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Criteria | Financial Institutions | Banks:

Bank Capital Methodology And Assumptions

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Table Of Contents

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Table Of Contents (cont.)

Criteria | Financial Institutions | Banks:

Bank Capital Methodology And Assumptions

*(**Editor's Note:** We originally published this criteria article on Dec. 6, 2010. We've republished it on July 11, 2017, following our periodic review completed on Feb. 2, 2017. As a result of that review, we updated the contact list, the Related Criteria And Research list, and references to archived criteria articles in the text. We added the Revision History and Effective Date sections. We also corrected an error that we identified in the course of our review. The correction resulted in revisions to the two numerical coefficients in the formula used to calculate a single-name concentration adjustment in paragraph 149. We believe this formula revision will not affect any ratings that are based on this methodology and will have a minimal effect on the "RAC Ratio After Diversification" calculated for each issuer. The article titled, "Revised Market Risk Charges For Banks In Our Risk-Adjusted Capital Framework," published June 22, 2012, has superseded paragraphs 81-86 in this article. For entities other than multilateral lending institutions, this criteria article has been superseded by "Risk-Adjusted Capital Framework Methodology," published July 20, 2017, except for those markets that require prior notification to and/or registration by the local regulator, where the criteria will become effective when so notified by S&P Global Ratings and/or registered by the regulator.)*

1. Standard & Poor's Ratings Services is refining and adapting its methodology and assumptions for assessing bank capital under its risk-adjusted capital framework (RACF). We are publishing this article to help market participants better understand our approach to measuring the level of a bank's risk-adjusted capital (RAC), regardless of the type of bank or where it operates.
2. This article is related to our criteria article "Principles Of Credit Ratings," which we published on Feb. 16, 2011.
3. This article supersedes and partly supersedes the criteria articles listed in Appendix D.

SCOPE OF THE CRITERIA

4. The RACF applies to our rating analysis of all banks, bank holding companies, certain finance companies, and other regulated financial institutions that take deposits, give loans, or trade with other financial institutions. These criteria do not apply to insurance companies, or regional securities brokers.
5. We use the RACF to determine a bank's RAC ratio, which we use to measure the adequacy of a bank's capital. We derive the RAC ratio by dividing total adjusted capital (TAC) by total risk-weighted assets (RWA). This involves calculating the components of TAC (equity and hybrids) and the level of RWA.

SUMMARY OF THE CRITERIA UPDATE

6. This article provides the detailed criteria we use to assess a bank's capital.
7. The RACF is a globally consistent framework to determine a bank's RAC ratio, which we use to measure the level of a bank's RAC, regardless of the type of bank or where it operates. In our view, regulatory capital ratios are often not comparable because of differences in jurisdictional definitions of capital, banks' approaches to calculating capital, and the options available to calculate RWA. Our RACF is intended to adjust both capital and the value of assets and

exposures to reflect degrees of risk in a more consistent fashion than is reflected in regulatory ratios. These adjustments can result in significant differences between our capital ratios and the regulatory ratios.

8. In this criteria update we have:

- Changed some of the weights we use to calculate RWA to align them more closely to the stress scenarios presented in Appendix IV of "Understanding Standard & Poor's Rating Definitions," published June 3, 2009;
- Revised some of the data we use in the RACF and the risk weights we apply to improve global consistency;
- Modified some charges, in light of the losses banks experienced during the recent financial market crisis; and
- Increased the transparency of the criteria by enhancing the level of disclosure.

9. Notable updates include:

- The application of a 25% reduction (haircut) of corporate exposure at default (EAD), which reflects our view that undrawn credit commitments contribute significantly to banks' EAD;
- Increasing the risk weights for exposures in countries we consider to be higher risk;
- Modifying some credit conversion factors (the multipliers used to translate banks' off-balance-sheet exposures into adjusted exposures) and data mapping to enhance consistency;
- Aligning the charges to equity in our adjustments with those in Appendix 6 of our "Refined Methodology And Assumptions for Analyzing Insurer Capital Adequacy Using The Risk-Based Insurance Capital Model," published June 7, 2010; and
- Revising our standard adjustments to capital, notably by introducing the deduction of tax loss carry forwards from adjusted common equity (ACE) and the removal of general loan loss reserves from TAC.

10. This paragraph was deleted.

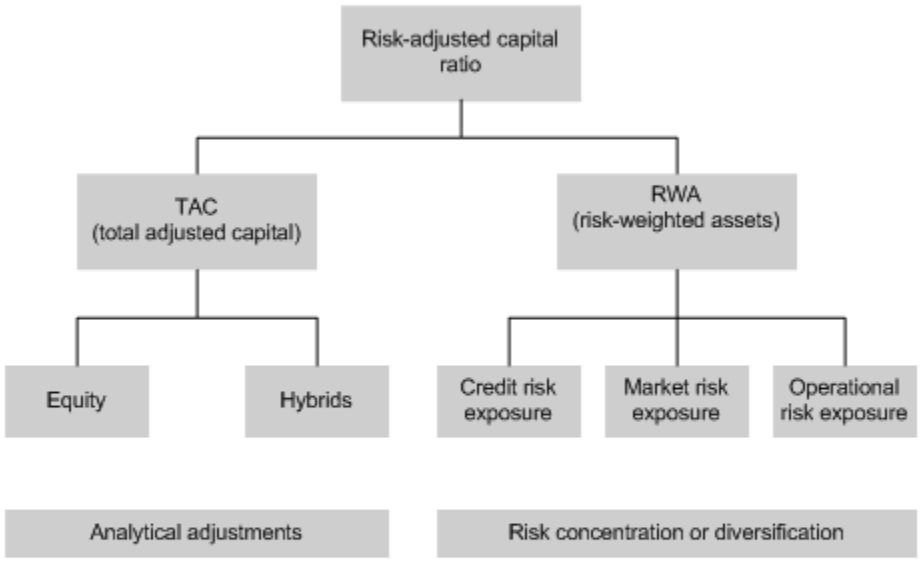
11. This paragraph was moved to Effective Date.

METHODOLOGY AND ASSUMPTIONS

12. The RAC ratio is the main output from the RACF and consists of two main components--TAC and RWA--that are derived from various building blocks (see chart 1). We use 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. Rather, analysis of the differences between various measures allows us to reach a more informed opinion of a bank's capital adequacy.

13. Under our RACF, we consider that a RAC ratio of 8% indicates that a bank should have sufficient capital to withstand a substantial stress scenario in developed markets. This article explains how we calculate each of the components of the RAC ratio by summarizing the data we use, the analytical steps we take, and the way we calibrate the RACF.

Chart 1
Building Blocks For The Risk-Adjusted Capital Framework



Calculating The RAC Ratio

14. TAC is the numerator of the RAC ratio. We calculate TAC by adding preferred stock and hybrid instruments that we qualify as having equity content to ACE. We determine the equity content of bank hybrids according to our criteria (see "Bank Hybrid Capital And Nondeferrable Subordinated Debt Methodology And Assumptions" published on Jan. 29, 2015). Under the criteria for RACF, we calculate ACE by adjusting reported common equity to our global standard. We use ACE and TAC as our standard definitions of capital in our criteria for rating banks.

15. Our figure for RWA is the denominator of the RAC ratio. Under the RACF, we derive a bank's total RWA by multiplying the bank'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; this means, the greater the risk we see, the higher the risk weight we apply and consequently the higher the resulting RWA. The main exposure categories in our computation are credit risk, market risk, and operational risk. The RACF uses regulatory and financial accounting data in an attempt

to capture the risk exposures and translate them into RWA by applying the relevant risk weight.

16. Credit risk exposures differ according to asset classes, that is, whether they are retail, corporate, sovereign, or financial institution exposures (see charts 2 and 3). The risk weights for the financial sector exposures may increase, depending on our Banking Industry Country Risk Assessment (BICRA). A BICRA signals the systemwide risk of operating in a banking industry for an individual financial institution. We assess that risk on a scale from 1 to 10, ranging from the lowest-risk banking industries (group 1) to the highest-risk banking industries (group 10). The risk weights for corporate sector and retail banking exposures--for which we also use a 1 to 10 scoring scale--may also increase, depending on how we assess economic risk in our BICRA analysis.

Chart 2

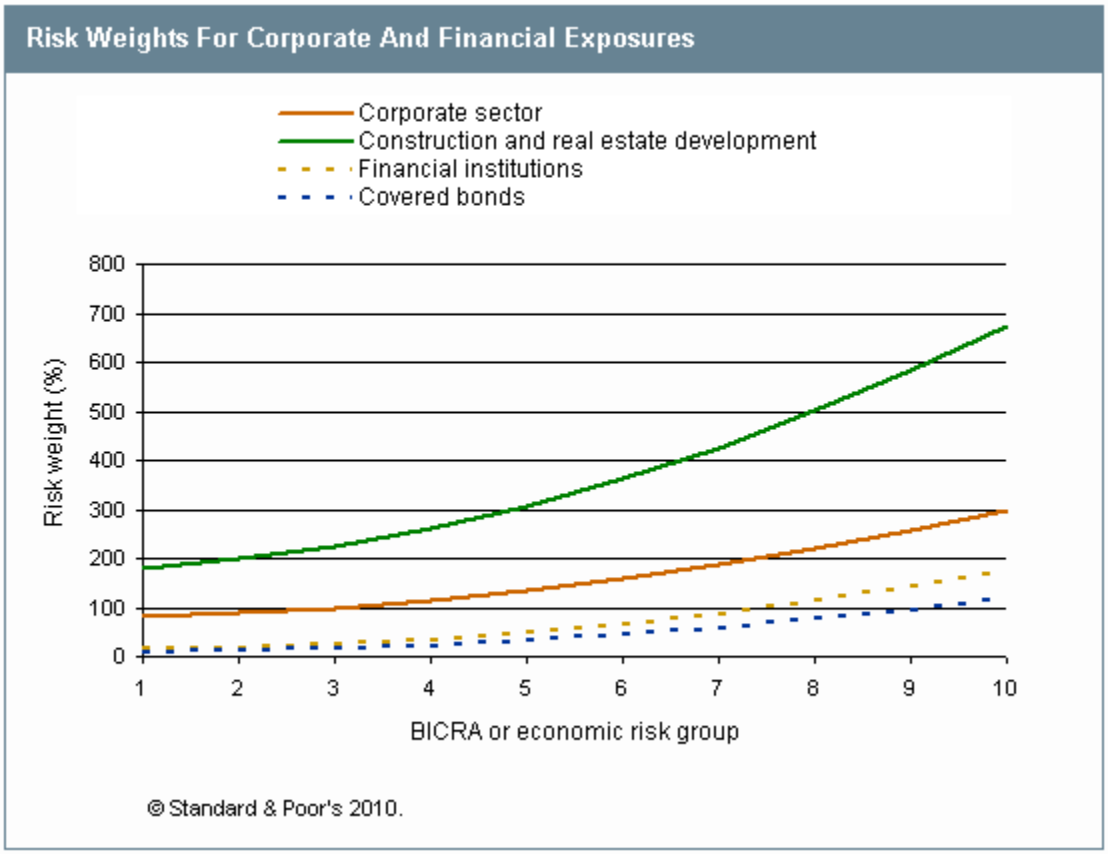
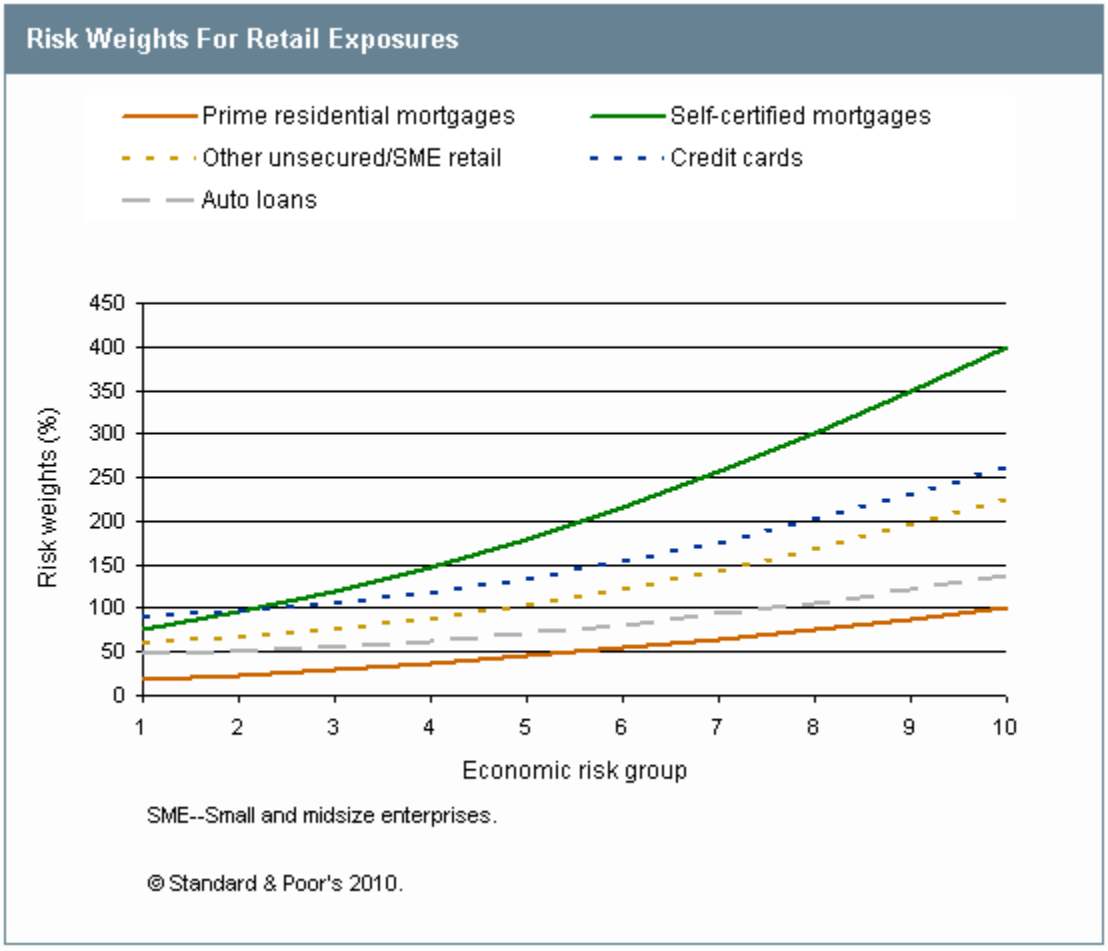
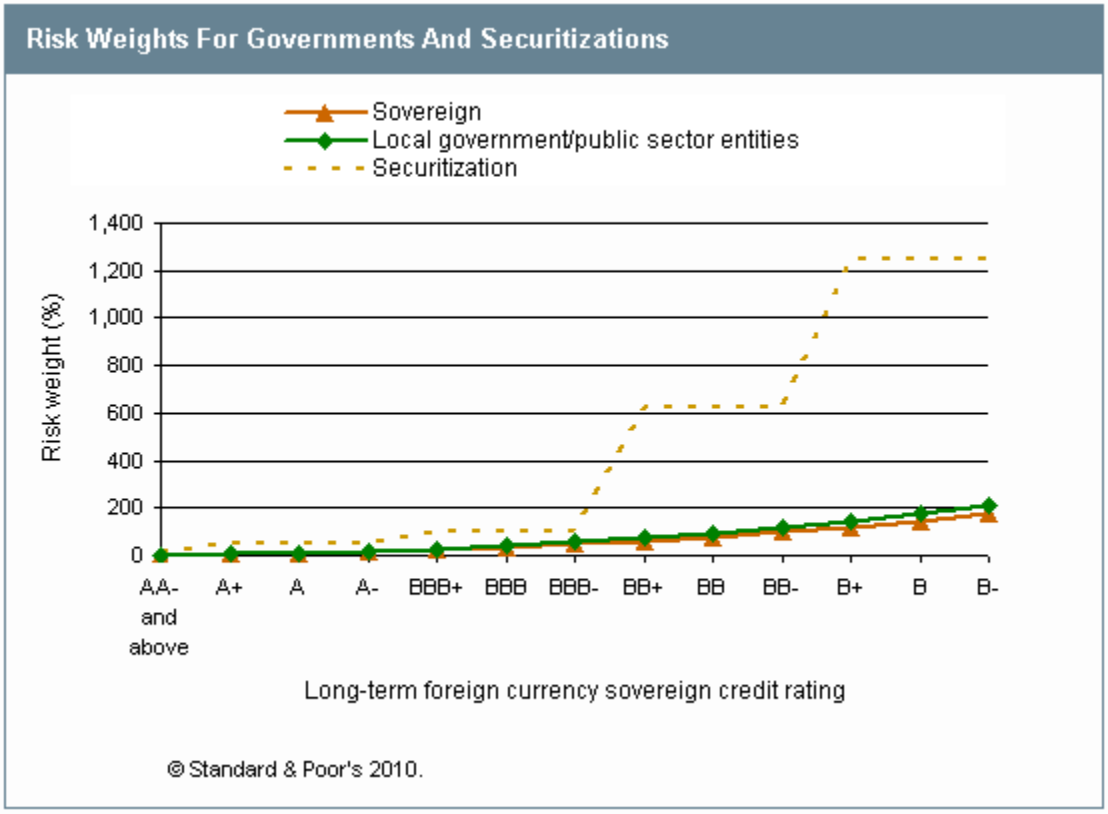


Chart 3



17. RACF also applies credit-related risk weights to exposures on government and securitizations according to our rating scale (see chart 4). Market risk exposures are a combination of trading book risk and price volatility risk on equity exposures. RACF applies risk weights to regulatory capital requirement figures for trading risk, as well as to banks' equity investments, based on our estimate of the risk on stock indices in the different countries. RACF applies risk weights to revenue or assets under management and custody to account for operational risks.

Chart 4



18. We calibrate the risk weights to be consistent with the stress scenarios presented in Appendix IV of "Understanding Standard & Poor's Rating Definitions," published June 3, 2009.

19. The RACF also quantifies the potential impact of risk concentration or diversification on RWA (see Appendix B). 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 single-name concentration (the aggregate of large exposures to a single borrower or counterparty), as well as the correlation of risk by geography, sector, type, and business line.

20. Table 1 summarizes the calculation of the RAC ratio and introduces some of the concepts and terms we use in the RACF, such as "adjusted exposure" and "normalized loss" rates.

Table 1

Computing Risk-Adjusted Capital

	Risk-adjusted capital (RAC)	**=**	**Total adjusted capital (TAC)**
			Risk-weighted assets (RWA)
where			
	Total adjusted capital (TAC)	=	See Table 2
	Risk-weighted assets (RWA)	=	RWA credit risk + RWA market risk + RWA operational risk

Table 1

Computing Risk-Adjusted Capital (cont.)

Risk-adjusted capital (RAC)	=	Total adjusted capital (TAC)
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 Standard & Poor's anticipates will be the bank's 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 II* 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 Appendix C

*Basel II refers to the requirements set out under the Bank for International Settlement's "Basel Committee on Banking Supervision's Basel II: International Convergence of Capital Measurement and Capital Standards: A Revised Framework--Comprehensive Version," paper of November 2005, and subsequent amendments.

Deriving The RAC Ratio Components

1. Total Adjusted Capital (TAC)

21. TAC is our main capital measure. Under RACF, TAC is an enlarged and globally consistent definition of the amount of capital a bank 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 and the equity-like characteristics of preferred stock (for details, see "Hybrid Capital Handbook: September 2008 Edition," published Sept. 15, 2008, "Bank Hybrid Capital And Nondeferrable Subordinated Debt Methodology And Assumptions" published Jan. 29, 2015, "Criteria Clarification On Hybrid Capital Step-Ups, Call Options, And Replacement Provisions," published Oct. 22, 2012, "Assumptions: Clarification Of The Equity Content Categories Used For Bank And Insurance Hybrid Instruments With Restricted Ability To Defer Payments," Feb. 9, 2010, and "Methodology: Hybrid Capital Issue Features: Update On Dividend Stoppers, Look-Backs, And Pushers," Feb. 10, 2010).

22. ACE reflects a narrow definition of core capital that eliminates capital components that we classify as relatively weaker than common equity. ACE is based on common equity and those 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 instruments from ACE.

23. We make various adjustments to a bank'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.

Table 2

Calculation Of Total Adjusted Capital

Common shareholders' equity	See paragraph 25
Add "Minority interests: Equity"	See paragraphs 28 - 31
Deduct dividends not yet distributed	See paragraph 32
Deduct revaluation reserves	See paragraphs 33 - 35

Table 2

Calculation Of Total Adjusted Capital (cont.)	
Deduct goodwill and nonservicing intangibles	See paragraphs 36 - 39
Deduct interest-only strips	See paragraph 40
Deduct deferred tax loss carry forwards	See paragraph 41
Add or deduct postretirement benefit adjustments	See paragraphs 42 - 43
Add or deduct cumulative effect of credit-spread-related revaluation of liabilities	See paragraphs 44 - 45
Add or deduct other equity adjustments	See paragraph 46
= Adjusted common equity (ACE)	See paragraph 14
Add preferred stock and hybrid capital instruments (subject to limits)	See paragraph 21
=Total adjusted capital (TAC)	See paragraph 21

24. In determining our analytical adjustments, we consider how bank regulators generally treat capital, but our capital ratios are likely to be different from those of regulators. Bank 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.

A. Standard adjustments to capital

25. ***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 hybrids, or minority interests that are reported in total shareholders' equity.

26. If a bank reports treasury stocks as an asset, we deduct this figure from total shareholders' equity to produce a consistent measure of common shareholders' equity.

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

28. ***Minority interests:*** ACE includes the holdings of minority investors (so-called "noncontrolling interests") associated with consolidated operating financial subsidiaries. This is because we typically view the investment of minority investors in consolidated subsidiaries as a component of equity supporting group activities.

29. ACE does not include any hybrid instruments reported under "Minority interest: Equity" on the bank's balance sheet. Subject to our criteria for the equity content of hybrids, we may include these instruments in our definition of TAC.

30. We exclude from "Minority interest: Equity" the portions that we consider to be unavailable to absorb losses, instead classifying them as "Minority interest: Non-equity," except for hybrids that we regard as having equity content. For example, we would reclassify as "non-equity" a bank's minority interests in fully consolidated nonfinancial subsidiaries whose resources are not available to absorb losses within the group. This includes minority interests in certain special-purpose entities or joint ventures that do not represent operating banking subsidiaries, large minority interests in fully consolidated property companies, and minority interests in industrial or commercial companies controlled under private-equity operations.

31. Under our criteria, we assess constraints that could restrict the flow of capital within the 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.

32. ***Dividends (not yet accrued or distributed):*** ACE excludes any unaccrued dividends that are likely to be distributed if reported equity does not reflect imminent dividend distributions. If the bank has not formally announced a dividend, or the information is otherwise unavailable, we deduct an estimate based on the bank's stated dividend policy. 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 unaccrued dividends in "pay-out pull-back" situations where the owners intend to reinject dividends into the bank and have made a clear statement to this effect.

33. ***Revaluation reserves:*** We adjust reported capital to remove the impact of revaluation reserves associated with post-tax unrealized gains/losses on available-for-sale (AFS) securities and deferred gains/losses related to cash flow hedges. If the revaluation reserves are positive, then we deduct them from reported equity (that is, exclude them from ACE and TAC). If the revaluation reserves are negative, then we add them back to reported equity. In this way, we attempt to neutralize the impact of marking to market the value of cash flow hedges as well as debt and equity securities reported as AFS. As a result, our capital measures do not reflect a benefit or loss if fair value changes. The RACF accounts for the unrealized gains or losses on AFS equities by netting them against the associated RAC charge.

34. 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.

35. We do not adjust capital for property revaluations included within reported capital reserves.

36. ***Goodwill and non-servicing intangibles:*** We make several adjustments to reflect goodwill and non-servicing intangibles:

    - We deduct reported goodwill and non-servicing intangible assets from reported equity to calculate ACE, net of any related deferred tax, 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.

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

38. We distinguish mortgage servicing rights (MSRs), which are servicing-related intangible assets, from non-servicing intangible assets 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 (see paragraph 73).

39. 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 the bank's business position and earnings capacity.

40. We deduct from reported equity (on an after-tax 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.

41. ***Tax loss carryforwards:*** ACE excludes the deferred tax assets related to tax loss carry forwards. Tax loss carry forwards are deferred tax assets related to annual net losses, which are available to offset future taxable operating profit when calculating future tax obligations. From our observations of accounting treatment under stress events, we consider that tax loss carry forwards can be partly written off or cancelled during a period of economic stress, reflecting their weaker capacity to absorb losses in such circumstances. We do not deduct other deferred tax assets that primarily reflect timing differences between tax accounting and the financial reporting periods.

42. ***Postretirement benefits:*** We assess the surplus or deficit of the bank's various postretirement plans and adjust for the net position (see table 3). The adjustment depends on how the net position is reflected in the bank's reported capital figures. We view deficits and surpluses under employer-sponsored defined-benefit pension and other postretirement benefit arrangements 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 make an adjustment when calculating ACE and TAC.

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.

43. We include the surplus on postretirement benefit obligations in our capital measures 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 bank has access to the assets in the fund or we believe that the bank can use the surplus. Otherwise, we exclude the surplus from our capital measures.

44. ***Cumulative effect of credit-spread-related revaluation of liabilities:*** We deduct from capital the cumulative gains or losses resulting from valuing liabilities at fair value that are due to changes in the bank's credit standing. We make this adjustment net of related deferred tax assets (or on a gross basis if the relevant tax data are not available).

45. We do not adjust reported capital 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.

B. Other adjustments

46. Standard & Poor's aims 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. When we make these adjustments, we typically describe them in our full analysis reports on banks and provide our view of the major accounting issues that affect the bank's financial statements and their significance to our analysis.

2. Risk-Weighted Assets (RWA)

47. In this section we explain how we derive a bank's RWA in a globally consistent manner. We calculate RWA by multiplying the exposure amount by the associated risk weight. The sources of the risk exposure amounts include data from banks that make Basel II Pillar 3 disclosure (Basel II banks), if available, or data from the published accounts of banks that don't use the Basel II framework (non-Basel II banks). For U.S. banks, we generally use holding companies' quarterly regulatory reports as the source. We may complement these data sources with any additional information that is available. 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 below.

48. We obtain the risk weights by dividing the RAC charge by 8%, which is equivalent to multiplying the RAC charge by 12.5. We use the risk weights to adjust the value of a bank's assets relative to our view of their riskiness and potential for default, in a method similar to that broadly used in the industry. This helps us make comparisons between the RAC ratio and regulatory-based capital ratios.

49. All risk weights shown in the tables below are rounded to the nearest percent.

A. Credit risk and associated risk weights

50. The RACF breaks credit risk down into six categories: governments, financial sector, corporate sector, retail and personal sector, counterparty risk, and securitizations. It then accounts for the impact of collateral and other risk mitigation on the RWA.

51. ***Governments:*** We classify government-related risks in two categories and apply different risk weights according to the rating on the sovereign issuer (see table 4). Our risk weights for sovereign and local authority exposures are based on our foreign currency credit rating on the sovereign, except for domestic government securities in local currency where we know the amount the bank holds. The risk weight on the domestic exposures is based on the local currency rating.

Table 4

Risk Weights For Government Exposures

Sovereign long-term foreign currency credit rating	Central government (%)	Local or regional government (%)
AA- and above	3	4
A+	5	6
A	9	11
A-	15	18
BBB+	23	28
BBB	34	41
BBB-	47	56
BB+	62	74

Table 4

Risk Weights For Government Exposures (cont.)

Sovereign long-term foreign currency credit rating	Central government (%)	Local or regional government (%)
BB	79	95
BB-	99	119
B+	122	146
B	146	176
B- and below	173	208

52. 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.

53. ***Financial sector:*** Financial exposures fall into two categories, financial institutions and covered bonds. The RACF applies risk weights according to our BICRA score for the country in which the exposures are domiciled (see table 5).

Table 5

Risk Weights For Financial Sector Exposures

Overall BICRA score	Financial institutions (%)	Covered bonds (%)
1	15	10
2	17	11
3	23	16
4	33	22
5	48	32
6	66	44
7	88	58
8	114	76
9	144	96
10	178	118

BICRA--Banking industry country risk assessment.

54. The "Financial institutions" column in table 5 includes exposures to all credit institutions, investment firms, and finance companies. Exposure to insurance companies and asset managers are included under corporate exposures.

55. ***Corporate sector:*** Corporate exposures fall into two categories: corporate, and construction and real estate development (see table 6). The RACF applies 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	80	180
2	88	198
3	100	225
4	116	261
5	136	306
6	161	363

Table 6

Risk Weights For Corporate Sector Exposures (cont.)

Economic risk group	Corporate (%)*	Construction and real estate development (%)
7	189	426
8	223	501
9	259	582
10	300	675

*RACF applies the risk weight to exposure at default (EAD) minus a 25% haircut, which recognizes the significant contribution to EAD from undrawn commitments.

56. The RACF uses regulatory credit conversion factors (CCF) to translate off-balance-sheet commitments into adjusted exposures. For banks in non-Basel II jurisdictions, we use a flat CCF of 50% for identified corporate off-balance-sheet commitments.

57. Because of inconsistencies in data reported by banks in different jurisdictions, the RACF applies 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. The RACF does not differentiate between large, blue chip corporates and small and midsize enterprises (SMEs).

58. The RACF applies 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.

59. Where there is insufficient information for us to distinguish construction and real estate development exposures from corporate exposures, we regard 5% of the corporate exposures as relating to construction and real estate development. If system data (such as central bank statistics on sectoral lending) show that the level of construction and real estate development exposure is higher than 5% of corporate lending, we use the system-level figure.

60. ***Retail and personal:*** We classify retail exposures into five categories: prime residential mortgages, auto loans, credit cards, self-certified mortgages, and other unsecured/retail lending to SMEs (see table 7). The RACF applies risk weights according to the economic risk score from the BICRA analysis.

Table 7

Risk Weights For Retail And Personal Exposures

Economic risk group	Prime residential mortgages (%)	Self-certified mortgages (%)	Credit cards (%)	Auto loans (%)	Other unsecured/SME retail (%)
1	19	76	89	48	60
2	24	96	96	51	66
3	30	120	105	56	75
4	37	148	118	63	87
5	45	180	134	71	102
6	54	216	153	81	121
7	64	256	176	93	142
8	75	300	201	107	167
9	87	348	230	122	194
10	100	400	263	139	225

SME--Small and midsize enterprises.

61. We convert undrawn credit card commitments into adjusted exposures by applying a flat CCF of 10%. For example, a bank with €10 billion of drawn credit card exposures and €50 billion of undrawn commitments has an adjusted credit card exposure in RACF of €10 billion plus 10% of €50 billion, that is, €15 billion. 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 (see also paragraph 109).

62. Other unsecured exposures refer to consumer loans, excluding credit card-type exposures and including the uncovered part of Lombard loans (that is, the exposure amount net of financial collateral after the RACF haircut; see table 10).

63. SME retail refers to granular exposures to SME reported as retail by Basel II banks. This asset class would carry the same risk weight as corporate EAD, after the 25% haircut. For banks that do not report Basel II figures, these exposures are classified as corporate exposures.

64. We apply a specific 188% risk weight to non-prime residential mortgages, which are currently only recorded in the U.S. When the split between prime and non-prime mortgages is not available, RACF treats 10% of the U.S. mortgage exposure as non-prime and 90% as prime.

65. ***Counterparty risk:*** Under the RACF, we treat counterparty risk according to the data disclosure. There are three types of disclosure scenarios:

- First, a bank can report its counterparty risk in the exposure data for each financial institution, corporate, or government with which it trades;
- Second, a bank can report aggregate counterparty risk as a separate exposure; and
- Third, U.S. banks provide a more detailed disclosure of counterparty risk according to the type of contract.

66. In the first case, RACF regards the counterparty risk as part of the underlying exposure to government, financial institutions, or the corporate sector, depending on the type of counterparty. For the second case, RACF would consider 50% as exposure to financial institutions and 50% as exposure to corporations.

67. For U.S. banks, RACF treats exposures to over-the-counter (OTC) derivatives according to their underlying counterparty. There are separate risk weights in the RACF for counterparty risks associated with securities lending, sale and repurchase agreements (repos), reverse repos, and margin loans reported in U.S. regulatory disclosures (see table 8).

Table 8

Counterparty Risk Weights For Banks In The U.S.

Type of counterparty exposure	Risk weight (%)
U.S. Securities lent	11
U.S. Repos	3
U.S. Reverse repos	8
U.S. Margin loans	9

68. ***Securitization:*** Under RACF, we apply the risk weights to different tranches of securitizations according to the rating on the tranche (see table 9).

69. We make assumptions about the underlying risk of exposure to securitizations when the tranche ratings are unavailable. For banks making Basel II Pillar 3 disclosures, we base our assumptions on the regulatory risk weight applied to the securitization exposure (see table 10). RACF provides an inferred credit estimate for each Basel II risk-weight range, which we use as a rating equivalent for the tranche. We then use the risk weight that pertains to that rating (see table 9).

Table 9

Risk Weights For Securitizations

Securitization rating	Risk weights (%)
AAA	20
AA	20
A	50
BBB	100
BB	626
B	1,250
CCC - C	1,250
Not rated	1,250

Table 10

Inferred Credit Estimates For Securitization Exposures

Basel II risk-weight band (%)	Inferred credit estimates
<=20	AA
<=50	A
<=100	BBB
<=350	BB
>350 or deduction from capital	Below B

<=--Less than or equal to. >--Greater than.

70. For non-Basel II banks or those that comply with Basel II but carry unrated exposures for which we do not have the breakdown of regulatory risk-weight bands, we apply a different treatment:

- An unrated asset-backed commercial paper (ABCP) facility would be regarded as having at least an 'A' long-term rating, resulting in a 50% risk weight for ABCP liquidity lines.
- The RACF applies a 20% risk weight to unrated pass-through Federal National Mortgage Association (FNMA; Fannie Mae) securitizations. This is because Fannie Mae guarantees timely payment of principal and interest on these securitizations, whether or not the borrower pays the underlying mortgage on time, and we believe there is an "almost certain" likelihood that the U.S. government would provide timely and sufficient extraordinary support to Fannie Mae in the event of financial distress.
- For other securitization exposures, the RACF applies a 250% risk weight, representing a rounded average of RACF securitization risk weights for a large sample of Basel II banks.

71. Under the RACF, we don't deduct equity tranches of a securitization (including residual interests in securitizations) from capital--as some regulators do--but instead apply a 1,250% risk weight. Our approach is consistent with the one we use to assign RAC charges to minority holdings in unconsolidated financial institutions (including insurance subsidiaries).

72. 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.

73. ***Mortgage servicing rights (MSRs):*** The RACF applies 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.

74. ***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 by making 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; or
- Credit default swaps.

75. 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 loan exposures (loans secured by collateral in the form of securities).

76. For banks that report Basel II 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 other banks, the haircuts are according to the type of financial collateral (see table 11).

Table 11

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
Equity	40
Unspecified financial collateral	30

77. The RACF does not adjust related exposures for nonfinancial collateral. This reflects our concerns about discrepancies among the valuation methodologies banks use and the fact that we have already factored typical loan collateralization into our industry benchmarks for corporate exposures.

78. The 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.

79. We lower by 50% the RACF corporate exposure hedged by credit derivatives, and take into account a direct

equivalent exposure to the credit-protection provider (usually a financial institution).

B. Market risk and associated risk weights

80. RACF is intended to capture market risk on a bank's trading activities and equity investments not accounted for in the trading business.

81. ***Trading activities:*** RACF applies a risk weight for market risk from trading activities, which is a multiple of the regulatory risk weight, derived either from a value-at-risk (VAR) calculation validated by regulators, the Basel standardized approach, or a combination of the two (see table 12).

Table 12

Risk Weights For Market Risk Exposure From Trading Activities	
Standardized approach in the Basel framework	1.5 times regulatory risk weight
VAR models for general risk, validated by the regulator	3 times regulatory risk weight
VAR models for both general risk and specific risk, validated by the regulator	4 times regulatory risk weight

82. For banks with VAR models validated for general risk only, we increase the regulatory capital requirement figure by a factor of three (see table 12). This is to align the VAR with a one-year horizon and make it consistent with a 99.9% mathematical confidence level, which implies that the loss, statistically speaking, is 99.9% likely to be within the estimated bounds. Compared with the regulatory 10-day VAR period, we believe the one-year horizon better reflects the illiquidity of many assets (such as hedge funds). It also reflects that, even if such positions could be unwound in several weeks, they would likely be replaced by new trading positions as the bank continues to take risks to support its income-producing activities. The adjustment factor of three includes a 50% add-on to account for extreme (fat-tail) events for a hypothetical trading portfolio consisting of equities, interest rate positions, commodities, and foreign exchange.

83. For banks with VAR models validated for both general and specific risk, we increase the regulatory capital requirement figure by a factor of four. This higher multiplier corresponds to our qualitative estimate of the impact of "specific risks", in particular, default and migration risks that, in our view, are poorly captured in VAR specific-risk models. In our opinion, this higher capital requirement should better reflect the magnitude of market risks on trading assets, including structured products. It should also capture illiquidity risks, which can increase sizably in times of stress.

84. We increase the regulatory capital requirement figure by a factor of 1.5 if it is derived from the Basel standardized approach. This reflects our opinion that the standardized approach is typically more conservative than the VAR models approved by the regulators, particularly with regard to asset diversification.

85. If a bank uses a combination of VAR models and the standardized approach, we apply a multiplier of 3 or 4 to the capital requirement derived from the VAR models and a multiplier of 1.5 to the capital requirement derived from the standardized approach.

86. If the regulatory capital figure for market risk is not available, we regard the market risk RAC charge as zero and RACF treats securities in the trading book as if they were recorded in the banking book. For example, RACF classifies stocks as equity holdings in the banking book, corporate bonds as corporate entities, and collateralized debt obligations as securitization exposures and applies the same risk weights we apply to banking book exposures.

87. ***Equity investments:*** The RACF applies risk weights to three different types of equity investments: listed securities, unlisted securities, and investments in unconsolidated subsidiaries. The RACF classifies listed equity investments into four equity market groups by country, based on the volatility we have observed in that country's main stock market index over the past 30 years (see table 13). Group 1 is the least risky and Group 4 is the most risky. Our risk weights on the three types of equity investments depend on the equity market group for the listed investments (see table 14).

Table 13

Equity Market Groups By Country Or Region

Equity market group	Countries and regions
1	Australia, North America, Switzerland, United Kingdom, United States
2	Asia Pacific, Belgium, Canada, Denmark, European Union, France, Germany, Hungary, Israel, Italy, Japan, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Portugal, Slovak Republic, Slovenia, South Africa, Southeast Asia, Spain, Sweden
3	Austria, Bahrain, Baltic, Caribbean, Cyprus, Czech Republic, Dominican Republic, Eastern Europe, Estonia, Finland, Greece, Gulf Cooperation Council, Hong Kong, Indonesia, Ireland, Jamaica, Korea, Kuwait, Latvia, Lithuania, Malaysia, Malta, Oman, Philippines, Qatar, Saudi Arabia, Singapore, Taiwan, Trinidad and Tobago, Turkey, United Arab Emirates
4	Africa, Argentina, Belarus, Bolivia, Bosnia and Herzegovina, Brazil, Cambodia, Chile, China, Colombia, Costa Rica, Croatia, Ecuador, Egypt, El Salvador, Georgia, Guatemala, Iceland, India, Jordan, Kazakhstan, Latin America, Lebanon, Montenegro, Morocco, Nigeria, North Africa, Pakistan, Panama, Peru, Poland, Romania, Russia, Serbia, Suriname, Thailand, Tunisia, Ukraine, Uruguay, Venezuela, Vietnam

Table 14

Risk Weights For Equity Investment Exposures

Equity market group	Listed securities (%)	Unlisted securities (%)	Minority holdings in unconsolidated financial institutions (%)
1	563	688	1,250
2	688	813	1,250
3	813	938	1,250
4	938	1,063	1,250

88. These equity groups are generally similar to those in Appendix 4 of our article "Refined Methodology And Assumptions for Analyzing Insurer Capital Adequacy Using The Risk-Based Insurance Capital Model," published June 7, 2010. RACF uses the charges in the insurance model, at a 99.9 % confidence level and a one-year horizon, as a proxy to model total losses on equity investments in a "substantial" stress scenario.

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

90. The RAC charges apply to the fair value of equity holdings. Under the RACF, we then subtract 100% of net unrealized gains or add 100% of net unrealized losses against the RAC charge. If we do not know the fair value of equity holdings, but the EAD (or the carrying value for non-Basel II banks), RACF applies risk weights to the EAD (or the carrying value) and does not recognize any potential unrealized gains (or unrealized losses).

91. For banks where Basel II does not apply, we exclude stocks held by insurance subsidiaries from the equity holdings reported in consolidated financial accounts because our RAC charge for insurance risk is already intended to capture such equity risks.

92. RACF applies a 625% 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.

93. RACF applies a 1,250% risk weight for investments in insurance subsidiaries and any other unconsolidated subsidiary.

C. Operational risk and associated risk weights

94. The RACF applies risk weights to all business lines according to either their revenue contribution or the size of assets under management or custody.

95. ***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 15). RACF applies 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 banks that experienced a recent drop in revenues as a consequence of operational or trading losses.

96. If a breakdown of revenues by business line is not available, RACF applies a 188% risk weight to the highest annual revenue of the past three years, net of revenues from insurance subsidiaries (if any). This is because operational risk from insurance operations is already incorporated into the risk weight for insurance subsidiaries.

Table 15

Risk Weights For Business Lines By Revenue

Business line	Risk weight to be applied to revenue (%)
Asset management, retail banking, retail brokerage	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

Table 16

Risk Weights For Assets Under Management

Types of assets under management	Risk weight (%)
Monetary funds (or funds with potential implicit support)	6.25
Other types of funds	1.25

97. ***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, RACF applies risk weights depending on the level of assets under management and the type of assets (see table 16). As highlighted in table 15, monetary funds attract a higher charge than other types of funds. 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.

98. We exclude assets under management held at insurance subsidiaries (if any) from the scope of this charge because we already factor operational risk on insurance operations into the 1,250% risk weight applied to insurance subsidiaries.

Table 17

Risk Weights For Assets Under Custody

Assets under custody (U.S. $)	Risk weights (%)
First $750 billion	0.50
Next $250 billion	0.25
Next $1,000 billion	0.13
Next $3,000 billion	0.06
Next $5,000 billion	0.04
More than $10,000 billion	0.03

In practice, the RAC charge for assets under custody that are greater than $750 billion results from the equation 163.03 x ln(assets under custody, expressed in million U.S. dollars) – 1905.4. Table 17 provides approximate guidance on the results of this equation.

99. ***Assets under custody:*** The RACF applies risk weights on assets under custody for a bank acting as a custodian; the higher the value of assets under custody, the lower the marginal risk weight (see table 17). 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 much more impact.

100. If disclosed separately in the total revenue breakdown, we deduct revenues from the agency services business line from the revenues applied in Table 15 to prevent double-counting.

101. ***Other items:*** RACF applies a further risk weight to exposures not covered by any other specific field. 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 the RACF.

102. 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, RACF applies the following rules:

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

103. ***Risk concentration and diversification:*** The RACF calculates an adjustment to RWA to reflect either the increased risk from concentration or reduced risk from diversification (see Appendix B).

3. Data Sources And Standard Adjustments

104. In this section we explain the data sources that RACF uses and standard adjustments we may make to that data. In addition, we explain how the RACF responds to more limited data disclosures. Generally we capture data on a bank's risk exposures from Basel II reporting, published accounts, or regulatory reports (see table 18). We also explain how RACF captures different geographic exposures.

Table 18

RACF Data Sources For Risk Exposures

Description	Application
Banks reporting Basel II data	When available, RACF uses Basel II Pillar 3 data as a source of information. Basel II Pillar 3 disclosures contain additional data and information beyond that normally presented in audited financial statements.

Table 18

RACF Data Sources For Risk Exposures (cont.)

Description	Application
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 (see Appendix A).
Other banks	In countries where Basel II is not yet implemented, RACF uses data from published accounts (notably on- and off-balance-sheet data).

105. The RACF applies risk weights to the combination of outstanding amounts on a bank's balance sheet and other commitments to derive total RWA. 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 the RACF are intended to improve global consistency.

106. In countries where Basel II does not apply (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.

107. For banks that apply Basel II guidelines, our adjusted exposures generally coincide with regulatory EAD. The only two exceptions are:

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

108. CCFs are multipliers to translate banks' off-balance-sheet exposures into adjusted exposures. The implied 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.

109. For undrawn credit card commitments, we use a CCF of 10%, regardless of whether a financial institution has adopted Basel I, Basel II standardized, or Basel II IRB approaches (using its own internal model). 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 reporting under Basel II that do not disclose the undrawn amount of credit cards commitments, we define adjusted exposures as the reported EAD.

110. RACF applies a CCF of 50% for corporate undrawn lines of credit (excluding letters of credit), other undrawn credit facilities, and other off-balance-sheet commitments for non-Basel II banks (including U.S. financial institutions). We believe this 50% 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, as 50% is also an estimated average of the CCF level used by banks that have adopted the Basel II advanced approaches.

111. We use a CCF of 100% for non-Basel II banks' exposure to letters of credit because these facilities are most likely to be totally drawn, in our view.

112. Given the significance of undrawn commitments in EAD under corporate exposure, we reduce adjusted exposures by 25% to account for this, regardless of whether a financial institution has adopted Basel I, Basel II standardized, or Basel II IRB approaches on the corporate asset class. This is in response to differences in the data disclosures available from different banks. RACF applies this haircut consistently, regardless of the amount of undrawn commitments to corporates. This 25% haircut does not apply to exposures relating to construction and real estate development.

113. In some cases, Basel II banks publish in their Pillar 3 reports 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 (see table 19).

Table 19

Inferred Asset Classes For Basel II Exposures Under The Standardized Approach

Exposure type	Risk weight (%)
Sovereign	0
Covered bonds	10
Financial institutions	20 or 50
Residential mortgage	35
Other retail	75
Corporates	100
Private equity	190 or 370
Other items	150
Listed stocks	290

114. RACF is intended to capture the adjusted exposure data by geography as well as by risk type. For Basel II banks, we use the geographic breakdown of EAD by asset classes published in Pillar 3 reports. 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.

115. The BICRAs, economic risk scores, 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, and long-term foreign currency sovereign credit ratings on the countries in these groups and regions.

4. Risk Calibration

116. We have calibrated RACF so that an 8% RAC ratio means that a bank should, in our view, have enough capital to withstand a substantial stress in developed markets. In this section, we explain the theory behind this calibration, which 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 four key steps to this calibration:

- We use idealized loss rates for particular credit risk assets from a substantial economic stress in developed markets;
- Then we calibrate the charges so that the combination of three years of annual normalized loss rates and the RAC charge 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; and

- Finally, we adjust the risk weights to reflect structural differences in stronger or weaker economies.

117. 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

118. For each of the six credit risk asset classes, we associate an idealized loss rate with a substantial stress scenario (an 'A' stress) as described in Appendix IV of "Understanding Standard & Poor's Rating Definitions," published June 3, 2009. For example, the idealized loss rate for prime residential mortgages is 3% following a substantial stress.

B. Normalized loss and the RAC charge

119. 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 average normalized loss rate and the RACF capital charge combine to match the idealized loss rate for each asset class (see table 20). In our view, product pricing and provisioning is able to absorb an average or "normal" level of annual credit losses, which we refer to as "normalized losses", and that banks hold capital to absorb losses that are greater than this "normal" level.

Table 20

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	0	0.25	0.25
Local or regional	0	0	0.29	0.29
Financial institutions				
Credit institutions	0.06	0.18	1.86	2.04
Covered bonds	0.04	0.12	1.24	1.36
Corporate				
Corporate	0.50	1.60	6.00¶	7.60
Commercial real estate	1.60	4.80	18.00	22.80
Retail and personal loans				
Prime residential mortgages	0.20	0.60	2.40	3.00
Self-certified mortgages	0.80	2.40	9.60	12.00
Credit cards*	3.50	--	8.40	11.90
Auto loans	0.50	1.50	4.50	6.00
Other unsecured	1.00	3.00	6.00	9.00

*For credit cards, we use the peak loss for a single year, so the three-year cumulative normalized loss rate does not apply. ¶After the 25% haircut.

120. In table 20, the idealized loss rates apply for a typical developed market with a government rated 'AA-' or higher, financial institutions in BICRA group 3, and corporate and retail exposures in economic risk score '3' under our BICRA methodology.

121. To calculate normalized loss rates, we determine the average loss by asset class for developed markets over a 12-year period and build in a moderate stress ('BB' type) for three of the 12 years. We do not expect this calculation to change frequently. Table 20 shows that the RAC charge is the difference between the idealized loss rate and the three-year cumulative normalized loss rate.

C. Adjusting for structural differences

122. We benchmark the idealized loss rates and associated risk weights to countries with highly rated governments, a financial sector in a BICRA group 3, and corporate and retail exposures associated with an economic risk score of '3' under our BICRA methodology. We then adjust the risk weights to reflect the differing credit fundamentals in countries we consider to be lower risk and those we regard as higher risk according to our BICRA scale (see tables 4 to 7 above).

123. The adjustments to the risk weights are based upon a quantitative and statistical analysis of peak loss experience over one and three years in multiple countries. We reviewed the industry data in many countries, theoretical portfolios, the track record of individual banks, and the quantitative impact studies produced by the Bank for International Settlements. We also used our analytical judgment because of the inconsistency of some global data.

124. The risk weights for assets in countries with an economic risk score of '3' are benchmarked to match a substantial stress ('A' type). The scaling of risk weights using different BICRA scores and the ratings scale as shown in tables 4 to 7 reflect our observation that credit losses are lower in countries we regard as low risk (economic risk score of '1' and '2') than in countries we classify as having economic risk in category '3'. We also see that credit losses are progressively higher in countries we consider to be higher risk (economic risk classes 4 through10) than in countries we classify as having level '3' economic risk.

5. Other Risks Not Covered By The RACF

125. The RACF is not intended to capture risks such as:

- Interest rate and currency risk in the banking book;
- Volatility of pension funding;
- Funding risk;
- Reputation risk; or
- Strategic risk.

We assess such risks qualitatively in other areas of our bank rating methodology.

126. We have chosen not to incorporate interest rate risk in the banking book under RACF because the methodologies of measuring asset-liability management (ALM) risk can differ substantially across banks, depending on the assumptions the banks use. Consequently, in the absence of any standard reporting requirement, the ALM risk metrics that banks publish tend to vary.

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

128. We have chosen not to incorporate reputation risk or strategic risk under the RACF, given the difficulty of quantifying

such risks.

APPENDICES

Appendix A: Mapping U.S. Bank Disclosures To RACF Exposure Inputs

129. (We no longer use Appendix A including paragraph 130 and Table A, "Mapping of Data in U.S. Bank Holding Companies' Quarterly Regulatory Reports, as changes in regulatory reporting have made Table A out-of-date.)

130. Table A summarizes the precise mapping of data disclosed in U.S. bank holding companies' quarterly regulatory reports--US FR-Y9 C.

Table A

Mapping Of Data In U.S. Bank Holding Companies' Quarterly Regulatory Reports

Description	RAC exposure subtype	U.S. FR-Y9 C mapping
Loans to foreign government	Central government	HC-C 7 A
U.S. treasuries	Central government	HC-B 1 A + HC-B 1 D
U.S. government agencies	Central government	HC-B 2.a. A + HC-B 2.a. D + HC-B 2.b. A + HC-B 2.b. D
Municipal securities	Local or regional government	HC-B 3 A + HC-B 3 D
Loans to foreign banks	Financial institutions	HC-C 2.b. A + HC 1.b.(2)
Securities lent*	Financial institutions	HC-L 6
Over-the-counter derivatives 0%	Central government	HC-R 54 C
Over-the-counter derivatives 20%	Financial institutions	HC-R 54 D
Over-the-counter derivatives 50%	Corporate	HC-R 54 E
Sale and repurchase securities transactions (repos)*	Financial institutions	HC 14.b.
Reverse repos*	Financial institutions	HC 3.b.
Loans to U.S. banks	Financial institutions	HC-C 2.a. A + HC 1.b.(1)
Other domestic debt	Corporate	HC-B 6.a. A + HC-B 6.a. D
Loans to foreign commercial and industrial sector	Corporate	HC-C 4.b. A
Foreign debt	Corporate	HC-B 6.b. A + HC-B 6.b. D
Commitments: securities underwriting	Corporate	HC-L 1.d.
Credit derivatives (net guarantor)	Corporate	HC-L 7.a.(1) A - HC-L 7.a.(1) B + HC-L 7.a.(2) A - HC-L 7.a.(2) B + HC-L 7.a.(3) A - HC-L 7.a.(3) B + HC-L 7.a.(4) A - HC-L 7.a.(4) B
Other corporate loans	Corporate	HC-C 9.a. A + HC-C 9.b.2 A + HC-S 2.c. G + HC-S 12 G
Commitments other	Corporate	HC-L 1.e.1 + HC-L 1.e.2 + HC-L 1.e.3 - HC-S memo M.3.b.(1) - HC-S memo M.3.b.(2) - HC-S 10 A - HC-S 10 B - HC-S 10 C - HC-S 10 D - HC-S 10 E - HC-S 10 F - HC-S 10 G
Accrued receivables	Purchased receivables	HC-F 1
Commercial real estate mortgage	Income-producing commercial real estate	HC-C 1.d. B + HC-C 1.e.(2) B + HC-C memo M.2.
Commitments commercial real estate	Income-producing commercial real estate	HC-L 1.c.(1) + HC-L 1.c.(2)

Table A

Mapping Of Data In U.S. Bank Holding Companies' Quarterly Regulatory Reports (cont.)

Description	RAC exposure subtype	U.S. FR-Y9 C mapping
Construction and land development loans	Construction and real estate development	HC-C 1.a.(1) B + HC-C 1.a.(2) B
Farmland	Corporate	HC-C 1.b. B
Other commercial real estate	Income-producing commercial real estate	HC-C 1 A - HC-C 1.a.(1) B - HC-C 1.a.(2) B - HC-C 1.b. B - HC-C 1.c.(1) B - HC-C 1.c.(2)(a) B - HC-C 1.c.(2)(b) B - HC-C 1.d. B - HC-C 1.e.(1) B - HC-C 1.e.(2) B + HC 7 + HC 9
Standby letters of credit	Corporate	HC-L 2 - HC-L 2.a. + HC-L 3 - HC-L 3.a.
Commercial and similar letters of credit	Corporate	HC-L 4
Agricultural loan	Corporate	HC-C 3 A
Loans to U.S. commercial and industrial	Corporate	HC-C 4.a. A + HC-C 1.e.(1) B - HC-C memo M.2. + HC-S 2.c. F + HC-S 12 F
Prime mortgages	Prime residential mortgages	HC-C 1.c.(2)(a) B
Home equity loans	Other retail	HC-C 1.c.(1) B + HC-C 1.c.(2)(b) B
Non-prime mortgages	Non-prime mortgages	HC-C 1.c.(2)(a) B
Commitments residential real estate	Prime residential mortgages	HC-L 1.a.
Credit card loan	Credit cards	HC-C 6.a. A + HC-S 1 C - HC-S 2.a C
Commitments: credit cards	Credit cards	HC-L 1.b.1 + HC-L 1.b.2
Other consumer loan	Other retail	HC-C 6.b. A + HC-C 6.c. A + HC-C 10.a. A
Mortgage servicing rights	Mortgage servicing rights	HC-M 12.a.
Margin loans*	Other retail	HC-C 9.b.1. A
Residual interests	Securitization	HC-S 2.c. A + HC-S 2.c. B + HC-S 2.c. D + HC-S 2.c. E + HC-S 12 A + HC-S 12 B + HC-S 12 C + HC-S 12 D + HC-S 12 E
Securitized residential real estate	Securitization	HC-S 2(b) A + HC-S 2(b) B + HC-S 3 A + HC-S 3 B + HC-S 9 A + HC-S 9 B + HC-S 10 A + HC-S 10 B
Securitized consumer loans	Securitization	HC-S 2(b) D + HC-S 2(b) E + HC-S 3 D + HC-S 3 E + HC-S 9 C + HC-S 9 D + HC-S 9 E + HC-S 10 C + HC-S 10 D + HC-S 10 E
Securitized commercial and industrial	Securitization	HC-S 2(b) F + HC-S 3 F + HC-S 9 F + HC-S 10 F
Securitized other	Securitization	HC-S 2(b) G + HC-S 3 G + HC-S 9 G + HC-S 10 G
Commercial paper conduit	Line to ABCP	HC-S memo M.3.b.(1) + HC-S memo M.3.b.(2)
FNMA pass-through	Securitization	HC-B 4.a.(1) A + HC-B 4.a.(1) D + HC-B 4.a.(2) A + HC-B 4.a.(2) D
Other FNMA	Securitization	HC-B 4.b.(1) A + HC-B 4.b.(1) D + HC-B 4.b.(2) A + HC-B 4.b.(2) D
Other mortgage-backed securities	Securitization	HC-B 4.a.(3) A + HC-B 4.a.(3) D + HC-B 4.b.(3) A + HC-B 4.b.(3) D + HC-B 4.c.(1) A + HC-B 4.c.(1) D + HC-B 4.c.(2) A + HC-B 4.c.(2) D
Asset-backed securities	Securitization	HC-B 5.a A + HC-B 5.a D + HC-B 5.b.(1) A + HC-B 5.b.(1) D + HC-B 5.b.(2) A + HC-B 5.b.(2) D + HC-B 5.b.(3) A + HC-B 5.b.(3) D
Leases	Other items	HC-C 10.b A
Other items	Other items	HC 6
Other	Other items	HC 11 - HC-F 1 - HC-F 2 - HC-F 4
VaR internal model approach	VAR models for general risk, validated by the regulator	HC-R 58 F - HC-R memo 6
Specific risk not captured in VaR	Standardized approach in the Basel framework	HC-R memo 6
Private equity	Unlisted securities	HC-F 4

Table A

Mapping Of Data In U.S. Bank Holding Companies' Quarterly Regulatory Reports (cont.)

Description	RAC exposure subtype	U.S. FR-Y9 C mapping
Public equity	Listed securities	HC-B 7 D
Minority equity holdings in financial institutions	Minority holdings in unconsolidated financial institutions	HC 8
Operational risk annual revenues	Operational risk without details to allocate by business line	Max past three years of gross revenues (HI 3 + HI 5.m. - HI 5.i. - HI 5.j. - HI 5.k.)

*FR-Y9 reports exposures gross of collateral and before haircuts, while Pillar 3 disclosures would generally require these exposures to be reported net of collateral and after haircuts, hence the specific risk weights for some U.S. assets in Table 7. ABCP--Asset-backed commercial paper. FNMA--Federal National Mortgage Association. VaR--Value at risk.

Appendix B: Calculating The Adjustment For Concentration Or Diversification

131. RACF calculates an adjustment to RWA 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 RWA in corporate exposures for correlations among different industries;
- Second, RACF calculates an adjustment to total RWA for correlations among country or regional exposures;
- Third, RACF calculates an adjustment to total RWA 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 RWA for concentration or diversification by adding the separate adjustments produced from the first four steps subject to caps, as explained in paragraph 132.

132. We limit or cap the overall benefit of concentration and diversification adjustments to 30% for the most diversified global financial institutions. 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.

Industry sector, geographic, and business line methodology

133. 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 RWA, then we determine the aggregate RWA for the various portfolios using a correlation matrix (based on the Markowitz covariance/variance formula):

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

134. Where:

- Ki is the RAC charge for either the industry sector, geographic region, or business line (i) in order to compute the total risk weight adjusted for industry sector, geographic region, business line concentration, or diversification;

- Ci is the concentration factor for the industry sector, geographic region, or business line (i); and
- Ri,j is the correlation coefficient between the industry sectors, geographic regions, or business lines) i and j.

135. In paragraph 133, 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.

136. 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: 38.1 – 3.9 x ln(R).

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

Industry sector concentration factors

138. Table B.1 shows the concentration factor RACF uses for industry sectors. 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 B.1

Sector Concentration Factors

Industry sector	Concentration factor (%)
Consumer discretionary	103
Consumer staples	97
Energy	104
Financials	106
Health care	98
Telecom services	104
Utilities	98
Information technology	113
Industrials	103
Materials	106
Capital goods	105
Commercial and professional services	106
Transportation	102
Automobiles and components	105
Consumer durables	106
Consumer services	106
Media	110
Retailing	107
Food and staples retailing	108
Food, beverages, and tobacco	98

Table B.1

Sector Concentration Factors (cont.)

Industry sector	Concentration factor (%)
Household and personal products	101
Health care equipment and services	106
Pharmaceutical and biotechnology	99
Banks	107
Diversified financials	110
Insurance	115
Real estate	109
Software and services	115
Semiconductors	112
Technology hardware and equipment	115

Geographic region concentration factors

139. Table B.2 shows the concentration factors RACF uses for countries and geographic regions. We calibrate the concentration factor so that the concentration factor for the largest economy in the world (currently the U.S.) is set to 100%, and the concentration factor for Switzerland is set to 115%.

140. 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.

141. 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 B.2

Geographic Concentration Factors

Country	Geographic concentration factor (%)
Argentina	117
Australia	112
Austria	116
Bahrain	129
Belarus	125
Belgium	115
Bolivia	130
Bosnia and Herzegovina	130
Brazil	110
Cambodia	132

Table B.2

Geographic Concentration Factors (cont.)

Country	Geographic concentration factor (%)
Canada	111
Chile	120
China	105
Colombia	118
Costa Rica	128
Croatia	124
Cyprus	129
Czech Republic	119
Denmark	117
Dominican Republic	126
Ecuador	125
Egypt	119
El Salvador	129
Estonia	130
Finland	118
France	107
Georgia	132
Germany	106
Greece	117
Guatemala	127
Hong Kong	119
Hungary	121
Iceland	132
India	111
Indonesia	115
Ireland	118
Israel	119
Italy	109
Jamaica	132
Japan	105
Jordan	129
Kazakhstan	122
Korea	113
Kuwait	122
Latvia	128
Lebanon	127
Lithuania	127
Luxembourg	125
Malaysia	119
Malta	133

Table B.2

Geographic Concentration Factors (cont.)

Country	Geographic concentration factor (%)
Mexico	112
Montenegro	136
Morocco	123
Netherlands	113
New Zealand	121
Nigeria	120
Norway	116
Oman	125
Pakistan	120
Panama	128
Peru	121
Philippines	120
Poland	116
Portugal	118
Qatar	123
Romania	120
Russia	111
Saudi Arabia	116
Serbia	126
Singapore	120
Slovak Republic	123
Slovenia	125
South Africa	117
Spain	110
Suriname	138
Sweden	116
Switzerland	115
Taiwan	116
Thailand	118
Trinidad and Tobago	129
Tunisia	126
Turkey	114
Ukraine	121
United Arab Emirates	118
United Kingdom	108
United States	100
Uruguay	127
Venezuela	117
Vietnam	122

Table B.2

Geographic Concentration Factors (cont.)

Country	Geographic concentration factor (%)
Region or group of countries	
Africa	113
Asia Pacific	103
Baltic	123
Caribbean	124
Eastern Europe	114
European Union	102
Gulf Cooperation Council	114
Latin America	107
North Africa	116
North America	100
Southeast Asia	112

Correlation matrices

142. RACF uses separate correlation matrices for industry sectors, countries, and business lines. For correlations by geographic regions and industry sectors, we have used the MSCI stock indexes. Business line correlations are based on our analytical judgment.

143. Tables B.3 and B.4 show a summary of the correlation matrices for industry sectors and geographic regions respectively. Using the MSCI stick indices, we chose the monthly returns of the index as a compromise between stability and the number of data points from 1987 to 2010.

144. We first computed Pearson correlations of these MSCI index returns, then we stressed the results to capture more fat-tail risks. To do so, we use a Fisher transformation and stress the resulting value to a confidence interval of 99.5%.

145. Table B.5 is the matrix RACF uses for business lines.

Table B.3

Sector Correlation Matrix (Selected Sample)

Table B.4

Geographic Correlation Matrix (Selected Sample)

Table B.5

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

Table B.5

Business Line Diversification Matrix (cont.)

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

146. 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.

Single-name concentration adjustment

147. The 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.

148. 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 (2003).

149. 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:

$$Add-on = 13.4 \cdot \left[\frac{1}{2K^*} \cdot \left(\sum_{i=1}^{n} s_i^2 C_i Q_i + \bar{s} \cdot ((\delta - 1)(K^* - K_n^*) + \delta(R^* - R_n^*)) \right) \right]^2 +$$
$$0.20 \cdot \frac{1}{2K^*} \cdot \left(\sum_{i=1}^{n} s_i^2 C_i Q_i + \bar{s} \cdot ((\delta - 1)(K^* - K_n^*) + \delta(R^* - R_n^*)) \right)$$

150. 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 Standard & Poor's 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 perecntage of EAD) computed using the Basel II foundation IRB formula, where the probability of default (PD_i) is set as Standard & Poor's long-term average global corporate default rate for the rating class if the exposure is rated. If the exposure is not 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_m* is the cumulative unexpected loss for the m largest exposures (as a percentage of EAD);
- R_m* is the cumulative expected loss for the m largest exposures (as a percentage of EAD);
- C_i= $(45\%^2 + VLGD_i^2)/45\%$ where VLGD is the volatility of LGD (loss-given default). Ci can be viewed as a stressed LGD using its normalized variance;
- VLGD =

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

; and

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

(The default rates are published in "2009 Annual Global Corporate Default Study and Rating Transitions," March 17, 2010.)

151. 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% to 21% higher portfolio value-at-risk for this highly concentrated portfolio versus a perfectly granular one that is comparable in all other dimensions.

152. 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% to 4% of portfolio value at risk. For smaller portfolios (with 1,000 to 4,000 loans), they estimate that a range between 4% and 8% is more likely.

153. 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.

Appendix C: Normalized Loss Rates

154. Appendix C provides the normalized loss rates we use for all instances.

Table C.1

Normalized Loss Rates By Business Line

Corporate, Financial Institutions, Retail And Personal Loans

	--Normalized loss rates (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	38	114	4	3	11	46	282	36	77
2	45	136	5	3	16	63	315	43	88
3	53	159	6	4	20	79	350	50	100
4	62	186	9	6	25	101	393	58	115
5	73	218	20	13	31	123	440	67	132
6	85	255	37	24	37	149	497	77	153
7	99	297	59	39	45	178	563	89	177
8	115	345	87	58	53	210	639	103	205
9	133	400	121	80	62	247	722	118	237
10	154	461	160	107	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 midsize enterprises.

Table C.2

Normalized Loss Rates By Business Line

Government, Securitization

	--Normalized loss rates (bps)--		
	--Government--		Securitization
Rating	Sovereign	Local or regional	All instruments
AA- and above	0	0	0
A+	2	2	4
A	4	5	8
A-	5	6	10
BBB+	10	12	20
BBB	18	22	36
BBB-	30	36	60
BB+	45	54	90
BB	64	77	128
BB-	86	104	N.M

Table C.2

Normalized Loss Rates By Business Line (cont.)

Government, Securitization

	--Normalized loss rates (bps)--		
	--Government--		Securitization
Rating	**Sovereign**	**Local or regional**	**All instruments**
B+	112	135	N.M
B and below	142	170	N.M

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

155. RACF derives these normalized loss estimates using a 40% LGD for sovereign exposures, consistent with the historical sovereign recovery rates. Likewise, RACF uses a 48% LGD for local government exposures (20% add-on compared with sovereign exposures).

156. RACF applies an 80% LGD for securitization exposures rated 'BB' and above in order to derive the normalized loss estimates. For securitization tranches rated below 'BB', RACF charges 100% of the exposure.

Appendix D: Superseded And Partially Superseded Criteria

157. This criteria article supersedes the following articles:

- "Methodology And Assumptions: Risk-Adjusted Capital Framework For Financial Institutions," published April 21, 2009,
- "Updated Assumptions: Risk-Adjusted Capital Framework For Financial Institutions," published March 17, 2010,
- "Methodology For Assessing Government Asset Protection Schemes With Retained First-Loss Tranches In S&P's Capital Ratios," published Sept. 30, 2009,
- "Financial Institutions Pension And Other Postretirement Benefits," published Dec. 19, 2006,
- "Credit Stress-Testing Canadian Banks," published July 29, 2009,
- "Updated Assumptions For Problem Assets And Credit Costs For Banks In Russia," published May 18, 2010,
- "Assumptions For Stress Testing U.S. Financial Institutions," published Feb. 1, 2010,
- "Assumptions For Credit Stress Testing German Banks," published Aug. 21, 2009,
- "Assumptions For Credit Stress Testing U.K. Banks," published Aug. 11, 2009,
- "Assumptions For Credit Stress Testing Irish Banks," published Jan. 26, 2010,
- "Assumptions For Credit Stress Testing Financial Institutions In Spain," published Sept. 15, 2009,
- "Credit Stress Testing Asia-Pacific Banks," published June 16, 2009,
- "Assumptions: Credit Stress Testing Banks In Kazakhstan," published Dec. 10, 2009, and
- "Credit Stress Testing For Financial Institutions," published April 29, 2009.

158. This article also partially superseded "Financial Institutions Group Provides More Transparency Into Adjustments Made To Bank Data," published April 26, 2007, and "Assessing Trading Risk Management Practices Of Financial Institutions," published Oct. 17, 2005. Both of these articles have since been fully superseded.

REVISION HISTORY

Feb. 2, 2017: As a result of the review at this date, on July 11, 2017, we republished the criteria article and updated the contact list, the editor's note, the Related Criteria and Research list, and references to archived criteria articles within the text. We added the Revision History and Effective Date sections. We also corrected an error in the values of two numerical coefficients incorporated in the single-name concentration adjustment formula in paragraph 149. We also deleted text that is no longer relevant.

Previous editor's note: We originally published this criteria article on Dec. 6, 2010. We've republished it following our periodic review completed on Feb. 9, 2016. On Dec. 23, 2015, we republished this article to indicate that Appendix A including paragraph 129 and Table A are no longer in use as Table A has become out-of-date with changes in regulatory reporting on which it relies. On Jan. 8, 2016, we republished this article to make a change in paragraph 67 that should have occurred at the same time as the related action to Table A. On Dec. 23, 2015, we also updated related criteria references. We also clarified in paragraph 4 that this criteria is applicable for finance companies as indicated in "Nonbank Financial Institutions Rating Methodology," published on Dec. 9, 2014. We had previously republished this article on Feb. 10, 2015, to correct the formula in paragraph 148, where we had omitted the square brackets. The error had no ratings impact because the internal model we use to calculate capital includes the correct formula. We previously republished this article on Nov. 24, 2014, to reinstate paragraphs 99 and 100 that were inadvertently deleted. The article titled, "Revised Market Risk Charges For Banks In Our Risk-Adjusted Capital Framework," published June 22, 2012, has superseded paragraphs 81-86 in this article.

Deleted text from paragraph 10:

IMPACT ON OUTSTANDING RATINGS

10. We don't expect this revised criteria to have any impact.

EFFECTIVE DATE

These criteria are effective on Dec. 6. 2010.

RELATED CRITERIA AND RESEARCH

Related criteria

- Bank Hybrid Capital And Nondeferrable Subordinated Debt Methodology And Assumptions, Jan. 29, 2015
- Nonbank Financial Institutions Rating Methodology, Dec. 9, 2014
- Quantitative Metrics For Rating Banks Globally: Methodology And Assumptions, July 17, 2013
- Group Rating Methodology, Nov. 19, 2013
- Banks: Rating Methodology And Assumptions, Nov. 9, 2011
- Refined Methodology And Assumptions for Analyzing Insurer Capital Adequacy Using The Risk-Based Insurance Capital Model, June 7, 2010
- Capital Model, June 7, 2010

- Methodology: Hybrid Capital Issue Features: Update On Dividend Stoppers, Look-Backs, And Pushers, Feb. 10, 2010
- Assumptions: Clarification Of The Equity Content Categories Used For Bank And Insurance Hybrid Instruments With Restricted Ability To Defer Payments, Feb. 9, 2010
- Criteria Clarification On Hybrid Capital Step-Ups, Call Options, And Replacement Provisions, Oct. 22, 2012
- Understanding Standard & Poor's Rating Definitions, June 3, 2009
- Hybrid Capital Handbook: 2008 Edition, Sept. 15, 2008

Related research

- 2009 Annual Global Corporate Default Study and Rating Transitions, March 17, 2010

Other research

- Basel Committee on Banking Supervision (2005), "Basel II: International Convergence of Capital Measurement and Capital Standards: A Revised Framework--Comprehensive Version"
- Gordy, M. (2004), "Granularity Adjustment In Portfolio Credit Risk Measurement," in Szegö G. (ed), "Risk Measures for the 21st Century," Wiley
- Gordy, M. and Lütkebohmert, E. (2007), "Granularity Adjustment for Basel II," Deutsche Bundesbank discussion paper, "Series 2: Banking and Financial Studies," No. 01/2007
- Martin, R. and Wilde, T. (2003), "Unsystematic Credit Risk," Risk Magazine, 15:123–128

These criteria represent the specific application of fundamental principles that define credit risk and ratings opinions. Their use is determined by issuer- or issue-specific attributes as well as Standard & Poor's Ratings Services' assessment of the credit and, if applicable, structural risks for a given issuer or issue rating. Methodology and assumptions may change from time to time as a result of market and economic conditions, issuer- or issue-specific factors, or new empirical evidence that would affect our credit judgment.