AUM or AUC.

132. **Revenue-based risk weights:** Our risk weights to account for operational risk for different business lines are based on the revenue these businesses generate (see table 13). We apply risk weights based on the highest annual revenue of the past three years. This is intended to accommodate recent activities and growth momentum and to avoid providing capital relief to entities that experienced a recent drop in revenues as a consequence of operational or trading losses.

Table 13

Risk weights for business lines by revenue

Business line	Risk weight to be applied to revenue (%)
Asset management, retail banking, retail brokerage, and other low-risk business lines	150
Commercial banking, and custody	188
Payment and settlement	225
Corporate finance, trading and sales	313
Other or no details to allocate in the first four buckets	188

133. If a breakdown of revenues by business line is not available, we apply a 188% risk weight to the highest annual revenue of the past three years, net of revenues from insurance subsidiaries (if any).

134. **Assets under management:** Asset managers are exposed not only to legal, reputational, and operational risks, but also to credit risk within their cash and money market funds. In addition to the risk weight based on revenues by business line, we apply a risk weight of 6.25% to cash and money market AUM. This is because, in our view, a number of asset managers may be led to support their monetary funds during a crisis to prevent a loss in value for investors.

135. We assume that 20% of total AUM pertains to monetary funds when the breakdown by type of funds is not available.

136. **Assets under custody:** We apply risk weights on AUC for a bank acting as a custodian. The higher the value of AUC, the lower the marginal risk weight (see table 14). Smaller custodians tend to be more concentrated on a few key customers than larger custodians, so an operational mistake for one key client could have a much bigger impact.

137. If disclosed separately in the total revenue breakdown, we deduct revenues from the agency services business line from the revenues applied in table 13 to prevent double counting.

138. In all instances, we cap the RAC operational risk charge for custodians at 10x the regulatory capital charge. This is because typically, our operational risk charges are substantially higher than regulatory charges, and we cap our charge in order to not be excessively punitive.

Table 14

Risk weights for assets under custody

Assets under custody (US$)	Risk weights (%)
Up to $750 billion	0.40
Next $250 billion	0.20
Next $1,000 billion	0.10
Next $3,000 billion	0.05
Next $5,000 billion	0.03
More than $10,000 billion	0.02

139. **Other items:** We apply a further risk weight to exposures not covered anywhere else in the analysis. We refer to these exposures as "other items," and they consist of the residual amount of total adjusted exposure that has not been captured elsewhere in RACF.

140. The risk weight for "other items" is 50% higher than the corresponding risk weight for unsecured retail lending, except when "other items" are more than 5% of total exposures. In such cases, we apply the following rules:

- Checks in transit are direct exposures to financial institutions.
- Cash exposures are assigned a 0% risk weight.
- On fixed assets and other elements not already deducted from TAC, such as residual value risk for leasing, we apply a risk weight that is 50% higher than the corresponding risk weight for unsecured retail lending.

141. **Risk concentration and diversification:** RACF calculates an adjustment to RWAs to reflect either the increased risk from concentration or reduced risk from diversification (see the "Calculating The Adjustment For Concentration Or Diversification" section).

3. Data Sources And Standard Adjustments

142. Here we explain the data sources that RACF uses and standard adjustments we may make to that data. Generally, we capture data on a bank's risk exposures from Basel reporting, published accounts, or regulatory reports (see table 15).

Table 15

RACF data sources for risk exposures

Description	Application
Banks reporting Basel Pillar 3 data	When available, RACF uses Basel Pillar 3 data as a source of information. Basel Pillar 3 disclosures contain additional data and information beyond that normally presented in audited financial statements.
U.S. financial institutions	The principal data source for measuring risk exposures is U.S. bank holding companies' quarterly regulatory reports, for example FR Y-9C.
Other financial institutions	In countries where Basel III is not yet implemented and for nonbanks, RACF uses data from published accounts (notably on- and off-balance-sheet data).

143. We apply risk weights to the combination of outstanding amounts on a bank's balance sheet and other commitments to derive total RWAs. The criteria use the term "adjusted exposure," as defined in table 1. This builds upon the term "exposure at default" (EAD), stated in the Basel II framework in the paper, "Basel II: International Convergence of Capital Measurement and Capital Standards: A Revised Framework--Comprehensive Version," published in November 2005 and in subsequent amendments. The adjustments to EAD and other financial data under RACF are intended to improve global consistency.

144. The methodologies described for calculating TAC and determining RWAs are based on the typical Pillar 3 or U.S. GAAP disclosures for financial institutions around the globe. When Pillar 3 reports are not available outside the U.S., we typically find published accounts that follow IFRS, but some firms may present their accounts in a generally accepted format that is governed by their home jurisdictions and that may differ from both IFRS and U.S. GAAP standards. One difference in reporting exposures may arise in the presentation of derivatives, which could be presented on a net counterparty basis, like they are in U.S. GAAP, could be presented on a gross basis like they are under IFRS, or could be presented in some other way that has characteristics of both disclosures. When we need to rely on disclosures that are not Pillar 3 or U.S. GAAP as the basis for our RAC methodology, we may be required to adjust certain exposures before calculating TAC or applying risk weights in an effort to ensure comparability of our RAC ratios.

145. In countries where comprehensive Pillar 3 reports are not published (including the U.S.), RACF computes adjusted exposures as a combination of on-balance-sheet and off-balance-sheet exposures. We then net specific provisions for losses from adjusted exposures.

146. For banks that publish comprehensive Pillar 3 reports, our adjusted exposures generally coincide with regulatory EAD. This is apart from:

- Credit cards, and
- Equity holdings in the banking book.

147. Credit conversion factors (CCFs) are multipliers to translate banks' off-balance-sheet exposures into adjusted exposures. The premise is that only a fraction of off-balance-sheet exposures will be realized because borrowers do not always fully draw on available credit facilities.

148. For undrawn credit card commitments, we use a CCF of 10%. RACF defines adjusted exposures as the drawn amounts plus 10% of undrawn committed amounts (whether they are cancellable without notice or not), net of specific provisions. For banks that do not disclose the undrawn amount of credit cards commitments, we define adjusted exposures as the reported EAD. The credit card category includes all other forms of qualifying revolving credit lines, such as overdrafts, that carry exposure limits similar to those used for credit cards.

149. Whenever banks do not report EADs, we apply the Basel III standardized approach CCFs to off-balance-sheet commitments (except in the case of undrawn credit card commitments). We believe the use of Basel III standardized CCFs is appropriate because it takes into consideration the amount of off-balance-sheet commitments but acknowledges that part will remain undrawn. It also reflects our goal to increase the consistency and comparability of our RAC ratio taking into account the CCF level used by banks for which we use EADs information that already incorporates regulatory CCFs. The applicable CCFs are in the Sector And Industry Variables section of the appendix.

150. In some cases, Pillar 3 reports include the breakdown of their exposures by regulatory risk weights, without explicitly declaring which asset classes the exposures refer to. For the exposures treated according to the standardized approach, we infer the asset classes from the various regulatory risk weights.

151. RACF is intended to capture the adjusted exposure data by geography as well as by risk type. For Pillar 3 banks, we use the geographic breakdown of EAD by asset classes. If the Pillar 3 breakdown is not available, we use the geographic breakdown of on-balance-sheet and off-balance-sheet exposures displayed in the published accounts. We then use the same geographic breakdown for all asset classes.

152. The BICRAs, economic risk scores, equity market groups (see paragraph 126), and long-term foreign currency sovereign credit ratings that we assign to groups of countries and to regions represent the GDP-weighted average of BICRAs, economic risk scores, equity market groups, and long-term foreign currency sovereign credit ratings on the countries in these groups and regions.

4. Risk Calibration

153. We have calibrated RACF so that an 8% RAC ratio means that a bank should, in our view, have enough capital to withstand substantial stress ('A' type) in developed markets. This calibration intends to make our criteria for assessing bank capital consistent with those for rating structured finance transactions and issuers from other corporate and government sectors. There are five key steps to this calibration:

- We use idealized loss rates for particular credit risk assets from a substantial economic stress in developed markets.
- We determine normalized loss rates using default and transition studies for corporate, sovereign, and financial institutions exposures and our assessment of long-term average annualized through-the-cycle expected losses informed by historical losses for retail and personal exposures. This normalized, through-the-cycle loss estimate is more conservative than an expected loss calculation based on a shorter time horizon, which might exclude periods of recession.

- Then we calibrate RAC charges so that the sum of RAC charges and the three-year normalized loss rates is equal to the idealized loss rates identified in the first step.
- Next we convert the RAC charges into risk weights by multiplying by 12.5.
- Finally, we adjust the risk weights to reflect structural differences in stronger or weaker economies.

154. The risk weights for market risk and operational risk are more absolute and aim to account for a degree of stress that is consistent with the other risk weights. We regard all losses related to market and operational risk as unanticipated, so we do not calculate normalized loss rates for these risk types.

A. Idealized loss rates

155. For each of the six credit risk asset classes (governments, financial sector, corporate sector, retail and personal sector, counterparty risk, and securitizations), we associate an idealized loss rate with a substantial stress scenario. For example, the idealized loss rate for prime residential mortgages is 3% following substantial stress.

B. Normalized loss and the RAC charge

156. Based on our observations of credit losses during past economic downturns, we believe that credit losses could take three years to flow through a bank's financial statements, except for credit cards, where we look at the peak loss for a single year. The three-year normalized loss rate and the RACF capital charge combine to match the idealized loss rate for each asset class (see table 16). In our view, product pricing and provisioning are able to absorb an average, or "normal," level of annual credit losses, which we refer to as "normalized losses," and banks hold capital to absorb losses that are greater than this "normal" level.

Table 16

Calibrating RACF to idealized loss rates

Types of exposure	Annual normalized loss rate (%)	Three-year cumulative normalized loss rate (%)	RAC charge (%)	Idealized loss rate (%)
Government				
Sovereign	0.00	0.00	0.24	0.24
Local or regional	0.00	0.00	0.29	0.29
Financial institutions				
Credit institutions	0.11	0.33	1.86	2.19
Covered bonds	0.07	0.21	1.24	1.45
Corporate				
Corporate	0.36	1.08	6.00	7.08
Commercial real estate	1.07	3.21	18.00	21.21
Retail and personal loans				
Prime residential mortgages	0.20	0.60	2.29	2.89
Self-certified mortgages	0.79	2.37	9.16	11.53
Credit cards	3.50	--	8.40	11.90
Auto loans	0.50	1.50	4.48	5.98
Other unsecured	1.00	3.00	6.00	9.00

157. In table 16, the idealized loss rates apply for a typical developed market with a government rated 'AA+' or higher, in a country that has been designated as BICRA group '3', with an economic risk score of '3'.

158. We calibrate normalized losses as our estimate of average losses by asset class over an entire credit cycle. Table 16 shows that the RAC charge is the difference between the idealized loss rate and the three-year cumulative normalized loss rate.

5. Other Risks Not Covered By The RACF

159. RACF is not intended to capture risks such as:

- Interest rate and currency risk in the banking book, other than the market value of the AFS securities portfolio, which could be affected by these risks;
- Volatility of pension funding;
- Funding risk;
- Reputation risk; and
- Strategic risk.

160. We assess such risks qualitatively in other areas of our rating methodologies.

161. With the exception of the AFS securities portfolio, we've chosen not to incorporate interest rate risk in the RACF because the methodologies of measuring asset-liability management (ALM) risk can differ substantially across banks, depending on each bank's assumptions. Consequently, in the absence of any standard reporting requirement, the ALM risk metrics that banks publish tend to vary.

162. We have chosen not to incorporate funding risk in RACF because we consider it more related to risk management than to capital adequacy.

163. We have chosen not to incorporate reputation risk or strategic risk in RACF, given the difficulty of quantifying such risks.

APPENDIXES

1. BICRA And Economic Risk Proxies Or Estimates

164. Where a full Banking Industry Country Risk Assessment (BICRA) is not available, we may determine a country's BICRA proxy or estimate. Although we assign BICRAs to all countries where rated banks are domiciled, many rated banks have exposures to countries and banking systems that have no rated banks.

165. If the aggregate credit exposures to countries and banking systems on which no BICRA exists are significant, or if we otherwise determine these exposures to be relevant to our analysis, we perform a standard, but simplified, BICRA analysis to produce a BICRA estimate for the purpose of computing RAC ratios. If rated banks' aggregate exposure is not significant, we use a BICRA proxy for the same purpose, based on our foreign currency sovereign rating on the country. Countries that have foreign currency sovereign ratings of 'B' and lower are assigned an economic risk score proxy of '10' and a BICRA group proxy of '10'. For a country that we rate at 'B+' or above, we derive the BICRA proxy as follows:

- First, we estimate the anchor for the country's banking system by deducting one notch from the foreign currency sovereign rating. The one-notch deduction is based on the average number of notches observed between anchors and the corresponding foreign currency sovereign ratings over multiple years for countries in which we have assigned BICRAs. The "anchor" concept is discussed in more detail in "Financial Institutions Rating Methodology" (the FI criteria).
- Table 1 in the FI criteria enables us to derive an anchor from the industry and economic risk scores. Here, we reverse that process, using the estimated anchor and the diagonal of table 1 to infer proxies for the economic and industry risk scores. We can then use those to derive the BICRA proxy. Thus, an estimated anchor of 'bb+' is associated with economic and industry risk proxies of '6', and thus a BICRA proxy of '6' (see chart 4 and table 17). The 'b' anchor does not appear on the diagonal, but we associate it with an economic risk proxy of '10', industry risk proxy of '9', and BICRA proxy of '10'.
- We set a floor for industry and economic risk proxies of '5', which in turn means that the BICRA proxy cannot be better than '5'.

Chart 4

Determining the economic risk and industry risk proxy from the estimated anchor

Industry risk \ Economic risk	1	2	3	4	5	6	7	8	9	10
1	a	a	a-	bbb+	bbb+	bbb				
2	a	a-	a-	bbb+	bbb	bbb-	bbb-			
3	a-	a-	bbb+	bbb+	bbb	bbb-	bbb-	bb+		
4	bbb+	bbb+	bbb+	bbb	bbb	bbb-	bb+	bb	bb	
5	bbb+	bbb	bbb	bbb	bbb-	bbb-	bb+	bb	bb-	b+
6	bbb	bbb	bbb-	bbb-	bbb-	bb+	bb	bb	bb-	b+
7		bbb-	bbb-	bb+	bb+	bb	bb	bb-	b+	b+
8			bb+	bb	bb	bb	bb-	bb-	b+	b
9				bb	bb-	bb-	b+	b+	b+	b
10					b+	b+	b+	b	b	b-

To the left of this line, we assign economic and industry risk proxies of '5'

Note: This chart is based on table 1 in "Financial Institutions Rating Methodology". We associate an estimated anchor of 'b' with an economic risk proxy of '10' and an industry risk proxy of '9'. Source: S&P Global Ratings.

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Table 17

Determining the proxy BICRA from the economic and industry risk proxies

Economic risk proxy	+	Industry risk proxy	⟶	BICRA group proxy
5		5		5
6		6		6
7		7		7
8		8		8
9		9		9
10		9		10
10		10		10

BICRA--Banking industry country risk assessment. Source: S&P Global Ratings.
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2. How To Compute Trading Risk RAC RWAs For Securities Firms

166. RACF calculates S&P Global Ratings RWAs for market risk. We typically base trading book market risk on a VaR approach. RACF's "core" assumption is a one-year 99.9% confidence level VaR.

167. For firms with regulator-approved internal VaR models, the RAC trading risk RWA is determined according to paragraphs 115-122.

168. For firms with no regulator-approved internal VaR models but for which we believe that the VaR is computed according to a robust standard and with supporting high-quality data, we scale up the average VaR over the past year. We apply the following calculations:

- We use the square root of time "rule" to scale up a x-day VaR into a y-day VaR (i.e., a 10-day VaR is square root of 10x the one-day VaR for the same confidence level); and
- We use the multipliers stemming from the Gaussian distribution (with a 50% add-on for fat tail events) to transform a VaR at a x-confidence level into a VaR at the chosen confidence level.

169. For example:

- If a broker's VaR is reported as meeting a 10-day 99% confidence interval, we would scale it up to a one-year 99.9% VaR by multiplying by the square root of 26 (i.e., the assumed number of trading days (260), divided by 10) to transform the 10-day VaR into a one-year VaR, and multiplying again by 1.33 x 1.5 to transform the 99% VaR into a 99.9% VaR.
- The following table shows examples of the multipliers that we use to scale a broker's reported VaR.

Examples of scaling to a one-year 99.9% VaR using a multiplier applied to the reported VaR (%)

Confidence level/horizon of the reported VaR	1 day	2 days	5 days	10 days	1 year
95	45.4	32.1	20.3	14.4	2.8
96	42.7	30.2	19.1	13.5	2.6
97	39.7	28.1	17.8	12.6	2.5
98	36.4	25.7	16.3	11.5	2.3
99	32.1	22.7	14.4	10.2	2.0
99.5	29.0	20.5	13.0	9.2	1.8

170. For firms that do not have their VaR assumptions validated by regulators, the RAC charge for market risk is the 99.9%, one-year VaR computed according to paragraphs 168 and 169 of this appendix, with a 33% upward adjustment. The adjustment reflects the potentially lesser reliability of the VaR model used in the computations. The upward adjustment is increased to 50% if there were more than five back-testing exceptions of the reported 99% VaR during the previous year and to 100% if there were more than 10 back-testing exceptions. (If the entity does not report the VaR and exceptions on a 99% VaR basis, then we scale the number of reported back-testing exceptions to arrive at a number of back-testing exceptions equivalent to that on a 99% level, using the approach in the text box below.) A back-testing exception occurs when the trading loss is greater than the VaR (in absolute value). The adjustments reflect the heightened risks associated with such exceptions.

TEXT BOX

If an entity does not report the VaR at the 99% confidence level, then we scale the number of reported back-testing exceptions to arrive at the equivalent number of exceptions at a 99% level by using the following approach: (Number of VaR back-testing exceptions for the reported VaR at a confidence level of x%)*(1-0.99)/(1-x).

For example, for a reported VaR at 98% and a reported number of back-testing exceptions of 8, the equivalent number of back-testing exceptions at a 99% VaR is:

(8)*(1-0.99)/(1-0.98) = 4

Given that the equivalent number of back-testing exceptions in this example is not more than 5, we use the 33% upward adjustment.

171. For firms with no VaR or with a VaR that we view of insufficient quality and/or covering a relatively narrow scope of the trading operations of the firm, we compute the market risk charges according to paragraphs 123 and 124.

3. Calculating The Adjustment For Concentration Or Diversification

172. RACF calculates an adjustment to RWAs to reflect the impact of concentration or diversification of risks. The adjustment is calculated by applying assumptions of correlations among different sectors, geographies, and business lines and by computing a concentration add-on to reflect single-name concentrations in the corporate portfolio.

- First, RACF calculates an adjustment to RWAs in corporate exposures for correlations among different industries;
- Second, RACF calculates an adjustment to total RWAs for correlations among country or regional exposures;
- Third, RACF calculates an adjustment to total RWAs for correlations among different business lines;
- Fourth, using the largest 20 named corporate exposures, RACF calculates an add-on to total corporate RWA to capture single-name concentrations in the corporate book; and
- Finally, RACF calculates the total adjustment to RWAs for concentration or diversification by adding the separate adjustments produced from the first four steps subject to caps, as explained in the following paragraph.

173. The overall benefit of concentration and diversification adjustments typically does not exceed 30%. We have set up a framework that yields relatively moderate maximum benefit levels because of issues such as instability, sizable correlation increases in times of crisis, and contagion risks.

Sector, geographic, and business line methodology

174. Our methodology for calculating geographic, sector, and business line diversification adjustments is based on a top-down approach to diversification. As a first step, we apply a concentration multiplier to RWAs, and then we determine the aggregate RWAs for the various portfolios using a correlation matrix (based on the Markowitz covariance/variance formula):

$$Adjusted\,Capital\,Charge = \sqrt{\begin{pmatrix} K_1{*}C_1 \\ \dots \\ K_n{*}C_n \end{pmatrix}^T \begin{pmatrix} 1 & \dots & R_{1,n} \\ \dots & \ddots & \dots \\ R_{n,1} & \dots & 1 \end{pmatrix} \begin{pmatrix} K_1{*}C_1 \\ \dots \\ K_n{*}C_n \end{pmatrix}}$$

175. Where:

- Ki is the RAC charge for either the sector, geographic region, or business line in order to compute the total risk weight adjusted for sector, geographic region, business line concentration, or diversification;
- Ci is the concentration factor for the sector, geographic region, or business line; and
- Ri,j is the correlation coefficient between the industry sectors, geographic regions, or business lines.

176. The adjusted capital charge is the RAC charge after the adjustment for diversification. The difference between the RAC charge after diversification and the RAC charge before diversification is the adjustment for diversification.

177. Within a given exposure class, we have found that the bigger a bank is, the more likely it is to be diversified from a business point of view. We therefore use a size concentration factor based on the maximum revenues over the past three years "R" (in million U.S. dollars, as for operational risk) and a logarithmic business line concentration factor:

$$\alpha + \beta \times \ln(R)$$

Where α is alpha and β is beta

The parameters in the business line concentration factor are determined based on our forward-looking assessment of the evolution of revenues over a two-year period for a representative sample of rated financial institutions. The value for alpha is 0.5254 and the current value for beta is -0.0453 based on a forward-looking view of the distribution of maximum revenues of global banks over the previous three years, incorporating a distribution average of $4 billion and a distribution maximum of US$110 billion. This input distribution results in size concentration factors of 0% for an entity with the maximum revenues and 15% for an entity with the average revenues.

178. We explain the concentration factors for sectors and geographic regions in the next two sections.

Sector concentration factors

179. The concentration factor for the more volatile sector is set to 115%. As a benchmark, the concentration factor for the world MSCI index (a stock index maintained by MSCI Inc., formerly Morgan Stanley Capital International) is set to 100%. The concentration factor for the sector "utility" is smaller than 100%, reflecting the lower volatility of this sector compared with the "world" index. We calculated the concentration factors using the volatility of the respective MSCI sector stock market index. The volatility is calculated as the standard deviation of the monthly log returns over the past 20 years.

Table 18

Concentration factors for industry sectors

Industry sector	Concentration factor (%)
Consumer discretionary	103
Consumer staples	96
Energy	106
Financials	107
Health care	98
Telecom services	104
Utilities	97
Information technology	113
Industrials	103
Materials	108
Capital goods	105
Commercial and professional services	101
Transportation	99
Automobiles and components	107
Consumer durables	106
Consumer services	102
Media	106
Retailing	104
Food and staples retailing	97

Concentration factors for industry sectors

Industry sector	Concentration factor (%)
Food, beverages, and tobacco	97
Household and personal products	99
Health care equipment and services	101
Pharmaceutical and biotechnology	98
Banks	108
Diversified financials	111
Insurance	107
Real estate	107
Software and services	114
Semiconductors	111
Technology hardware and equipment	115

Geographic region concentration factors

180. We calibrate the concentration factor so that the concentration factor for the U.S. is set to 100%, and the concentration factor for Switzerland is set to 115%.

181. To reflect geographic concentration, we use a multiplier based on the logarithm of the GDP of the country in which the bank is located. In practice, the concentration multiplier diminishes by a constant factor each time the GDP doubles. This concentration factor reflects our view that, in general, the smaller an economy is, the less diversified it is. The GDP of a geographic region is the average between the total aggregate GDP of that region and the GDP of the largest country in the region, reflecting the fact that when a bank reports exposures to a region, it may not have exposures to all countries within that region.

182. For U.S. banks, we differentiate between banks with nationwide coverage, to which the 100% concentration factor applies; banks with multiregional coverage, to which we apply a 107% concentration factor; banks with state-only coverage, to which a 114% geographic concentration factor applies; and local banks, to which we apply a 121% concentration factor.

Table 19

Geographical concentration factors

Country	Geographic concentration factor (%)
Argentina	116
Australia	112
Austria	117
Bahrain	129
Belarus	125
Belgium	116
Bolivia	129
Bosnia and Herzegovina	132
Brazil	109
Cambodia	133

Geographical concentration factors

Country	Geographic concentration factor (%)
Canada	111
Chile	120
China	102
Colombia	118
Costa Rica	128
Croatia	127
Cyprus	131
Czech Republic	121
Denmark	118
Dominican Republic	126
Ecuador	124
Egypt	119
El Salvador	131
Estonia	131
Finland	120
France	108
Georgia	133
Germany	107
Greece	120
Guatemala	127
Hong Kong	119
Hungary	123
Iceland	133
India	110
Indonesia	114
Ireland	120
Israel	119
Italy	110
Jamaica	134
Japan	106
Jordan	129
Kazakhstan	121
Korea	112
Kuwait	122
Latvia	130
Lebanon	127
Lithuania	128
Luxembourg	126
Malaysia	119
Malta	135
Mexico	112
Montenegro	139

Geographical concentration factors

Country	Geographic concentration factor (%)
Morocco	124
Netherlands	114
New Zealand	121
Nigeria	116
Norway	117
Oman	125
Pakistan	120
Panama	128
Peru	121
Philippines	119
Poland	116
Portugal	120
Qatar	121
Romania	121
Russia	111
Saudi Arabia	115
Serbia	128
Singapore	119
Slovak Republic	124
Slovenia	128
South Africa	118
Spain	112
Suriname	138
Sweden	116
Switzerland	115
Taiwan	116
Thailand	118
Trinidad and Tobago	130
Tunisia	128
Turkey	114
Ukraine	123
United Arab Emirates	118
U.K.	108
U.S.	100
Uruguay	127
Venezuela	121
Vietnam	121
Region or group of countries	
Africa	112
Asia-Pacific	104
Baltic	124
Caribbean	125

Geographical concentration factors

Country	Geographic concentration factor (%)
Eastern Europe	114
EU	102
Gulf Cooperation Council	113
Latin America	107
North Africa	116
North America	100
Southeast Asia	111

Correlation matrices

183. RACF uses separate correlation matrices for sectors, countries, and business lines. For correlations by geographic regions and sectors, we have used a dataset of the MSCI stock indices that spans more than 20 years. Business line correlations are based on our analytical judgment.

184. In calculating the correlation matrices, we first computed Pearson correlations of these MSCI index returns, and we then stressed the results to capture more fat-tail risks. To do so, we used a Fisher transformation and stressed the resulting value to a confidence interval of 99.5%. By the way of example, correlation factors generated using this methodology for selected sectors and geographies are detailed in tables 20 and 21 for information purposes.

Table 20

Sector correlation factors

	--Correlation factors (%)--									
Industry sector	**CD**	**CS**	**EN**	**FN**	**HC**	**TC**	**UT**	**IT**	**IN**	**MT**
Consumer discretionary (CD)	100	70	68	89	67	77	64	86	94	84
Consumer staples (CS)	70	100	63	79	80	59	77	50	75	69
Energy (EN)	68	63	100	71	57	56	70	58	77	83
Financials (FN)	89	79	71	100	75	70	73	72	92	83
Health care (HC)	67	80	57	75	100	61	69	56	70	62
Telecommunication services (TC)	77	59	56	70	61	100	63	79	72	64
Utilities (UT)	64	77	70	73	69	63	100	50	72	68
Information technology (IT)	86	50	58	72	56	79	50	100	80	69
Industrials (IN)	94	75	77	92	70	72	72	80	100	91
Materials (MT)	84	69	83	83	62	64	68	69	91	100

Table 21

Geographical correlation factors

	--Correlation factors (%)--														
Country	**U.S.**	**Japan**	**Europe**	**U.K.**	**France**	**Germany**	**Italy**	**Spain**	**China**	**World**	**Canada**	**Russia**	**Brazil**	**Mexico**	**Australia**
U.S.	100	60	84	83	78	78	65	72	59	92	82	61	38	63	71
Japan	60	100	63	58	59	57	57	61	43	76	57	55	31	48	57
Europe	84	63	100	84	82	82	73	77	56	94	75	60	38	54	72
U.K.	83	58	84	100	81	77	71	75	54	84	73	63	33	58	73
France	78	59	82	81	100	89	79	79	46	80	71	59	36	58	67
Germany	78	57	82	77	89	100	77	75	49	79	69	56	34	57	67
Italy	65	57	73	71	79	77	100	78	34	70	62	53	30	49	58
Spain	72	61	77	75	79	75	78	100	46	77	64	56	34	59	66
China	59	43	56	54	46	49	34	46	100	60	60	51	37	54	57
World	92	76	94	84	80	79	70	77	60	100	81	65	39	60	75
Canada	82	57	75	73	71	69	62	64	60	81	100	69	34	60	69
Russia	61	55	60	63	59	56	53	56	51	65	69	100	70	65	53
Brazil	38	31	38	33	36	34	30	34	37	39	34	70	100	41	37
Mexico	63	48	54	58	58	57	49	59	54	60	60	65	41	100	51
Australia	71	57	72	73	67	67	58	66	57	75	69	53	37	51	100

185. We apply table 22 to RAC RWAs. For insurance risk, we add to RAC RWAs, as computed according to the "Investments in insurance subsidiaries and minority interests in financial institutions" section, (if any) the risk-weighted assets equivalent (by applying 1250% risk weight) of the deduction from equity in accordance with this section.

186. If we do not have information on the breakdown of the corporate book by sector, we apply a concentration charge equal to 105% of our total corporate RAC charge.

Table 22

Business line diversification matrix

	--Correlation factors (%)--							
Business line	**Sovereign**	**Financial institutions**	**Corporate**	**Real estate**	**Other retail**	**Trading and equity**	**Asset management**	**Insurance**
Sovereign	95*	85	85	85	85	85	85	50
Financial institutions	85	95*	50	50	25	85	85	50
Corporate	85	50	95*	50	25	85	85	50
Real estate	85	50	50	95*	50	85	25	50
Other retail	85	25	25	50	95*	85	25	50
Trading and equity	85	85	85	85	85	95*	85	50
Asset management	85	85	85	25	25	85	95*	50
Insurance	50	50	50	50	50	50	50	95*

*We apply extreme correlations between sub-business lines within the same broad category, for example, between residential and commercial mortgages.

Single-name concentration adjustment

187. RACF calculates the concentration charge for exposures to single names in the corporate exposures using a model based on the granularity adjustment described and tested by Gordy and Lütkebohmert (2007). We apply the model to a bank's total corporate exposures and largest 20 corporate exposures.

188. Our methodology is derived as a first-order asymptotic approximation for the effect of diversification in large portfolios within the CreditRisk+ methodology for calculating the distribution of possible credit losses from a portfolio, developed by Credit Suisse. The theoretical tools for this analysis were proposed first by Gordy (2004) and refined significantly by Martin and Wilde.

189. In practice, we derive an add-on from the breakdown of the top 20 corporate exposures reported to us, according to the following formula, which is a quadratic scaled version of the formula proposed as upper-bound by Gordy and Lütkebohmert:

$$Add\ -on = 11.8 \cdot \left[\frac{1}{2K^*} \cdot \left(\sum_{i=1}^{n} s_i^2 C_i Q_i + \bar{s} \cdot ((\delta - 1)(K^* - K_n^*) + \delta(R^* - R_n^*)) \right) \right]^2 +$$

$$0.23 \cdot \frac{1}{2K^*} \cdot \left(\sum_{i=1}^{n} s_i^2 C_i Q_i + \bar{s} \cdot ((\delta - 1)(K^* - K_n^*) + \delta(R^* - R_n^*)) \right)$$

$$\bar{s} = \text{Smallest } s_i \text{ within the top 20 largest exposures}$$

Where the notation follows Gordy and Lütkebohmert (2007):

- Parameter δ equals 4.83;
- K^* is the RAC charge for the entire corporate portfolio (as a percentage of EAD);
- R^* is S&P Global Ratings' normalized loss for the entire corporate portfolio (as a percentage of EAD);
- S_i= EAD(i)/total corporate EAD is the share of the corporate portfolio corresponding to exposure i;
- K_i is the Basel II unexpected loss for exposure i (as a percentage of EAD) computed using the Basel II foundation IRB formula, where the probability of default (PD_i) is set as S&P Global Ratings' long-term average global corporate default rate for the rating class if the exposure is rated. If the exposure isn't rated, we use the 'BB-' default rate;
- $R_i = PD_i * 45\%$ is the Basel II foundation IRB expected loss for exposure i (as a percentage of EAD);
- K_n^* is the cumulative unexpected loss for the n largest exposures (as a percentage of EAD);
- R_n^* is the cumulative expected loss for the n largest exposures (as a percentage of EAD)
- $C_i = (45\%^2 + VLGDi^2)/45\%$ where VLGD is the volatility of LGD (loss-given default). C_i can be viewed as a stressed LGD using its normalized variance;
- VLGD =

$$\sqrt{0.25 * 45\% * (1 - 45\%)}$$

- $Q_i = \delta * (K_i + R_i) - K_i$ is used for notational convenience.

190. A number of academic studies provide either direct or indirect estimates of the importance of granularity risk for bank portfolios. The effect is clearly more pronounced for smaller portfolios. An indicative calculation of the upper boundary of the contribution of idiosyncratic risk to economic capital can be performed by reference to a portfolio having the maximum permissible concentration under the EU's large-exposure rules. Such calculations give estimates of 13%-21% higher portfolio VaR for this highly concentrated portfolio versus a perfectly granular one that is comparable in all other dimensions.

191. For portfolios that are more typical for an "actual" bank (as opposed to a theoretical portfolio with the maximum concentration that EU large-exposure rules would allow), the impact of name concentration is substantially lower. Gordy and Lütkebohmert (2007) use characteristics of loans from the German credit register to compare the effect of name concentration on loan portfolios of the size that can be found in actual banks. For large credit portfolios of more than 4,000 exposures, they estimate that name concentration can contribute about 1.5%-4% of portfolio VaR. For smaller portfolios (with 1,000 to 4,000 loans), they estimate that a range of 4%-8% is more likely.

192. If the breakdown of the top 20 corporate exposures is not available, the concentration adjustment in RACF is set to 1% of total corporate exposures, net of eligible financial collateral.

4. Normalized Loss Rates

193. Tables 23-25 provide the normalized loss rates we use for all instances.

Table 23

Normalized loss rates by business line--corporate, financial institutions, and retail and personal loans (bps)

	--Corporate--		--Financial institutions--		--Retail and personal loans--				
BICRA/Economic risk score	Corporate	CRE	Credit institutions	Covered bonds	Prime residential mortgages	SCM	Credit cards	Auto loans	Other unsecured/SME retail
1	17	51	2	1	11	46	282	36	77
2	23	69	7	4	16	63	315	43	88
3	36	107	11	7	20	79	350	50	100
4	54	163	18	11	25	101	393	58	115
5	75	225	27	18	31	123	440	67	132
6	98	295	54	36	37	149	497	77	153
7	123	369	73	49	45	178	563	89	177
8	150	449	125	83	53	210	639	103	205
9	178	534	159	106	62	247	722	118	237
10	208	623	245	163	72	288	816	135	273

bps--basis points. BICRA--Banking industry country risk assessment. CRE--Commercial real estate. SCM--Self-certified mortgages. SME-Small and midsized enterprises.

Table 24

Normalized loss rates by business line--government (bps)

Rating	Sovereign	Local or regional
AA+/AAA	0	0
AA	1	1
AA-	2	2
A+	4	4
A	7	8
A-	11	14
BBB+	18	22
BBB	27	33
BBB-	39	47
BB+	54	65
BB	73	88
BB-	97	116
B+	125	150
B	159	191
B-	199	238
CCC+	245	294
CCC	299	359
CCC-	360	432
CC	360	432
SD/D	360	432

bps--basis points.

Table 25

Normalized loss rates by business line--securitization (bps)

Rating	All instruments
AAA	2
AA category	13
A category	45
BBB category	170
BB category	212
B category	307
CCC category	N.M.
CC	N.M.
D	N.M.

bps--basis points. N.M.--Not meaningful.

194. Our normalized loss estimates for sovereign, corporate, and financial institutions asset classes result from combining our assumptions on loss given default (LGD) with those on default rates through the cycle. For example, for the sovereign asset class, RACF derives the normalized loss

estimates using a 45% LGD (consistent with the historical sovereign recovery rates) and the historical average default rates, by ratings, observed over more than 30 years.

195. Our normalized loss estimates for asset classes in retail and personal loans in table 23 have been calibrated taking into account banks' historical loss experience for these asset classes in combination with our views on certain aspects that are likely to affect the long-term average annualized through-the-cycle losses stemming from banks' exposures to these asset classes (for example, the impact of potential changes in underwriting standards and of risks in the economy).

196. We apply a specific normalized loss rate to nonprime residential mortgages in the U.S., which is typically 6.5x the prime residential mortgages normalized loss rate.

5. Treatment Of Financial And Operating Leases For Financial Companies (From The Perspective Of The Lessor)

197. The treatment in RACF differentiates financial leases--whereby there is transfer of ownership of the underlying asset at the end of the lease from the lessor to the lessee--from operating leases--whereby the leased assets remain on the balance sheet of the lessor for the entire course of the lease and amortize with time. For financial leases, lessors are exposed to credit risk vis-a-vis the lessee (for the entire set of future rents that have not been paid). For operating leases, lessors are exposed to residual value risk and credit risk on the lessee. The residual value risk is a market risk that arises from the fact that the market value of the asset at the end of the lease may be lower than the book value of the asset (in the lessor's balance sheet) at that time.

198. Financial leases: Receivables due from the lessee (on the asset side of the balance sheet for the lessor) are viewed in RACF as a direct exposure to the lessee (i.e., as a corporate exposure if the lessee is a corporate entity).

199. Operating leases: Our treatment varies depending on whether the lessor discloses the expected residual value of the leased asset.

200. In the case where the lessor discloses the expected residual value of the asset, RACF views the expected residual value of the leased asset as "other items" (in line with the treatment for banks) and the difference between the book value of the asset and the expected residual value as a direct exposure vis-a-vis the lessee.

201. In the case where the lessor does not disclose the expected residual value of the asset, RACF views the book value of the asset as "other items."

6. Treatment Of Insurance Subsidiaries In The Risk-Adjusted Capital Framework

202. We define investments in insurance subsidiaries as including both equity and subordinated debt. This is because insurance regulators often allow subordinated debt to count toward regulatory minimums and would be unlikely to allow insurance subsidiaries to repay the debt investment early in times of stress at the bank level.

203. The investment amount that we deduct from reported equity to calculate TAC is net of the same adjustments that we make to the group's ACE (except the deduction of minority interests).

Typically, those adjustments include netting the capital amount against goodwill and nonservicing intangibles.

204. We do not deduct the bank investment at historical cost because using historical cost would only focus on the initial investment. We deduct a bank's initial investment as well as reserves accumulated since the acquisition of the subsidiary or initial investment into the subsidiary. The group share of these accumulated reserves is also part of the insurance risk borne by the banking group.

205. We do not typically differentiate between various tiers of regulatory instruments when determining the level of investments in insurance subsidiaries. We observe that, in practice, the majority of subordinated debt issued by insurance subsidiaries is Tier 2 instruments. These instruments frequently form part of regulatory capital for the insurance subsidiary (either to meet requirements or as a buffer on top of the minimum) so that insurance regulators would be unlikely, in our view, to allow insurance subsidiaries to repay this debt to the parent in a time of parental stress (unless they replace it with common equity or hybrid capital sold to external investors). We do not include debt issued by insurance subsidiaries that is not eligible for regulatory capital in the scope of the insurance capital charge in the RACF.

206. We only differentiate between types of regulatory capital instruments for determining the level of investment in insurance subsidiaries (that we deduct to calculate TAC) when the insurance risks to the group are material and there are regulatory capital instruments owned by the parent that we do not include in our measure of the insurance subsidiary's TAC. In this case, consistent with our view about the relative loss-absorbing capacity of these instruments, to calculate TAC we do not allocate one-to-one capital by deducting the amounts invested by the parent in instruments that we do not include in our measure of the insurance subsidiary's TAC, but we risk weight them to reflect the risks we see in the parent holding these equity-like securities. Consistent with our view of the quality of these instruments, we do not give any credit for the relative loss-absorbing capacity of these instruments in our assessment of whether the capitalization of the insurance subsidiary would be sufficient to withstand a substantial stress scenario.

207. A bank does not receive credit in TAC for insurance subsidiary capital instruments (including subordinated debt) held by external parties because this capital is available to support the risks borne by the insurance entity and is not directly available to support the risks associated with the banking operations. This also applies to minority interests in an insurance subsidiary's common equity (i.e., capital provided to the insurance company by its minority shareholders is not directly available to absorb losses in the parent).

208. The following examples illustrate our approach to assessing the degree of materiality of the insurance subsidiary in a group and how we calculate the magnitude of deduction to calculate ACE and the impact on RWAs:

- Entity A's RWAs increase by more than 10% when incorporating the RWA equivalent of the insurance subsidiaries exposures, which are mainly accounted for by an investment in a majority-owned subsidiary. We therefore consider the insurance risks in the group as substantial. The insurance subsidiary's TAC is commensurate with capital needed to withstand a modest level of stress according to the analysis of the RBC model. In arriving at ACE, we thus deduct from reported shareholder funds the funds injected by the parent. In determining the group's RWAs, we add to RWAs the 375% risk-weight equivalent of the shortfall that the majority-owned subsidiary would have relative to the capitalization needed to withstand a substantial level stress, according to our RBC model.

- Entity B's RWAs increase by less than 10% when incorporating the RWA equivalent of the insurance subsidiaries exposures. In our view, the insurance subsidiary of Entity B in which the majority of the investment is concentrated is a core member of the group and its rating benefits from group support accordingly. If we consider the insurance risks in the group as having the potential to have a significant impact on the group's capitalization, we add to RWAs the 375% risk-weight equivalent of the insurance subsidiary's shortfall relative to the capitalization needed to withstand a substantial level stress, according to our RBC model. In arriving at ACE, we deduct from reported shareholder funds the funds injected by the parent.
- Entity C's RWAs increase by less than 10% when incorporating the RWA equivalent of the insurance subsidiaries exposures. We view the insurance subsidiary of Entity C as nonstrategic. The combination of these two factors leads us to believe that it is unlikely that the insurance subsidiary's capitalization would have a significant impact on the group's capitalization, and we, therefore, consider the insurance risks in the group as not substantial. In arriving at ACE, we deduct from reported shareholder funds the funds invested by the parent in the insurance subsidiary.
- Entity D's RWAs increase by less than 10% when incorporating the RWA equivalent of the insurance subsidiaries exposures, which are mainly accounted for by an investment in a majority-owned subsidiary. This insurance subsidiary is undertaking a plan to recapitalize following several years of poor performance, and it has regulatory capital ratios close to the regulatory limit. The parent entity has stated publicly that it is supporting the financial plan of the insurance subsidiary. We, therefore, believe that the recapitalization of the insurance subsidiary has the potential to have a substantial impact on the entity's capital. This insurance subsidiary is unrated, so we calculate an estimation of the entity's level of capitalization to withstand a substantial level stress, according to our RBC model. In arriving at ACE, we deduct from reported shareholder funds the funds injected by the parent. In arriving at the group's RWAs, we add to RWAs the 375% risk-weight equivalent of the shortfall estimated relative to the capitalization needed to withstand a substantial stress scenario.
- Entity E's RWAs increase by more than 10% when incorporating the RWA equivalent of the insurance subsidiaries exposures. In our view, the insurance subsidiary is highly strategic. The combination of these factors leads us to consider the insurance risks in the group as substantial. The insurance subsidiary is capitalized to a level we consider sufficient to withstand an extreme stress scenario. We believe it likely that the insurance regulator would allow resources to be fungible from the insurance subsidiary across the banking group, even in a substantial stress scenario. In arriving at ACE, we deduct from reported shareholder funds, the funds injected by the parent. To determine the group's RWAs, we deduct from RWAs the 375% risk-weight equivalent of the excess capital of the insurance subsidiary relative to the capitalization needed to withstand a substantial stress, according to our RBC model.
- Entity F's RWAs increase by more than 10% when incorporating the RWA equivalent of the insurance subsidiaries' exposures. The group's investment in insurance is divided almost equally between two entities: the life and the non-life majority-owned subsidiaries. The combination of these factors leads us to consider that the group's insurance risks are substantial. Our analysis of the insurance subsidiaries' capitalization, according to the RBC model, leads us to conclude that the life subsidiary's capitalization would withstand an extreme stress scenario, while the non-life subsidiary's capitalization would withstand a moderate stress scenario. In arriving at ACE, we deduct from reported shareholder funds the funds injected by the parent in the insurance entities. In arriving at the group's RWAs, we add to RWAs the 375% risk-weight equivalent of the non-life insurance subsidiary's shortfall, and we deduct the 375% risk-weight equivalent of excess capital of the life insurance subsidiary. In

both cases, the excess or shortfall is calculated relative to the capitalization needed to withstand a substantial stress scenario, according to our RBC model.

- Entity G's RWAs increase by more than 10% when incorporating the RWA equivalent of the insurance subsidiaries' exposures. The group's investment in insurance is two minority stakes in insurance entities, and the group has clearly indicated that these stakes are considered financial investments. The combination of these two factors leads us to consider that it is unlikely the insurance subsidiaries would have a significant impact on the group's capitalization, and we, therefore, consider the insurance risks in the group as not substantial. In arriving at ACE, we deduct from reported shareholder funds the funds invested by the parent in the insurance subsidiaries.
- Entity H's RWAs increase by more than 10% when incorporating the RWA equivalent of the insurance subsidiaries exposures, which, in this case, we view as reflecting material insurance risks for the group, even though they are mainly accounted for by an investment in a 25%-owned subsidiary. The insurance subsidiary's TAC is commensurate with capital needed to withstand a moderate level of stress, according to the analysis of the RBC model. In arriving at ACE, we deduct from reported shareholder funds the funds injected by Entity H. In determining the group's RWAs, we add to RWAs the 375% risk-weight equivalent of 25% (i.e., the percentage ownership) of the shortfall that the subsidiary would have relative to the capitalization needed to withstand a substantial level stress, according to our RBC model.
- Entity I's RWAs increase by more than 10% when incorporating the RWA equivalent of the insurance subsidiaries exposures, which, in this case, we view as reflecting material insurance risks for the group. The subsidiary is fully owned and domiciled in the same jurisdiction of the parent, which is a country we classify in bucket 2 for the purposes of table 12. The insurance subsidiary's TAC is commensurate with capital needed to withstand a moderate level of stress, according to the analysis of the RBC model. A part of the amount that the parent has invested in the insurance subsidiary is in regulatory capital instruments that we do not include in our measure of the insurance subsidiary's TAC. In arriving at ACE, we deduct from reported shareholder funds the funds injected by Entity I in regulatory capital instruments that we include in our measure of the insurance subsidiary's TAC. In determining the group's RWAs, we add the 875% risk-weight equivalent of the amount the parent has invested in regulatory capital instruments that are not included in our measure of the insurance subsidiary's TAC and the 375% risk-weight equivalent of the shortfall that the subsidiary would have relative to the capitalization needed to withstand a substantial level stress, according to our RBC model.

7. Glossary

CCP trade exposures (as Basel III defines them). The current and potential future exposure of a clearing member or a client to a CCP arising from OTC derivatives, exchange-traded derivatives transactions or securities financing transactions, as well as initial margin.

Comprehensive risk measure. An incremental charge for correlation in the trading book portfolios.

CSA. A credit support annex (or CSA) is a legal document that regulates collateral exchanges for derivatives transactions. It provides credit protection to counterparties by setting the rules governing the posting of collateral for OTC derivatives transactions.

CSA--minimum transfer amounts. The minimum transfer amount is the minimum amount that can be transferred for any margin call between two parties. It is generally specified in the CSA agreement.

CSA--independent amount. CSA clauses could stipulate that, under some situations, a given party must post collateral to the other party ("independent amount") of the derivatives transaction for an amount that exceeds the credit exposure between the two parties at a given point in time. In these situations, the posting of the independent amount will lead to overcollateralization.

In some instances, the "independent amount" is expressed as a percentage of the derivatives notional.

CSA--threshold amount. CSA clauses often stipulate that no exchange of collateral between counterparties of an OTC derivatives transaction is made (i.e., no margin calls) if the current exposure is below a given threshold.

Incremental risk charge. An incremental charge for default and migration risks for non-securitized products in the trading book.

Lombard (margin) loan. Retail loans backed by clients' securities. They could be non-purpose loans or loans exclusively granted to buy securities (which are going to be pledged to the lender). In the latter case, we talk about "margin loans," and in the former case, we talk about "asset-based" lending.

Object finance. A loan exposure for which repayment is dependent on the cash flow generated by the financed or pledged assets.

Real estate and construction loans. Loans for the financing of land acquisition, development and construction of any residential or commercial properties where the source of repayment at origination of the exposure is either the future uncertain sale of the property or cash flows whose source of repayment is substantially uncertain.

Senior tranche. We use the same definition of a senior tranche as the Basel Committee for Banking Supervision. A securitization exposure (tranche) is considered to be a senior exposure (tranche) if it is effectively backed or secured by a first claim on the entire amount of the assets in the underlying securitized pool. While this generally includes only the most senior position within a securitization transaction, in some instances there may be other claims that, in a technical sense, may be more senior in the waterfall (such as a swap claim) but may be disregarded for the purpose of determining which positions are treated as senior.

Stressed VaR. The stressed VaR is intended to replicate a VaR calculation that would be generated on the entity's current portfolio if the relevant market factors were experiencing a period of stress (model inputs calibrated to historical data from a continuous 12-month period of significant financial stress). The stressed VaR is intended, in part, to dampen the cyclicality of the VaR measure and to mitigate the problem of market stresses falling out of the data period used to calibrate the VaR after some time.

Tax loss carryforwards. Tax loss carryforwards may arise when a taxpaying institution reports an accounting loss but a profit for income tax returns purposes, which generates an obligation to pay income taxes despite the accounting losses. In future years, a tax loss carryforward may be utilized to reduce the firm's income tax liability during years that it generates profits by reducing taxable income.

8. Sector And Industry Variables

The sector and industry variables and associated details in this section of the appendix are expected to be periodically updated and republished as market conditions warrant.

Equity market groups

In paragraph 126, we detail the treatment of exposures to listed and unlisted securities and outline the factors typically used to classify equity investments into four groups by country. The four equity market groups are listed in the table below. We apply a different capital charge to each of the four groups, reflecting our view of the degree of riskiness (least risky is group 1; most risky is group 4).

Table 26

Equity market groups classification by country

Equity market group	Countries
Group 1	Switzerland, U.K., U.S.
Group 2	Australia, Austria, Belgium, Canada, Chile, Colombia, Denmark, France, Germany, Hong Kong, Israel, Italy, Japan, Mexico, Netherlands, New Zealand, Norway, Portugal, Singapore, South Korea, Spain, Sweden
Group 3	Bahrain, Brazil, China, Czech Republic, Finland, Hungary, India, Ireland, Kuwait, Latvia, Lithuania, Luxembourg, Malaysia, Malta, Poland, Qatar, Saudi Arabia, Slovenia, Slovakia, South Africa, Taiwan, Turkiye, United Arab Emirates
Group 4	All other countries

Paragraph 152 details our approach to deriving the overall equity market group when we don't have the equity exposures broken down by country. We classify them by region or subregion and then calculate a GDP-weighted average of the equity market group for the countries included. Table 27 shows the classification of some of the main regions or groups of countries in the four equity market groups.

Table 27

Equity market groups classification by region or group of countries

Regions or group of countries	Equity bucket
Northern America	1
Europe or EU	2
Asia-Pacific; Europe, the Middle East, and Africa; Gulf Cooperation Council; Latin America; and world	3
Africa; Central America; and Caribbean	4

RACF risk weights associated with certain types of exposures in the U.S.

Paragraph 83 explains the weighting applied to the separate counterparty risks associated with securities lending, sale and repurchase agreements (repos), reverse repos, and Lombard (margin) loans. The risk weights reflect the collateralization we typically observe for these kinds of

exposure in the U.S. We also apply risk weights and normalized losses for subprime mortgages in the U.S., as described in paragraphs 78 and 196 of the RACF criteria. Normalized losses for subprime mortgages in the U.S. are currently 130 basis points.

Table 28

RACF risk weights for counterparty risks associated with certain types of exposures in the U.S.

Type of counterparty risk exposure	Risk weight (%)
U.S. securities lent	11
U.S. repos	3
U.S. reverse repos	8
U.S. margin loans	15
U.S. subprimes	189

RACF risk weights for pass-through securities

Paragraph 100 currently applies only to the Federal National Mortgage Assn. (known as Fannie Mae) and Federal Home Loan Mortgage Corp. (known as Freddie Mac). The current RACF risk weight applicable to pass-through securities issued by these entities in the U.S. is 20%.

RACF credit valuation adjustment charge in jurisdictions with no exempted counterparties

The RACF criteria target a one-year 99.9% confidence level. For banks applying the revised Basel III standardized or basic approach, we apply a multiplier of 1.5. We apply a multiplier of 1.3 for other banks.

RACF CVA charge in the EU

In the EU, sovereign and nonfinancial corporate entities are currently exempted from the regulatory CVA charge, but financial institutions are not.

The current value of the add-on described in paragraph 88--which represents the incremental risks posed by the generally lower creditworthiness of exempted counterparties in the EU compared with financial institutions--is 64%. For example, for an entity applying the revised Basel III standardized or basic approach with financial institutions exposures representing 45% of total over-the-counter (OTC) derivatives exposures, the second multiplier described in paragraph 87 is (1 + [1 + 64%] x [1 - 45%]/45%) = 3.0. Overall, the RACF CVA charge for this entity would be (1.5 x 3.0) = 4.5x the regulatory charge.

When we do not get the breakdown of OTC derivatives exposures by types of counterparties, we currently assume that nonexempted counterparties represent 45% of total derivative counterparties. In this example, the default value of the multiplier applied to the regulatory CVA charge (as defined in paragraph 87) is 4.5.

RACF CVA charge when the regulatory CVA charge isn't available or when the revised Basel III fallback approach is applied

In our RACF criteria, we define our approach for entities that meet the materiality thresholds but for which the regulatory CVA charge is not available. We compute the RAC CVA charge as a percentage of derivatives receivables, with percentages calibrated on a set of representative banks. We use two percentages, one for entities in jurisdictions for which derivatives are presented on a gross basis (as in International Financial Reporting Standards; IFRS) and one for entities in jurisdictions for which derivatives are presented on a net basis (as in U.S. generally accepted accounting principles; GAAP). The current values of the two multipliers are:

- 11% of derivatives receivables for entities reporting under U.S. GAAP or equivalent and
- 2% of derivatives receivables for entities reporting under IFRS or equivalent.

Computing the RAC central counterparties charge for entities reporting under Basel III standards only, when certain information is not available

For entities reporting under Basel III standards, we apply a RAC central counterparty (CCP) charge, reflecting capital allocation to trade exposures, initial margins, and guarantee fund contributions, as outlined in the RACF criteria. When information on one or more of these three types of exposure is not available, paragraphs 66-67 detail how we use either regulatory risk-weighted assets or the available accounting information to determine the level of these exposures.

The criteria describe how we determine trade exposures or initial margins at CCPs as a percentage of derivatives receivable--the percentage differs, according to whether the derivatives receivable are reported gross or net--and CCP guarantee fund contributions as a flat percentage of trade and initial margin exposures:

- When guarantee fund contributions are not disclosed separately, we assume that they represent 6.5% of trade and initial margin exposures (consistent with the current average guarantee fund contributions of a representative sample of rated banks).
- When trade exposures and initial margin are not disclosed, we assume that they represent 25% of derivatives receivable for entities under IFRS (or local GAAP equivalent) and 150% of derivatives receivable for entities under U.S. GAAP. These are conservative estimates based on representative samples of rated banks.

Computing the counterparty risk charge on derivatives exposures (cleared or OTC) for entities that do not report exposures according to Basel standards

For entities that do not report counterparty risk exposures according to Basel standards, the criteria include, in paragraph 82, the determination of exposures to derivatives (OTC and listed) as a percentage of derivatives receivable (different depending whether reported gross or net), based on a sample of representative banks. These multipliers are defined as follows:

- When a firm reports derivatives under U.S. GAAP rules (or equivalent), counterparty risk exposure on derivatives is assumed to be equal to 475% of derivatives receivable. Exposures are assumed to be OTC and split 50/50 between financial institutions and corporate entities, unless a majority of derivative activity is in exchange-settled products, in which case we assume that 100% of the derivative exposure is with clearinghouses.
- When a firm reports derivatives under IFRS (or local GAAP equivalent for the accounting treatment of derivatives), counterparty risk on derivatives is assumed to be equal to 55% of

derivatives receivable. Exposures are assumed to be OTC and split 50/50 between financial institutions and corporate entities, unless a majority is in exchange-settled products, in which case we assume that 100% of derivatives are with clearinghouses.

Basel III sensitivities-based method multiplier

We apply a multiplier to the regulatory capital requirement calculated under the sensitivities-based method, which is derived by incorporating assumptions for a typical bank's trading book, applying the Basel framework and the resulting calibration of the risk of loss on a bank's trading portfolio to a one-year horizon and a 99.9% confidence level. Based on analytical judgement, applying available disclosures from a representative sample of banks with meaningful trading activities, the multiplier applied to the Basel III regulatory sensitivities-based method calculation is 1.6x.

Credit conversion factors

As explained in paragraph 149, whenever banks do not report Basel exposures, we apply the Basel III standardized approach credit conversion factors (CCFs) to off-balance-sheet commitments (except for credit card commitments). For example, commitments that will mature in less than one year (except retail commitments that are unconditionally cancelable) are assigned a 20% CCF. Commitments that have a maturity of more than one year are assigned a 50% CCF.

KEY CHANGES FROM PREVIOUS CRITERIA

Revaluation reserves associated with post-tax unrealized gains/losses on AFS securities

- We no longer remove the impact of revaluation reserves associated with post-tax unrealized gains/losses on AFS securities from reported capital.
- We no longer adjust the risk weighted asset for net unrealized gains or losses on equity securities.
- We quantitatively incorporate market-value movements on AFS securities in our analysis.

DTAs

- When calculating the 10% threshold deduction from capital for DTAs arising from timing differences, we now include only not-readily-convertible DTAs.
- Without changing our definitions, we updated our terminology to refer to DTAs that rely on future profitability and DTAs that arise from timing differences.

IMPACT ON OUTSTANDING RATINGS

S&P Global Ratings applies its RACF methodology to about 1,000 ratings on financial institutions, non-U.S. public-sector funding agencies, and multilateral lending institutions. We anticipate we could take a very limited number of rating actions (fewer than five), all only one notch. We don't anticipate any rating actions on any non-U.S. public-sector funding agencies or multilateral lending institutions.

Revisions And Updates

This article was originally published on May 5, 2026.

Changes introduced after original publication (other than to the contact list or criteria cross-references):

- On July 13, 2026, we republished this criteria article to correct a publication error in Appendix 8, Sector And Industry Variables. The example in the "RACF CVA charge in the EU" section, though accurate for an entity not applying the revised Basel III standardized or basic approaches, does not apply to many EU entities that transitioned to the revised Basel III standardized or basic approaches. We updated the example to reflect entities applying the revised Basel III standardized or basic approach.

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Related Research

- Banking Industry Country Risk Assessment Update, published monthly and available on CapIQ and spglobal.com
- S&P Global Ratings Definitions
- Updated Financial Institutions Risk-Adjusted Capital Framework Methodology Published, May 5, 2026
- RFC Results For Risk-Adjusted Capital Framework Methodology, May 5, 2026
- Calibrating The Risk-Adjusted Capital Framework, July 20, 2017

- What's Behind S&P Global Ratings' Risk-Adjusted Capital Framework Update, July 20, 2017

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Contact List

Analytical Contacts

Matthew B Albrecht, CFA
Englewood
1-303-721-4670
matthew.albrecht
@spglobal.com

Methodology Contacts

Mathieu Plait
Paris
33-14-420-7364
mathieu.plait
@spglobal.com

Analytical Contacts

Emmanuel F Volland
Paris
33-14-420-6696
emmanuel.volland
@spglobal.com

Analytical Contacts

Nico N DeLange
Sydney
61-2-9255-9887
nico.delange
@spglobal.com

Analytical Contacts

Alejandro Peniche
Madrid
34-913-89-69-45
alejandro.peniche
@spglobal.com

Methodology Contacts

Michael P Altberg
New York
1-212-438-3950
michael.altberg
@spglobal.com

Methodology Contacts

Michelle M Brennan
London
44-20-7176-7205
michelle.brennan
@spglobal.com

Analytical Contacts

Chizuru Tateno
Tokyo
81-3-4572-6220
chizuru.tateno
@spglobal.com

Analytical Contacts

Mehdi El mrabet
Paris
33-14-075-2514
mehdi.el-mrabet
@spglobal.com

Analytical Contacts

Mohamed Damak
Dubai
97143727153
mohamed.damak
@spglobal.com

Analytical Contacts

Osman Sattar, FCA
London
44-20-7176-7198
osman.sattar
@spglobal.com

Methodology Contacts

Francesca Sacchi
Milan
390272111272
francesca.sacchi
@spglobal.com

Methodology Contacts

Steven Ader
New York
1-212-438-1447
steven.ader
@spglobal.com

Analytical Contacts

Nicholas J Wetzel, CFA
Englewood
303-721-4448
nicholas.wetzel
@spglobal.com

Analytical Contacts

Deepali V Seth Chhabria
Mumbai
912261373187
deepali.seth
@spglobal.com

Analytical Contacts

Nicolas Malaterre
Paris
33-14-420-7324
nicolas.malaterre
@spglobal.com

Analytical Contacts

Anna Lozmann
Frankfurt
49-69-33999-166
anna.lozmann
@spglobal.com

Methodology Contacts

Russell J Bryce
Charlottesville
1-214-871-1419
russell.bryce
@spglobal.com

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